# VERITAS NetBackup™ DataCenter 4.5

## Media Manager System Administrator's Guide

**for Windows**

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VERITAS

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# About This Guide

This guide describes using the NetBackup Administration Console to manage Media Manager software and its components on a Windows server (see the Terms section below for the supported Windows server platforms).

Media Manager is the component of VERITAS NetBackup DataCenter that manages the devices and media that are used to store the backup data.

In this guide, the term *NetBackup* refers to the VERITAS NetBackup DataCenter product.

## Audience

This guide is intended for system administrators and assumes a good working knowledge of the Windows operating system on the server where the product is used. In this guide, a system administrator is defined as a person with Windows system administrator privileges and responsibilities.

## Organization

This guide contains the following chapters:

- "Introduction to Media Manager" on page 1 provides an overview of Media Manager.
- "Configuring Storage Devices" on page 9 explains how to attach storage devices and configure Media Manager to use them.
- "Managing Media" on page 63 contains topics on configuring Media Manager to use the media (volumes and volume pools) that Media Manager requires to store backups.
- "Managing Media in Robots" on page 117 explains how to configure Media Manager to use and manage the media in robots (using robot inventory).
- "Monitoring Storage Devices" on page 171 explains tasks such as monitoring drives and media mount requests, and assigning a requested volume to a drive.

In addition to these chapters, there are the following appendixes, a glossary of NetBackup terms and an index.

- "Media Manager Commands and Processes" on page 197 explains Media Manager commands that you can run from a Windows command prompt.
- "Media Manager Reference Topics" on page 255 provides background information on important Media Manager features and concepts.
- "Robot Drive and Slot Layouts" on page 309 contains diagrams that show the drive layout and slot locations for many of the robots that Media Manager supports.
- "Automated Cartridge System (ACS)" on page 355 explains how Media Manager works with StorageTek (STK) Automated Cartridge System robots.
- "Microsoft Removable Storage Manager (RSM)" on page 371 explains how Media Manager communicates with robots under the control of Microsoft Removable Storage Manager.
- "IBM Automated Tape Library (ATL)" on page 379 explains how Media Manager supports robots controlled by the IBM Automated Tape Library.
- "ADIC Distributed AML Server (DAS)" on page 391 explains how Media Manager works with the EMASS Distributed AML Server to control Tape Library Multimedia (TLM) robots, including the Grau AML Library.

# Related Documents

NetBackup documents that will be useful are listed below. For a complete list of related documents, see the NetBackup release notes. Depending on your configuration, other documents may also be required.

- *NetBackup Installation Guide for Windows*

  Explains how to install NetBackup DataCenter software on Windows-based platforms.

- *NetBackup DataCenter System Administrator's Guide for Windows*

  Explains how to configure and manage NetBackup DataCenter on a Windows server.

- *NetBackup Global Data Manager System Administrator's Guide for UNIX and Windows*

  Explains how to install, configure, and use Global Data Manager (GDM) for NetBackup DataCenter and BusinesServer products on UNIX and Windows-based operating systems.

- *NetBackup Release Notes for UNIX and Windows*

Provides important information about NetBackup DataCenter and BusinesServer products on UNIX- and Windows-based servers, such as the platforms and operating systems that are supported and operating notes that may not be in the NetBackup manuals or the online help.

- *NetBackup SAN Shared Storage Option System Administrator's Guide for UNIX and Windows*

  Provides information on installing and configuring NetBackup Shared Storage Option (SSO) software on UNIX and Windows-based servers. SSO is an extension to tape drive allocation and configuration for NetBackup DataCenter Media Manager.

- *NetBackup Troubleshooting Guide for Windows*

  Provides troubleshooting information for Windows-based NetBackup DataCenter and BusinesServer products.

- *NetBackup Vault 4.5 System Administrator's Guide for UNIX and Windows*

  Describes how to configure and use logical vaults and profiles to duplicate backups, perform catalog backups, eject media, and generate reports.

# Accessibility

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.

# Conventions

The following explains typographical and other conventions used in this guide.

## Type Style

Typographic Conventions

| Typeface | Usage |
|---|---|
| **`Bold fixed width`** | Input. For example, type **`cd`** to change directories. |
| `Fixed width` | Paths, commands, filenames, or output. For example: The default installation directory is `/opt/VRTSxx`. |
| *Italics* | Book titles, new terms, or used for emphasis. For example: *Do not* ignore cautions. |
| *Sans serif* (italics) | Placeholder text or variables. For example: Replace *filename* with the name of your file. |
| **Serif** (no italics) | Graphical user interface (GUI) objects, such as fields, menu choices, etc.<br>For example: Enter your password in the **Password** field. |

## Notes and Cautions

**Note** This is a Note. Notes are used to call attention to information that makes using the product easier or helps in avoiding problems.

**Caution** This is a Caution. Cautions are used to warn about situations that could cause data loss.

## Key Combinations

Some keyboard command sequences use two or more keys at the same time. For example, holding down the **Ctrl** key while pressing another key. Keyboard command sequences are indicated by connecting the keys with a plus sign. For example:

Press Ctrl+t

## 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*

the user can use either the *arg1* or *arg2* variable.

## Terms

The terms listed in the table below are used in the VERITAS NetBackup documentation to increase readability while maintaining technical accuracy.

| Term | Definition |
|---|---|
| Microsoft Windows, Windows | Terms used as nouns to describe a line of operating systems developed by Microsoft, Inc.<br>A term used as an adjective to describe a specific product or noun. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI.<br>Where a specific Windows product is identified, then only that particular product is valid with regards to the instance in which it is being used.<br>For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at `http://www.support.veritas.com`. |
| Windows servers | A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and Windows 2000. |
| Windows clients | A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE. |

# Getting Help

For updated information about this product, including system requirements, supported platforms, supported peripherals, and a list of current patches available from Technical Support, visit our web site:

`http://www.support.veritas.com/`

VERITAS Customer Support has an extensive technical support structure that enables you to contact technical support teams that are trained to answer questions to specific products. You can contact Customer Support by sending an e-mail to support@veritas.com, or by finding a product-specific phone number from the VERITAS support web site. The following steps describe how to locate the proper phone number.

1. Open `http://www.support.veritas.com/` in your web browser.
2. Click **Contact Support**. The *Contacting Support Product List* page appears.
3. Select a product line and then a product from the lists that appear. The page will refresh with a list of technical support phone numbers that are specific to the product you just selected.

# Introduction to Media Manager 1

Media Manager provides control of tape storage devices and tracks the location of the removable media that are used in these devices. Media Manager is an integral part of NetBackup and is installed with it on every NetBackup server.

This chapter provides an overview of Media Manager and contains the following topics:

- Media Manager Features
- Media Manager Hosts
- Media Manager-Controlled Storage Devices
- Media Manager Volumes
- Media Manager Administration Utilities
- Device and Media Configuration Overview

**Caution** If you want to use devices with some other application and these devices are currently being controlled by Media Manger, you must down the drive if the drive is in the Media Manager up state.

## Media Manager Features

- Robotic and Standalone Drive Support

  In Media Manager, a robot is a peripheral device for the automated mounting and dismounting of volumes in tape drives. A standalone drive is a drive that is not associated with a robot.

  Media Manager supports a wide range of robots and automates the handling of volumes in these devices. Except for initial setup and loading of tapes or an equipment failure, manual intervention is not required.

  Visit the VERITAS support web site for a list of the platforms and peripherals that Media Manager supports.

  Media handling in standalone drives is also automated to the extent that Media Manager automatically uses the tape that is in a drive, if it is required by NetBackup.

**Note** Media Manager on Windows servers does not support optical disk storage devices.

- Media Location Tracking

  Media Manager maintains a volume database that shows the location of all media (for example, the robot and slot). This information permits Media Manager to find media when it is required to satisfy a request.

- Media Statistics Tracking

  Media Manager keeps a record of statistics that are useful in tracking the useful life of media (for example, an expiration date and the number of times that media has been mounted).

- Security

  Media Manager `vmd` security works in conjunction with NetBackup authentication/authorization security to control user access to `vmd` (the NetBackup Volume Manager service).

  "vmd Security" on page 290 explains important security features.

- Robot Inventory and Update

  Media Manager can inventory a robot, provide reports, and update the volume database to match the results of the inventory. This simplifies administration, by permitting you to quickly determine the contents of a robot. This also automates the configuration process.

- Automatic Volume Recognition

  Media Manager compares the media IDs on media with media IDs that are requested and then assigns the correct media to requests. This is an essential part of providing hands-off operation for both robots and standalone drives.

- Automatic Scanning of Media Labels

  Media Manager scans the labels of media that are in drives and displays them in the Device Monitor. This is useful if you want to know whether a certain drive contains a particular volume.

- Volume Pools

  During configuration, you can assign media to pools that are reserved for specific uses. For example, media can be reserved for backups of specific departments. It is also possible to create a scratch pool from which media can be allocated to other pools as they are needed.

  A pool named NetBackup is created by default and, unless you specify otherwise in the class or schedule, all NetBackup images go to media in the NetBackup pool. You can create other volume pools as desired. Other volume pools that are created by default are named None and DataStore.

- Volume Groups

  When media is added, it is assigned (or you can assign) a volume group name that corresponds to the physical location of the media (for example, the robot that has the media). This is useful for administering groups of volumes and for tracking location. For example, when media is taken to offsite storage, you can move the media to specific standalone groups.

- Graphical User Interfaces for Media and Device Management

  The following interfaces (or tree nodes) are available from the NetBackup Administration Console.

  - **Device Monitor** shows the current status of all drives and allows you to easily change the state of a drive. For example, it is possible to set a drive to DOWN to prevent its use by Media Manager or reset it to clear a hang condition. You can also assign requests to drives in those instances when assignment does not occur automatically.
  - **Media** provides intuitive and easy-to-use methods for managing your media, volume pools, and volume groups.
  - **Devices** provides intuitive and easy-to-use methods for managing your device hosts, robots, and drives.

# Media Manager Hosts

In the NetBackup Console and in this guide, a host that has Media Manager software installed is called a media server or a device host (remember that Media Manager is installed as part of NetBackup).

Two related terms that you will encounter and should be familiar with are:

- Device host

  A host is called a device host if it controls devices for Media Manager.

- Volume Database Host

  A host is called a volume database host if it contains information about the volumes that Media Manager uses. All hosts (where Media Manager is installed) have volume databases and can keep volume information in them, but VERITAS recommends that you centralize the information on only one host (this is usually the master server).

# Media Manager-Controlled Storage Devices

Drives and robots must be added to the Media Manager configuration before NetBackup can use them. Devices can be easily added using either of the following methods using the NetBackup Administration Console:

- The Device Configuration Wizard (this is the recommended method). This wizard is available from the right pane of the NetBackup Administration Console, if you have selected **Media and Device Management** in the tree pane.
- Using **Devices** (use the new robot and new drive menu items).

# Media Manager Volumes

The tapes that Media Manager uses are referred to as volumes in NetBackup. Volumes are assigned media IDs and other attributes that are required for tracking and management. You can do the assignment manually or let Media Manager do it automatically.

These methods are explained in the following chapters:

- "Managing Media" on page 63
- "Managing Media in Robots" on page 117

The following are examples of what occurs when NetBackup requests a volume for a backup:

- If NetBackup requests an existing volume, Media Manager locates the volume and performs the steps necessary to have the volume mounted in a drive.
- If NetBackup requests a new volume, Media Manager looks for a volume of the requested density and assigns it to NetBackup before mounting it in a drive. Once a volume is assigned to NetBackup, other applications cannot use it until NetBackup no longer needs the backups on the volume.
- If Media Manager does not have a record of a volume suitable for the request, an error occurs and you must configure a volume to use before the operation can proceed.

## Mounting and Using Volumes

Mounting a volume consists of the steps necessary to make it available for reading or writing data. After finding a volume, Media Manager mounts it as follows:

- If the volume is in a robot, Media Manager issues the commands that move the volume to a drive, position the heads to the beginning of the volume, and assign it to the request. No manual intervention is required.

- If the volume happens to be in a standalone drive and has been requested by NetBackup, Media Manager automatically mounts and assigns it. Again, no manual intervention is required.
- If the volume is not in a robot or a standalone drive, Media Manager displays a pending request in the Device Monitor. The operator must then find the volume and do one of the following:
  - Check the Device Monitor to find a suitable drive, and mount the requested volume in that drive.
  - Move the volume into the robot and update the volume configuration to reflect the correct location for the media, and resubmit the request.
- The administrator or operator can then find the required volume, insert it into the drive, and assign the drive to the request with the Device Monitor. This situation will exist, for example, if the requested volume happens to be offsite.

In robots that have barcode readers, Media Manager verifies the barcode to ensure that the robot loads the correct volume. If the barcode on the volume does not match the barcode in the Media Manager volume database, it is considered an error and the operation is stopped.

**Note** Media Manager is involved only in backups that are stored on removable media. If the defined NetBackup storage unit is on magnetic disk, NetBackup sends the backup to the file path specified during configuration of the storage unit and records the location in the NetBackup media database. Media Manager, in this instance, does not have a record of the storage location.

# Media Manager Administration Utilities

Utilities for managing media and devices are available in the NetBackup Administration Console.

There are also some operations that may require you to use a command from the Windows command prompt (see “Media Manager Commands and Processes” on page 197). These operations are not required in the normal use of NetBackup.

## Starting the Media Manager Administration Utilities

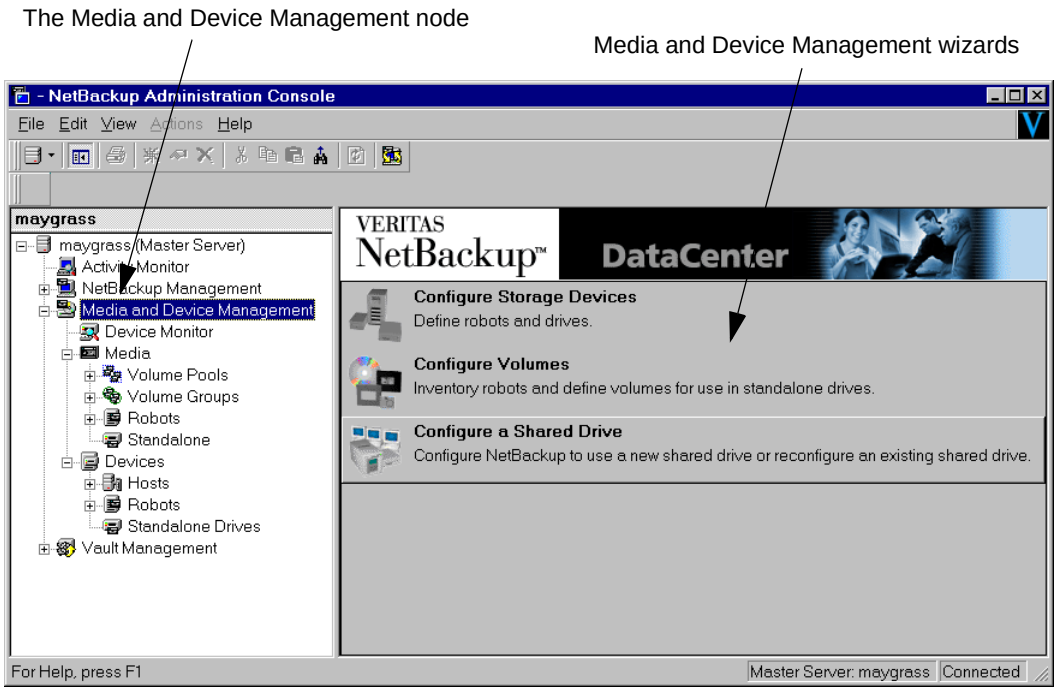
1. Log on to a Windows workstation as a member of the Administrators group.
2. From **Start** > **Programs**, select **VERITAS NetBackup** > **NetBackup Administration Console**. The NetBackup Administration Console appears on your workstation.

The NetBackup Administration Console is the starting point for administering NetBackup. The left pane of the console window has a node for each major area of NetBackup administration (including nodes for optional VERITAS products).

The right pane initially contains the NetBackup wizards that apply to each node. The figure shows the available wizards for Media Manager (the **Media and Device Management** node).

Clicking a node displays information related to that node in the right pane. The menus contain commands relevant to the selected node.

**Note** See the NetBackup system administrator's guide for Windows servers for details on the other NetBackup Administration Console nodes, other NetBackup administration utilities, and menu commands.




3. The **Media and Device Management** node contains the Media Manager utilities. Expand **Media and Device Management** to view these utilities.

   - Click **Device Monitor**. The device monitor has commands for monitoring the operation of storage devices.

     "Monitoring Storage Devices" on page 171 explains how to use the Device Monitor.

- Click **Media**. This node has commands for managing media.

  "Managing Media" on page 63 and "Managing Media in Robots" on page 117 explain how to manage your media.

- Click **Devices**. This node has commands for configuring and managing hosts, robots, and drives.

  "Configuring Storage Devices" on page 9 explains how to configure robots and drives.

### Shortcut Menus

Pressing the right-mouse button while the pointer is over sections of the NetBackup Administration Console, displays shortcut menus. Different menus appear depending on where your pointer is positioned.

## Device and Media Configuration Overview

The following summarizes the steps for configuring storage devices and media. Complete your NetBackup configuration as explained in the NetBackup system administrator's guide for Windows servers.

1. Install NetBackup software by following the instructions in the NetBackup installation program. Media Manager is installed as a part of NetBackup.

2. Use the Device Configuration Wizard (select **Configure Storage Devices** in the right pane of NetBackup Console) to configure your robots, non-shared drives, and shared drives (SSO). For more information, see "Using the Device Configuration Wizard to Configure Devices" on page 28.

   To configure unsupported devices, you must use the menus of the **Devices** node. See "Configuring Storage Devices" on page 9.

3. Use the Volume Configuration Wizard (select **Configure Volumes** in the right pane of the NetBackup Console) to add the media that you will be using in the storage devices. This wizard configures volumes for all supported standalone drives and robots.

   When you logically add a new volume (or move volumes) in a robot that supports barcodes, a scan occurs and the Media Manager volume database is updated to reflect the contents of the robotic library.

To configure volumes for unsupported devices, use the menus of the **Media** node. See “Managing Media” on page 63 and “Managing Media in Robots” on page 117 for advanced robot inventory operations.

# Configuring Storage Devices 2

The device management window provides the tools required to add, configure, and manage the devices that Media Manager uses.

This chapter explains how to attach drives and robotic libraries and configure Media Manager to use them. The topics in this chapter are listed below. If this is the first time you have configured devices, read the topics in the order they are presented.

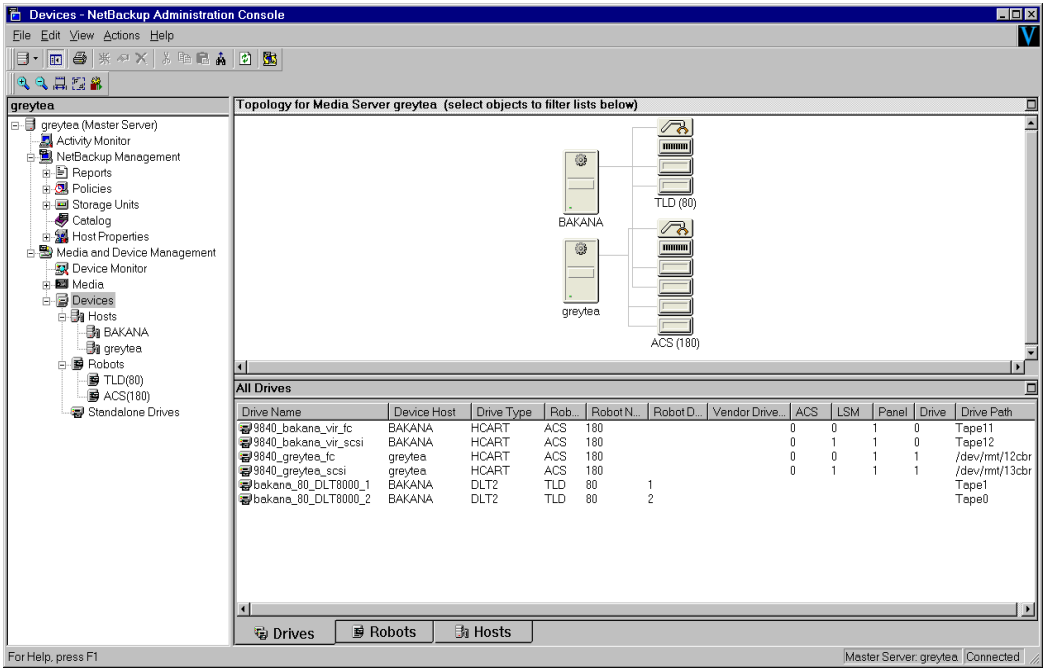
- Starting Device Management
- Using the Device Management Window
- Performing Initial Device Configuration
- Administering Devices on Other Device Hosts
- Managing the Global Device Database Host
- Using the Device Configuration Wizard to Configure Devices
- Managing Partially-Configured Devices
- Adding Robots
- Adding Shared Drives
- Adding Drives
- Managing Robots and Drives
- Printing Your Device Configuration
- Robot and Drive Configuration Examples

## Starting Device Management

In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

The device management window appears.

Device Management Window




In addition to the tree pane on the left, two panes are displayed on the right when you start device management:

- A pane showing global topology.
- A pane showing devices.

# Using the Device Management Window

The following topics provide an overview of the window's contents:

- Menus and Commands
- Toolbars
- Tree Pane
- Global Topology Pane
- Devices Pane
- Status Bar
- Shortcut Menus and Commands

- Tool Tips
- Customizing the Window
- Allowable Media Manager Characters

## Menus and Commands

The device management window has available the menus and commands shown in the following table.

The menu items are enabled based on the items that are currently selected in the tree pane or topology pane, or which tab is selected in the devices pane. For example, if the robot tab is selected in the devices pane and a robotic library is selected in the list, **Inventory Robot** is enabled on the **Actions** menu.

Device Management Menus and Commands

| Menu | Commands |
|---|---|
| **File** | **Change Server** - Displays a dialog box that allows you to change to a different host that is running NetBackup.<br>**New Console** - Starts another instance of NetBackup Administration Console.<br>**New Window from Here** - Starts another instance of the NetBackup Administration Console node that was active.<br>**Backup, Archive, and Restore** - Starts the NetBackup Client utility.<br>**Print Setup** - Displays a Windows print setup dialog.<br>**Print** - Prints the topology pane or devices pane (when one of these panes is selected).<br>**Close** - Closes the current window.<br>**Exit** - Closes all open windows. |
| **Edit** | Contains **Find** commands for managing items in the display lists.<br>**New** - Displays a dialog box to add an item of the type that is currently selected.<br>**Change** - Displays a dialog box for changing the configuration of the selected items.<br>**Delete** - Deletes selected items from the configuration. |
| **View** | Contains commands for specifying your viewing preferences for the device management window, including showing and hiding the toolbar or tree, showing and hiding robots, and refreshing the display. See “Customizing the Window” on page 22. |

Device Management Menus and Commands (continued)

| Menu | Commands |
|---|---|
| **Actions** | **New** - Displays choices for adding robots, drives, or shared drives to a configuration. |
| | **Global Device Database** - Displays choices for adding or removing device hosts from the global device database, or synchronizing the entries in the global device database. |
| | See "Managing the Global Device Database Host" on page 26. |
| | **Change Standalone Volume Database Host** - Displays a dialog box to change the volume database host for standalone drives. |
| | **Inventory Robot** - Displays a dialog box with choices for performing an inventory of the selected robot or updating the volume configuration to match the contents of the robot. |
| | **Configure Shared Drive** - Starts a wizard that guides you through the steps involved in adding a shared drive, changing a shared drive, or changing a non-shared drive to a shared drive (SSO option). |
| | Using this wizard is not the preferred method when configuring shared drives, instead use the Device Configuration wizard (see "Using the Device Configuration Wizard to Configure Devices" on page 28). |
| | **Stop/Restart Device Manager Service** - Stops and restarts the NetBackup Device Manager service. |
| | **Analyze Device Configuration** - Displays a dialog box for starting the configuration analyzer. This analyzer verifies that the settings in your device configuration are consistent and checks for potential problems. |
| **Help** | **Help Topics** - Provides online help information about the NetBackup Console. |
| | **VERITAS Web Page** - Displays the VERITAS web page, if the host has a browser configured. |
| | **License Keys** - Provides information about your active and registered license keys. |
| | **About Administration Console** - Displays program information, version number, and copyright information. You can click **More Info** for more detailed information. |

## Toolbars

The toolbar buttons of the device management window provide shortcuts for commands that are on the menus.

To show or hide the toolbar buttons:

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

2. Click **View** > **ToolBar**.

To change the display of the toolbar buttons:

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

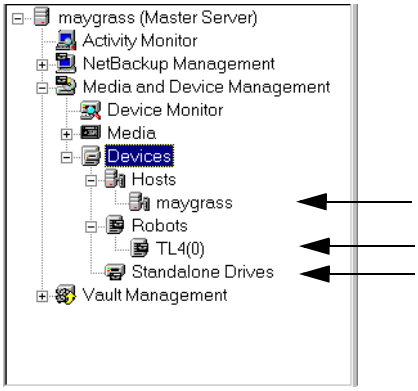
2. Click **View** > **Customize** > **Toolbars**.

Also see “Customizing the Window” on page 22.

## Tree Pane

The tree pane for **Devices** contains nodes for **Hosts**, **Robots**, and **Standalone Drives**. You can select items in the tree pane or the Topology pane in conjunction with the tabs of the Devices pane to filter the lists that are shown in the Devices pane.

The following figure shows just the tree pane and contains an expanded view of the **Devices** node:




If you select a device host, robot, or Standalone Drives, the Topology pane shows the pertinent connections highlighted and the Devices pane shows information filtered for that specific selection.

**Note** Selecting an item in the Tree pane (for example, a specific robot) *does not* enable the **Robots** tab in the Devices pane.

## Global Topology Pane

A description bar is displayed at the top of the topology pane. Tool Tips are provided for all of the objects displayed in the topology pane. See “Tool Tips” on page 21.

The topology view shows how devices are configured to the server being administrated, by showing images of servers and devices. The topology information is taken from the Media Manager global device database and is displayed in this pane.

## Topology Images

The following images may appear in the topology pane. Shared drives are a NetBackup DataCenter option.

| Description | Topology Image |
|---|---|
| NetBackup media server | |
| Robot | |
| Robot that is partially configured | |
| Robot media | |
| Drive | |
| Drive that is partially configured | |
| Drive that is shared | |

## Topology Connections

Connections in the topology indicate physical and logical connections of the devices, as follows:

- Media server to robotic library and drive relationships are indicated. A line attaches a robot arm to the media server that has robot control.

- Drives that are physically located in a robotic library are shown directly below the robotic library. Standalone drives are represented as individual drive objects.
- Drive to device host connections are shown only if the drive is being used for a request and the drive is in use by NetBackup. A line attaches a drive to the servers that are configured to use it. Robot to server connections and robot to volume database connections are always shown.
- Media is represented as in a robotic library. A line attaches the media to the server doing media management.
- The topology also indicates robotic library to volume database host connections.

### Selecting Topology Objects

Selecting an object will highlight the connecting lines from the object to all other objects to which it is connected, as follows:

- Clicking on a drive will highlight the connection to the server it is attached.
- Clicking on a shared drive will highlight connections to all servers that are configured to use the drive.
- Clicking on a server will high light connections to all robots, media, and drives that are connected or configured to the server.

Selecting objects in the topology pane is also one of the methods to filter the contents of the lists shown in the Devices pane.

Multiple objects of the same type can be selected by pressing the Ctrl key and selecting another object. If the Ctrl key is used and an object of a different type is selected, the selection is not allowed. If the Ctrl key is not used and an object is selected, the previous selection will be unselected.

## Devices Pane

The lower right pane contains tabs for **Drives**, **Robots**, and **Hosts**. These tabs allow you to select different views of your devices. Information in the devices pane is taken from the Media Manager global device database and the local device databases.

You can use the tree pane or the topology pane in conjunction with the tabs to filter the lists shown in this pane. Selecting an item in the tree (for example, a specific robot) *does not* enable the **Robots** tab in the devices pane.

## Managing the Devices Pane

The **Edit** menu has commands for finding items and is useful if you are managing many devices. You can use **View** > **Columns > Layout** to rearrange or hide the columns in this display. Some of the columns are initially hidden by default.

## Using the Drives Tab

The drives list allows you to view detailed information about drives configured with NetBackup.

To update the drives list with more detailed information, a drive must be selected in the topology pane. You can select a drive in the topology explicitly or implicitly by selecting a robotic library. The drives list will then be updated with the objects selected in the topology.

The following table describes the columns in the drives list:

Drives List

| Column | Description |
|---|---|
| Drive Name | Contains the configured name of the drive.<br>If the drive is configured as a shared drive (SSO), the icon for the drive appears as a shared item.<br>If the icon shown for a drive contains a red arrow, the current server is *not* the volume database host for the drive. In this case, it is recommended to change to the correct server before adding volumes for this drive. |
| Device Host | Contains the name of the device host where this drive is attached. |
| Drive Type | Contains the type of drive. For example, 4MM.<br>If the drive is partially configured, PCD is shown. See “Managing Partially-Configured Devices” on page 30 for details. |
| Robot Type | Specifies the type of robot that contains this drive. For example, TL4.<br>NONE in this column means that the drive is a standalone drive.<br>If the robot is partially configured, PCR is shown. See “Managing Partially-Configured Devices” on page 30 for details. |
| Robot Number | Contains the number of the robot. If the robot type is NONE, this column is blank. |
| Robot Drive Number | Specifies the number of the drive in the robot. This number is only present for robot types that are not ACS, TLH, and TLM. |

Drives List (continued)

| Column | Description |
|---|---|
| Vendor Drive Name | For TLH robots, this column contains the DAS drive name.<br>For TLH robots, this contains the IBM device name.<br>This column is not applicable for NetBackup BusinesServer. |
| ACS | Contains the index (in ACS library software terms) that identifies the robot that has this drive.<br>This column is not applicable for NetBackup BusinesServer. |
| LSM | Contains the ACS Library Storage Module that has this drive.<br>This column is not applicable for NetBackup BusinesServer. |
| Panel | Contains the ACS robot panel where this drive is located.<br>This column is not applicable for NetBackup BusinesServer. |
| Drive | Contains the physical number of the drive (in ACS library software terms).<br>This column is not applicable for NetBackup BusinesServer. |
| Drive Path | Contains the path for the drive, for example, Tape5. |
| Serial Number | Contains the drive serial number, if the drive reports one. |
| World Wide ID | Contains a unique identifier that is assigned to each device. Some drives may not report this identifier. |
| Shared | This column is used for the shared storage option (SSO) feature. Yes, means this drive is configured as a shared drive. No, means the drive is not a shared drive.<br>For NetBackup BusinesServer this column contains No, since this feature is not supported. |
| Drive Status | Contains the current status of the drive. |
| Port | Contains the SCSI port number (if the robot is connected to a Windows server). |
| Bus | Contains the SCSI bus number (if the robot is connected to a Windows server). |
| Target | Contains the SCSI target number (or SCSI ID) (if the robot is connected to a Windows server). |
| Lun | Contains the SCSI logical unit number of the robot (if the robot is connected to a Windows server). |

Drives List (continued)

| Column | Description |
|---|---|
| Time Mounted | Contains the time the drive was first mounted. |
| Total Time | Contains the total mount time (in hours). |
| Cleaning Frequency | Contains the cleaning frequency for the drive, in hours. |
| Last Cleaning Time | Contains the date that the drive was last cleaned. |
| Volume Header Device | This column applies only to optical disk drives on certain UNIX hosts and specifies the volume header device path for the drive.<br>This column is not applicable for NetBackup BusinesServer. |
| Drive Comments | Contains any user comments added for the drive. |
| Inquiry Information | Contains device information returned from the device. This information is used to identify the device. For example, vendor ID, product ID, and product revision. |
| NDMP Host | Contains the name of the NDMP control host. |
| Drive Index | Drive index assigned to the drive during configuration. |

## Using the Robots Tab

The robots list allows you to view detailed information about robots configured with NetBackup. Initially, all robots in the global device database are listed in the robot list. However, only information found in the global device database will be displayed in the list.

To update the robot list with more detailed information, a robot must be selected in the topology pane or in the tree pane. You can select a robot in the topology explicitly or implicitly by selecting a drive in the robot or the device host that the robot is connected to. The list will then be updated with the objects selected in the topology.

The following table describes the columns in the robots list:

Robots List

| Column | Description |
|---|---|
| Robot Name | Contains the type and number of the robot, for example TLM(3).<br>If the robot is partially configured, PCR is shown. For example, PCR(3). See "Managing Partially-Configured Devices" on page 30 for details.<br>If the icon shown for a robot contains a red arrow, the current server is *not* the volume database host for the robot. In this case, it is recommended to change to the correct server before adding volumes for this device. |
| Device Host | Contains the name of the device host where this robot is attached. |
| Robot Type | Contains the type of robot. If the robot is partially-configured, PCR is shown. See "Media Manager Robot Types" on page 255 for a list of supported robot types. |
| Robot Number | Number of the robot. |
| Volume Database Host | Contains the name of the volume database host that is used to track the volumes in this robot |
| Serial Number | Contains the robot serial number. |
| Robotic Path | Contains the path for the robot, for example, changer0. |
| Robot Control Host | Contains the name of the host that is providing the robotic control. |
| Port | Contains the SCSI port number (if the robot is connected to a Windows server). |
| Bus | Contains the SCSI bus number (if the robot is connected to a Windows server). |
| Target | Contains the SCSI target number (or SCSI ID) (if the robot is connected to a Windows server). |
| Lun | Contains the logical unit number of the robot (if the robot is connected to a Windows server). |
| Inquiry String | Contains device information returned from the device. This information is used to identify the device. For example, vendor ID, product ID, and product revision. |

### Using the Hosts Tab

The hosts list allows you to view detailed information about the hosts that are referenced in your Media Manager configuration.

To update the hosts list with more detailed information, a host must be selected in the topology pane or in the tree pane. You can select a host in the topology explicitly or implicitly by selecting a robot. The hosts list will then be updated with the objects selected in the topology.

The following table describes the columns in the hosts list:

Hosts List

| Column | Description |
|---|---|
| Host Name | Contains the name of the device host. |
| Connection Status | Contains the current NetBackup connection status for this host. This status field contains Connected, Not Connected, or the text of a possible connection error message. |
| Standalone Volume Database Host | Contains the name of the volume database host for all of the standalone drives controlled by this device host. |
| Version | Contains the NetBackup software version. |

## Status Bar

The status bar appears at the bottom of the NetBackup Console window. The status bar

- Shows tool tips (if tool tips are enabled).
- Indicates the name of the master server.
- Indicates if you are connected to the master server.

To show or hide the status bar

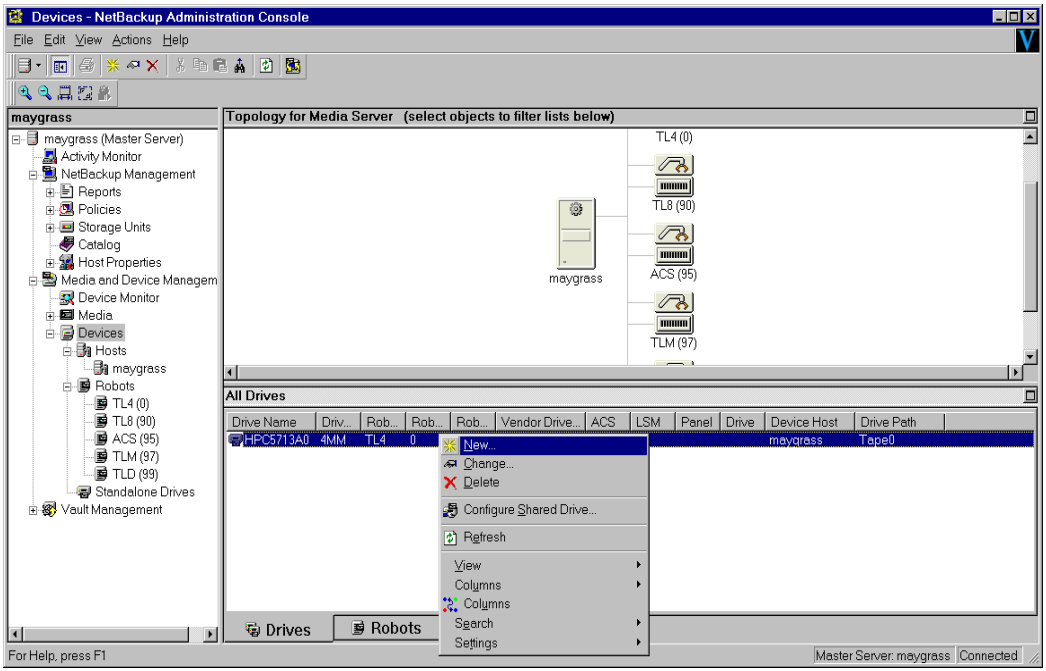
❖ Click **View** > **Status Bar**.

## Shortcut Menus and Commands

Clicking the right mouse button while the pointer is over a pane or a selection of a pane, displays a shortcut menu with commands that apply to that context. These shortcut commands are also available on the menus or toolbars.

These shortcut menus work in the context of what device is currently selected in the tree pane or topology pane, or which tab is selected in the devices pane.

Short Cut Menu




## Tool Tips

Tooltips are helpful information for the toolbar buttons, or items in the topology pane (as you position the pointer).

To enable tool tips

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

2. Click **View** > **Customize**.

3. On the **Toolbars** tab, select **Show ToolTips**.

# Customizing the Window

The **View** menu has options for sorting and changing the layout and appearance of the panes.

## Showing or Hiding Columns

You can use **View** > **Columns > Layout** to show or hide columns in this display.

## Rearranging Columns

You can use **View** > **Columns > Layout** to rearrange the order of columns in this display.

## Changing the View of the Topology Pane

Click **View** > **Options** > **Devices** and select **Fit topology to window on startup**. This will fit the topology diagram to the pane and not use the default size on start up.

Click **View** > **Zoom** > **Zoom In** to enlarge the topology diagrams. This can be done multiple times.

Click **View** > **Zoom** > **Zoom Out** to decrease the size of the topology diagrams. This can be done multiple times.

Click **View** > **Zoom** > **Fit Window** to size the topology diagram to the size of the current pane.

Click **View** > **Zoom** > **Overview Window** to select and focus on a portion of the topology diagram.

# Allowable Media Manager Characters

The following set of characters can be used in user-defined names, such as drive comments and drive names that you enter when creating these entities. These characters must be used even when specifying these items in foreign languages.

Do not use a minus as the first character or leave any spaces between characters.

- Alphabetic (A-Z a-z)
- Numeric (0-9)
- Period (.)
- Plus (+)
- Minus (-)

- Underscore (_)

# Performing Initial Device Configuration

The following steps describe a general method for attaching devices to a Windows device host. The device applets on the Windows server that you use in these steps may be different.

1. Use the appropriate Windows applet to obtain information on any currently attached SCSI devices.

2. If you are attaching a new robotic library or drive to a Media Manager device host, follow the manufacturer's instructions for attaching the device.

3. Shut down the device host and physically attach the supported device, ensuring that SCSI targets and termination settings are consistent with adapter card and peripheral vendor recommendations.

4. Reboot the host and answer the prompts for adapter card peripheral configuration options. Watch the display to ensure that the adapter card recognizes the attached peripherals.

**Note** Some devices (for example, Quantum DLT4500) may require that nonzero logical unit numbers are enabled in the adapter card configuration.

5. If you are adding drives, install the tape drivers and use the appropriate Windows applet to verify that the drive was recognized.

   You can download the latest tape drivers and tape installer from `http://support.veritas.com`.

   Search on the keywords *tape device installer*. These drivers support the tape devices listed in the compatibility lists on this web site.

   `NetBackupTapeDeviceDriverInstall`.exe will run only if NetBackup has been installed.

**Note** If you are adding Sony AIT drives, the settings for dip switches 1-4 should be left at the default setting (all switches off).

6. Add the storage devices to your Media Manager configuration. If this is the first time you have configured Media Manager devices, note the following:

**a.** If you are adding the device to a remote host, also see “Administering Devices on Other Device Hosts” on page 24.

**b.** Depending on what type of device you are adding, proceed to one of the following topics:

- “Using the Device Configuration Wizard to Configure Devices” on page 28.
- “Adding Robots” on page 30.
- “Adding Shared Drives” on page 38.
- “Adding Drives” on page 39.

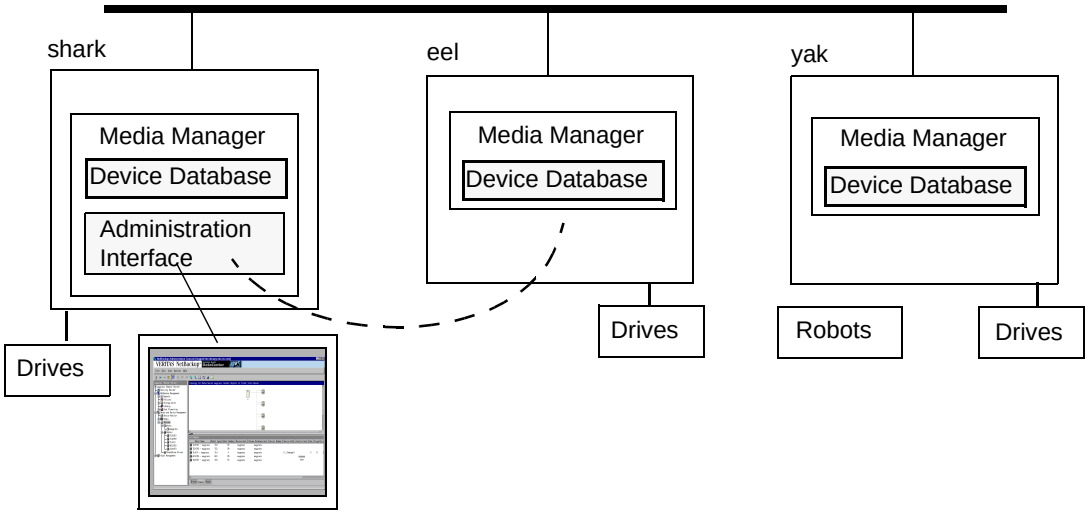
**c.** Make your device configuration changes. If you use the Device Configuration wizard, the following step is done by the wizard.

Stop and restart the NetBackup Device Manager service using **Actions** > **Stop/Restart Device Manager**.

In the dialog box, the **arrow** in the Device Host box allows you to select a device host. This dialog also shows the current status of this host.

# Administering Devices on Other Device Hosts

By default, you are able to manage storage devices on the server where you are running the Media Manager interface. In the following figure, the administrator is running Media Manager on host shark and managing devices on host eel.



## Media Manager Security

For Media Manager to access devices on another host, it may be necessary to add a `SERVER` entry to the `vm.conf` file on the remote host (or you can use the Host properties node in the NetBackup Administration Console to add an entry).

`SERVER` entries are used for security. Without any `SERVER` entries and authentication not enabled, *any* host can manage the devices on the host. You can add entries allowing only specific hosts to remotely access the devices.

| If the vm.conf File on a Remote Host Contains | Then |
|---|---|
| No SERVER entries and authentication is not enabled | Any host can manage the devices on this host. It is not necessary to make any additions to vm.conf. |
| SERVER entries | You must add a SERVER entry for the host where you are running the NetBackup Administration Console (if it is not present). |

`vmd` is the NetBackup Volume Manager service. Device configuration changes, even those made local to a server, may require `vmd` to be running. It is recommended that `vmd` be running at all times, including when changes are being made to the Media Manager device configuration.

### vmd Considerations

Media Manager authentication / authorization may affect systems where NetBackup authentication / authorization has been enabled.

Connections to `vmd` will fail if authentication / authorization are enabled, an `AUTHORIZATION_REQUIRED` entry is present in `vm.conf`, and the caller of `vmd` does not have the required permission to use `vmd` functions.

If authentication / authorization is needed in NetBackup but not in Media Manager, you can do one of the following:

- Add `SERVER` entries in `vm.conf`.
- Have no `SERVER` and no `AUTHORIZATION_REQUIRED` entries in `vm.conf`.

See “vmd Security” on page 290 for more information.

### Example SERVER Entries

Assume that we have three hosts, named eel, yak, and shark; and that NetBackup authentication is not enabled.

We want to centralize device management on host shark and also permit each host to manage its own devices.

- The `vm.conf` file on shark contains

  ```
  SERVER = shark
  ```

  The `vm.conf` file on shark does not require any additional `SERVER` entries, because all device management for shark will be performed from shark.

- The `vm.conf` file on eel contains

  ```
  SERVER = eel
  SERVER = shark
  ```

  This allows eel to manage its own devices and also permits shark to access them.

- The `vm.conf` file on yak contains

  ```
  SERVER = yak
  SERVER = shark
  ```

  This allows yak to manage its own devices and also permits shark to access them.

# Managing the Global Device Database Host

Device discovery and auto-configuration are used by NetBackup and Media Manager. For device discovery and auto-configuration to work properly (particularly where devices are connected to many servers) a single host must serve as the repository for global device configuration information. When you install NetBackup, by default the master server is configured as the global device database host.

Also, the **Devices** node of the NetBackup Administration Console requires that all hosts that the node references need to be using the same global device database host. The **Devices** node verifies global device database consistency between any hosts that are included for device management.

If you have multiple master servers in your configuration or did not install or upgrade your master servers before the media servers, then more than one host may have been designated as the global device database host. See “Synchronizing the Global Device Database” on page 27 to correct this problem.

You should manage your media servers from the master server point of view.

**Note** When using the Device Configuration wizard, a global device database host conflict may be detected during device scanning. The hosts you selected to scan in the wizard do not agree on which host stores global device information.

The following topics cover the commands available to manage the global device database host:

- Adding a Device Host to the Global Device Database
- Removing a Device Host From the Global Device Database
- Synchronizing the Global Device Database
- Specifying a Different Host as the Global Device Database Host

## Adding a Device Host to the Global Device Database

Unless you add a drive or add a robotic library, entries for each device host are not entered in the database (no host entries are present in the database).

To add a host to the global device database, select **Actions** > **Global Device Database** > **Add Device Host**.

## Removing a Device Host From the Global Device Database

To remove a host from the global device database, select **Actions** > **Global Device Database** > **Remove Device Host**.

## Synchronizing the Global Device Database

This command updates host settings in the global device database to be consistent with the device configurations of all of the device hosts in your configuration.

Synchronizing the global device database is normally not necessary, but can be done if you are experiencing problems and have made recent configuration changes to your local device hosts that may not have been recognized.

Select **Actions** > **Global Device Database** > **Synchronize Global Device Database**.

## Specifying a Different Host as the Global Device Database Host

See the man pages for information about using the `get_gdbhost` and `set_gdb_host` options of the `tpautoconf` command. This command allows you to determine the current global device database host and specify a different host as the global device database host.

`tpautoconf` is also used by the Device Configuration wizard to automatically discover and configure devices.

# Using the Device Configuration Wizard to Configure Devices

This wizard performs better if the robotic libraries and drives that you are configuring support complete device serialization. Using this wizard is the recommended method of configuring the following devices:

- Robots.
- Drives.
- Shared drives (drives in an SSO configuration).

When using the Device Configuration wizard, a global device database host conflict may be detected during device scanning. The hosts you selected to scan in the wizard do not agree on which host stores global device information. See "Managing the Global Device Database Host" on page 26 for more information.

## Wizard Limitations

To scan and auto-configure a device, all of the device hosts (media servers) that you select must be running NetBackup release 3.4 or later. The scan for devices will fail on hosts that are running older release levels.

All information required for full auto-configuration may not be available on some systems. In this case, the wizard will do as much as possible with the limited device information. Later you need to manually configure the remaining devices.

If tape drives are in use or offline, they cannot be discovered.

This wizard *does not* support the following devices:

- ACS, RSM, or TLM robots and drives.

  The wizard can discover RSM changers, but configures them as native SCSI devices not as RSM robot types.
- Robots and drives for use with NetBackup for NDMP.

To configure these devices, see "Adding Robots" on page 30 and "Adding Drives" on page 39.

## Drives In an SSO Configuration

You may need to use the Shared Drive wizard to configure shared drives for some robot types. See "Adding Shared Drives" on page 38.

For information on the Device Configuration wizard and the Shared Drive wizard in an SSO configuration see the NetBackup SSO system administrator's guide.

## Starting the Wizard

The Device Configuration wizard is available from the list of wizards displayed in the right pane of the **Media and Device Management** window.

Click **Media and Device Management** > **Configure Storage Devices**.

In some cases the wizard may leave some devices partially configured. See "Managing Partially-Configured Devices" on page 30 for more information.

## Rerunning the Wizard

Rerunning the Device Configuration wizard updates the Media Manager configuration. For example, adding a new SCSI adapter may change the path to a robotic library. A similar change to the configuration may occur if you add a new drive.

The Device Configuration wizard updates the Media Manager configuration to match the new configuration.

## External Device Mapping Files

These text files are used by the Device Configuration wizard to automatically discover and configure new devices. External mapping files exist for robots and drives.

This means that in some cases, device discovery support for your new or upgraded devices may be accomplished without waiting for a patch from VERITAS. Support for some new devices only requires that you download an updated external mapping file when any device changes are made to your configuration.

**Note** These files do not indicate support for any of the devices, only the ability to recognize and automatically configure them.

### Obtaining External Device Mapping Files

Visit the VERITAS support web site (`http://support.veritas.com`) to download the latest external device mapping files for your devices.

Refer to the supplied README file for instructions. The files that you download will be named similar to the following files: MAPPINGS_4.5_*nnnnnn*.TAR and MAPPINGS_4.5_*nnnnnn*.ZIP

# Managing Partially-Configured Devices

Under certain conditions, for example an unsupported robotic library or drive, the Device Configuration wizard may leave some devices as partially configured.

Also if you unselect a discovered device from the tree view of the wizard, will cause the device to be configured as partially configured.

Partially-configured drives are designated by PCD and partially-configured robots by PCR in the Devices window pane.

See “Using the Drives Tab” on page 16 and “Using the Robots Tab” on page 18.

If this happens it is best to ensure that you have downloaded the most recent external mapping files from the VERITAS support web site (see “External Device Mapping Files” on page 29).

# Adding Robots

**Note** Using the Device Configuration wizard is the recommended method of configuring robots. See “Using the Device Configuration Wizard to Configure Devices” on page 28 for wizard restrictions and more information.

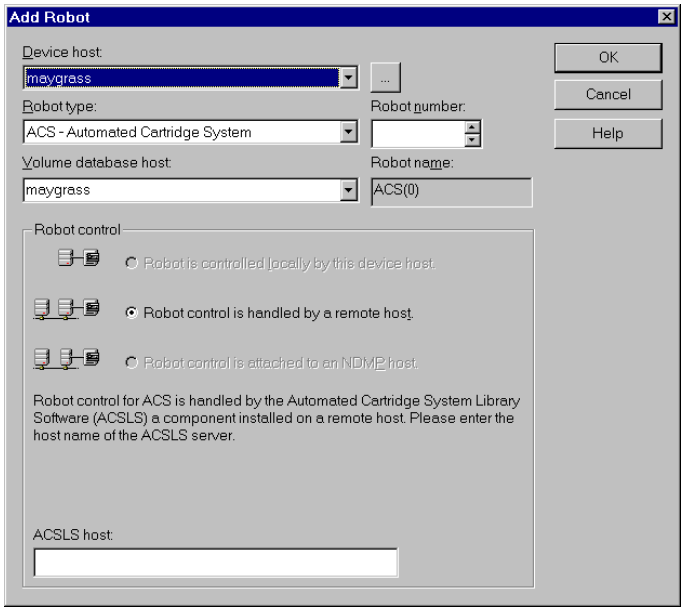
When adding a robotic library and drives, the best method is to add the robotic library first, as explained in this procedure and then add the drives (see “Adding Drives” on page 39).

1. Perform the steps explained in “Performing Initial Device Configuration” on page 23.

2. In the NetBackup Administration Console, click **Media and Device Management** > **Devices**.

3. Select **Actions** > **New** > **Robot**.

   A dialog box for adding a robotic library appears. The properties that appear in this dialog box vary depending on the host platform type and robot type.




4. Specify the properties for the robotic library as explained in “Dialog Box Entries for Adding and Changing Robots” on page 31.

5. Click **OK**.

   A prompt appears asking whether you want to stop and restart the NetBackup Device Manager service (this also stops and restarts any robotic processes). If your changes are complete, answer yes to this prompt.

**Note** It is possible that stopping and restarting this service will abort any backups, archives, or restores that are in progress.

## Dialog Box Entries for Adding and Changing Robots

The following topics describe the properties that you specify when you add a robotic library or change a robot configuration. Note that some of these properties apply only to specific robots or host platforms.

### Device Host

**Note** This property does not apply to NetBackup BusinesServer.

Specifies the host to which you are adding the robotic library. To specify a host, click the **arrow** and select a host from the list.

To choose a device host that is not in the list, click the browse button (**...**). In the dialog box that then appears, specify the name of the host you want.

## Robot Type

Specifies the type of robot that you are adding. Click the **arrow** and select from the list of types that Media Manager supports.

Visit the VERITAS support web site (`http://www.support.veritas.com`) to locate the robot type to use for specific vendors and models.

### Microsoft Windows 2000 Removable Storage Manager (RSM)

If you want to use the RSM robot type, review the following important points:

- Your device host must be running Windows 2000.
- You want the Microsoft Removable Storage Manager to control the robot, rather than Media Manager.
- A robotic library configured as an RSM robot, cannot also be used as a Media Manager direct-controlled (SCSI) robot (for example, TLD).
- Shared drives cannot be configured in an RSM robot.
- For more information on configuring and using RSM robots, see the appendix, “Microsoft Removable Storage Manager (RSM)” on page 371.

## Robot Number

Specifies a unique, logical identification number for the robotic library. This number identifies the robotic library in displays (for example, TLD (21)) and also is used when adding media for the robot to the Media Manager configuration.

Important points when specifying a robot number follow:

- Robot numbers must be unique for all physically-distinct robots on all hosts in the configuration. This applies regardless of the robot type or the host that controls them. For example, if you have two robots, use different robot numbers even if they are controlled by and configured on different hosts.
- If you are adding a robot definition for a robot where the robot control is handled by a remote device host (not this device host), be sure to use the same robot number as used for that robot on all other device hosts.

Also, if the robot has its robotic control and drives on different hosts (for example, as permitted by a Tape Library DLT), be certain to specify the same robot number in all references to that library. That is, use the same robot number on the hosts with the drives, as you do on the host that has the robotic control. See "Example 3: Robot and Drives Distributed Among Multiple Hosts" on page 55.

## Volume Database Host

**Note** This property does not apply to NetBackup BusinesServer.

Specifies the name of the host where Media Manager keeps the volume configuration information about the media in the robotic library.

You can specify any host that has Media Manager installed as the volume database host, even if the host does not have any drives or robots attached. Click the **arrow** and select from the list of hosts listed.

**Caution** VERITAS recommends that you use one volume database host for all your volumes (robotic and standalone). Although it is possible to maintain separate volume databases on multiple hosts, administration is more difficult and it is not possible to merge the databases later.

"Example 3: Robot and Drives Distributed Among Multiple Hosts" on page 55, shows a configuration where the volume database is on a central host.

You will have to know the name of the volume database host when adding volumes to the robotic library.

Adding volumes is explained in "Managing Media" on page 63.

## Robot Control

In the Robot control section, you specify the control for the robot. Depending on the robot type you are adding and the type of device host, various combinations of the robot control buttons are available in the dialog.

The following table provides an overview of configuring robot control, based on robot type and the device host platform type. The third column in the table indicates the robot control button that is valid for that particular robot type and platform, as follows:

- **Robot is controlled locally by this device host** (Local)
- **Robot control is handled by a remote host** (Remote)
- **Robot control is attached to an NDMP host** (NDMP)

For NetBackup BusinesServer, **Robot control is handled by a remote host** is not supported and is not available. See the NetBackup release notes or visit the VERITAS support web site for more detailed information on supported platforms and other NetBackup product limitations.

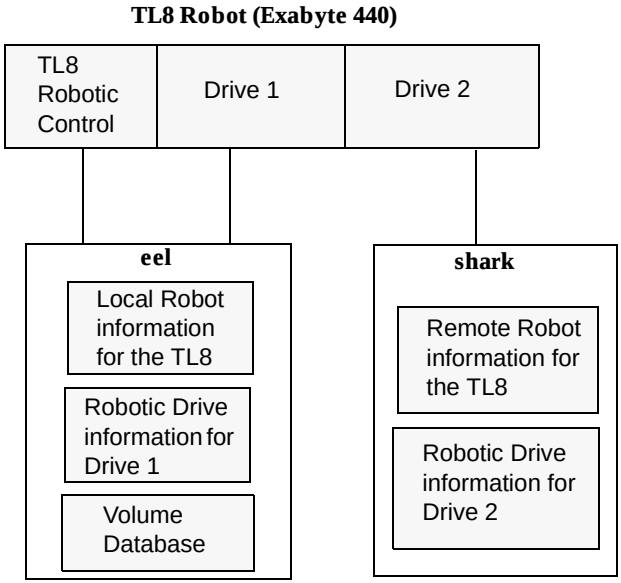
Robot Control Configuration Overview

| Robot Type | Valid Device Host Platform | Robot Control | Information Required for Configuration |
|---|---|---|---|
| ACS | Any (except UNIX Auspex and Linux) | Remote | ACSLS host |
| LMF | UNIX Solaris | Local | Library name |
| LMF | UNIX Solaris | Remote | Robot control host |
| ODL | UNIX (except Linux) | Local | Robotic device file |
| RSM | Windows 2000 | Local | Robot device |
| TL4, TL8, TLD<br>TS8, TSD, TSH | UNIX | Local | Robotic device file |
| TL4, TL8, TLD<br>TS8, TSD | Windows | Local | Robot device |
| TL8 | Any (except UNIX NCR) | Remote | Robot control host |
| TLD | Any | Remote | Robot control host |
| TL8, TLD, TSD | Windows<br>UNIX AIX<br>UNIX Solaris<br>UNIX HP/UX | NDMP | NDMP host name<br>Robot device |
| TLH | UNIX AIX | Local | LMCP device file |
| TLH | UNIX (except AIX and Linux) | Local | Library name |
| TLH | Windows (Intel only) | Local | Library name |
| TLH | Any (except Linux) | Remote | Robot control host |
| TLM | Any | Remote | DAS server |

The following figure shows two hosts using two drives in a TL8 robot. This is an example of *robot sharing* or *library sharing*. The robotic control for the robot is on the host named eel. One drive in the robot is connected to eel and the other is connected to the host shark.

When you add this robot to the device configuration on eel, you select **Robot is controlled locally by this device host**. When you add the robot to the device configuration on shark, you select **Robot control is handled by a remote host**.

Robot Control Host Example




## Robot is controlled locally by this device host

For this type of robot control, you have the following possibilities based on the robot type and device host platform that you selected.

### Robotic Device File

When adding a robot to UNIX device hosts, specify the robotic device file path as follows. This file is used for a SCSI connection and is located in the `/dev` directory tree on the device host.

1. Click **Browse** and then select a robotic device file from the list that appears in the Devices dialog box. When you click **OK**, your selection will be placed in the Robotic device file box.

2. If the browse operation fails to find and display all of the attached robots, click **Other Device** to display a dialog box that allows you to enter the path of the device file. Your entry will be placed in the Robotic device file box.

   If the browse operation does not find any attached robots, you will see an error dialog box.

   If the device file entry does not exist, create the entry as explained in the NetBackup Media Manager device configuration guide for UNIX.

### Robot Device

When adding a robot to Windows device hosts, specify the robot as follows.

For information on adding RSM robots, see the appendix, “Microsoft Removable Storage Manager (RSM)” on page 371.

Click **Browse** and then select a device from the list that appears in the Devices dialog box. If the browse operation does not find any attached robots, you will see an error dialog box.

Selecting a robot in the Devices dialog and clicking **OK** will set different values in the Robot Control text box depending on the type of Windows device host. The following table shows the settings in the first column for the type of device host listed in the second column:

| Robot Control Text Box Setting | For this Type of Windows Device Host |
|---|---|
| SCSI Port, Bus, Target, and LUN numbers | Windows NT hosts |
| SCSI Port, Bus, Target, and LUN numbers | Windows 2000 hosts where a changer driver *is not* in control of the robot |
| Device name (for example, Changer1) | Windows 2000 hosts where a changer driver *is* in control of the robot |

### LMCP Device File

For TLH robot types where the IBM ATL is controlled from an AIX device host, specify the LMCP (Library Manager Control Point) device file name, as it is configured on the AIX device host.

### Library Name

For LMF robot types, specify the library name. You can use the Fujitsu `lmadmin` command to determine the name.

For TLH robot types on a Windows server, specify the library name that is configured in the `C:\winnt\ibmatl.conf` file.

Determine the library name by viewing the file. The following is an example entry in that file, where `3494AH` is the library name:

```
3494AH 176.123.154.141 ibmpc1
```

For more information on LMF robots, see the appendices of the NetBackup DataCenter Media Manager system administrator's guide for UNIX.

For more information on TLH robots, see the appendix, "IBM Automated Tape Library (ATL)" on page 379.

## Robot control is handled by a remote host

For this type of robot control, you have the following possibilities for the robot control host (based on the robot type and device host platform that you selected).

### Robot Control Host

For LMF, TL8, TLD, or TLH robot types, specify the device host that controls the robot. Enter the name of the device host where you have defined or will define the robot information for this robot.

Referring to the figure, "Robot Control Host Example" on page 35, you would specify eel as the Robot Control Host when adding a robot to host shark.

For more information on LMF robots, see the appendices of the NetBackup DataCenter Media Manager system administrator's guide for UNIX.

For more information on TLH robots, see the appendix, "IBM Automated Tape Library (ATL)" on page 379.

### DAS Server

For TLM robot types that are controlled by an ADIC Distributed AML Server (DAS), specify the host name of the DAS server. This host is an OS/2 workstation near or within the robot cabinet, or a Windows server near the ADIC Scalar library.

For more information on TLM robots, see the appendix, "ADIC Distributed AML Server (DAS)" on page 391.

#### ACSLS Host

For ACS robots, specify the name of the host where the ACS library software resides (on some UNIX platforms, this host can also be a device host or volume database host).

The ACS library software component on this host can be any of the following:

- Automated Cartridge System Library Software (ACSLS)

  See “Example 4: Windows Host With An ACS Robot” on page 59.

- STK Library Station
- Storagenet 6000 Storage Domain Manager (SN6000).

  This STK hardware serves as a proxy to another ACS library software component (such as, ACSLS).

**Note** STK LibAttach software must also be installed, if the device host that has drives under ACS control is a Windows host.

For an overview of ACS robots, see the appendix, “Automated Cartridge System (ACS)” on page 355.

### Robot control is attached to an NDMP host

For this type of robot control, you specify the following:

#### Robot Device

Specify the robot device that is attached to the NDMP host.

Click **Browse** to select a robot device from the list in the Devices dialog.

#### NDMP Host Name

Enter the name of the NDMP host where the robot is attached.

## Adding Shared Drives

The Device Configuration wizard or the Shared Drive wizard can be used to configure drives for an SSO configuration. Either wizard guides you through the steps involved in configuring drives that will be shared among hosts.

For more information on using these wizards in a SSO configuration, see the NetBackup Shared Storage Option system administrator’s guide.

## Using the Device Configuration Wizard

For TL8, TLD, and TLH robot types, it is recommended to use the Device Configuration wizard to add shared drives.

See “Using the Device Configuration Wizard to Configure Devices” on page 28 for restrictions and more information.

## Using The Shared Drive Wizard

For ACS and TLM robot types, it is recommended to use the Shared Drive wizard to add shared drives. See the SSO system administrator’s guide for a list of restrictions.

You can start this wizard as follows:

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.
2. Click **Actions** > **New** > **Shared Drive**.

   Follow the prompts for the wizard.

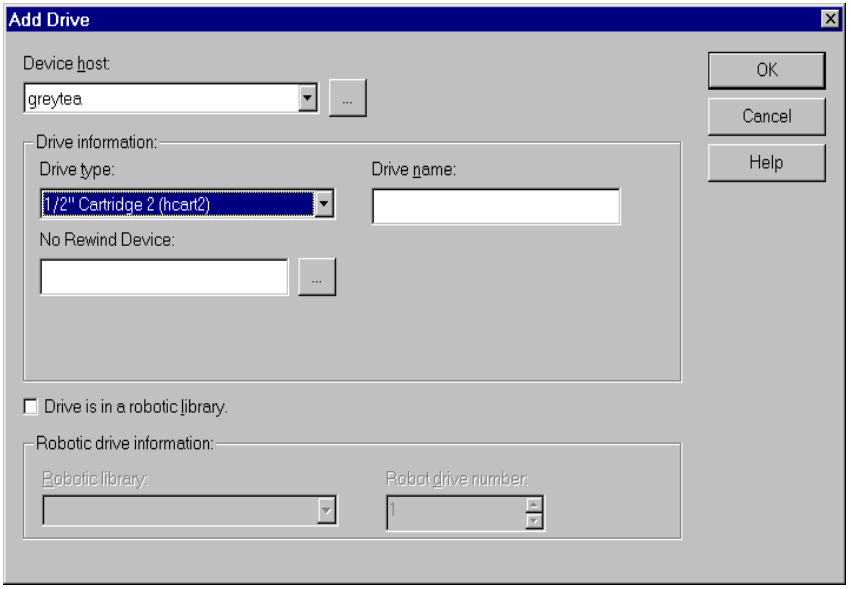
# Adding Drives

**Note** Using the Device Configuration wizard is the recommended method of configuring drives. See “Using the Device Configuration Wizard to Configure Devices” on page 28 for wizard restrictions and more information.

The following procedure explains how to add drives using device management menus:

1. Perform the steps necessary for the host to recognize the attached drives (see “Performing Initial Device Configuration” on page 23).
2. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.
3. Select **Actions** > **New** > **Drive**.

   The properties that appear in this dialog box vary slightly, depending on the type of host platform and robot type.




4. Specify the properties of the drive as explained in “Dialog Box Entries for Adding or Changing Drives” on page 41.

5. Click **OK**.

   The display now shows the new drive information.

---

**Note** The initial drive status is up, so the drive is available as soon as you add it and restart `ltid`. To change the status of the drive, click **Device Monitor**.

---

A prompt appears asking whether you want to stop and restart the NetBackup Device Manager service (this also stops and restarts any robotic processes). If your changes are complete, answer yes to this prompt.

---

**Note** It is possible that stopping and restarting this service will abort any backups, archives, or restores that are in progress.

---

6. If the new drive was standalone, verify the volume database host setting and change it if necessary. See “Changing the Volume Database Host for Standalone Drives” on page 47.

# Dialog Box Entries for Adding or Changing Drives

The following are the properties that you can specify when adding a drive or changing the properties of a drive. Some of these properties apply only to specific types of drives or host platforms.

## Device Host Section

**Note** This property does not apply to NetBackup BusinesServer.

Specifies the host to which you are adding the drive. The host that is shown initially in the box is the device host you selected earlier in the tree pane.

If you want to specify a different host, click the **arrow** and select a host from the list.

If you want to specify a device host that is not in the list, click the browse button (**...**). In the dialog box that appears, specify the name of the host you want.

## Drive Information Section

### Drive Type

Specifies the type of drive that you are adding. Click the **arrow** and select from the list of the drive types that Media Manager supports.

See “Media Manager Media Types” on page 257 for more information.

### Drive Name

Enter a name that will be used by Media Manager to identify the drive. Descriptive names are recommended and the name *must* be unique.

### Device Name

**Note** Applies only to Windows servers.

Enter the name of the drive as it is recognized by the Windows server. Enter the name in the box, or click the browse button to display the Devices dialog box, where you can select from the drives that are currently attached to this host.

You can also get the device name for the drive from the appropriate Windows applet.

### No Rewind Device

**Note** Applies only to UNIX servers.

Enter the no rewind device file path for the drive or click the button to the right to display a dialog box from which you can select a device file.

Although both no rewind and rewind device files are usually available, Media Manager requires only the no rewind on close device file.

Device files are located in the `/dev` directory on the UNIX host. If the device files do not exist, create them as explained in the NetBackup Media Manager device configuration guide for UNIX.

A no rewind device remains at its current position on a close operation. Usually the device file name is preceded or followed by the letter `n`.

If you are using NDMP drives, see the NetBackup for NDMP system administrator's guide for configuration information.

If you are using Fastrax drives, see the NetBackup for EMC Fastrax system administrator's guide for configuration information.

### Character Device

**Note** Applies only to optical disk drives on NetBackup DataCenter UNIX servers, and does not apply to NetBackup DataCenter Windows servers or NetBackup BusinesServer.

Enter the Character Device file path for the drive.

Character device files are in the `/dev` directory on the UNIX host. If the entries do not exist, you can create them as explained in the NetBackup Media Manager device configuration guide for UNIX. Media Manager uses character mode device files.

### Volume Header Device

**Note** Applies only to optical disk drives on NetBackup DataCenter UNIX servers, and does not apply to NetBackup DataCenter Windows servers or NetBackup BusinesServer.

Enter the Volume Header Device path for the drive. This file is in the `/dev` directory on the UNIX host. If the entry does not exist, create it as explained in the NetBackup Media Manager device configuration guide for UNIX.

### Drive Is In A Robotic Library

Select **Drive is in a robotic library** to specify that the drive is under robotic control and then enter information in the Robotic drive information section of the dialog.

Clear **Drive is in a robotic library** for standalone (nonrobotic) drives.

## Robotic Drive Information Section

### Robotic Library

This box allows you to select any currently configured robotic library that can control the drive. Click the **arrow** and select a robotic library from the list.

### Robot Drive Number

**Note** **Robot drive number** does not apply when adding drives to the following robots:

ACS (Automated Cartridge System). See “ACS” on page 44.
TLH (Tape Library Half-inch). See “TLH” on page 44.
TLM (Tape Library Multimedia). See “TLM” on page 44.

Specifies the physical location within the robotic library of the drive.

Set this to the number that correlates to the location of the drive that you are adding. When adding more than one drive to a robot, you can add the physical drives in any order. For example, in a TS8 robot you can add drive 2 before drive 1.

If you assign the wrong number Media Manager does not detect it, but an error occurs when the robotic control attempts to mount media on the wrong drive. To determine the correct number, you must know which physical drive in the robot is identified by the logical device name (Windows) or device file (UNIX) that you specify in this dialog box.

See “Correlating Device Files to Physical Drives When Adding Drives” on page 274 for more information.

### ACS

For drives in an Automated Cartridge System robot, click **ACS** to specify the physical location of the drive within the robot. A dialog box appears that allows you to enter the following information:

| For | Enter |
|---|---|
| **ACS Number** | The index (in ACS library software terms) that identifies the robot that has this drive. |
| **LSM Number** | The Library Storage Module that has this drive. |
| **Panel Number** | The robot panel where this drive is located. |
| **Drive Number** | The physical number of the drive (in ACS library software terms). |

If you assign the wrong parameters, Media Manager does not detect it but an error eventually occurs when the robot mounts media on the wrong drive. To determine the physical location, you must know which physical drive in the robot is identified by the device files that you specified earlier. You establish this correlation during installation.

The appendix, “Automated Cartridge System (ACS)” on page 355, has further information.

### TLH

For drives in an TLH (Tape Library Half-inch) robot, click **TLH** to specify the IBM device name of the drive within the robot. A dialog box appears that allows you to enter the device name. If you assign the wrong IBM device name, Media Manager does not detect it but an error eventually occurs when the robot mounts media on the wrong drive.

The appendix, “IBM Automated Tape Library (ATL)” on page 379, has further information.

### TLM

For drives in an TLM (Tape Library Multimedia) robot, click **TLM** to specify the DAS drive name of the drive within the robot. A dialog box appears that allows you to enter the drive name. If you assign the wrong drive name, Media Manager does not detect it but an error eventually occurs when the robot mounts media on the wrong drive.

The appendix, “ADIC Distributed AML Server (DAS)” on page 391, has further information.

# Managing Robots and Drives

The following topics explain how to manage your robots and drives:

- Changing a Robot Configuration
- Changing the Configuration of a Drive
- Changing a Non-Shared Drive to a Shared Drive
- Changing the Volume Database Host for Standalone Drives
- Deleting Robots
- Deleting Drives

Rerunning the Device Configuration wizard updates the Media Manager configuration. For example, adding a new SCSI adapter may change the path to a robotic library. A similar change to the configuration may occur if you add a new drive or robotic library.

The Device Configuration wizard updates the Media Manager configuration to match the new configuration. See "Using the Device Configuration Wizard to Configure Devices" on page 28.

## Changing a Robot Configuration

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.
2. Select the **Robots** tab in the Devices pane.
3. Select the robotic library you want to change.
4. Select **Edit** > **Change**.

   A dialog box appears, showing the current information for the selected robotic library.
5. Make the desired changes (see "Dialog Box Entries for Adding and Changing Robots" on page 31).
6. Click **OK**.

   A prompt asks whether you want to stop and restart the NetBackup Device Manager service (this also stops and restarts any robotic processes). If your changes are complete, answer yes to this prompt.

**Note** It is possible that stopping and restarting this service will abort any backups, archives, or restores that are in progress.

## Changing the Configuration of a Drive

To change information for a drive, use the following procedure:

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

2. Select the **Drives** tab in the Devices pane.

3. Select the drive you want to change.

4. Select **Edit** > **Change**.

   a. If the drive you selected is a shared drive, the shared drive wizard is started to guide you through the steps involved in changing the configuration of the drive. Follow the wizard prompts.

   b. If the drive you selected is *not* a shared drive, a change drive dialog box appears showing the current information for the selected drive. Make the desired changes (see "Dialog Box Entries for Adding or Changing Drives" on page 41).

   c. Click **OK**.

      A prompt appears asking whether you want to stop and restart the NetBackup Device Manager service (this also stops and restarts any robotic processes). If your changes are complete, answer yes to this prompt.

**Note** It is possible that stopping and restarting this service will abort any backups, archives, or restores that are in progress.

## Changing a Non-Shared Drive to a Shared Drive

An SSO license is required on *each* master and media server to configure and use a shared drive.

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

2. Select the **Drives** tab in the Devices pane.

3. Select the non-shared drive that you want to change.

4. Right-click and select **Configure Shared Drive** on the shortcut menu.

The shared drive wizard is started to guide you through the steps involved in changing the drive to a shared drive.

If the drive you selected is currently a shared drive, the shared drive wizard guides you through the steps involved in changing the configuration of the shared drive.

Follow the wizard prompts.

## Changing the Volume Database Host for Standalone Drives

All standalone drives on a specific host *must* use the same volume database. To change this host use the following procedure:

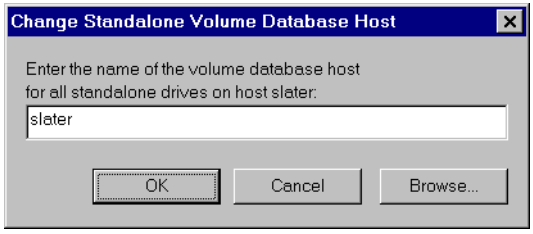
1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

2. Select the **Hosts** tab in the Devices pane.

3. Select the host you want to change.

4. Select **Actions** > **Change Standalone Volume Database Host**.

   A dialog box appears showing the current volume database host.




5. To change the host, enter the new host name in the text box (or select a new host by clicking **Browse**).

   You can enter the name of any host that has Media Manager installed, even if it does not have any attached drives. However, VERITAS recommends that you use a single volume database host for all your volumes (robotic and standalone). It is possible to maintain separate volume databases on multiple hosts, but administration is more difficult and it is not possible to merge the databases later.

6. Click **OK**.

A prompt appears asking whether you want to stop and restart the NetBackup Device Manager service (this also stops and restarts any robotic processes). If your changes are complete, answer yes to this prompt.

**Note** It is possible that stopping and restarting this service will abort any backups, archives, or restores that are in progress.

## Deleting Robots

Any drives that were configured as residing in the deleted robot are changed to standalone drives.

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.
2. Select the **Robots** tab in the Devices pane.
3. Select the robotic library you want to delete.
4. Select **Edit** > **Delete**.
5. Answer the delete confirmation dialog.

## Deleting Drives

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.
2. Select the **Drives** tab in the Devices pane.
3. Select the drive you want to delete.
4. Select **Edit** > **Delete**.
5. Answer the delete confirmation dialog.

# Printing Your Device Configuration

To print your current Media Manager device configuration, do the following:

1. In the Devices pane, click on **Drives**, **Robots**, or **Hosts**.

2. Select **File** > **Print**.

To print the device configuration topology diagram, do the following:

1. Click in the Topology pane.

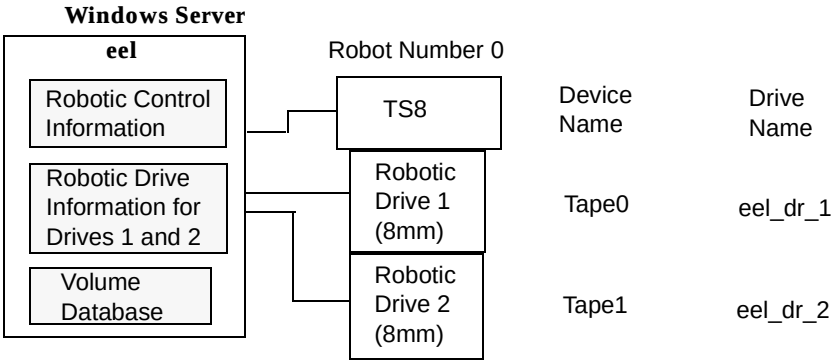
2. Select **File** > **Print**.

You can also use the `tpconfig` command (located in *install_path*`\Volmgr\bin\`) to print the device configuration for a host. The following example lists the device configuration and redirects the output to the file `devconf.txt`, which you can then print:

tpconfig -d > devconf.txt

# Robot and Drive Configuration Examples

## Example 1: Host With One Robot




This is a configuration with a tape stacker containing two 8mm tape drives. The robot and drives are connected to a host running Windows.

After installing Media Manager software and attaching the drives, run the Device Configuration wizard or complete the Add Robot and Add Drive dialog box entries as shown in the following tables.

Add Robot Dialog Entries

| | |
|---|---|
| Device Host | eel |
| Robot Type | TS8 - Tape Stacker 8MM |
| Volume Database Host | eel |
| Robot Number | 0 |
| Robot is controlled locally by this device host | Set (cannot be changed for this robot type) |

Add Robot Dialog Entries (continued)

| | |
|---|---|
| Robot Device | Selecting a robot device sets the SCSI Port, Bus, Target, and LUN numbers in the dialog for Windows NT hosts and for Windows 2000 hosts where a changer driver *is not* in control of the robot.<br>On Windows 2000 hosts where a changer driver *is* in control of the robot, selecting a robot device sets the changer name in the dialog. |

Add Drive Dialog Entries (Tape0)

| | |
|---|---|
| Device Host | eel |
| Drive Type | 8mm Cartridge (8mm) |
| Drive Name | eel_dr_1 |
| Device Name | Tape0 |
| Drive is in a Robotic Library | Yes |
| Robotic Library | TS8(0) - eel |
| Robot Drive Number | 1 |

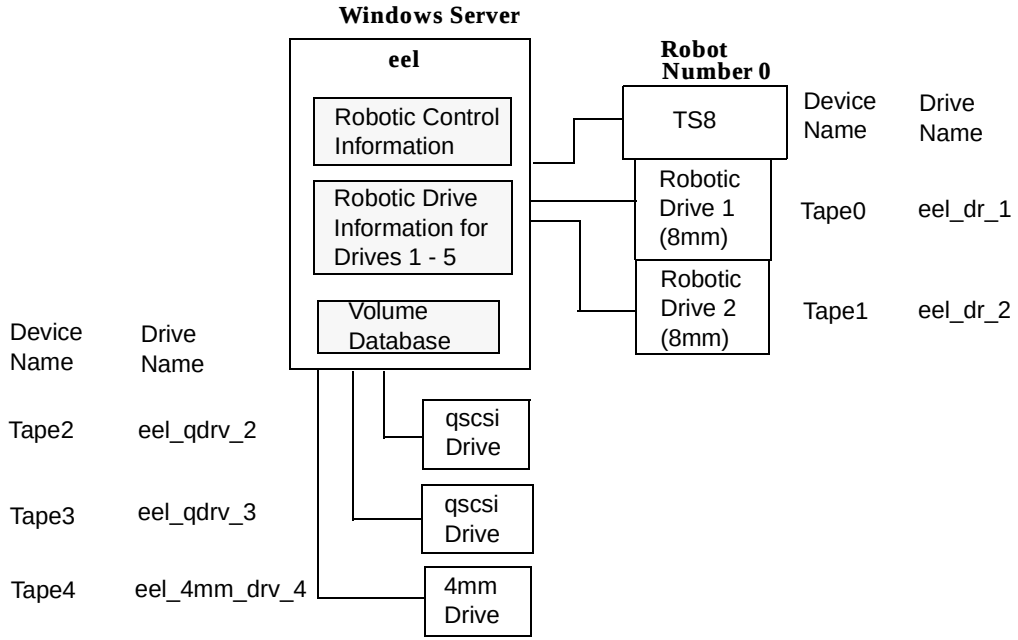
Add Drive Dialog Entries (Tape1)

| | |
|---|---|
| Device Host | eel |
| Drive Type | 8mm Cartridge (8mm) |
| Drive Name | eel_dr_2 |
| Device Name | Tape1 |
| Drive is in a Robotic Library | Yes |
| Robotic Library | TS8(0) - eel |

Add Drive Dialog Entries (Tape1) (continued)

| | |
|---|---|
| Robot Drive Number | 2 |

## Example 2: Host With Standalone Drives




This example adds three standalone drives to the device configuration for host eel shown in Example 1. As in that example, the volume database and all devices are on the same host. The following tables show the Add Drive dialog box entries for the standalone drives. Configuration information for the robot and its two drives are the same as in Example 1 and is not repeated here.

Add Drive Dialog Entries (Tape2)

| | |
|---|---|
| Device Host | eel |
| Drive Type | 1/4” Cartridge (qscsi) |
| Drive Name | eel_qdrv_2 |
| Device Name | Tape2 |
| Drive is in a Robotic Library | No |

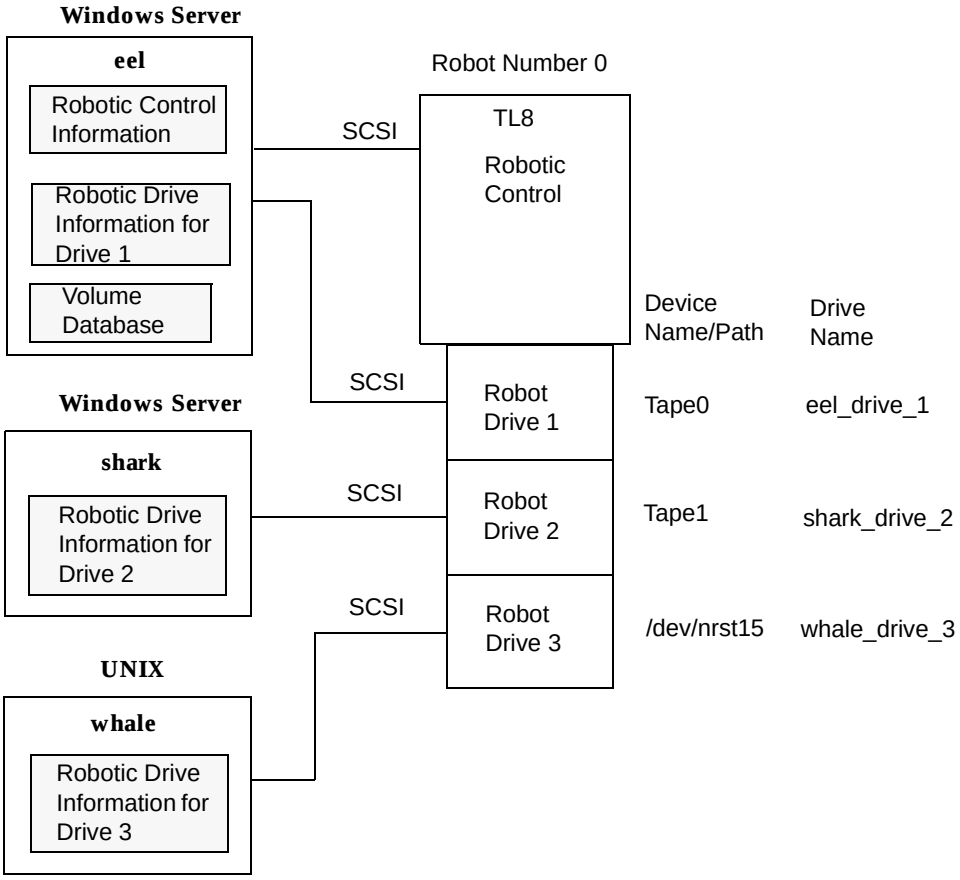
Add Drive Dialog Entries (Tape3)

| | |
|---|---|
| Device Host | eel |
| Drive Type | 1/4” Cartridge (qscsi) |
| Drive Name | eel_qdrv_3 |
| Device Name | Tape3 |
| Drive is in a Robotic Library | No |

Add Drive Dialog Entries (Tape4)

| | |
|---|---|
| Device Host | eel |
| Drive Type | 4mm Cartridge (4mm) |
| Drive Name | eel_4mm_drv_4 |
| Device Name | Tape4 |
| Drive is in a Robotic Library | No |

## Example 3: Robot and Drives Distributed Among Multiple Hosts




This is a more complex configuration than the previous examples because it involves a robot that has its robotic control on one host and its drives used by two other hosts.

After installing Media Manager software and attaching the drives, run the Device Configuration wizard or complete the Add Robot and Add Drive dialog box entries as shown in the following tables. Some things to note when examining these tables follow:

- Media for all devices is configured in a common volume database, which is located on eel.
- The Robot Number is 0 in all three cases. This is required because the three hosts refer to the same physical robot. In this case, robotic control is on host eel.
- Robot Drive Numbers correlate to the physical drive assignment within the robot.

- When you add volumes, add them to host eel because the volume database is on that host.

## Configuration on the Windows Host eel

Make the following entries to the Add Robot and Add Drive dialogs:

Add Robot Dialog Entries

| | |
|---|---|
| Device Host | eel |
| Robot Type | TL8 - Tape Library 8MM |
| Volume Database Host | eel |
| Robot Number | 0 |
| Robot is controlled locally by this device host | Set |
| Robot Device | Selecting a robot device sets the SCSI Port, Bus, Target, and LUN numbers in the dialog for Windows NT hosts and for Windows 2000 hosts where a changer driver *is not* in control of the robot.<br>On Windows 2000 hosts where a changer driver *is* in control of the robot, selecting a robot device sets the changer name in the dialog. |

Add Drive Dialog Entries (Drive 1)

| | |
|---|---|
| Device Host | eel |
| Drive Type | 8mm Cartridge (8mm) |
| Drive Name | eel_drive_1 |
| Device Name | Tape0 |
| Drive is in a Robotic Library | Yes |

Add Drive Dialog Entries (Drive 1) (continued)

| | |
|---|---|
| Robotic Library | TL8(0) - eel |
| Robot Drive Number | 1 |

## Configuration on the Windows Host shark

Make the following entries in the Add Robot and Add Drive dialogs:

Add Robot Dialog Entries

| | |
|---|---|
| Device Host | shark |
| Robot Type | TL8 - Tape Library 8MM |
| Volume Database Host | eel |
| Robot Number | 0 |
| Robot control is handled by a remote host | Set |
| Robot Control Host | eel |

Add Drive Dialog Entries (Drive 2)

| | |
|---|---|
| Device Host | shark |
| Drive Type | 8mm Cartridge (8mm) |
| Drive Name | shark_drive_2 |
| Device Name | Tape1 |
| Drive is in a Robotic Library | Yes |
| Robotic Library | TL8(0) - eel |
| Robot Drive Number | 2 |

## Configuration on the UNIX Host whale

Make the following entries to the Add Robot and Add Drive dialogs:

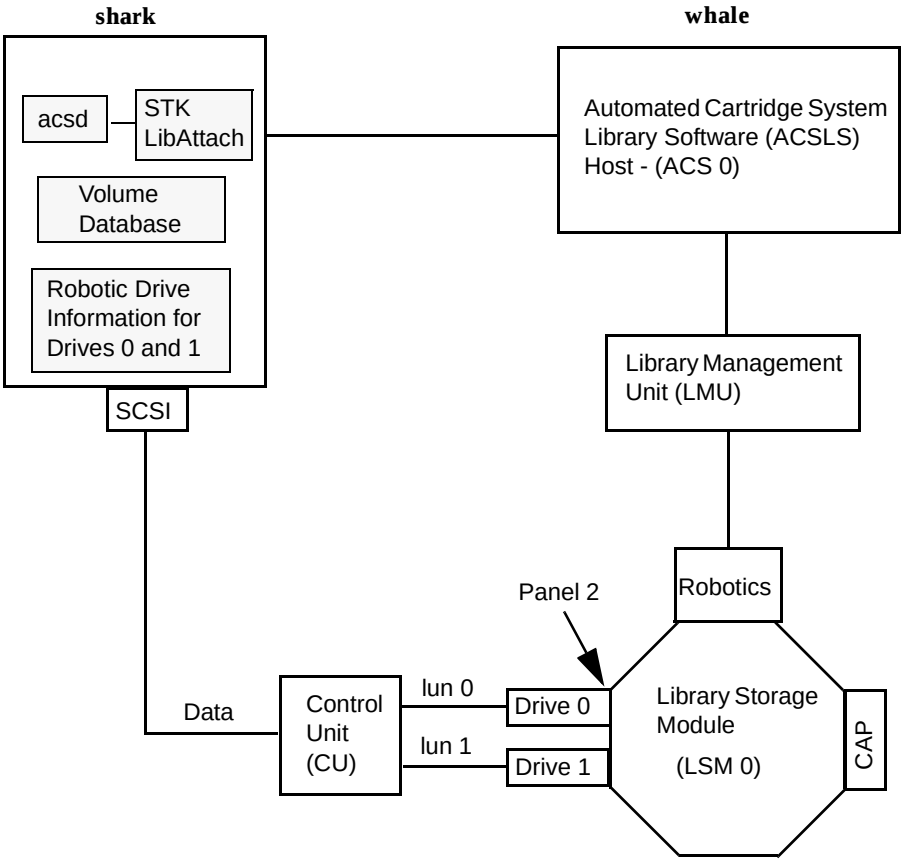
Add Robot Dialog Entries

| | |
|---|---|
| Device Host | whale |
| Robot Type | TL8 - Tape Library 8MM |
| Volume Database Host | eel |
| Robot Number | 0 |
| Robot control is handled by a remote host | Set |
| Robot Control Host | eel |

Add Drive Dialog Entries (Drive 3)

| | |
|---|---|
| Device Host | whale |
| Drive Name | whale_drive_3 |
| Drive Type | 8mm Cartridge (8mm) |
| No Rewind Device | /dev/nrst15 |
| Cleaning Frequency | 20 |
| Drive Status | UP |
| Drive is in a Robotic Library | Yes |
| Robotic Library | TL8(0) - eel |
| Robot Drive Number | 3 |

## Example 4: Windows Host With An ACS Robot




This configuration uses an Automated Cartridge System (ACS) robot for storage. Host shark can be a Windows NetBackup master server or media server. The following tables show the Add Drive and Add Robot dialog entries for host shark. Items to note when reviewing these tables follow:

- The ACSLS host (in the Add Robot dialog) is host whale, where the ACS library software resides. In this example, Automated Cartridge System Library Software (ACSLS) is installed as the ACS library software.

  On some host platforms it may be possible to run Media Manager software and ACS library software on the same host, eliminating the need for two servers.

- The ACS, LSM, PANEL, and DRIVE numbers are part of the ACS library software configuration and must be obtained from the administrator of that host.

- Robot number and ACS number are different terms. Robot number is the robot identifier used in Media Manager. ACS number is the robot identifier in ACS library software. These numbers can be different, although they both default to zero.
- It is possible for the drives to connect through an independent control unit. If so, the correct Logical Unit Numbers (lun) are needed in order to find the correct tape name to use.
- The Add Robot dialog entries include an ACSLS Host entry, since communication with the ACS library software host is over the network using STK LibAttach software. This software must be installed on each Windows host that has ACS drives attached.

See the appendix, “Automated Cartridge System (ACS)” on page 355 for more information.

Add Robot Dialog Entries

| | |
|---|---|
| Device Host | shark |
| Robot Type | ACS - Automated Cartridge System |
| Volume Database Host | shark |
| Robot Number | 0 |
| Robot control is handled by a remote host | Set (cannot be changed for this robot type) |
| ACSLS Host | whale |

Add Drive Dialog Entries (Drive 0)

| | |
|---|---|
| Device Host | shark |
| Drive Type | 1/2” Cartridge (hcart) |
| Drive Name | shark_drive_0 |
| Device Name | Tape0 |
| Drive is in a Robotic Library | Yes |
| Robotic Library | ACS(0) - whale |

Add Drive Dialog Entries (Drive 0) (continued)

| | |
|---|---|
| ACS | ACS: 0<br>LSM: 0<br>PANEL: 2<br>DRIVE: 0 |

Add Drive Dialog Entries (Drive 1)

| | |
|---|---|
| Device Host | shark |
| Drive Type | 1/2” Cartridge (hcart) |
| Drive Name | shark_drive_1 |
| Device Name | Tape1 |
| Drive is in a Robotic Library | Yes |
| Robotic Library | ACS(0) - whale |
| ACS | ACS: 0<br>LSM: 0<br>PANEL: 2<br>DRIVE: 1 |

# Managing Media 3

The media management window provides the tools required to add and manage the removable media that Media Manager controls. These media are referred to as volumes.

This chapter explains how to add and manage the removable media that Media Manager controls. These media are referred to as volumes, and are assigned media IDs and other attributes that are required to track and manage them.

The chapter, “Managing Media in Robots” on page 117 explains how to manage media in robots.

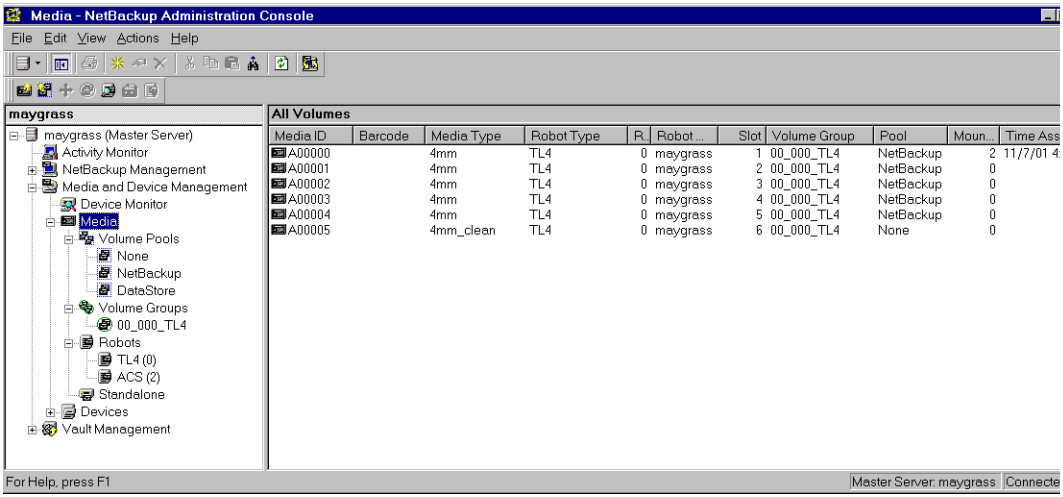
If you have Backup Exec volumes to manage, see the Backup Exec tape reader option appendix of the NetBackup system administrator’s guide for Windows for more information.

## Starting Media Management

In NetBackup Administration Console, click **Media and Device Management** > **Media**.

The media management window appears.

Media Management Window




In addition to the tree pane displayed on the left, a volume pane is displayed on the right when you start media management.

# Using the Media Management Window

The following topics describe the media management window:

- Menus and Commands
- Toolbars
- Tree Pane
- Volumes Pane
- Status Bar
- Shortcut Menus and Commands
- Tool Tips
- Customizing the Window
- Allowable Media Manager Characters

## Menus and Commands

The media management window has available the menus and commands shown in the following table.

The menu items are enabled based on the items that are currently selected in the tree pane or volumes pane. For example, if a volume group is selected in the tree pane, **Delete** is enabled on the **Edit** menu.

Media Management Menus and Commands

| Menu | Commands |
|---|---|
| **File** | **Change Server** - Displays a dialog box that allows you to change to a different host that is running NetBackup.<br>**New Console** - Starts another instance of NetBackup Administration Console.<br>**New Window from Here** - Starts another instance of the NetBackup Administration Console node that was active.<br>**Backup, Archive, and Restore** - Starts the NetBackup backup, archive, and restore interface.<br>**Print Setup** - Displays the standard Windows print setup dialog.<br>**Print** - Prints the volumes pane (when the pane is selected).<br>**Close** - Closes the current window.<br>**Exit** - Closes all open windows. |
| **Edit** | Contains **Find** commands for managing items in the volume lists.<br>**New** - Displays a dialog box to add an item of the type that is currently selected.<br>**Change** - Displays a dialog box for changing the configuration of the selected items.<br>**Delete** - Deletes selected items from the configuration. |
| **View** | Contains commands for specifying your viewing preferences for the media management window, including showing and hiding the toolbar or tree, and refreshing the display. See “Customizing the Window” on page 75. |

Media Management Menus and Commands (continued)

| Menu | Commands |
|---|---|
| **Actions** | **New** - Displays a dialog box for adding volumes or volume pools to a configuration. |
| | **Change Volume Group** - Displays a dialog box for changing the volume group for selected volumes. |
| | **Move** - Displays a dialog box for moving volumes. |
| | **Rescan/Update Barcodes** - Rescans the barcodes in the selected robotic library and updates the barcodes for the selected volumes, as necessary. |
| | **Eject Volume(s) From Robot** - Ejects selected single or multiple volumes to the robot's media access port. |
| | **Inventory Robot** - Displays a dialog box with choices for performing an inventory of the selected robot or updating the volume configuration to match the contents of the robot. |
| **Help** | **Help Topics** - Provides online help information about the NetBackup Console. |
| | **VERITAS Web Page** - Displays the VERITAS web page, if the host has a browser configured. |
| | **License Keys** - Provides information about your active and registered license keys. |
| | **About Administration Console** - Displays program information, version number, and copyright information. You can click **More Info** for more detailed information. |

## Toolbars

The toolbar buttons of the Media window provide shortcuts for commands that are on the menus.

To show or hide the toolbar buttons:

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.
2. Click **View** > **ToolBar**.

To change the display of the toolbar buttons:

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.
2. Click **View** > **Customize** > **Toolbars**.

Also see "Customizing the Window" on page 75.

## Tree Pane

The tree pane for **Media** contains nodes for **Volume Pools**, **Volume Groups**, **Robots**, and **Standalone**.

The display in the Volumes pane (on the right) shows the volumes that are in the volume database on this server. If you add any volumes, they are added to this volume database.

If there are no volumes configured in the volume database, the Volumes pane will be blank. Selecting different items in the tree pane filters the lists that are shown in the Volumes pane.

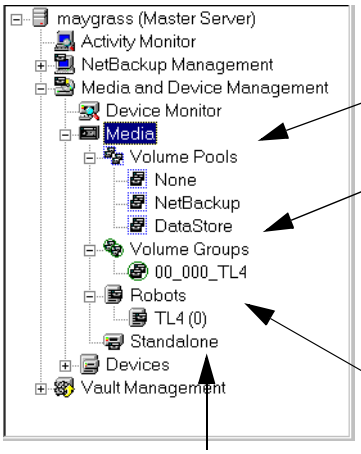
Before adding volumes on the selected server, check the volume database host setting for the robot or standalone drive to verify that the volume will be added to the correct volume database. See "Administering Media on Other Hosts" on page 76.

If the icon shown for a robotic library contains a red arrow, the current server is *not* the volume database host for the robotic library. In this case, it is recommended to change to the correct server before adding volumes for this device.

To view or configure volumes on another server, change your connection to that host by using **File** > **Change Server**. See "Administering Media on Other Hosts" on page 76 for more information.

The following figure shows an expanded view of the Media tree pane:

The current Media Manager server. You are currently connected to this host. Volumes that appear in the Volumes pane are in the volume database on this server.




All the volume pools in the volume database on the current server. If you select Volume Pools, the Volumes pane contains information for all the volumes in all pools. Selecting an individual pool, displays only the volumes in that pool.

All the volume groups in the volume database on the current server. If you select Volume Groups, the Volumes pane contains information for all the volumes in all groups. Selecting an individual group, displays only the volumes in that group.

If you select Robots, the Volumes pane contains information for all the volumes that are in all robots and in the volume database on this server. Selecting an individual robot, displays only the volumes in that robot.

If you select Standalone, the Volumes pane contains information for all the volumes that are in standalone drives (or in standalone status) and in the volume database on this server.

## Volumes Pane

This pane lists the volumes in the volume database located on the current media server. The following tables describe the columns in the various volume lists that can be displayed.

### Managing the Volumes Pane

The **Edit** menu has commands for finding items and is useful if you are managing many volumes. You can use **View** > **Columns > Layout** to rearrange or hide specific columns in the Volumes pane. Some of the columns are hidden initially by default.

## Volume Pools List

If you select **Media** > **Volume Pools** in the tree pane, the following list is displayed in the Volumes Pane showing information for all of the volume pools.

Volume Pools List

| Column | Description |
|---|---|
| Volume Pool | Name of the volume pool. A volume pool defines the usage for the volume. Volumes in a pool are grouped together for use by a single application and are protected from access by other applications and users.<br>None is the default pool for users of applications, other than NetBackup and Storage Migrator.<br>NetBackup is the default pool name for NetBackup.<br>DataStore is the default pool name for DataStore.<br>HSM is the default pool name for VERITAS Storage Migrator. |
| Number | Number assigned to the volume pool. This number is assigned by NetBackup. The following numbers are reserved:<br>0 is the None (default) pool.<br>1 is the NetBackup pool.<br>The DataStore pool is assigned the next available number. |
| User | Contains the value ANY or the user ID (for example, root(0)). |
| Host | Name of the host that is allowed to request and use the volumes in this volume pool or the value ANYHOST. |
| Group | Identifies the UNIX user group for this volume pool or contains NONE. |
| Description | Description for the volume pool. You create the description when you configure a volume pool. |

## Volume Groups List

If you select **Media** > **Volume Groups** in the tree pane, the following list is displayed in the Volumes Pane showing information for all of the volume groups.

Volume Groups List

| Column | Description |
|---|---|
| Volume Group | Name of the volume group. A volume group defines the volume by location and is a logical group of volumes that are at the same physical location.<br>Volume groups are a convenience for administrating multiple volumes. By using a volume group, you can logically move a set of volumes between a robotic library and a standalone location, or delete them by specifying the group name rather than each individual media ID.<br>More than one volume group can share the same location. For example, a robotic library can contain volumes from more than one volume group and there can be more than one standalone volume group. All volumes in a volume group must have a compatible media type. |
| Media Type | Media Manager media type of the volume group. |
| Robot Number | Number of the robot that contains this volume group. If the robot type is NONE, this column contains a hyphen (-). |
| Robot Type | Type of robot that contains this volume group. NONE in this column means a standalone volume group. |
| Robot Control Host | This is the robot control host for the volumes in this volume group. If the robot type is NONE, this column contains a hyphen (-). |
| Volume Count | Number of volumes in this volume group. |

## Robots List

If you select **Media** > **Robots** in the tree pane, the following list is displayed in the Volumes Pane showing information for all of the robots.

Robots List

| Column | Description |
|---|---|
| Robot Name | Contains the name of the robot (comprised of the robot type and robot number), for example TLM(3). |

Robots List (continued)

| Column | Description |
|---|---|
| Device Host | Contains the name of the device host where this robot is defined. |
| Robot Type | Type of robot. See the Reference Topics appendix of this guide for a list of supported robot types. |
| Robot Number | Number of the robot. |
| Volume Database Host | Contains the name of the volume database host for the volumes in this robot. |
| Serial Number | Contains the robot serial number. |
| Robotic Path | Contains the path of the robot or is blank for remote robots. |
| Robot Control Host | Name of the host that is providing the robotic control. This column contains a host name only for robots where the robot control is handled by a different host than the host where the robot is attached.<br>This column is not applicable for NetBackup BusinesServer and is blank. |

## Volumes List

If you select an item under **Volume Pools**, **Volume Groups**, **Robots**, or **Standalone** in the tree pane, the volumes list is filtered based on the selected item and that information is displayed in the Volumes pane.

Volumes List

| Column | Description |
|---|---|
| Media ID | Identifies the volume in six or less alphanumeric characters. This value is usually assumed to be the same as the external media ID and should be the same as the recorded media ID for non-scratch, labeled media.<br>You specify the media ID when you add volumes to Media Manager. |
| Barcode | Uniquely identifies the barcode of a volume in 13 alphanumeric characters or less.<br>The barcodes for volumes in an API robot are equivalent to the volume's identifier, as configured with the robot-vendor software. |
| Media Type | Media type of the volume. See "Media Manager Media Types" on page 257 for a list of the supported media types. |

Volumes List (continued)

| Column | Description |
|---|---|
| Robot Type | Type of robot that contains this volume. See “Media Manager Robot Types” on page 255 for a list of supported robot types.<br>NONE in this column means a standalone volume. |
| Robot Number | Number of the robot that contains this volume. If the volume is for a standalone drive or the volume is part of a group that was moved out of a robot (with the intent of being moved back into a robot), this column contains a hyphen (-). |
| Robot Control Host | Name of the host that controls the robot that contains this volume. This host is providing the robotic control.<br>If this column contains NONE, there is no specific robot control host (the robot is controlled from multiple hosts).<br>If this column is blank, the volume is for a standalone drive. |
| Slot | Slot in the robot that contains the volume.<br>This column is blank for API robots, since Media Manager does not track slot information for these robots. For these robot types, the vendor software tracks the slot information. |
| Volume Group | Name of the volume group for this volume. |
| Volume Pool | The volume pool defines the usage for the volume. Volumes in a pool are grouped together for use by a single application and are protected from access by other applications and users.<br>None is the default pool name for users of applications, other than NetBackup, DataStore, and Storage Migrator.<br>NetBackup is the default pool name for NetBackup.<br>DataStore is the default pool name for DataStore.<br>HSM is the default pool name for Storage Migrator. |
| Mounts | Number of times that the volume has been mounted (does not apply to cleaning media types). |
| Time Assigned | Shows the date when the volume was assigned for use. You cannot delete a volume or change its volume pool while it is assigned to an application. |

Volumes List (continued)

| Column | Description |
|---|---|
| Status | Applies only to volumes that are assigned to NetBackup, Storage Migrator, or Storage Migrator for Microsoft Exchange.<br>There is also a date in the Time Assigned column for assigned volumes.<br>- 0 - NetBackup<br>The volume is assigned to NetBackup regular backups.<br>- 1 - Catalog<br>The volume is assigned to NetBackup catalog (database) backups.<br>- 2 - Storage Migrator<br>The volume is assigned to Storage Migrator for UNIX.<br>- 3 - Storage Migrator<br>The volume is assigned to Storage Migrator for Microsoft Exchange or Storage Migrator for Windows 2000. |
| Side/Face | Location of the volume.<br>If the media type is an optical disk, this column shows A or B, representing the platter side on which the volume is located.<br>If the media type is an 8mm tape and the robot type is TL8, this column shows the xy coordinates for the slot number.<br>For any other media type, this column contains a hyphen (-). |
| Partner | For optical disks, this column shows the media ID of the volume on the other side of the optical platter. For all other media types, the column contains a hyphen (-). You define this value as Partner ID when you add the volume.<br>For NetBackup BusinesServer, this column contains a hyphen (-), since optical media is not supported. |
| Max Mounts | Number of times the volume can be mounted. If maximum mounts is reached, a message is logged to the system application log and Media Manager allows no further mounts in write mode. Further mounts in read mode are allowed. |
| First Mount | Date and time that the volume was first mounted through Media Manager. |
| Last Mount | Date and time that the volume was last mounted. |
| Expiration Date | Refers to the age of the volume. If the expiration date is reached, the volume is considered too old to be reliable and Media Manager allows no further mounts in write mode. Further mounts in read mode are allowed, but a message is logged to the system application log indicating that the expiration date has been reached. If the column is blank, the volume has no expiration date. |

Volumes List (continued)

| Column | Description |
|---|---|
| Cleanings Remaining | For a cleaning tape, this column shows how many more times the tape can be used. To use a cleaning tape, the value in this column must be greater than zero. You can change this count by selecting the volume and using **Change** on the **Edit** menu. |
| Created | Date and time that the volume was added. |
| Description | Describes the media in 25 or less alphanumeric characters. You create the description when you add volumes. |
| Vault Name | Used for the NetBackup Vault option. Contains the name of the vault where this volume is located. |
| Date Vaulted | Used for the NetBackup Vault option. Contains the date this volume was sent to the vault. |
| Return Date | Used for the NetBackup Vault option. Contains the date when this volume returns from the vault. |
| Vault Slot | Used for the NetBackup Vault option. Contains the slot where this volume is stored in the vault. |
| Session ID | Used for the NetBackup Vault option. Contains the ID of the vault session that ejected this volume. |

## Status Bar

The status bar appears at the bottom of the NetBackup Console window. The status bar

- Shows tool tips (if tool tips are enabled).
- Indicates the name of the master server.
- Indicates if you are connected to the master server.

To show or hide the status bar

- Click **View** > **Status Bar**.

## Shortcut Menus and Commands

Clicking the right mouse button while the pointer is over either pane or a selection of a pane, displays a shortcut menu with commands that apply to that context. These commands are also usually available on the menus or toolbars.

## Tool Tips

Tool tips are helpful information for the toolbar and menu buttons (as you position the pointer over a button). To enable tool tips

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.
2. Click **View** > **Customize**.
3. On the **Toolbars** tab, select **Show ToolTips**.

## Customizing the Window

The **View** menu has options for sorting and changing the layout and appearance of the panes.

### Showing or Hiding Columns

You can use **View** > **Columns > Layout** to show or hide columns in this display.

### Rearranging Columns

You can use **View** > **Columns > Layout** to rearrange the order of columns in this display.

## Allowable Media Manager Characters

The following set of characters can be used in user-defined names, such as volume groups, volume pool names, and media IDs that you enter when creating these entities. These characters must be used even when specifying these items in foreign languages.

Do not use a minus as the first character or leave any spaces between characters.

- Alphabetic (A-Z a-z)
- Numeric (0-9)

- Period (.)
- Plus (+)
- Minus (-)
- Underscore (_)

# Administering Media on Other Hosts

Each host that has Media Manager installed, can have a volume database. However, to simplify administration, VERITAS strongly recommends that you centralize the volume database on one host and keep the other volume databases empty. Adding volumes to multiple hosts makes administration more complicated and it is not possible to merge the databases later.

The configuration for each robotic library or set of standalone drives designates the volume database host that contains the volume information for those devices. Before adding a volume to the volume configuration, you *must* be managing the correct host or the volume will not be found when it is required.

To verify which host has the volume database for a device, see “Determining the Volume Database Host for a Device”.

## Determining the Volume Database Host for a Device

1. In NetBackup Administration Console, click **Media and Device Management** > **Devices**.

2. For a drive in a robotic library, click the **Robots** tab in the Devices pane. The Volume Database Host column shows the name of the host for the volumes in this robotic library.

3. For a standalone drive, click the **Hosts** tab in the Devices pane. The Standalone Volume Database Host column shows the name of the host for all of the standalone drives controlled by this host.

## Managing Media on Other Hosts

Initially, you can manage media on the server where you are running NetBackup. The name of this server and its connection status is shown in the status bar (on the right side) of the window, for example Master Server: spain4.

If you change from a NetBackup DataCenter server to a NetBackup BusinesServer server, the functionality available on the new server is limited to the functionality supported by NetBackup BusinesServer.

If you change from a NetBackup BusinesServer server to a NetBackup DataCenter server, complete functionality is available on the new server.

To change to a different server, use the following procedure:

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. Click **File** > **Change Server**.

   In the dialog box for **File** > **Change Server**, do one of the following to specify the host:

   - Enter the name of the host.
   - Select a host from one of the hosts shown in the list.
   - Click **Browse** and select a host.

   You can also click **Remove** to delete a host from the list of available hosts.

   Click **OK**.

**Note** You can also click the **arrow** to the right of the Change Server icon and select a host from one of the hosts shown in the list.

3. The name of the new host appears in the status bar and the volumes pane shows the volume information for the new server.

# Configuring Volume Pools

A volume pool identifies a logical set of volumes by usage. Associating volumes with a volume pool protects them from access by unauthorized users, groups, or applications.

With the exception of the volume pools automatically created by NetBackup, you must create a volume pool before you can add volumes to a volume pool. The following volume pools are automatically created (see “Volume Pools List” on page 69):

- Media Manager creates a pool, named NetBackup, for NetBackup use.
- NetBackup creates a pool, named DataStore, for DataStore use.

During initial configuration, it is easiest to create all of your volume pools first. Then as you add volumes, you can assign them to volume pools.

It is also possible to configure a scratch pool from which Media Manager can transfer volumes, when another volume pool has no volumes available.

For background information, see “Volume Pools” on page 280 and “Scratch Volume Pools” on page 283.

The following topics explain volume pool configuration:

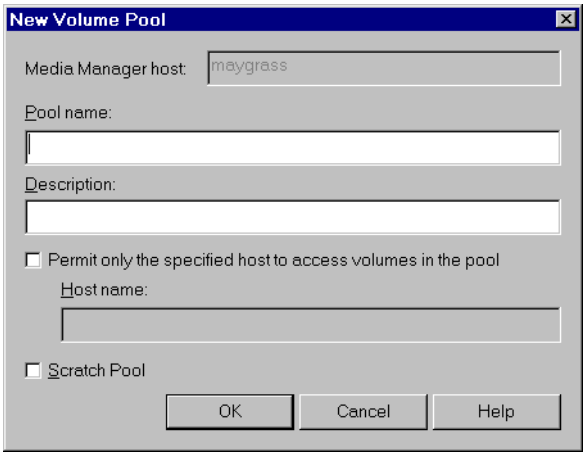
- Adding a New Volume Pool or Scratch Volume Pool
- Changing the Attributes of a Volume Pool
- Changing the Volume Pool Assignment for a Volume
- Deleting a Volume Pool

## Adding a New Volume Pool or Scratch Volume Pool

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. Click **Actions** > **New** > **Volume Pool**.

   To add a scratch volume pool, see “Adding a Scratch Volume Pool” on page 79.




3. In the **Pool name** text box, enter a name for the new volume pool.

   The name can be 20 characters or less, and cannot contain any spaces or special characters. See “Allowable Media Manager Characters” on page 75.

4. In the **Description** text box, enter a brief description for the pool.

5. To allow only a specified host to use the volumes in this pool:

   a. Select **Permit only the specified host to access volumes in the pool**.

   b. In the **Host name** text box, enter the name of the host that is allowed to request and use the volumes in this volume pool.

**Caution** VERITAS recommends that you *do not* specify a specific host. Allowing any host (the default) is recommended, and is required if you have NetBackup media servers controlled by a master server. Never specify the name of a client.

## Adding a Scratch Volume Pool

A scratch pool is a special volume pool that you can optionally configure. If a scratch pool is configured, Media Manager moves volumes from the scratch pool to any other pools that do not have volumes available.

If you want this pool to be a scratch volume pool, do the following:

1. Specify attributes for the scratch pool as shown in the following table:

| For | Enter |
|---|---|
| **Pool Name** | Any name, except NetBackup or None. It is recommended to use *scratchpool* as the pool name. |
| **Description** | It is recommended to use *scratch pool* in the description. |
| **Permit only the specified host to access volumes in the pool** | Do not select this check box to specify a specific host.<br>ANYHOST is the default host name. |
| **Scratch Pool** | Select this check box. |

2. Add volumes to the scratch volume pool for each robotic or standalone device that may require them.

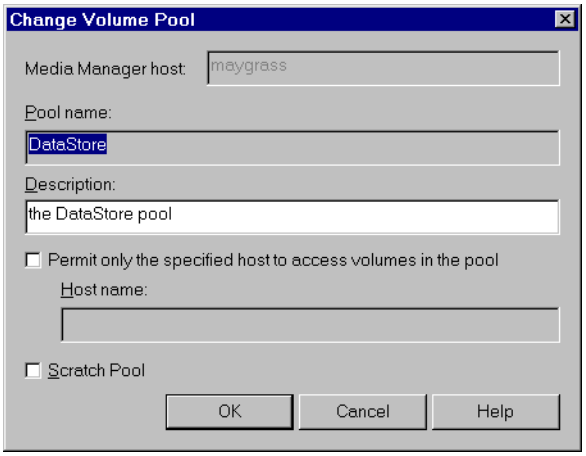
   Follow the steps for adding other volumes to pools (see "Adding New Volumes" on page 87). In this case, select the pool name of the scratch pool you created as the volume pool.

## Changing the Attributes of a Volume Pool

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. Select the desired pool from the pools shown under **Volume Pools** in the tree pane.

3. Click **Edit** > **Change**.




4. In the **Description** text box, enter a new description for the pool.

   To change this pool to a scratch volume pool, see "Changing a Volume Pool To a Scratch Volume Pool" on page 81.

5. To allow only a specified host to use the volumes in this pool:

   a. Select **Permit only the specified host to access volumes in the pool**.

   b. In the **Host name** text box, enter the name of the host that is allowed to request and use the volumes in this volume pool.

**Caution** VERITAS recommends that you *do not* specify a specific host. Allowing any host (the default) is recommended, and is required if you have NetBackup media servers controlled by a master server. Never specify the name of a client.

### Changing a Volume Pool To a Scratch Volume Pool

A scratch pool is a special volume pool that you can optionally configure. If a scratch pool is configured, Media Manager moves volumes from the scratch pool to any other pools that do not have volumes available.

If you want to change this pool to be a scratch volume pool:

1. Specify attributes for the scratch pool as follows.

| For this Attribute | Your Action |
|---|---|
| **Description** | It is recommended to enter *scratch pool* as the description. |
| **Permit only the specified host to access volumes in the pool** | Do not select this check box to specify a specific host.<br>ANYHOST is the default host name. |
| **Scratch Pool** | Select this check box. |

2. Add volumes to the scratch volume pool for each robotic or standalone device that may require them.

   Follow the steps for adding other volumes to pools (see "Adding New Volumes" on page 87). In this case, select the name of the scratch pool as the volume pool.

## Changing the Volume Pool Assignment for a Volume

Volumes are grouped in a specific volume pool. The Volume Pool column in the Volumes list shows the name of the volume pool to which the volumes belong. Change the volume pool assignment as follows:

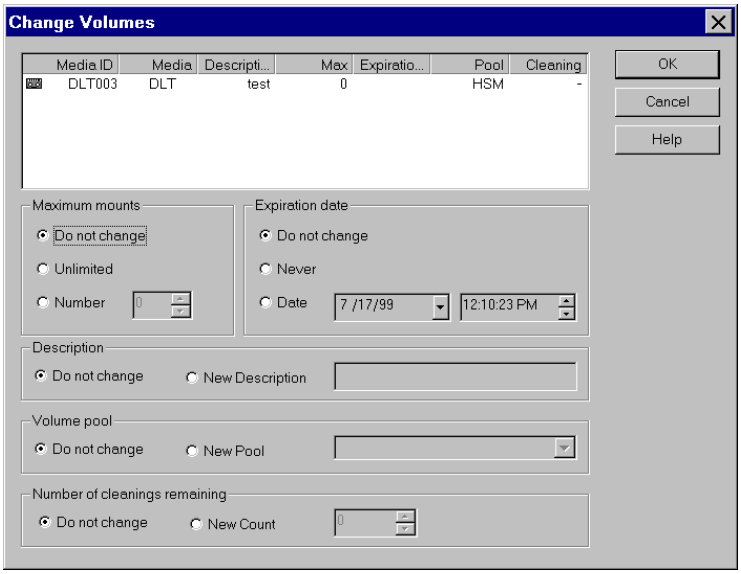
1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. Select a volume or volumes from the volumes pane.

**Note** You are unable to change the volume pool for any assigned volumes until the application deassigns them (see "Deassigning Volumes" on page 107).

3. Click **Edit** > **Change**.

In the dialog box that appears, the volumes you selected are listed in the top section of the dialog.




4. In the Volume Pool section, click **New Pool** and click the **arrow** to view a list of the available volume pools.

   Select a volume pool from the list.

5. Click **OK**.

## Deleting a Volume Pool

Note that you *cannot* delete any of the following pools:

- A volume pool that contains volumes
- Scratch pools
- The NetBackup volume pool
- The None volume pool
- The HSM volume pool (for VSM)
- The DataStore volume pool

Delete a volume pool as follows:

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. Choose the volume pool and ensure that the volume pool is empty.

   If necessary, change the volume pool name for any volumes in the pool. Or if the volumes are not needed, delete them.

3. Click **Edit** > **Delete**.

# Methods Available for Injecting and Ejecting Volumes

Some robotic libraries implement different functionality for their media access ports. For example, some libraries have front-panel inject and eject features that conflict with the use of the media access port in NetBackup. Other robotic libraries require front-panel interaction when using the media access port.

Read the operator manual for your robotic library to understand the media access port functionality. Libraries such as the ones noted may not be fully compatible with the inject and eject features of NetBackup if not properly handled. Other libraries may not be compatible at all.

## Methods for Injecting Volumes into a Robot

The following methods are available to inject a single volume into a robotic library.

### When Adding New Volumes

When specifying dialog box entries for adding new volumes, select **Inject volume into robot via the media access port** to inject a volume into a robotic library.

**Inject volume into robot via the media access port** is available only for the robot types listed in the matrix shown in “Inject and Eject Functions Available by Robot Type” on page 86.

**Inject volume into robot via the media access port** *may* be enabled for some robots that do not have media access ports, since the robot type for the robotic library only indicates that media access ports are possible.

See “Adding Volumes - Using the Actions Menu” on page 90 for complete instructions.

## When Moving Volumes

When specifying dialog box entries for moving volumes, select **Inject volume into robot via the media access port** to inject this volume into a robotic library.

**Inject volume into robot via the media access port** is available only if the following are true:

- You are moving a single volume from standalone to a robotic library.
- Media Manager supports inject for the robot type involved (see "Inject and Eject Functions Available by Robot Type" on page 86).

**Inject volume into robot via the media access port** *may* be enabled for some robots that do not have media access ports, since the robot type for the robot only indicates that media access ports are possible.

See "Moving Volumes" on page 97 for complete instructions.

## When Performing a Volume Configuration Update Using Robot Inventory

When performing a volume configuration update for a robot, select **Empty media access port prior to update** to inject a volume into a robot.

Any volumes to be injected must be in the media access port before the operation begins. If **Empty media access port prior to update** is selected and there are no volumes in the port, you are *not* prompted to place volumes in the media access port and the update operation continues.

Each volume located in the media access port is moved into the robotic library. If the robotic library has a port that can hold multiple volumes, volumes are moved to empty slots in the robotic library until the media access port is empty or all the slots are full.

After the volume or volumes have been moved, the configuration update proceeds as usual.

**Empty media access port prior to update** is available only for the robot types listed in the matrix shown in "Inject and Eject Functions Available by Robot Type" on page 86.

**Empty media access port prior to update** *may* be available for some robots that do not have media access ports, since these robot types only indicate that media access ports are possible.

See "Updating the Volume Configuration for a Robot" on page 126 for complete instructions.

# Methods for Ejecting Volumes From a Robot

The following methods are available to eject single or multiple volumes.

## When Moving Volumes

When specifying dialog box entries for moving volumes, select **Eject volume from robot via the media access port** to eject one or more selected volumes using the robot's media access port.

You can eject volumes that reside in multiple robots. In this case, multiple eject dialogs will appear for each robot type.

**Eject volume from robot via the media access port** is available only if the following are true:

- You are moving a volume from a robotic library to standalone.
- Media Manager supports eject for the robot type involved (see "Inject and Eject Functions Available by Robot Type" on page 86).

**Eject volume from robot via the media access port** *may* be enabled for some robots that do not have media access ports, since the robot type for the robotic library only indicates that media access ports are possible.

For the robot types shown in the 4th column of the matrix, selecting multiple volumes to eject requires operator intervention. The selected volumes will be ejected one volume at a time. Operator intervention is required to remove the ejected volume and answer the prompts.

For the robot types shown in the 3rd column of the matrix, operator intervention is only required if the robotic library does not have a media access port large enough to eject all of the selected volumes. For these robot types, you are prompted to remove the media from the media access port so the eject can continue with the remaining volumes.

See "Moving Volumes" on page 97 for complete instructions.

## Using the Eject Volumes From Robot Command

Select **Actions** > **Eject Volume(s) From Robot** to eject one or more selected volumes from a robotic library.

**Eject Volume(s) From Robot** is only available for the robot types shown in the matrix in "Inject and Eject Functions Available by Robot Type" on page 86.

You can eject volumes that reside in multiple robots. In this case, multiple eject dialogs will appear for each robot type.

For the robot types shown in the 4th column of the matrix, selecting multiple volumes to eject requires operator action. The selected volumes will be ejected one volume at a time. Operator intervention is required to remove the ejected volume and answer the prompts.

For the robot types shown in the 3rd column of the matrix, operator intervention is only required if the robotic library does not have a media access port large enough to eject all of the selected volumes. For these robot types, you are prompted to remove the media from the media access port so the eject can continue with the remaining volumes.

See “Ejecting Volumes From Robots (Actions Menu Command)” on page 104 for complete instructions.

## Inject and Eject Functions Available by Robot Type

The following matrix shows the availability of inject and eject functions provided with the Media Manager functions listed in the 1st column. The availability of the inject and eject functions listed in the column headings depends on the robot type being used. NA in a cell means *not applicable*.

Inject / Eject Functions Available by Robot Type

| Media Manager Function | Inject Single Volume | Eject Single or Multiple Volumes (Dialog Type 1) | Eject Single or Multiple Volumes (Dialog Type 2) |
|---|---|---|---|
| **New Volumes** | LMF, ODL, TL8, TLD, TSH | NA | NA |
| **Move Volumes** | LMF, ODL, TL8, TLD, TSH | ACS, TL8, TLD, TLH, TLM | LMF, ODL, RSM, TSH |
| **Robot Inventory** | TL8, TLD, TLM | NA | NA |
| **Eject Volumes** | NA | ACS, TL8, TLD, TLH, TLM | LMF, ODL, RSM, TSH |

**Note** For LMF and ODL robot types, the robot must be attached to a UNIX server running NetBackup.

# Adding New Volumes

Media Manager volumes are logical units of data storage or cleaning capability on media that have been assigned media IDs and other attributes, which are recorded in the Media Manager volume database. The attributes in the volume database include information to show the robotic location, and includes the robot host, robot type, robot number, and slot location. This type of information for the volume is referred to as *residence information* or *residence*.

When you add a new volume, there is no default expiration date.

## Methods Available for Adding Volumes

The methods available to add volumes depend on how the volume will be used, as follows.

If your devices are supported by the Volume Configuration wizard, using this wizard is an easy method for adding volumes. See “Using the Volume Configuration Wizard” on page 95 for more details.

### Robotic Volumes (Volumes Located in a Robot)

- The easiest way to add robotic volumes is to use the Volume Configuration wizard. See “Using the Volume Configuration Wizard” on page 95 for more details.
- To use robot inventory to add robotic volumes, perform the Update Volume Configuration procedure. During the update, Media Manager assigns the media IDs and other attributes.

  See “Adding Volumes - Using the Robot Inventory Update Option” on page 89.
- To add volumes using the menu, see “Adding Volumes - Using the Actions Menu” on page 90.

### Standalone Volumes (Volumes To Be Used in Standalone Drives)

- The easiest way to add standalone volumes is to use the Volume Configuration wizard. See “Using the Volume Configuration Wizard” on page 95 for more details.
- You can also configure volumes automatically by inserting the media into a standalone drive. For an unused volume, NetBackup assigns a media ID, labels the volume, and uses it (if it needs a volume of that type for a backup). Media Manager adds the media ID (designated by NetBackup) and other attributes for the volume.

The `DISABLE_STANDALONE_DRIVE_EXTENSIONS` NetBackup configuration option turns off NetBackup's automatic use of standalone volumes. See the NetBackup system administrator's guide for Windows servers for more information.

- To manually choose the media IDs, label the volume with the NetBackup `bplabel` command and follow the instructions in "Adding Volumes - Using the Actions Menu" on page 90. See the NetBackup system administrator's guide for Windows servers for more information on this command.

  Even if you normally use NetBackup's assignment capabilities for standalone volumes, manually adding extra standalone volumes prevents "out of media" errors in some situations.

  For example, if a volume in a standalone drive is full or unusable because of errors, NetBackup requests that Media Manager eject the volume. NetBackup then searches for another unused volume. If another appropriate volume is not defined, NetBackup exits with an error.

  Labeling a volume (using the NetBackup `bplabel` command) and adding it prevents this problem, because Media Manager displays a mount request for that volume rather than returning an error to NetBackup.

## NetBackup Catalog Backup Volumes

- Prior to using volumes for NetBackup catalog backups, you must add them. You can also use the NetBackup `bplabel` command to label the volume.

  See "Adding Volumes - Using the Actions Menu" on page 90.

## Notes on Labeling NetBackup Volumes

Labeling volumes is controlled by the application. Refer to the NetBackup DataCenter system administrator's guide for Windows servers or the Storage Migrator system administrator's guide for more information.

NetBackup controls the labeling of its volumes and in most cases performs this operation automatically.

- If a volume in a robotic library has not been labeled, NetBackup labels it with the media ID assigned by Media Manager the first time that it uses the volumes for a backup. This is done unless those volumes
  - Were last used for NetBackup catalog backups. You do not want to label the volumes unless they are no longer being used for catalog backups.
  - Contain data from a recognized non-NetBackup application. The NetBackup configuration option, `ALLOW_MEDIA_OVERWRITE` can be set to allow the volume to be overwritten.

- If you prefer to assign specific media IDs to NetBackup volumes, label them with the NetBackup `bplabel` command and add them using the manual update procedure.
- NetBackup uses a default prefix of A when assigning media IDs (for example, A00001). To change this default, use the NetBackup `MEDIA_ID_PREFIX` configuration option.
- If the robotic library supports barcodes, by default NetBackup generates media IDs for new volumes based on the last six characters of the barcode. To change this default, you can specify and select specific characters using Media ID generation rules (see "Configuring Media ID Generation Rules" on page 165).

## Adding Volumes - Using the Robot Inventory Update Option

To update the volume database to match the contents of the robotic library, use the following procedure:

1. Insert the volume into the robotic library.
2. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
3. Select the robotic library where you inserted the volume.
4. Click **Actions** > **Inventory Robot**.
5. In the Inventory Type section, select **Update Volume Configuration**.

The update includes the generation of media IDs for new volumes as follows.

If the robot

- Supports barcodes and the volumes have readable barcode labels, the update part of the operation generates media IDs for new volumes based on the last six characters of the barcodes as the default or the specific characters that you specify if you are using Media ID generation rules.
- Does not support barcodes or the volumes do not have readable barcodes, the new media IDs are based on a media ID prefix that you specify.

  See "Updating the Volume Configuration for a Robot" on page 126 for more information on robot inventory and media ID generation rules.

When you use barcode rules, new volumes that are added through a barcode rule are assigned a media type, volume pool, maximum number of mounts (or maximum cleanings), and description.

## Adding Volumes - Using the Actions Menu

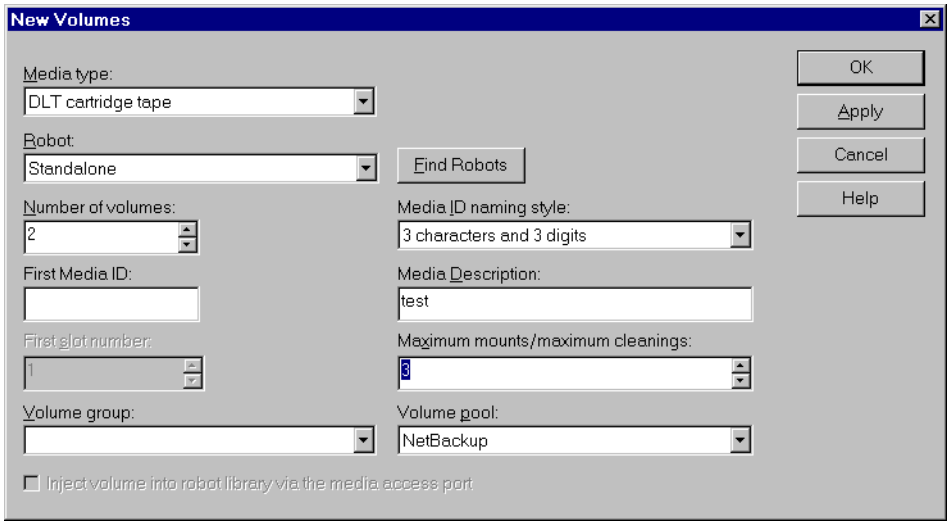
1. If you are adding new volumes to a robotic library, insert them into the proper slots.

2. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

3. Verify that you are adding volumes on the volume database host for the robotic library or a standalone device that will be using the new volumes.

   See "Determining the Volume Database Host for a Device" on page 76.

4. Click **Actions** > **New** > **Volumes**.




5. Specify the properties for the volumes as explained in "Dialog Box Entries for New Volumes" on page 91.

**Caution** Be careful when specifying properties, since you cannot later change properties such as the media ID or media type. To change these properties you need to delete the volumes and add them again.

6. Click **OK** to execute the add. If you selected **Inject volume into robot via the media access port**, an inject prompt appears.

   The volumes pane now shows the new volume information. If the robot has a barcode reader, Media Manager does the following:

- Adds an entry in the volume database, using the specified media ID.
- Reads the barcode of each new volume.
- Adds the barcodes as attributes in the volume database.

**Note** If you are making multiple additions, clicking **Apply** updates the configuration without closing the dialog box or refreshing the display. This allows you to add another volume by modifying the dialog box contents and then clicking **Apply** or **OK**.

## Dialog Box Entries for New Volumes

### Media Type

Specifies the media type for the volume that you are going to add. Click the **arrow** to open a list of the available media types and select from the list.

If you are adding a cleaning tape, choose one of the cleaning tape media types.

**Note** Media Manager on a Windows host does not support optical disk volumes.

### Robot

Specifies the robotic library to which you are adding the volumes.

To specify a different robotic library, click the **arrow** and select a robotic library from the list. The list shows robots on the selected device that can contain volumes of the selected media type.

Select from the list as follows:

- Select one of the robots in the list to add the volumes to that robot.

  The list shows the robot type, number, and control host for any robot, that already has at least one volume in the volume database.

- Select **Standalone** to designate the volumes as not currently associated with a robotic library (such as those cases when using a standalone drive).

To add volumes to a robot that does not appear in the list (for example, a new robot), click **Find Robots**.

## Find Robots

Displays a dialog box where you can select the robot. Select **Find Robots** if the desired robot does not appear in the **Robot** box.

After clicking **OK**, the name of the selected robot appears in the **Robot** box, and is also the robot name that will be in the volume database, for the volumes you are moving.

## Number of Volumes

Specify the number of volumes. For a robotic library, this refers to the number of slots that must be reserved for the new volumes. Depending on the number of volumes you are adding, you must also specify additional information as shown in the following table:

| If You are Adding | You Must also Specify |
|---|---|
| One volume | **Media ID.** |
| More than one volume | **First Media ID** and **Media ID naming style**. |

## Media ID Naming Style

If you are adding more than one volume, click the **arrow** in the **Media ID Naming Style** box to open a list of possible combinations of alphanumeric characters and digits. Then select a style to use in creating the media IDs for this range of new volumes.

**Note** In this guide, ACS, LMF, RSM, TLH, and TLM Media Manager robot types are often grouped together and the term API robot is used to identify these robot types.

Media IDs for an API robot must always match the barcodes. This means that you must get a list of the barcodes prior to adding the volumes. You can obtain this information through a robotic inventory or from the robot vendor's software. For API robots, Media Manager supports barcodes with six or less characters.

## Media ID or First Media ID

In the text box, enter a 1 to 6-character ID for the new volume.

If you are adding one volume, **Media ID** is the ID for the volume.

If you are adding more than one volume, **First Media ID** is the ID for the first volume in the range of volumes. Use the same pattern that you chose in the **Media ID Naming Style** box. Media Manager names the remaining volumes by incrementing the digits.

Media IDs for an API robot must always match the barcodes. This means that you must get a list of the barcodes prior to adding the volumes. You can obtain this information through a robotic inventory or from the robot vendor's software. For API robots, Media Manager supports barcodes with six or less characters.

## Description

Enter a 1 to 25 ASCII character description of the media that you are adding.

## First Slot Number

**Note** You cannot enter slot information for volumes in an API robot. The robot vendor or the operating system software tracks the slot locations for these robot types.

For volumes in a robot, specify the first slot number to be used by the range of volumes that you are adding. Media Manager assigns the remainder of the slot numbers sequentially.

The appendix "Robot Drive and Slot Layouts" on page 309 shows the slot layout for many of the robots that Media Manager supports.

## Maximum Mounts

For volumes intended for backups, specify the maximum number of times that Media Manager is able to mount the volumes. When a volume reaches this mount limit, the volume can be read, but not written.

To help determine the maximum mount limit to use, consult your vendor documentation for information on the expected life of the volume.

**Note** Specify the number 0 to permit an unlimited number of mounts.

## Maximum Cleanings

For a cleaning tape, specify the number of cleanings that can be performed. The number must be greater than zero.

See "Drive Cleaning" on page 277 for information on manual cleaning and cleaning tapes.

## Volume Group

Enter the name of the volume group for the volumes you are adding, or click the **arrow** to select from a list of previously configured volume groups. The following table shows the results if you leave the volume group blank:

| If You Leave the Volume Group Blank for | Media Manager |
|---|---|
| Standalone volumes | Does not assign a volume group. |
| Robotic volumes | Generates a name using the robot number and type.<br>For example, if the robot is a TS8 and has a robot number of 50, the group name will be 00_050_TS8. |

**Note** Do not confuse volume groups with volume pools. Refer to "Volume Pools and Volume Groups" on page 280 for an explanation of the differences.

### Rules for Assigning Volume Groups

- All volumes in a group must be the same media type.

  However, a media type and its corresponding cleaning media type are allowed in the same volume group (for example, DLT and DLT_CLN).
- All volumes in a robotic library *must* belong to a volume group. You cannot add volumes to a robotic library without specifying a group or having Media Manager generate a name.
- The only way to clear a volume group name is to move the volume to standalone and not specify a volume group.
- More than one volume group can share the same location. For example, a robotic library can contain volumes from more than one volume group and you can have more than one standalone volume group.
- All members of a group must be in the same robotic library or be standalone. That is, Media Manager will not let you add a group (or part of a group) to a robotic library, if it already exists in another robotic library.

### Volume Pool

Click the **arrow** and select from the list of volume pools as follows.

| Select | To Make |
|---|---|
| **None** | The volume available to any user or application (cleaning tapes must be in the None pool). |
| **NetBackup** | The volume available only to NetBackup. |
| **DataStore** | The volume available only to DataStore. |
| One of the other volume pools in the list | The volume available to a specific volume pool. Other volume pools appear only if you created them earlier as explained in “Configuring Volume Pools” on page 77. |

### Inject Volume Into Robot via the Media Access Port

Select **Inject volume into robot via the media access port** to insert a single volume into the media access port, so it can be injected into the correct slot in the robot. When you select **Inject volume into robot via the media access port**, insert the volume in the robotic library and Media Manager will add it to its volume configuration.

See “Methods for Injecting Volumes into a Robot” on page 83 for a list of the robot types that determine when **Inject volume into robot via the media access port** is available and more information on using this function.

## Using the Volume Configuration Wizard

Use the Volume Configuration wizard to do the following:

- Inventory your robots.
- Identify cleaning media in your robots.
- Add volumes for standalone drives.
- Update the Media Manager volume database.

After running this wizard to configure media, each media will have a unique media ID in the volume database that is used in NetBackup and Media Manager to track the media.

## Wizard Limitations

The Volume Configuration wizard is only available in NetBackup releases 3.4 or later.

This wizard configures volumes for standalone drives and robots, but does not support the configuring of volumes for the following devices:

- Robots that have more than one type of drive.

  A robot is considered to have more than one type of drive if the media written in any one drive cannot be read and written in every other drive. This includes drives that are different versions of the same family of drives. For example, a robot with a Quantum DLT7000 drive and a Quantum DLT8000 drive is considered to have different drive types.

- API robots. API robots manage their own media.

  Supported API robots on UNIX servers are ACS, LMF, TLH, or TLM Media Manager robot types.

  Supported API robots on Windows servers are ACS, RSM, TLH, or TLM Media Manager robot types.

To configure volumes for these unsupported devices, see “Adding Volumes - Using the Robot Inventory Update Option” on page 89 or “Adding Volumes - Using the Actions Menu” on page 90.

## What To Expect In This Wizard

The following table shows the screens of the wizard and what to expect in each:

| Wizard Screen | What to Expect |
|---|---|
| Welcome | With this wizard you can<br>- Inventory the volumes in a robotic library.<br>- Create new volumes for use in standalone drives. |
| Select Device | You select one of the following:<br>- The robot that you want to inventory.<br>- The type of standalone drive where you want to configure volumes.<br>Robots that have more than one type of drive are not supported. In some cases the wizard is unable to determine if more than one type of drive exists in the robot. In this case, you must specify whether or not the robot has multiple drive types. |

| Wizard Screen | What to Expect |
|---|---|
| Robot Inventory<br>(*Only if a robot was selected*) | You start the inventory which updates the Media Manager volume database. |
| Robot Inventory<br>(*Only if a robot was selected*) | You can view the results of the inventory. |
| Identify Cleaning Media<br>(*Only if a robot was selected*) | To avoid any potential problems in the Media Manager volume database, you select the slots in the robotic library that are known to contain cleaning media. |
| Volumes for Standalone Drives<br>(*Only if a standalone drive was selected*) | You specify the number of volumes to configure for the selected drive type. The Media Manager volume database is updated when you click **Next**. |
| Completion | You can choose to go back and configure more volumes if necessary, or exit the wizard. |

## Before You Start This Wizard

Make sure that you have all media that you want to use in the robotic library before starting the wizard.

## To Start This Wizard

This wizard is available from the list of wizards displayed in the right pane of the **Media and Device Management** window of the NetBackup Administration Console.

Click **Media and Device Management** > **Configure Volumes**.

# Moving Volumes

When you move volumes in or out of a robotic library, you must physically *and* logically move the volume.

When moving volumes from one robotic library to another robotic library, you must move the volumes to standalone as an intermediate step, and then to the new robotic library.

For important background information, see “Moving Volumes” on page 285.

You can move volumes using one of the following methods:

- Moving Volumes - Using the Robot Inventory Update Option

- Moving Volumes - Using the Actions Menu

## Moving Volumes - Using the Robot Inventory Update Option

The robot must have a barcode reader and the volumes must have readable barcodes to use the following procedure. But you can also use this procedure to just move volumes *out* of a robot, even if the volumes do not have barcodes or if the robot does not have a reader.

1. Physically move the volumes to their new location.

2. Click **Actions** > **Inventory Robot** to update the volume database to agree with the contents of the robot.

   See “Updating the Volume Configuration for a Robot” on page 126 for more information.

## Moving Volumes - Using the Actions Menu

If you move a volume to a robotic library that has a barcode reader, Media Manager updates the media database to show the correct barcode for the volume.

When moving volumes from one robotic library to another, you must move the volumes to standalone as an intermediate step and then to the new robotic library.

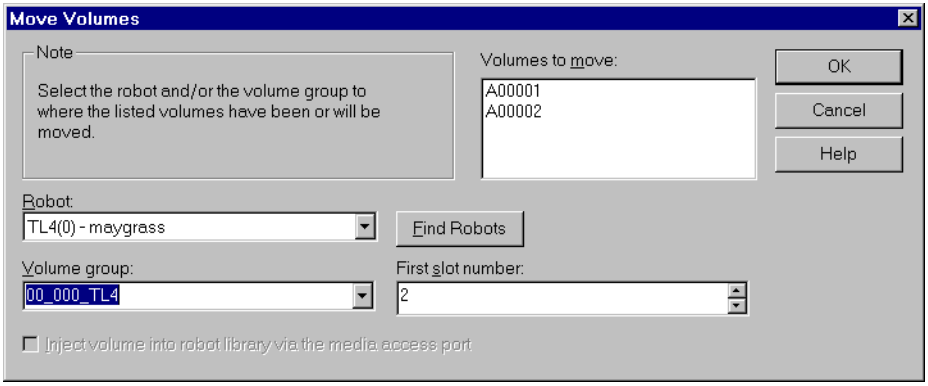
1. Physically move the volumes to their new location.

   You can also use the inject and eject options when moving volumes to or from a robotic library that has an media access port. Inject can be used for single volumes and eject can be used for multiple volumes.

2. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

3. In the volumes pane, select the volumes you want to move.

4. Click **Actions** > **Move**.



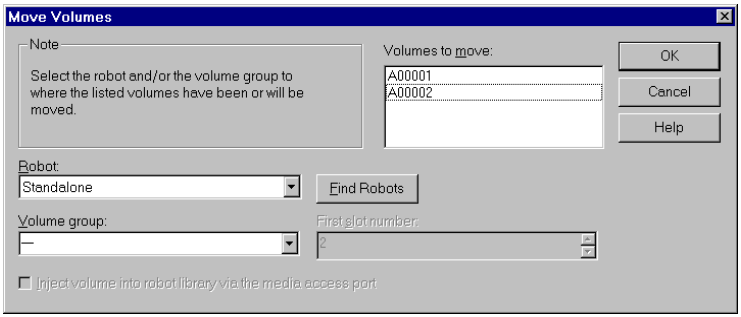

If you selected volumes of different media types or volume residences, a Move Volumes dialog appears for each residence and media type.

For example, if you selected two volumes to move out of a robotic library and two standalone volumes to move in as replacements for these volumes, a dialog box appears for the two full volumes and another dialog box for the two replacement volumes. In this example, you must complete both move dialog boxes to execute the move (complete the move for the volumes that are full first).

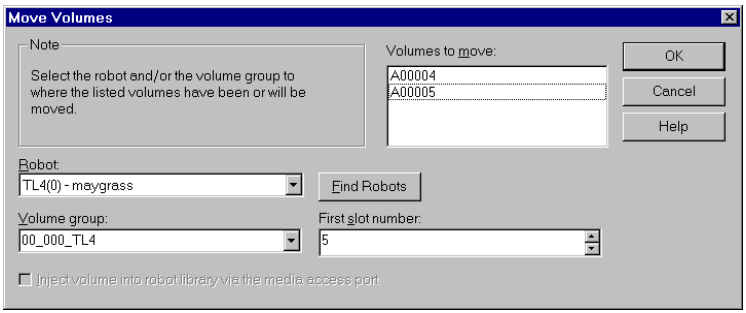
**Note** These multiple Move Volumes dialog boxes may appear on top of each other and need to be repositioned.

The following is an example of a move involving multiple types or residences:

**Step 1. Move volumes to Standalone**




**Step 2. Move volumes to the robot**




5. Specify the properties for the move as explained in “Dialog Box Entries for Move Volumes” on page 100.

6. Click **OK** to execute the move.

   If you selected **Eject volume from robot via the media access port**, an eject dialog appears. See “Ejecting Volumes From Robots (Actions Menu Command)” on page 104 for more information on the eject dialogs.

# Dialog Box Entries for Move Volumes

## Volumes to Move

Shows the Media IDs of the volumes that you selected to move. If you selected only one side of an optical disk platter, only that side appears in the Volumes to Move box, but both sides will be moved.

## Robot

Click the **arrow** to specify the robot where you are moving the volumes. The list shows robots that have volumes in the volume database on the current host and that can use the selected media type.

Select from the list as follows.

| Select | If You Are Moving |
|---|---|
| **Standalone** | Volumes to standalone. |
| One of the robots in the list | Volumes to that robot.<br>The list shows the robot type, number, and control host for any robot that already has at least one volume in the volume database. |

To move volumes to a robotic library that does not appear in the list (for example, a new robotic library), click **Find Robots**.

## Find Robots

Displays a dialog box where you can select the robotic library. Use **Find Robots** if a robotic library does not appear in the Robot box.

The name of the selected robotic library appears in the Robot box, and is also the robotic library name that will be in the volume database, for the volumes you are moving.

## Volume Group

Enter the name of the volume group for the volumes that you are moving, or click the **arrow** to select from a list of previously configured volume groups. The following table shows the results if you leave the volume group blank:

| If you Leave Volume Group Blank for | Media Manager |
|---|---|
| Standalone volumes | Does not assign a volume group. |
| Robotic volumes | Generates a name by using the robot number and type. For example, if the robot is a TS8 and has a robot number of 50, the group name will be 00_050_TS8. |

### Rules for Moving Volumes Between Groups

- You must move volumes to a new volume group or to an existing volume group that has the same type of volumes as you are moving.
- All volumes in a robotic library *must* belong to a volume group. You cannot move volumes into a robotic library without specifying a group or having Media Manager generate a name.
- More than one volume group can share the same location. For example, a robotic library can contain volumes from more than one volume group and you can have more than one standalone volume group.
- All members of a group must be in the same robotic library or be standalone. That is, Media Manager will not let you add a group (or part of a group) to a robotic library, if it already exists in another robotic library.

## First Slot Number

**Note** You cannot enter slot information for volumes in an API robot. The robot vendor or the operating system software tracks the slot locations for these robot types.

For volumes in a robotic library, specify the first slot number to be used in the destination robotic library.

By default, this box shows the slot number that the volume is coming from. Media Manager assigns the remainder of the slot numbers sequentially.

The appendix, “Robot Drive and Slot Layouts” on page 309 shows the slot layout for many of the robots that Media Manager supports.

## Eject Volume From Robot via the Media Access Port

Select **Eject volume from robot via the media access port** to eject one or more selected volumes using the robot’s media access port.

See “Methods for Ejecting Volumes From a Robot” on page 85 for a list of the robot types and cases that determine when **Eject volume from robot via the media access port** is available and more information on using this function.

## Inject Volume Into Robot via the Media Access Port

Select **Inject volume into robot via the media access port** to insert a single selected volume in the robot’s media access port. The robotic library will then move the volume to the correct slot.

See “Methods for Injecting Volumes into a Robot” on page 83 for a list of the robot types and cases that determine when **Inject volume into robot via the media access port** is available and more information on using this function.

# When to Delete Volumes

There may be times when you want to delete volumes. For example, if any of the following situations apply. The volume is

- No longer used and you want to recycle it by relabeling it with a different media ID.
- Unusable because of repeated media errors.
- Past its expiration date or has too many mounts, and you want to replace it with a new volume.
- Lost and you want to clean up the volume database.

Once a volume is deleted, you can discard it or add it back under the same or a different media ID.

Before deleting and reusing or discarding a volume, ensure that it does not have any important data. NetBackup and Storage Migrator volumes have an extra safeguard against accidental deletion. Volumes assigned to either application cannot be deleted while they are still assigned. See “Deassigning Volumes” on page 107.

See “Deassigning Volumes” on page 107.

## Deleting Volumes

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. In the volumes pane, select the volumes that you want to delete.

**Note** You cannot delete any assigned volumes until any application using them deassigns them (see “Deassigning Volumes” on page 107).

3. Click **Edit** > **Delete**.

   A dialog box appears asking you to confirm the action.

**Note** If you selected only one side of a platter, the volume on other side is also deleted.

4. Remove the deleted volumes from the storage device.

## Deleting a Volume Group

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. In the volumes list, look at the Time Assigned column to check if any of the volumes in the group you want to delete are currently assigned.

   If any of the volumes are assigned, you cannot delete the group until these volumes are deassigned by the application (see "Deassigning Volumes" on page 107). Use the "Deleting Volumes" procedure to delete individual volumes that are unassigned.

3. Select a volume group in the tree pane.

4. Click **Edit** > **Delete**.

   A dialog box appears asking you to confirm the deletion.

5. Remove the deleted volumes from the storage device.

# Ejecting Volumes From Robots (Actions Menu Command)

You can eject single or multiple volumes. See "Methods for Ejecting Volumes From a Robot" on page 85 for a list of robot types that determine when this command is available and more information on using this command.

To eject volumes, use the following procedure:

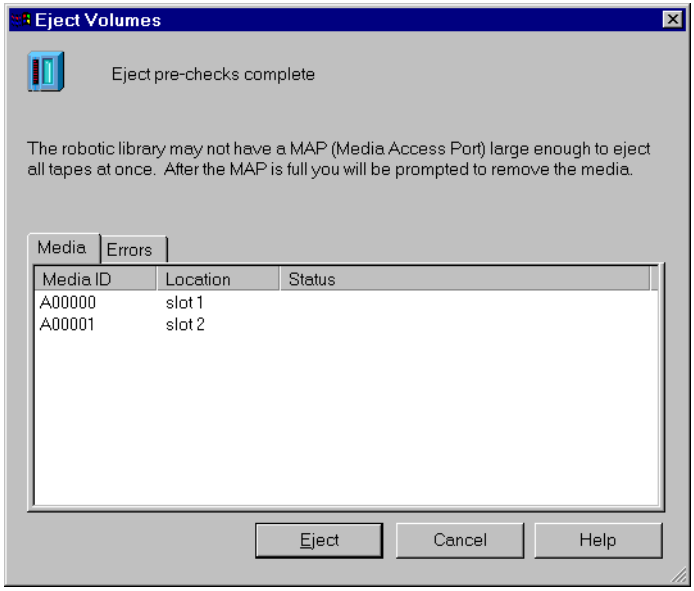
1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. In the volumes pane, select one or more volumes that you want to eject.

3. Click **Actions** > **Eject Volume(s) From Robot**.

### Eject Volumes Dialog Type 1

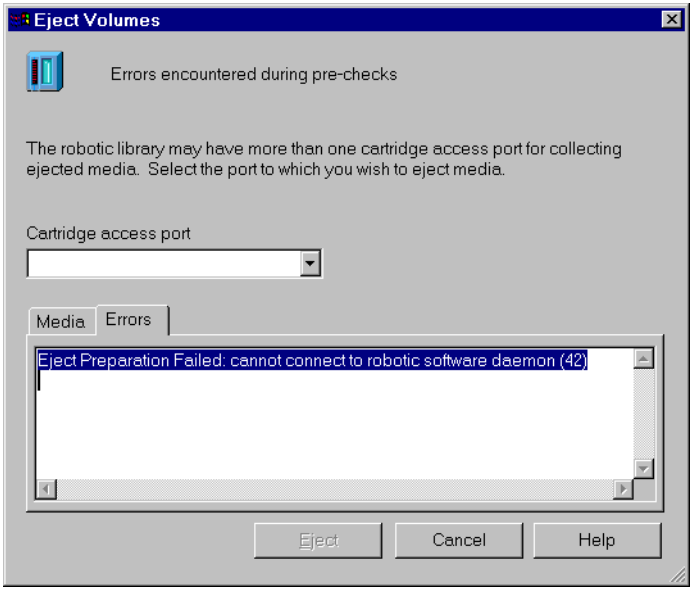
For some robot types, the following dialog is displayed showing the volumes you selected. See "Inject and Eject Functions Available by Robot Type" on page 86 for an explanation of the robot types where this dialog type applies.




1. In normal cases, the **Media** tab shows the volumes that you selected to eject and the **Errors** tab is empty.

   The eject may not be possible because of an error. If an error occurs, the **Errors** tab is opened. The following two classes of errors can occur:

   - For more serious errors, **Eject** will not be available and the error situation must be corrected (see the sample dialog that follows).
   - For other errors, the **Errors** tab shows an explanation of the error. You may continue the eject action (select **Eject**) or cancel (select **Cancel**) depending on the type of error.




2. For ACS and TLM robot types only, you must select the media access port that will be used for the eject.

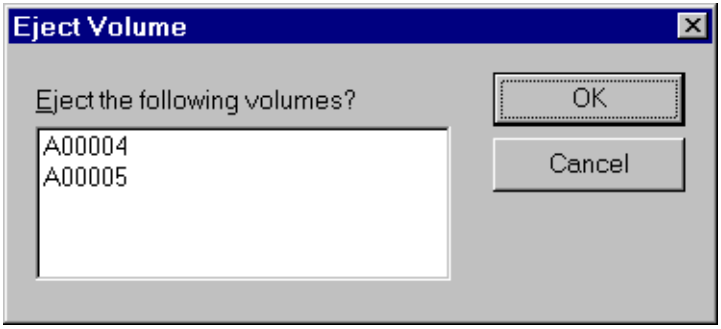
3. Click **Eject** to execute the eject.

   The robotic library may not have a media access port large enough to eject all of the selected volumes. For most robot types, you are prompted to remove the media from the media access port so the eject can continue with the remaining volumes.

## Eject Volumes Dialog Type 2

For some robot types, the following dialog is displayed showing the volumes you selected. See “Inject and Eject Functions Available by Robot Type” on page 86 for an explanation of the robot types where this dialog type applies.

If you selected multiple volumes, operator action is required to remove each volume after each eject (prompt dialogs are used). Click **OK** to execute the eject.




# Deassigning Volumes

An assigned volume is currently assigned for exclusive use by NetBackup or Storage Migrator (but not both). A volume is set to the assigned state when NetBackup or Storage Migrator first starts using it to store data. The time of the assignment appears in the Time Assigned column for the volume in the volumes pane. When a volume is assigned, you cannot delete it or change its volume pool.

A volume remains assigned until the application deassigns it. NetBackup and Storage Migrator deassign a volume only when they no longer need the data.

In the case of a NetBackup volume:

- A regular backup volume is deassigned when the retention period has expired for all the backups on the volume.
- A catalog backup volume is deassigned when you stop using it for catalog backups.

## Determining Which Application is Using a Volume

To determine which application is using the volume, look at the Status column of the Volumes list (see “Volumes Pane” on page 68).

## Deassigning NetBackup Volumes

**Caution** It is recommended that you *do not* manually deassign NetBackup volumes. If you do, be certain that the volumes do not have any important data. If you are uncertain, duplicate the images to another volume.

The procedure is different depending on whether the volume is currently being used for regular backups or for backing up the NetBackup catalogs. See the following two topics for instructions.

## Deassigning NetBackup Regular Backup Volumes

NetBackup deassigns a regular backup volume when the retention periods have expired for all backups on the volume. If you do not need the data and do not want to wait for normal expiration to occur, you can expire the backup by using the `bpexpdate` command on the master server.

This command is located in the *install_path*`\NetBackup\bin\admincmd` directory and has the following format. *install_path* is the directory where NetBackup is installed.

`bpexpdate -d 0 -m` *media id* `[-host` *hname*`]`

Where:

*media id* is the media ID to be expired.

*hname* is the name of the NetBackup media server that has the media ID (the server where media ID was written). Specify *hname* only if your configuration uses master servers and media servers.

The following example assumes there is only one NetBackup server and expires all the backups on media ID ABC001:

*install_path*`\NetBackup\bin\admincmd\bpexpdate -d 0 -m ABC001`

If you use this command to expire the volume, NetBackup stops tracking the backups that are on it and deassigns it. This makes the volume available to be reused, deleted, or its volume pool to be changed. You can manually expire the backups regardless of the volume's prior state (frozen, suspended, and so on).

Expiring the volume does not change anything on the volume itself. When a media is expired, however, you must use the NetBackup import feature before restoring the backups it contains (a restore is possible only if the volume has not been overwritten).

## Deassigning NetBackup Catalog Backup Volumes

Volumes used for backing up the NetBackup catalogs are tracked separately from regular backup volumes. To deassign these volumes (assuming they do not contain any important data), specify None or a different media ID for catalog backups (see the NetBackup system administrator's guide for Windows). Then the media is available to be reassigned or deleted; or its volume pool can be changed.

## Deassigning Storage Migrator Volumes

**Caution** If a volume is assigned to Storage Migrator, you must wait for Storage Migrator to deassign them. Storage Migrator deassigns a volume when the images are no longer required. Attempting to manually deassign Storage Migrator volumes could result in loss of data. For more information on how Storage Migrator manages its volumes, see the Storage Migrator system administrator's guide for UNIX.

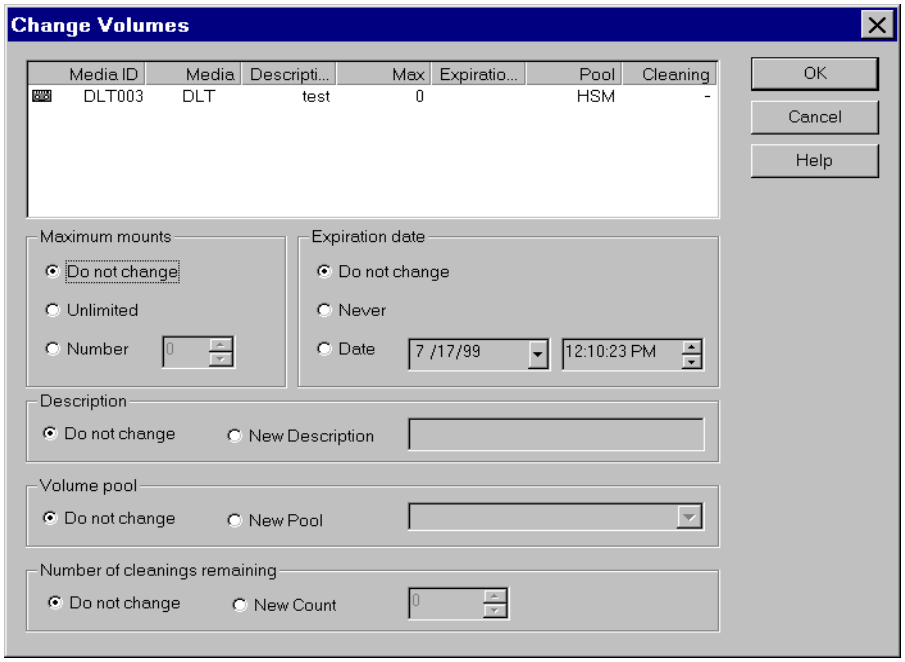
# Changing the Attributes for a Volume

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

2. In the volumes pane, select a volume or volumes.

3. Click **Edit** > **Change**.

   A dialog box appears and shows the media ID and other attributes for each selected volume.



4. In the dialog box, change the attributes as explained in “Dialog Box Entries for Change Volumes” on page 110.

5. Click **OK** to apply the changes to the selected volumes.

# Dialog Box Entries for Change Volumes

## Maximum Mounts

**Note** Does not apply to cleaning tapes.

Controls the number of times that the selected volumes can be mounted. The choices for this entry are as follows.

| Select | Result |
|---|---|
| **Do Not Change** | No changes will be made to Maximum Mounts. |
| **Unlimited** | Allows an unlimited number of mounts. **Unlimited** is the default. |
| **Number** | Sets a specific limit for the number of mounts. When the limit is passed the volume can still be read, but it will not be mounted for a write. Entering 0 (the default) is the same as selecting **Unlimited.** |

To help determine the maximum mount limit to use, consult your vendor documentation for information on the expected life of the volume.

## Expiration Date

**Note** Expiration date does not apply to cleaning tapes. When you add a new volume, there is no default expiration date.

Changes the expiration date for the selected volumes. This date refers to the age of the volume and is the time at which the volume is considered too old to be reliable. When the expiration date has passed, a volume can still be read but will not be mounted for a write.

Do not confuse the expiration date with the retention period for the backup data on the volume. The expiration date that you can set in this dialog box refers only to the physical expiration of the volume and is independent of the backup data written on the volume.

The backup data expiration date is separately managed by the application that is using the volume. In the case of NetBackup, the expiration date for the data is set as the retention level during schedule configuration. The choices for this entry are as follows.

| Select | Result |
|---|---|
| **Do Not Change** | No changes will be made to Expiration Date. |
| **Never** | Sets the expiration date to infinity. |
| **Number** | Sets a specific date and time when you want Media Manager to stop using the volumes. |

## Description

Specifies the media description for the selected volumes. The choices for this entry are as follows.

| Select | Result |
|---|---|
| **Do Not Change** | No changes will be made to the media description. |
| **New Description** | Allows you to enter a short description of how the volumes are being used. |

## Volume Pool

**Note** Does not apply to cleaning tapes.

Specifies the desired volume pool. The choices for this entry are as follows.

| Select | Result |
|---|---|
| **Do Not Change** | No changes will be made to Volume Pool. |
| **New Pool** | Specify a volume pool. Click the **arrow** for a list of all previously configured volume pools. |

### Number of Cleanings Remaining

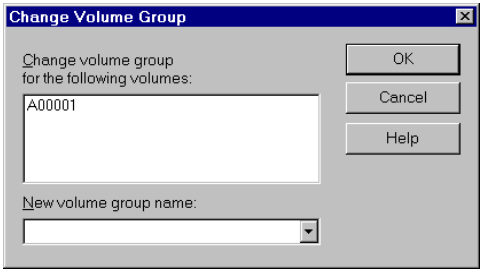
**Note** Applies to cleaning tapes only.

Specifies the number of cleanings that are allowed for the cleaning tape. This number is decremented with each cleaning and when it is zero, Media Manager stops using the tape. At this point, you can change the cleaning tape or increase the number of cleanings allowed. The choices for this entry are as follows.

| Select | Result |
|---|---|
| **Do Not Change** | No changes will be made to Number of Cleanings Remaining. |
| **New Count** | Allows you to change the number of cleanings. |

## Changing the Volume Group of a Volume

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.
2. In the volume list, select the volumes that you want to change the volume group.
3. Click **Actions** > **Change Volume Group**.




4. Enter a name in the **New volume group name** box or click the **arrow** to select a name from the list of volume groups.
5. Click **OK**.

   The name change is reflected in the volume list entry for the selected volumes. If you specified a new volume group, the group appears under **Volume Groups** in the tree pane.

# Replacing Volumes

In general, you should replace volumes that are any of the following:

- Full
- Past their maximum allowable number of mounts
- Too old (past their expiration date)
- Unusable, for example, because of repeated media errors

The following are two possible procedures for replacing volumes, depending on whether you want to reuse the old media ID.

## Replacing a Volume Without Reusing the Media ID

Use this procedure when the volume you are replacing has unexpired images. For example, the volume may be full.

1. Move the volume to another location (see "Moving Volumes" on page 97).

   If the volume is in a robotic library, you may want to take it out of the robotic library and move it to a standalone group.

2. Add a new volume or move an existing volume in as a replacement.

   If you are adding a new volume, specify the same attributes as the old volume, except for media ID. See "Adding New Volumes" on page 87.

3. Physically replace the old volume, but do not delete the volume entry for that Media ID.

## Replacing a Volume and Reusing the Media ID

This procedure lets you reuse the same set of media IDs, which may be convenient in some instances.

**Caution** Reuse a media ID only if all data on the old volume is no longer needed and you are going to recycle it later, or if the volume is damaged and you are going to discard it. Otherwise, you may encounter serious operational problems and possible loss of data.

1. Delete the volume entry and physically remove the old volume from the storage device. See “When to Delete Volumes” on page 103.

2. Physically add the new volume to the storage device.

3. Logically add the new volume to the configuration and specify the same attributes, including the media ID. See “Adding New Volumes” on page 87.

4. Set a new Expiration Date for this volume. See “Changing the Attributes for a Volume” on page 109.

**Note** The number of mounts continues to increment from the value accumulated on the previous volume.

# Recycling Volumes

**Caution** Recycle a volume only if all data on the volume is no longer needed, or if the volume is damaged and unusable. Otherwise, you may encounter serious operational problems and possible loss of data.

## Recycling Volumes Under the Same Media ID

Reusing a NetBackup or Storage Migrator volume without changing its media ID is usually done when the last image expires. If the volume has unexpired NetBackup or Storage Migrator images, see “Deassigning Volumes” on page 107.

## Recycling Volumes Under a New Media ID

Before changing the media ID and reusing a volume, be certain that it does not have any required data.

1. Physically remove the volume from the storage device.

2. If the volume is in a robotic library, move it to standalone. See “Moving Volumes” on page 97.

3. Record the number of mounts and expiration date for the volume.

4. Delete the volume entry. See “When to Delete Volumes” on page 103.

5. Add the new volume entry, and physically add the volume to the storage device. See "Adding New Volumes" on page 87.

6. Set the maximum mounts to a value that is equal or less than the following value that you calculate. Calculate *value* as follows:

   *value* = (number of mounts that the manufacturer recommends) - (value that you recorded in step 3)

   This is necessary because the count will start from zero for the new volume entry.

7. Set the expiration date to the value you recorded in step 3.

# Managing Media in Robots 4

See “Starting Media Management” on page 63 for an explanation of the **Media** window that you use in the procedures of this chapter.

**Note** ACS, LMF, RSM, TLH, and TLM Media Manager robot types are often grouped together, and the term *API robot* is used to identify these robot types.

If you have Backup Exec volumes to manage, see the Backup Exec tape reader option appendix of the NetBackup system administrator’s guide for Windows for more information.

## Robot Management Overview

The following topics explain the available Media Manager features for managing volumes in a robotic library.

- “Robot Inventory Operations (Inventory Robot Dialog)”
- “Checking Barcodes (Rescan / Update Barcodes Dialog)”

### Robot Inventory Operations (Inventory Robot Dialog)

To access the Media Manager robot inventory operations, use the following initial procedure:

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robot you want to inventory.
3. Click **Actions** > **Inventory Robot**.

The following operations are performed using the functions of the Robot Inventory dialog:

- **Show Contents**

Inventories the selected robotic library and generates a report showing which volume (media ID) is in each slot. This operation does not check or change the volume database, but is useful for determining the contents of a robot.

For detailed instructions, see “Showing the Contents of a Robot” on page 119.

- **Compare Contents with Volume Configuration**

  Compares the contents of a robotic library with the contents of the Media Manager volume database. Regardless of the result the volume database is not changed. This is useful for determining if volumes have been physically moved within a robot.

  For detailed instructions, see “Comparing Robot Contents with the Volume Configuration” on page 123.

- **Update Volume Configuration**

  Inventories the selected robotic library and compares the results with the contents of the Media Manager volume database. If there are differences, Media Manager updates the volume database to match the contents of the robot.

  For detailed instructions, see “Updating the Volume Configuration for a Robot” on page 126.

  When you select **Update Volume Configuration**, you also have the following capabilities available from the Update section of the dialog:

  - **Interactive**

    An interactive session allows you to confirm whether to proceed with the update or stop. For instructions, see “Updating the Volume Configuration for a Robot” on page 126.

  - **Empty media access port prior to update**

    Allows you to move volumes in the robot’s media access port into the robot. For instructions, see “Updating the Volume Configuration for a Robot” on page 126.

  - **Options**

    You can specify options for the update. For example, you can assign media-type mappings if the robot type supports these mappings.

    For detailed instructions, see “Changing the Update Options” on page 132.

  - **Barcode Rules**

    A barcode rule specifies criteria for assigning attributes to new robotic volumes. The attributes are assigned according to the actual barcode that is detected by the robotic library.

    For detailed instructions, see “Configuring Barcode Rules” on page 159.

  - **Media ID Generation**

Using media ID generation rules allows you to manage your barcodes when you do not want to use the default rule for media ID generation. You control how Media Manager media IDs are created by defining rules that specify which characters of a barcode on tape will be used in the media ID.

For detailed instructions, see “Configuring Media ID Generation Rules” on page 165.

### Checking Barcodes (Rescan/Update Barcodes Dialog)

In addition to the functions available in the Robot Inventory dialog, you can check the barcodes of volumes in certain robot types and update the volume database to agree with the contents of the robotic library.

For detailed instructions, see “Rescanning and Updating Barcodes for a Robot” on page 169.

## Showing the Contents of a Robot

1. In the dialog box, the **Device host** box contains the name of the host that controls the robot and the **Robot** box contains the selected robot.

   If the server in **Robot’s volume database host** is highlighted in red, the volume database host is not located on the host that you are managing indicating possible conflicts.

   a. To select a robot on a different host, click the **arrow** and select a host from the list.

   b. To select a different robotic library on the same host, click the **arrow** and select from the list of robots on that host.

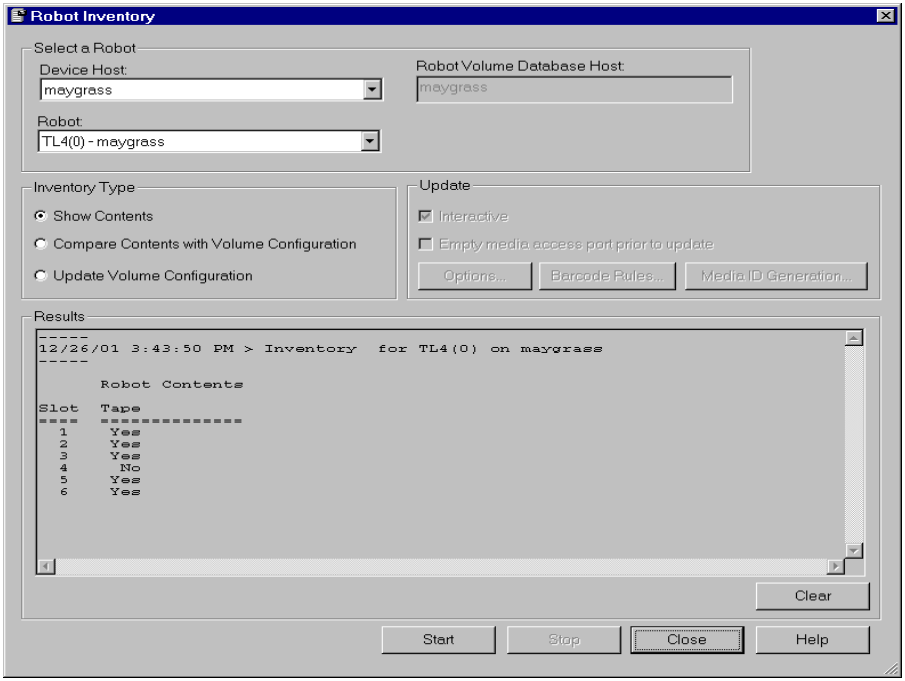
2. In the Inventory Type section, select **Show Contents**.

   To clear any previous display in the Results section, click **Clear**.

3. Click **Start** to start the inventory.

   The inventory report appears in the Results section.

Show Contents Report




For robots (other than API robots) that have a barcode reader, Media Manager obtains the barcode and includes it in the report.

See “Robot Attributes” on page 258 for information on the robots that support barcode readers. These robots can have up to eight characters in the barcodes.

See “Show Contents Reports for API Robots” for information on the reports that are generated for API robots.

## Show Contents Reports for API Robots

The following figure is an example **Show Contents** report for an ACS robot. The reports for other API robots are similar.

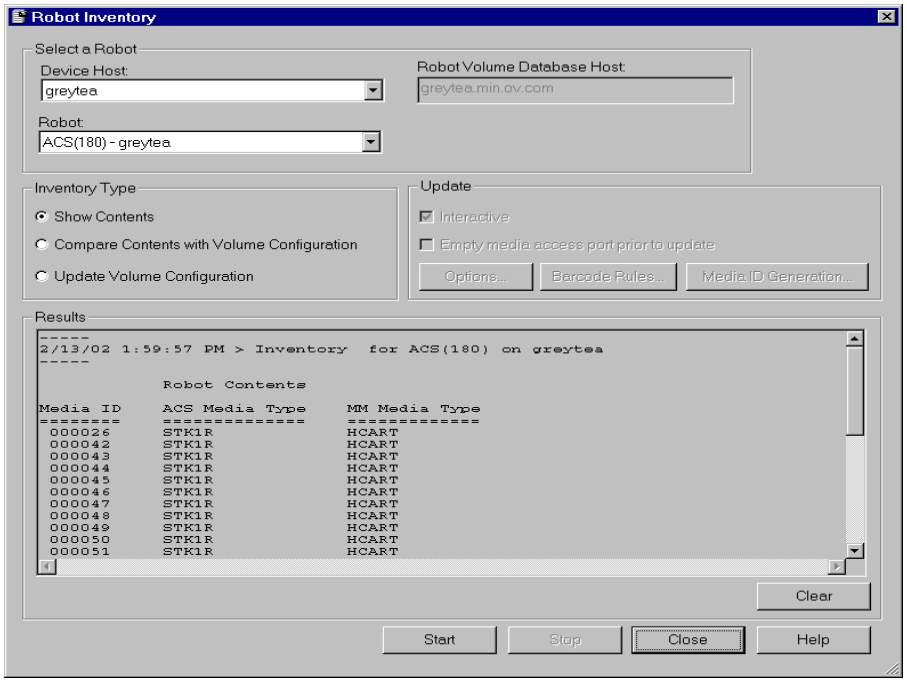
### ACS Robots

Media Manager reports what it receives from ACS library software. The resulting report shows the ACS library software volume ID (in the first column), the ACS media type, and the Media Manager media type.

- The Media Manager media ID corresponds to the ACS library software volume ID.
- The report shows the mapping between the ACS library software media type and the corresponding Media Manager media type (without considering barcode rules).

See “Robot Inventory Operations” on page 363 for more information on how Media Manager reports what it receives from ACS library software.

Show Contents Report (ACS Robot)




## TLH Robots

Media Manager reports what it receives from the Automated Tape Library (ATL) library manager. The resulting report shows the volser (volume serial number, in the first column), the ATL media type, and the Media Manager media type.

- The Media Manager media ID corresponds to the ATL volser.
- The report shows the mapping between the ATL media type and the corresponding Media Manager media type (without considering barcode rules).

  See the TLH appendix, “IBM Automated Tape Library (ATL)” on page 379 for more information on how Media Manager reports what it receives from the IBM ATL library manager.

## TLM Robots

Media Manager reports what it receives from DAS (Distributed AML Server). The resulting report shows the volser (volume serial number, in the first column), the DAS media type, and the Media Manager media type.

- The Media Manager media ID corresponds to the DAS volser.
- The report shows the mapping between the DAS media type and the corresponding Media Manager media type (without considering barcode rules).

  See the TLM appendix, "ADIC Distributed AML Server (DAS)" on page 391 for more information on how Media Manager reports what it receives from DAS.

## LMF Robots

Media Manager reports what it receives from the Library Management Facility (LMF). The resulting report shows the volser (volume serial number, in the first column), the LMF media type, and the Media Manager media type.

- The Media Manager media ID corresponds to the LMF volser.
- The report shows the mapping between the LMF media type and the corresponding Media Manager media type (without considering barcode rules).

  See the LMF appendix in the NetBackup DataCenter Media Manager system administrator's guide for UNIX for more information on how Media Manager reports what it receives from LMF.

## RSM Robots

Media Manager reports what it receives from the Windows 2000 Removable Storage service. The resulting report shows a list of media (by media name) obtained from the service along with their RSM and Media Manager media types.

See the RSM appendix, "Microsoft Removable Storage Manager (RSM)" on page 371 for more information on how Media Manager translates what it receives from the Removable Storage service.

# Comparing Robot Contents with the Volume Configuration

1. In the dialog box, the **Device host** box contains the name of the host that controls the robotic library and the **Robot** box contains the selected robot.

   If the server in **Robot's volume database host** is highlighted in red, the volume database host is not located on the host that you are managing indicating possible conflicts.

   a. To select a robotic library on a different host, click the **arrow** and select a host from the list.

   b. To select a different robot on the same host, click the **arrow** and select from the list of robots on that host.

2. In the Inventory Type section, select **Compare Contents with Volume Configuration**.

   To clear any previous display in the Results section, click **Clear**.

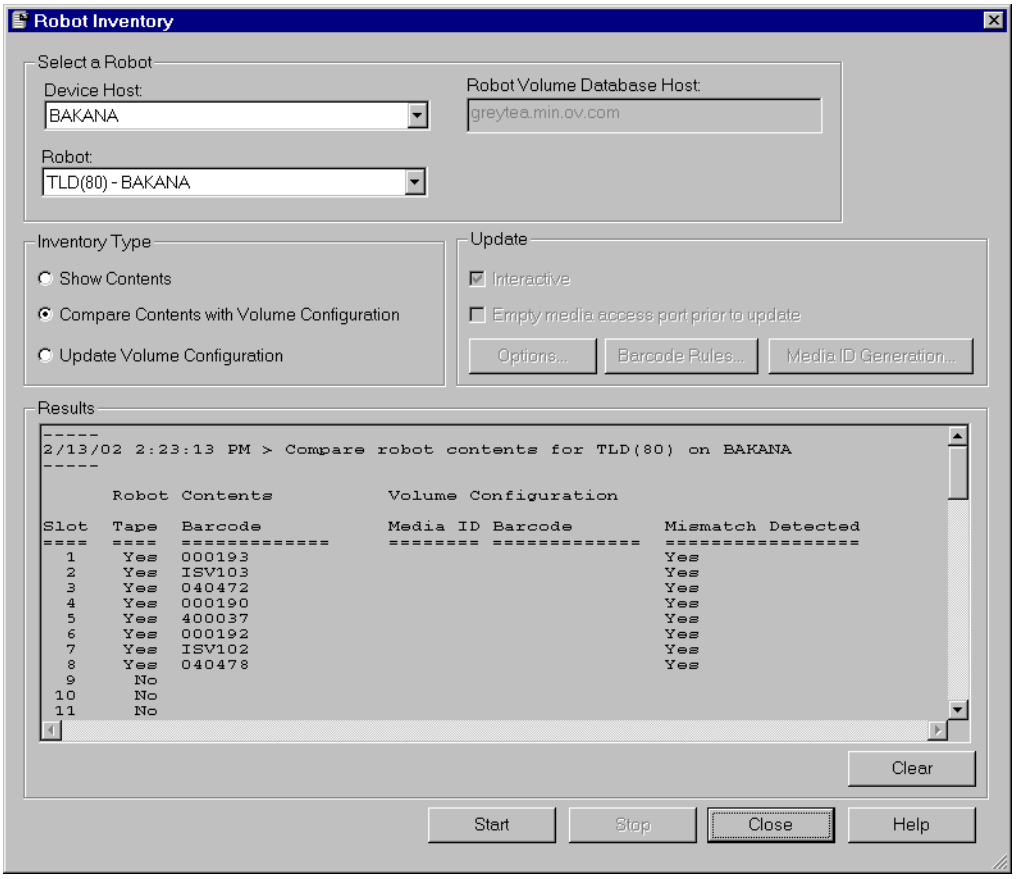
3. Click **Start** to start the compare.

   Media Manager requests an inventory from the selected robotic library and compares the results with the contents of the volume database.

   The Results section of the dialog box shows any discrepancies as follows:

   - If the robot can read barcodes (see "Robot Attributes" on page 258), the report includes barcode information. Media Manager determines if the barcodes in the robot match those in the volume database. The following figure shows an example report.

Compare Contents Report (Non-API Robot That Can Read Barcodes)

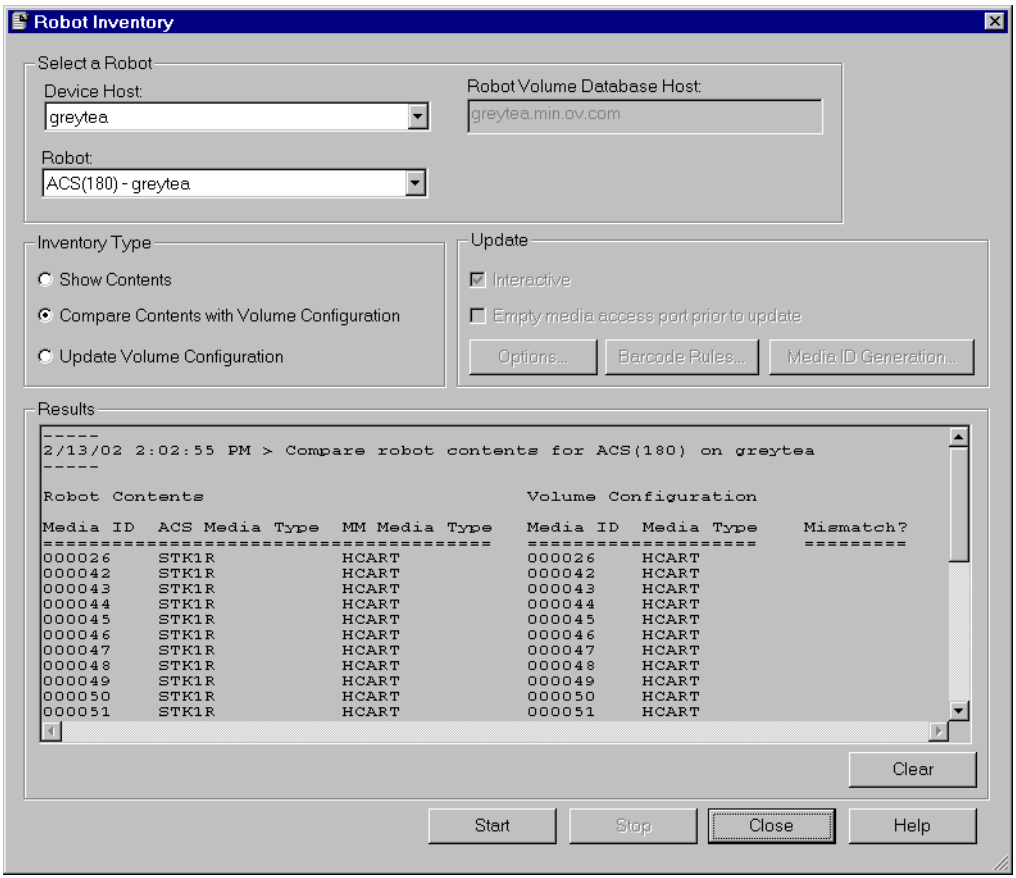



- The following figure shows an example report for an ACS robot. For ACS robots, Media Manager determines whether the media ID and media type in the Media Manager volume database matches the ACS library software database.

  Reports for the other API robots are similar to an ACS robot report.

  See “Robot Inventory Operations” on page 363 for more information on what Media Manager receives from ACS library software.

Compare Contents Report (ACS Robot)




- If the robotic library cannot read barcodes, Media Manager verifies only whether the volume database correctly shows whether a slot contains a volume.

**4.** If the report shows that the volume database does not match the contents of the robotic library, do one of the following:

- Physically move the volume.
- Correct the condition by using **Actions** > **Move** or by updating the volume configuration as explained in “Updating the Volume Configuration for a Robot” on page 126.

# Updating the Volume Configuration for a Robot

The following topics explain how to use the Update Volume Configuration feature:

- When to Use Update Volume Configuration
- When Not to Use Update Volume Configuration
- To Update the Volume Configuration for a Robot
- Changing the Update Options
- Update Options
- Examples of Updating a Volume Configuration

These topics explain how to inventory a robotic library, and optionally update the volume database to match the contents of the robotic library. In these topics, *insert* means the volume is placed physically in the robot without using an add or move option to update the volume database, and *remove* means to take a volume out of a robot without using a move or eject command.

If you have inserted new volumes, the configuration update includes creation of media IDs (based on barcodes or a prefix that you specify).

When you use barcode rules, a new volume that is added by using a barcode rule is also assigned a media type, volume pool, maximum number of mounts (or maximum number of cleanings), and description. For instructions on setting up barcode rules see "Configuring Barcode Rules" on page 159.

## When to Use Update Volume Configuration

You can use this operation on robots that Media Manager supports, regardless of whether they can read barcodes or not. The Update Volume Configuration operation is useful for updating the volume's configuration information that is stored in the Media Manager volume database, after performing one of the following tasks:

- Removing existing volumes from a robotic library.

  The operation updates the residence information in the volume database, to show the new standalone location. You specify the volume group to use.

- Inserting new volumes into a robotic library.

  If the robotic library supports barcodes and the volume has readable barcode labels, the operation creates new volume entries in the volume database with media IDs that are based on the last six characters of the barcodes as the default or the specific characters that you specify, if you are using media ID generation rules (see "Configuring Media ID Generation Rules" on page 165).

If the robotic library does not support barcodes or the volumes do not have readable barcodes, the new media IDs are based on a media ID prefix that you specify.

For more information, see “Adding New Volumes” on page 87.

If the robotic library supports barcodes and the volume has a readable barcode, you can use this operation in the following cases. If you are

- Inserting existing volumes into a robotic library.

  The operation updates the residence information in the volume database, to show the new robotic location. This includes the robot host, robot type, robot number, and slot location. You specify the volume group to use.

- Physically moving existing volumes within a robotic library.

  The operation updates the residence information in the volume database, to show the new slot location.

- Physically moving volumes between robotic and standalone.

  The operation updates the residence information in the volume database, to show the new robotic or standalone location.

- Physically moving volumes from one robotic library to another.

  If the volumes for the robots are in the same volume database, you must perform two separate updates as explained in “Example 6: Moving existing volumes between robots” on page 156.

  These updates move the volumes to standalone, as an intermediate step, and then to the new robot. Otherwise, Media Manager is unable to update the entries and you receive an “Update failed” error.

## When Not to Use Update Volume Configuration

The following situations require a move operation, rather than using Update Volume Configuration:

- After inserting existing volumes into a robotic library, and the volume does not have readable barcodes or the robotic library does not support barcodes.

  Without barcodes, Media Manager cannot identify the volume and assigns a new media ID that uses the media ID prefix you select for the update. A volume entry for the old media ID remains in the volume database. An error may occur later, if an application attempts to use the new or old volume.

- After physically moving existing volumes that do not have readable barcodes or if the volumes are in a robot that does not support barcodes.

If you swap volumes between two different locations, Media Manager is unable to detect the change and cannot update the volume database.

If you remove a volume from a slot and place it in an empty slot, Media Manager assumes it is a new volume. Media Manager then adds a new logical volume entry with a generated media ID at its new robotic location. The volume entry for the old media ID is moved to standalone. An error may occur if an application attempts to use the volume entry with the new or old media ID. See “Example 7: Adding existing volumes when barcodes are not used” on page 157.

## To Update the Volume Configuration for a Robot

**Note** Before adding a volume to the Media Manager volume database, you *must* be managing the correct server or the volume will not be found when it is requested.

1. In the dialog box, the **Device host** box contains the name of the host that controls the robotic library and the **Robot** box contains the selected robotic library.

   If the server in **Robot’s volume database host** is highlighted in red, the volume database host is not located on the host that you are managing indicating possible conflicts.

   a. To select a robotic library on a different host, click the **arrow** and select a host from the list.

   b. To select a different robot on the same host, click the **arrow** and select from the list of robots on that host.

2. Check the barcode capabilities of the robotic library and the volume by performing the procedure “Comparing Robot Contents with the Volume Configuration” on page 123.

   Determine if the following are true:

   - The robotic library supports barcodes.
   - Any new volume that was inserted has readable barcodes.

3. If the robotic library does *not* support barcodes or the volume does *not* have readable barcodes, consider the following important points:

   - Save the results of the verify, as it may be useful in deciding on a media ID prefix if you use Update Options to assign a prefix later in this procedure.
   - For API robots, assign media-type mappings. If you do not, default media types are used.

See “Media Type Mappings (for API robots)” on page 142 for instructions.

For ACS robots, media-type mappings are explained in the appendix, “Automated Cartridge System (ACS)” on page 355.

For RSM robots, media-type mappings are explained in the appendix, “Microsoft Removable Storage Manager (RSM)” on page 371.

For TLH robots, media-type mappings are explained in the appendix, “IBM Automated Tape Library (ATL)” on page 379.

For TLM robots, media-type mappings are explained in the appendix, “ADIC Distributed AML Server (DAS)” on page 391.

For information on LMF media type mappings, see the NetBackup DataCenter Media Manager system administrator’s guide for UNIX.

4. Create barcode rules (optional).

   Barcode rules are used for updating the volume database for a volume that has been inserted into the robotic library.

   See “Configuring Barcode Rules” on page 159 for more information.

5. Create media ID generation rules (optional).

   Media ID generation rules allow you to manage your barcodes when you do not want to use the default rules for media ID generation. You control how Media Manager media IDs are created by defining rules that specify which characters of a barcode on tape will be used in the media ID.

   See “Configuring Media ID Generation Rules” on page 165 for more information.

6. In the Inventory Type section, select **Update Volume Configuration**.

   To clear any previous display in the Results section, click **Clear**.

7. If you want the session to be interactive, select **Interactive** (**Interactive** set is the default). If you do not want the session to be interactive, clear **Interactive**.

   During an interactive session, Media Manager lists the recommended changes and lets you confirm whether to proceed with the update.

   If the session is not interactive, the changes are made without prompting you for confirmation. This allows you to preview and ensure that all new media have barcodes before they are added to the Media Manager volume database.

8. Select **Empty media access port prior to update** to move (inject) one or more volumes in the robot’s media access port into the robotic library before initiating the update.

Any volumes to be injected must be in the media access port before the operation begins. If **Empty media access port prior to update** is selected and there are no volumes in the port, you are *not* prompted to place volumes in the media access port and the update operation continues.

Check "Methods for Injecting Volumes into a Robot" on page 83 for a list of robot types that determine when **Empty media access port prior to update** is available and more information on using this function.

**Note** If you have recently ejected volumes from the robot with the eject or move volume Media Manager commands, remove the volumes from the media access ports before performing an inject with **Empty media access port prior to update** selected. Otherwise, if the entry and exit ports are the same, the volumes that you ejected could be injected back into the robotic library.

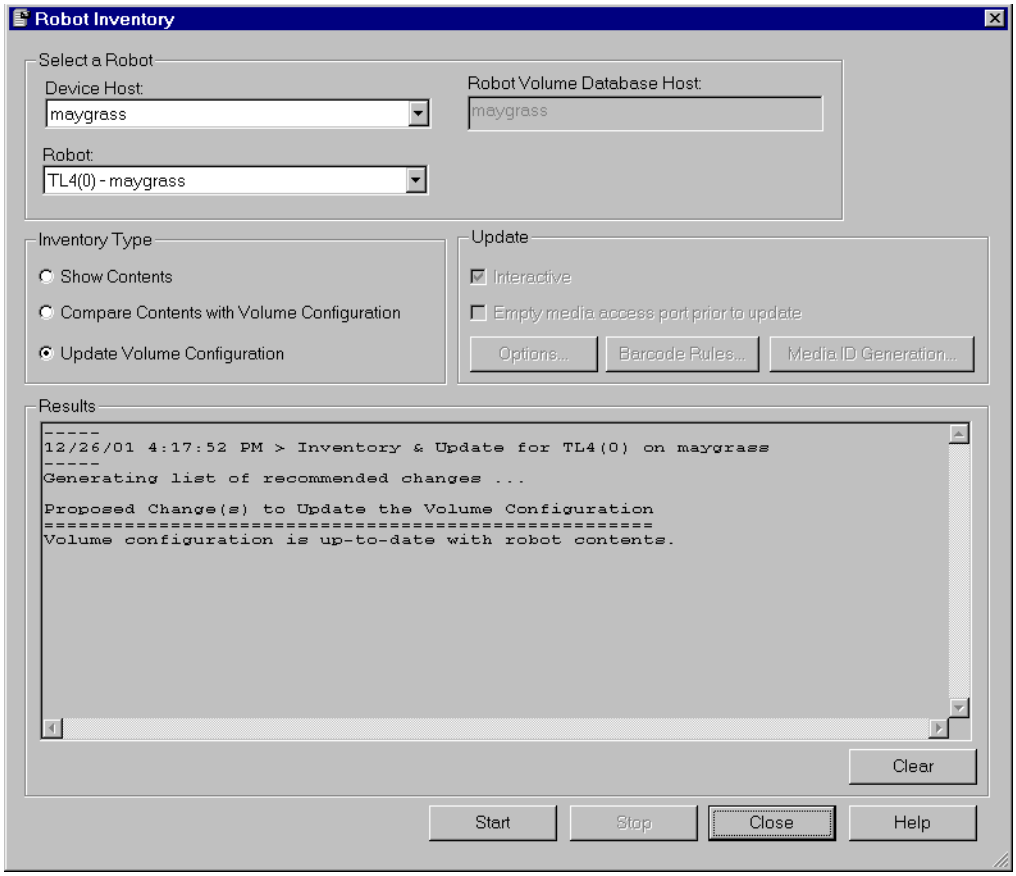
**9.** To view or change the settings for the update, click **Options**. See "Changing the Update Options" on page 132 for instructions.

**10.** Click **Start** to start the update.

The following figure shows example results for a robotic library that is not an API robot.

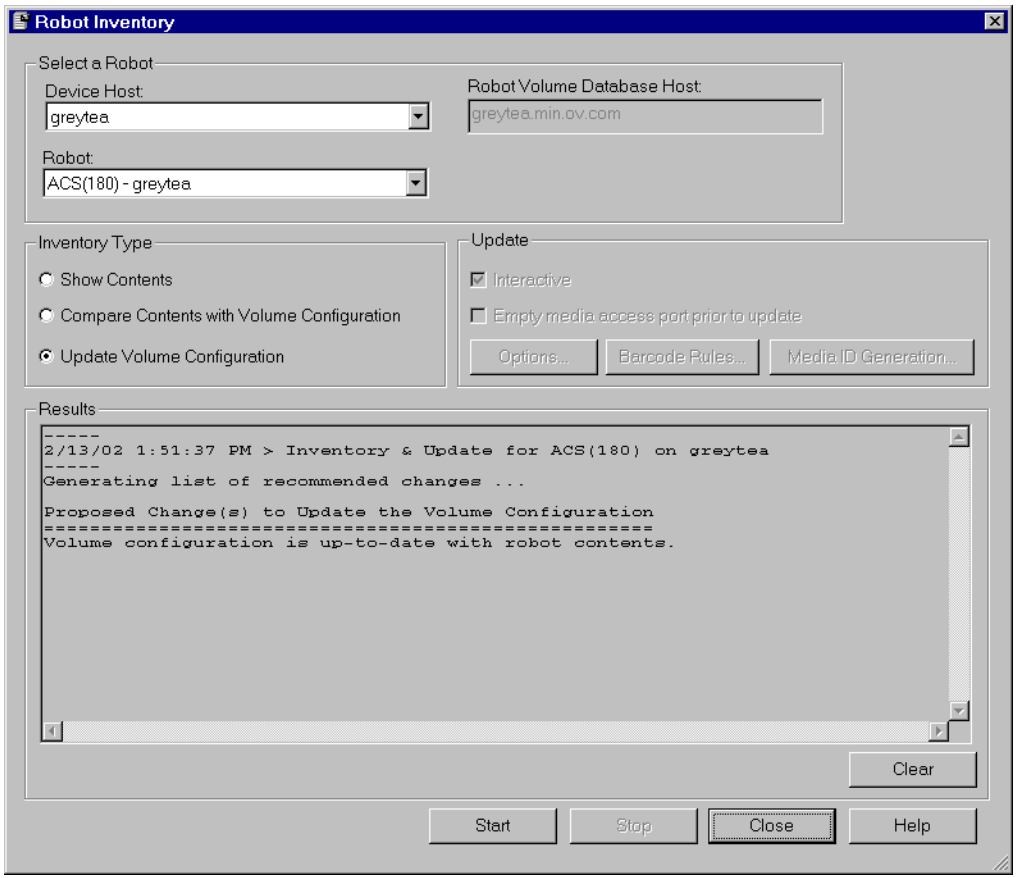
**Note** For NetBackup BusinesServer the dialog is similar, but you cannot change the device host.

Update Volume Configuration Report (Not an API Robot)




The following figure shows an example report for an API robot (the report is similar for other API robots).

Update Volume Configuration Report (API Robot)

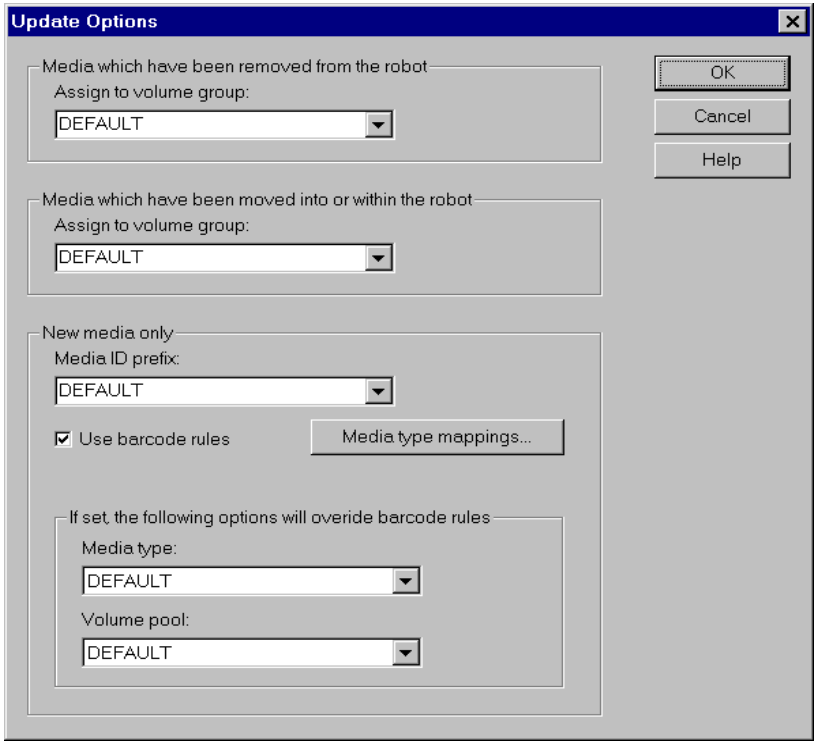



## Changing the Update Options

1. In the Robot Inventory dialog box, click **Update Volume Configuration** > **Options**.

   See “To Update the Volume Configuration for a Robot” on page 128 for the complete procedure.

   The Update Options dialog box appears.




2. Specify update options properties, as explained in “Update Options” on page 133.

3. When you are satisfied with your settings, click **OK** to return to the Robot Inventory dialog box.

4. Click **Start** to initiate the update.

## Update Options

### Media Which Have Been Removed From the Robot Assign to Volume Group

Specifies the volume group that Media Manager assigns to volumes that you have removed from the robot.

If you leave the volume group at DEFAULT and there is an existing group with a compatible residence for the volume, the volume is added to that group. A compatible residence means the same robot type, robot number, robot host, and media type (DLT and DLT_CLN are considered equivalent in this regard). If a suitable volume group does not currently exist, Media Manager generates a new volume group name.

To change from DEFAULT, do one of the following:

- Enter a volume group name in the box.
- Click the **arrow** and select from the list of choices for the volume group. This opens a list of choices for the volume group that Media Manager can assign to volumes that you have removed from the robotic library. The list always has the following choices.

| Select | To |
|---|---|
| DEFAULT | Let Media Manager choose the volume group. |
| AUTO-GENERATE | Automatically generate a new volume group. |
| NO VOLUME GROUP | Not assign a volume group. |

The other available volume group choices in the list depend on the Media Type selection (see "Media Type (for robots that are not API robots)" on page 137).

| If Media Type is | The List Shows Existing Volume Groups that are Valid for |
|---|---|
| DEFAULT | The robot's default media type (see "Media Type When Not Using Barcode Rules" on page 138). |
| Not DEFAULT | The specified media type. |

## Media Which Have Been Moved Into or Within the Robot Assign to Volume Group

Specifies the volume group that Media Manager assigns to volumes that you have inserted into the robot (or moved to a new location within the robot).

If you leave the volume group at DEFAULT and there is an existing group with a compatible residence for the volume, the volume is added to that group. A compatible residence means the same robot type, robot number, robot host, and media type (DLT and DLT_CLN are considered equivalent in this regard). If a suitable volume group does not currently exist, Media Manager generates a new volume group name.

To change from DEFAULT, do one of the following:

- Enter a group name in the box.
- Click the **arrow** and select from the list of choices for the volume group. This opens a list of choices for the volume group that Media Manager can assign to volumes that you have moved into the robotic library. The list always has the following choices.

| Select | To |
|---|---|
| DEFAULT | Let Media Manager choose the volume group. |
| AUTO-GENERATE | Automatically generate a new volume group. |

**Note** If the robotic library contains multiple media types, it is better to leave the volume group setting as DEFAULT. If you specify a volume group and volumes of different media types have been moved into or within the robotic library since the last update, the new update will fail. This is because volumes of differing media types cannot have the same volume group.

The other available volume group choices depend on the Media Type selection (see "Media Type (for robots that are not API robots)" on page 137).

| If Media Type is | The List Shows Existing Volume Groups that are Valid for |
|---|---|
| DEFAULT | The robot's default media type (see "Media Type When Not Using Barcode Rules" on page 138). |
| Not DEFAULT | The specified media type. |

## Media ID Prefix

Specify a Media ID prefix, if either of the following conditions exist:

- The robotic library does not support barcodes.
- The volume that was inserted does not have readable barcodes.

If the robotic library supports barcodes and the volume has readable barcodes, a prefix is not required because Media Manager creates the media ID in one of the following ways. This is true whether or not a barcode rule is used.

- As the default, Media Manager assigns the last six characters of the barcode as the media ID.
- You specify specific characters for the media ID using Media ID generation rules. See "Configuring Media ID Generation Rules" on page 165.

If you want media IDs for media generated based on a specific prefix, you can specify a media ID prefix by entering a prefix or picking a prefix from a list as follows.

### Entering a New Value For a Prefix

The prefix is used only for the current operation. It is *not* added to the `vm.conf` file.

Enter a new value for the prefix in the text box. You can specify a prefix having from one to five alpha-numeric characters. Media Manager assigns the remaining numeric characters. For example, if the prefix is NETB, the media IDs are: NETB00, NETB01, and so on.

### Picking A Prefix From the List

Click the **arrow** and select a choice for the prefix.

The list will be similar to the following example list. The first two items in this example list are configured media ID prefixes. These prefixes are based on `MEDIA_ID_PREFIX` entries that were added to the `vm.conf` file on the host where you are running NetBackup administration.

```
NV
NETB
DEFAULT
NOT USED
```

See "Media Manager Configuration File (vm.conf)" on page 297 for an overview of the `vm.conf` file.

`DEFAULT` always appears in the selection list. If you select `DEFAULT`, Media Manager checks the `vm.conf` file for `MEDIA_ID_PREFIX` entries, as shown in the following table:

| If the vm.conf File | Media Manager |
|---|---|
| Contains prefix entries | Assigns the last one as the default prefix. |
| Does *not* contain prefix entries | Uses the letter A, as the default prefix. |

`NOT USED` also always appears in the selection list. If you select `NOT USED`, the operation succeeds only if the robotic library supports barcodes and the volume has readable barcodes. Otherwise, Media Manager is unable to assign new media IDs and the operation fails. `NOT USED` may be useful if you are using barcoded volumes and want updates to fail when unreadable or missing barcodes are encountered.

## Use Barcode Rules

This check box specifies whether you are using barcode rules or not. The resulting actions are shown in the following table:

| If You | Media Manager |
|---|---|
| Select **Use barcode rules** | Searches existing barcode rules and applies the rules to new volumes that have been inserted into a robot. |
| Clear **Use barcode rules** | Ignores barcode rules. |

## Media Type (for robots that are not API robots)

**Note** See "Media Type Mappings (for API robots)" on page 142 for instructions for specifying Media Type for API robots.

Specifies the media type for the volume that is being added. Click the **arrow** to select from the list of media types that are valid for this robotic library.

The following is an sample list for a TLD robotic library:

```
DEFAULT
1/2″ cartridge tape
1/2″ cartridge tape 2
1/2″ cartridge tape 3
8MM cartridge tape
8MM cartridge tape 2
8MM cartridge tape 3
DLT cartridge tape
DLT cartridge tape 2
DLT cartridge tape 3
DTF cartridge tape
1/2″ cleaning tape
1/2″ cleaning tape 2
1/2″ cleaning tape 3
8MM cleaning tape
8MM cleaning tape 2
```

```
8MM cleaning tape 3
DLT cleaning tape
DLT cleaning tape 2
DLT cleaning tape 3
DTF cleaning tape
```

The procedure you follow to select a media type depends on whether you are using barcode rules, as follows:

| If You are | See the Instructions in |
|---|---|
| Not using barcode rules | "Media Type When Not Using Barcode Rules" on page 138. |
| Using barcode rules | "Media Type When Using Barcode Rules" on page 139. |

### Media Type When Not Using Barcode Rules

If you are not using barcode rules and you want to use the media type shown in first column of the following table, select the type as shown in the second column.

| Media Type | Select |
|---|---|
| The default media type | **DEFAULT**.<br>If *all* of the drives in the robotic library (configured on this robot host) are<br>- The same type and at least one drive is configured on the robot control host, then Media Manager uses the media type for the drives.<br>- *Not* the same type, then Media Manager uses the default media type for the robotic library. |
| A media type other than the default media type | A media type from the list.<br>Selecting from the list is required in either of the following cases:<br>- The robotic library supports multiple media types and you do not want the default media type.<br>- Drives are not configured on the robot control host and the drives are not the default media type for the robot. |

The following table shows the default media types for robots when drives are not configured on the robot control host:

Default Media Types for Robots (Not API robots)

| Robot Type | Default Media Type |
|---|---|
| Optical Disk Library (ODL) | Rewritable optical disk |
| Tape Library 4MM (TL4) | 4MM cartridge tape |
| Tape Library 8MM (TL8) | 8MM cartridge tape<br>Also supports 8MM cartridge tape 2 and 8MM cartridge tape 3. |
| Tape Library DLT (TLD) | DLT cartridge tape<br>Also supports DLT cartridge tape 2, DLT cartridge tape 3, 1/2-inch cartridge tape, 1/2-inch cartridge tape 2, 1/2-inch cartridge tape 3, 8MM cartridge tape, 8MM cartridge tape 2, 8MM cartridge tape 3, and DTF cartridge tape. |
| Tape Stacker 8MM (TS8) | 8MM cartridge tape<br>Also supports 8MM cartridge tape 2 and 8MM cartridge tape 3. |
| Tape Stacker DLT (TSD) | DLT cartridge tape<br>Also supports DLT cartridge tape 2 and DLT cartridge tape 3. |
| Tape Stacker Half-inch (TSH) | 1/2-inch cartridge<br>Also supports 1/2-inch cartridge tape 2 and 1/2-inch cartridge tape 3. |

### Media Type When Using Barcode Rules

If you are using barcode rules and you want to

- Let the barcode rule determine the media type that is assigned, select DEFAULT as the media type.

For example, assume you want to add DLT and half-inch cartridges to a TLD robot with a single update operation. First create separate rules for DLT and half-inch cartridges and select the specific media type in the barcode rules. Then, select DEFAULT in the Update Options. Media Manager now uses the media type in the barcode rules when it does the update.

**Note** If you choose DEFAULT here and in the barcode rule, Media Manager assigns the default media type for the robotic library.

- Use a media type other than the default, select a media type from the list.

  For example, to use the same rule to add DLT or half-inch cartridges to a TLD robot, select a specific media type in Update Options and select DEFAULT for the barcode rule media type when you add the barcode rule. Now you can perform one update for DLT and another for half-inch cartridge and use the same rule for both.

  The update media type always overrides the rule. If you specify any value other than DEFAULT in Update Options, the media type for the rule must be the same type or be DEFAULT in order to obtain a match (except for cleaning media).

  The following table shows the results for various combinations of update and barcode rule media types:

| Update Options Media Type | Barcode Rule Media Type | Rule Used | Media Type in Volume Configuration |
|---|---|---|---|
| DLT | DEFAULT | Yes | DLT |
| HCART | DEFAULT | Yes | HCART |
| DLT | DLT | Yes | DLT |
| DLT | DLT_CLN | Yes | DLT_CLN |
| DLT_CLN | DLT | No | DLT_CLN |
| DLT_CLN | DLT_CLN | Yes | DLT_CLN |
| DLT_CLN | DEFAULT | Yes | DLT_CLN |
| DLT | 8MM, 4MM, and so on | No | DLT |
| DEFAULT | DEFAULT | Yes | DLT |
| DEFAULT | DLT | Yes | DLT |

| Update Options Media Type | Barcode Rule Media Type | Rule Used | Media Type in Volume Configuration |
|---|---|---|---|
| DEFAULT | DLT_CLN | Yes | DLT_CLN |
| DEFAULT | 8MM, 4MM, and so on | No | Depends on robot type. |

The fourth barcode rule in the table shows Media Manager's ability to add cleaning cartridges with regular volumes when you execute an update for a robotic library.

If the volumes that you insert include a cleaning tape, Media Manager adds the volumes correctly, if the following are true:

- The update options media type is for the regular media (DLT in this example).
- The barcode on the volume matches a barcode tag and the barcode rule media type is the cleaning media (DLT_CLN in this example).

Also see "Example 5: Add cleaning tapes to a robot" on page 155.

The sixth and seventh rules in the table illustrate how to add only a cleaning tape. In the sixth rule, you specify the cleaning media type in Update Options and in the barcode rule. In the seventh rule, you specify the cleaning media in Update Options and choose default when you configure the barcode rule.

## Volume Pool

Specifies the volume pool. Click the **arrow** and select from the list of volume pools to which you can assign new volumes.

The list will be similar to the following example:

```
DEFAULT
None
NetBackup
DataStore
a_pool
```

```
b_pool
```

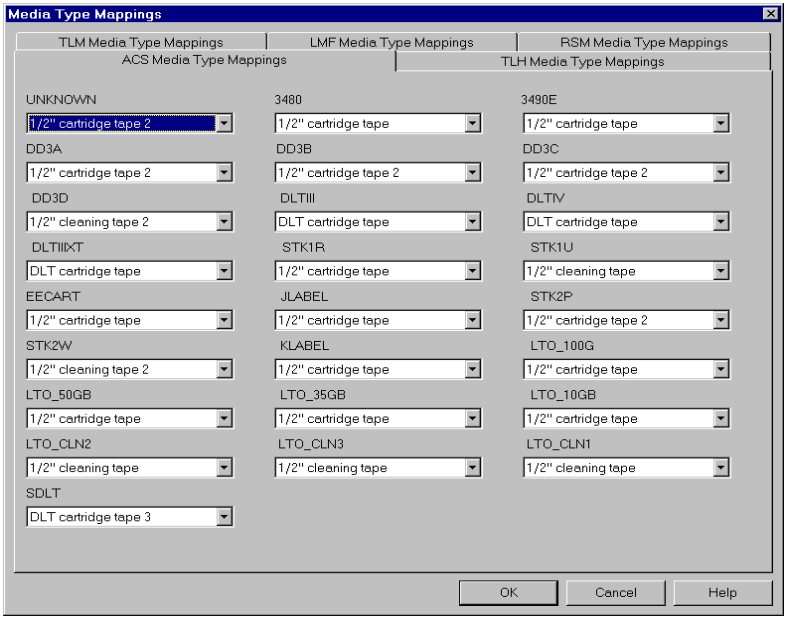
| If You are *Using* Barcode Rules and You Want to | Select |
|---|---|
| Let the barcode rule determine the volume pool that is assigned to new volumes. | DEFAULT. |
| Use a volume pool other than the default. | That pool name in the list. The Update Options volume pool always overrides the rule. |

| If You are *Not Using* Barcode Rules and You Want to Use | Select |
|---|---|
| The NetBackup volume pool for data volumes and no volume pool for cleaning tapes. | DEFAULT. |
| A volume pool other than the default. | That pool name in the list. |

## Media Type Mappings (for API robots)

For ACS, LMF, RSM, TLH, or TLM robot types (API robots), the Media type setting is always DEFAULT. Media Manager uses the mappings in the Media Type Mappings dialog box to set the media type for new volumes.

Click **Media type mappings** to access this dialog box (**Media type mappings** is available only for these robot types).




In Media Type Mappings, map the media type specified by the robot vendor or operating system software to a corresponding Media Manager type as follows. Your mappings apply only to the current update.

1. Find the appropriate robot vendor media type in the dialog.

2. Click the **arrow** and select a Media Manager type from the list.

You can set the defaults that appear in Media Type Mappings by adding media mappings to the Media Manager configuration file, `vm.conf`, on the host where you are running NetBackup administration.

For information on adding ACS media mapping entries, see “vm.conf Map Entries for ACS Robots” on page 365.

For information on adding TLH media mapping entries, see “vm.conf Map Entries For TLH Robots” on page 390.

For information on adding TLM media mapping entries, see “vm.conf Map Entries For TLM Robots” on page 401.

For information on adding RSM media mapping entries, see “vm.conf Map Entries For RSM Robots” on page 377.

For information on LMF media type mappings, see the NetBackup DataCenter Media Manager system administrator’s guide for UNIX.

If either of the following are true, Media Manager uses the default media type mappings shown in the following tables:

- The `vm.conf` file does not exist.
- The `vm.conf` file does not contain media mapping entries for that robot type.

Default Media Types for ACS Robots

| ACS Media Type | Default Media Manager Media Type |
|---|---|
| 3480 | 1/2-inch cartridge (HCART) |
| 3490E | 1/2-inch cartridge (HCART) |
| DLTIII | Digital Linear Tape (DLT) |
| DLTIIIXT | Digital Linear Tape (DLT) |
| DLTIV | Digital Linear Tape (DLT) |
| DD3A | 1/2-inch cartridge tape 2 (HCART2) |
| DD3B | 1/2-inch cartridge tape 2 (HCART2) |
| DD3C | 1/2-inch cartridge tape 2 (HCART2) |
| DD3D | 1/2-inch cartridge cleaning tape 2 (HC2_CLN) |
| STK1R | 1/2-inch cartridge (HCART) |
| STK1U | 1/2-inch cartridge cleaning tape (HC_CLN) |
| EECART | 1/2-inch cartridge (HCART) |
| JLABEL | 1/2-inch cartridge (HCART) |
| STK2P | 1/2-inch cartridge tape 2 (HCART2) |
| STK2W | 1/2-inch cartridge cleaning tape 2 (HC2_CLN) |
| KLABEL | 1/2-inch cartridge (HCART) |
| LTO_100G | 1/2-inch cartridge (HCART) |

Default Media Types for ACS Robots (continued)

| ACS Media Type | Default Media Manager Media Type |
|---|---|
| LTO_50GB | 1/2-inch cartridge (HCART) |
| LTO_35GB | 1/2-inch cartridge (HCART) |
| LTO_10GB | 1/2-inch cartridge (HCART) |
| LTO_CLN2 | 1/2-inch cartridge cleaning tape (HC_CLN) |
| LTO_CLN3 | 1/2-inch cartridge cleaning tape (HC_CLN) |
| LTO_CLN1 | 1/2-inch cartridge cleaning tape (HC_CLN) |
| SDLT | Digital Linear Tape 3 (DLT3) |
| UNKNOWN | 1/2-inch cartridge tape 2 (HCART2) |

Default Media Types for LMF Robots

| LMF Media Type | Default Media Manager Media Type |
|---|---|
| 18/36TRK | 1/2-inch cartridge (HCART) |
| 128TRK | 1/2-inch cartridge (HCART) |
| UNKNOWN | 1/2-inch cartridge tape 2 (HCART2) |

Default Media Types for RSM Robots

| RSM Media Type | Default Media Manager Media Type |
|---|---|
| DDS_4MM | 4mm cartridge (4MM) |
| MINI_QIC | 1/4-inch cartridge (QCART) |
| TRAVAN | 1/4-inch cartridge (QCART) |
| QIC | 1/4-inch cartridge (QCART) |

Default Media Types for RSM Robots (continued)

| RSM Media Type | Default Media Manager Media Type |
|---|---|
| MP_8MM | 8mm cartridge (8MM) |
| AME_8MM | 8mm cartridge (8MM) |
| AIT1_8MM | 8mm cartridge (8MM) |
| DLT | Digital Linear Tape (DLT) |
| IBM_MAGSTAR_3590 | 1/2-inch cartridge (HCART) |
| IBM_MAGSTAR_MP | 1/2-inch cartridge (HCART) |
| STK_DATA_D3 | 1/2-inch cartridge (HCART) |
| MP2_8MM | 8mm cartridge (8MM) |
| CLEANER_CARTRIDGE | 1/2-inch cartridge (HC_CLN) |
| STK_EAGLE | 1/2-inch cartridge (HCART) |
| LTO_ULTRIUM | 1/2-inch cartridge (HCART) |
| LTO_ACCELIS | 1/2-inch cartridge (HCART) |
| UNKNOWN | 1/2-inch cartridge tape 3 (HCART3) |

Default Media Types for TLH Robots

| TLH Media Type | Default Media Manager Media Type |
|---|---|
| 3480 | 1/2-inch cartridge (HCART) |
| 3490E | 1/2-inch cartridge (HCART) |
| 3590J | 1/2-inch cartridge (HCART) |
| 3590K | 1/2-inch cartridge (HCART) |
| UNKNOWN | 1/2-inch cartridge tape 2 (HCART2) |

Default Media Types for TLM Robots

| TLM Media Type | Default Media Manager Media Type |
|---|---|
| 3480 | 1/2-inch cartridge (HCART) |
| OD_THICK | Rewritable optical disk (REWR_OPT)<br>Optical disk is not supported on Windows servers and is not supported with Update Volume Configuration. |
| OD_THIN | NONE (not supported) |
| DECDLT | Digital Linear Tape (DLT) |
| 8MM | 8mm cartridge (8MM) |
| 4MM | 4mm cartridge (4MM) |
| D2 | NONE (not supported) |
| VHS | NONE (not supported) |
| 3590 | 1/2-inch cartridge (HCART) |
| CD | NONE (not supported) |
| TRAVAN | NONE (not supported) |
| DTF | DTF cartridge (DTF) |
| BETACAM | NONE (not supported) |
| SONY AIT | 8mm cartridge (8MM) |
| LTO | 1/2-inch cartridge (HCART) |
| AUDIO_TAPE | NONE (not supported) |
| BETACAMCL | NONE (not supported) |
| DVCM | NONE (not supported) |
| DVCL | NONE (not supported) |

Default Media Types for TLM Robots (continued)

| TLM Media Type | Default Media Manager Media Type |
|---|---|
| UNKNOWN | 1/2-inch cartridge tape 2 (HCART2) |

# Examples of Updating a Volume Configuration

**Note** The following examples show only the relevant dialog box and volume attributes.

## Example 1: Remove a volume from a robot

The following is an example of removing a volume from a robotic library. It does not matter whether the robot supports barcodes.

1. The following are the attributes for media ID 800001.

| | |
|---|---|
| media ID | 800001 |
| media type | 8MM cartridge tape |
| barcode | TL800001 |
| media description | tl8 backup volume |
| volume pool | NetBackup |
| robot type | TL8 - Tape Library 8MM |
| volume group | EXB220 |
| max mounts allowed | 0 (unlimited) |

2. Assume that you remove the volume from the robotic library, specify the following in the Update Options dialog box, and then execute the update.

| | |
|---|---|
| media type | DEFAULT |
| volume group | NONROB_8MM |

| | |
|---|---|
| volume pool | DEFAULT |

3. The resulting volume attributes for media ID 800001 are as follows:

| | |
|---|---|
| media ID | 800001 |
| media type | 8MM cartridge tape |
| barcode | TL800001 |
| media description | tl8 backup volume |
| volume pool | NetBackup |
| robot type | NONE - Not Robotic |
| volume group | NONROB_8MM |
| max mounts allowed | 0 (unlimited) |

The new residence information in the volume database shows a standalone location in the volume group, specified by the volume group on the Update Options dialog. The media type and volume pool remain unchanged.

The results are the same for a volume that does not have a barcode.

## Example 2: Add existing standalone volumes to a robot

The following is an example of adding a standalone volume, that has a barcode, to a robotic library that supports barcodes (TL8).

**Note** When moving volumes from robot to robot, you must do two separate updates, as explained in “Example 6: Moving existing volumes between robots” on page 156.

1. The following are the volume attributes for media ID 800021, which has a readable barcode and already exists as a standalone volume.

| | |
|---|---|
| media ID | 800021 |
| media type | 8MM cartridge tape |
| barcode | TL800021 |
| media description | 8MM standalone |
| volume pool | None |
| robot type | None (Standalone) |
| volume group | NONROB_8MM |
| max mounts allowed | 0 (unlimited) |

2. Assume that you insert the volume into a TL8 robot, specify the following in the Update Options dialog box, and then execute the update.

| | |
|---|---|
| media type | DEFAULT |
| volume group | EXB220 |
| use barcode rules | YES |
| volume pool | NetBackup |

The barcode rules shown in the following table exist:

| Barcode Tag | Media Type | Volume Pool | Max Mounts/ Cleanings | Description |
|---|---|---|---|---|
| CLND | DLT_CLN | None | 30 | dlt cleaning |
| CLN8 | 8MM_CLN | None | 20 | 8mm cleaning |
| TL8 | 8MM | NetBackup | 0 | tl8 backup |
| DLT | DLT | d_pool | 200 | dlt backup |

| Barcode Tag | Media Type | Volume Pool | Max Mounts/ Cleanings | Description |
|---|---|---|---|---|
| TS | 8MM | None | 0 | 8mm no pool |
| <NONE> | DEFAULT | None | 0 | no barcode |
| <DEFAULT> | DEFAULT | NetBackup | 0 | other barcodes |

3. Media Manager recognizes that the media ID exists and changes the volume database to reflect the new robotic location, rather than creating a new media ID. The resulting volume attributes for media ID 800021 are as follows:

| | |
|---|---|
| media ID | 800021 |
| media type | 8MM cartridge tape |
| barcode | TL800021 |
| media description | 8MM standalone |
| volume pool | NONE |
| robot type | TL8 - Tape Library 8MM |
| robot number | 0 |
| robot slot | 1 |
| robot host | shark |
| volume group | EXB220 |
| max mounts allowed | 0 (unlimited) |

Because the last six characters of the barcode match the media ID of an existing standalone volume in the configuration, the residence information in the volume database is updated to reflect the new robotic location. Since the volume is not new, barcode rules are ignored.

The only option used in the Update Options dialog box is the volume group for added or moved volumes. The media type option was not used because this example was for a single existing volume that already had a media type.

## Example 3: Move existing volumes within a robot

The following is an example of moving a volume from one slot to another within the same robot. The robot supports barcodes and the volume has a readable barcode.

**Caution** For volumes moved within a robotic library, use Update Volume Configuration only if the robotic library supports barcodes and the volumes have readable barcodes. Otherwise, Media Manager is unable to properly recognize the move (see "When Not to Use Update Volume Configuration" on page 127 and "Example 7: Adding existing volumes when barcodes are not used" on page 157).

1. The following are the attributes for media ID 800002, which currently resides in slot 1 of the robotic library.

| | |
|---|---|
| media ID | 800002 |
| media type | 8MM cartridge tape |
| barcode | TL800002 |
| media description | tl8 backup |
| volume pool | NetBackup |
| robot type | TL8 - Tape Library 8MM |
| robot number | 0 |
| robot slot | 1 |
| robot host | shark |
| volume group | EXB220 |
| max mounts allowed | 0 (unlimited) |

2. Assume that you move the volume to empty slot 10, specify the following in the Update Options dialog box, and then execute the update.

| | |
|---|---|
| media type | DEFAULT |
| volume group | EXB220 |

| | |
|---|---|
| use barcode rules | NO |
| volume pool | DEFAULT |

3. The resulting volume attributes are:

| | |
|---|---|
| media ID | 800002 |
| media type | 8MM cartridge tape |
| barcode | TL800002 |
| media description | tl8 backup |
| volume pool | NetBackup |
| robot type | TL8 - Tape Library 8MM |
| robot number | 0 |
| robot slot | 10 |
| robot host | shark |
| volume group | EXB220 |
| max mounts allowed | 0 (unlimited) |

The updated volume attributes show the new slot number, but all other information is unchanged.

## Example 4: Add new volumes to a robot

The following is an example of adding new volumes with barcodes to a robot that supports barcodes. Assume the following:

- The new volume is an 8MM tape with a readable barcode of TL800002.
- There are no media generation rules defined.
- The drives in the robot all have a drive type of 8MM or there are no drives configured on the robot control host.

1. You specify the following in the Update Options dialog box and execute the update.

| | |
|---|---|
| media type | DEFAULT |
| volume group | EXB2220 |
| use barcode rules | YES |
| volume pool | DEFAULT |

The barcode rules shown in the following table exist:

| Barcode Tag | Media Type | Volume Pool | Max Mounts/ Cleanings | Description |
|---|---|---|---|---|
| CLND | DLT_CLN | None | 30 | dlt cleaning |
| CLN8 | 8MM_CLN | None | 20 | 8mm cleaning |
| TL8 | 8MM | NetBackup | 0 | tl8 backup |
| DLT | DLT | d_pool | 200 | dlt backup |
| TS | 8MM | None | 0 | 8mm no pool |
| <NONE> | DEFAULT | None | 0 | no barcode |

2. The barcode on the media matches the barcode rule named TL8 and the resulting volume attributes for the new volume are as follows:

| | |
|---|---|
| media ID | 800002 |
| media type | 8MM cartridge tape |
| barcode | TL800002 |
| media description | tl8 backup |
| volume pool | NetBackup |
| robot type | TL8 - Tape Library 8MM |

| | |
|---|---|
| robot number | 0 |
| robot slot | 1 |
| robot host | shark |
| volume group | EXB220 |
| max mounts allowed | 0 (unlimited) |

The media ID is from the last six characters of the barcode since there are no media ID generation rules. The new residence information in the volume database, shows the robot host, robot type, robot number, slot, and host. The volume group is from the Update Options dialog. The volume pool and max mounts allowed are from the barcode rule.

If barcode rules (or barcodes) had not been used, the media description, volume pool, and max mounts allowed would be set to the following defaults:

- Media description: added by Media Manager
- Volume pool: NetBackup for data tapes or None for cleaning tapes
- Max mounts: 0 (unlimited)

**Note** If the robot does not support barcodes or the barcode is unreadable, you must specify a Media ID prefix (or DEFAULT) in the Update Options dialog box or Media Manager will not add new media IDs.

## Example 5: Add cleaning tapes to a robot

A special case exists when adding cleaning tapes. For example, assume you are doing an update for a TLD robot.

1. The tapes you inserted include regular tapes with barcodes ranging from DLT00000 to DLT00010 and a cleaning tape with a barcode of CLN001.

   The barcode rules shown in the following table exist:

| Barcode Tag | Media Type | Volume Pool | Max Mounts/ Cleanings | Description |
|---|---|---|---|---|
| CLN | DLT_CLN | None | 30 | dlt cleaning |
| DL | DLT | d_pool | 200 | dlt backup |

| Barcode Tag | Media Type | Volume Pool | Max Mounts/ Cleanings | Description |
|---|---|---|---|---|
| <NONE> | DEFAULT | None | 0 | no barcode |

2. You specify the following in the Update Options dialog box and then execute the update.

| | |
|---|---|
| media type | DLT |
| volume group | STK7430 |
| use barcode rules | YES |

3. The barcodes on the regular tapes match the DL barcode rule and the media type of the DL barcode rule matches the Media type in the Update Options dialog box. These tapes are added as DLT.

   The cleaning tape matches the CLN barcode rule and Media Manager recognizes that DLT_CLN is the cleaning tape for DLT. The cleaning tape CLN001 is added as DLT_CLN type media along with the regular volumes.

   This illustrates Media Manager's ability to add cleaning cartridges along with regular volumes when you use Update Volume Configuration.

   If the volumes you insert include a cleaning tape, Media Manager adds the volumes correctly if the following are true:

   - The Media type in the Update Options dialog box is the regular media (DLT in this example).
   - The barcode on the volume matches a barcode tag (CLN in this example) and the media type for the barcode rule is the correct cleaning media (DLT_CLN in this example).

   To add only cleaning media, specify the cleaning media type in the Update Options dialog box and in the barcode rule (DLT_CLN in this example).

## Example 6: Moving existing volumes between robots

When you move volumes from one robot to another and the volumes in both robots are in the same volume database, you must perform two separate updates. These updates move the volumes to standalone, as an intermediate step, and then to the new robot.

Otherwise, Media Manager is unable to update the entries and you receive an "Update request failed" error.

**Caution** This procedure assumes that robot 2 is able to read barcodes and the volume has readable barcodes. Otherwise, you will encounter the problem mentioned in "Example 7: Adding existing volumes when barcodes are not used" on page 157.

1. Remove the volume from robot 1.

   Insert the volume in robot 2.

2. Perform an Update Volume Configuration on robot 1.

   This updates the volume attributes to show the volume as standalone.

3. Perform an Update Volume Configuration on robot 2.

   This updates the configuration to show the volume in robot 2.

## Example 7: Adding existing volumes when barcodes are not used

**Caution** This example is *NOT* recommended and is shown only to illustrate the results.

The following is an example of adding an existing standalone volume to a TL4 robot. A TL4 robot supports inventory (detects media presence), but not barcodes.

1. The following are the attributes for media ID 400021, which already exists as a standalone volume.

| | |
|---|---|
| media ID | 400021 |
| media type | 4MM cartridge tape |
| barcode | ---------- |
| media description | 4MM standalone |
| volume pool | None |
| robot type | NONE - Not Robotic |
| volume group | NONROB_4MM |
| max mounts allowed | 0 (unlimited) |

2. Assume that you insert the volume into the robot, specify the following in the Update Options dialog box, and then execute the update.

| | |
|---|---|
| media type | DEFAULT |
| volume group | 00_000_TL4 |
| media ID prefix | C4 |
| volume pool | DEFAULT |

3. The resulting volume attributes are:

| | |
|---|---|
| media ID | C40000 |
| media type | 4MM cartridge tape |
| barcode | ---------- |
| media description | Added by Media Manager |
| volume pool | NetBackup |

| | |
|---|---|
| robot type | TL4 - Tape Library 4MM |
| robot number | 0 |
| robot slot | 1 |
| robot host | shark |
| volume group | 00_000_TL4 |
| max mounts allowed | 0 (unlimited) |

It is *important* to note that Media Manager assigned a new media ID to the volume (C40000). This undesired result occurs if you use Update Volume Configuration to add volumes that do not have readable barcodes or if the robot does not support barcodes. Without a barcode, Media Manager cannot identify the volume and assumes it is new. The media ID C40000 is generated from the media ID prefix on the Update Options dialog.

The old media ID (400021) remains in the configuration unchanged. The information for the new media ID (C40000) shows the robotic location, including the robot host, robot type, number, slot, and host. The volume group and volume pool are according to the Update Options dialog box selections. The max mounts allowed is set to the default (0).

# Configuring Barcode Rules

A barcode rule specifies criteria for assigning attributes to new robotic volumes. The attributes are assigned according to the barcode that is detected by the robotic library. You choose whether to use barcode rules when you set up the update operation.

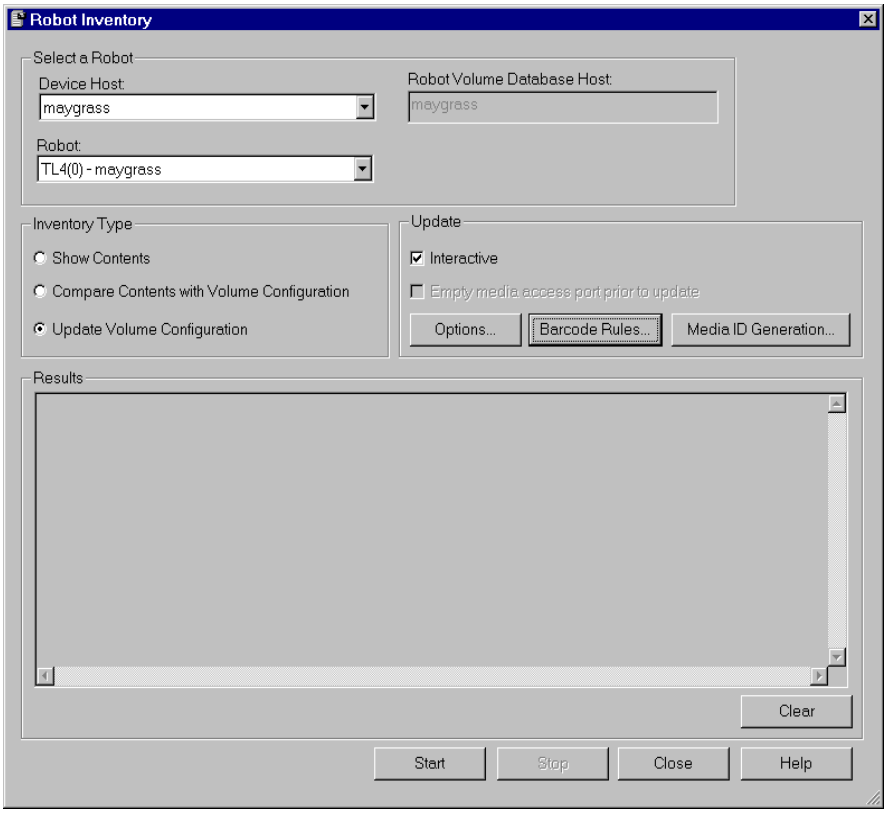
For background information, see “Barcode Rules” on page 287.

The following topics explain how to use barcode rules:

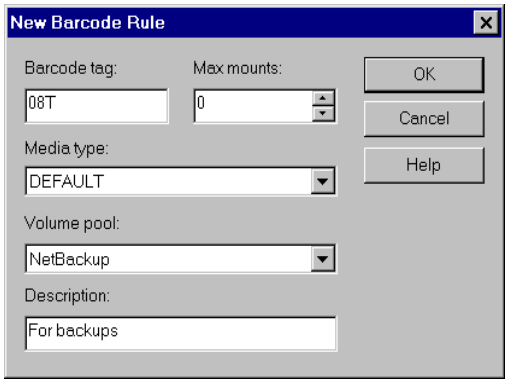
- Adding a New Barcode Rule
- Dialog Box Entries for Adding and Changing Barcode Rules
- Changing a Barcode Rule
- Deleting a Barcode Rule

## Adding a New Barcode Rule

1. In the Robot Inventory dialog box, click **Update Volume Configuration** > **Barcode Rules**.




2. In the Barcode Rules dialog box, click **New**. A dialog box appears.




3. Specify the properties for the new barcode rule and click **OK**.

   See “Dialog Box Entries for Adding and Changing Barcode Rules” for help on specifying these properties.

# Dialog Box Entries for Adding and Changing Barcode Rules

## Barcode Tag

Enter a barcode tag for the rule. The tag can have from 1 to 16 characters, but cannot contain any spaces (or special characters that appear as spaces).

In the barcode rule database and in the volume database a barcode tag can have a maximum of 16 characters, but Media Manager only supports the following maximum barcode lengths (in the volume database not all 16 characters are used for all robot types).

- Eight characters in robots that are not API robots (and the robot also supports barcodes).
- Six characters in API robots.

The following rules can have special characters in the barcode tags:

- <NONE > - Matches when rules are used and the volume has an unreadable barcode or the robotic library does not support barcodes.
- <DEFAULT> - For volumes with barcodes, this tag matches when none of the other barcode tags match, providing the media type in the <DEFAULT> rule and the media type in the Update Options dialog box are compatible.

Use Update Options to set up the criteria for a robot update (see “Updating the Volume Configuration for a Robot” on page 126).

## Media Type

Click the **arrow** to select the media type for which this rule will be used, as shown in the following table:

| If You Want the Rule to Match | Select |
|---|---|
| *Any* media type that you select in Update Options | DEFAULT.<br>If you also select DEFAULT in Update Options, Media Manager uses the default media type for the robotic library (see "Media Type (for robots that are not API robots)" on page 137). |
| *Only* when you select that specific media type or DEFAULT in Update Options | A specific media type from the list.<br>If you select DEFAULT for the update, Media Manager assigns the rule's media type. |

**Note** Always select `DEFAULT` for API robots.

The following table shows various combinations of update selections and barcode rule media types for a TLD robot.

| Update Media Type | Barcode Rule Media Type | Rule Used | Media Type Added To Volume Configuration |
|---|---|---|---|
| DLT | DEFAULT | Yes | DLT |
| HCART | DEFAULT | Yes | HCART |
| DLT | DLT | Yes | DLT |
| DLT | DLT_CLN | Yes | DLT_CLN |
| DLT_CLN | DLT | No | DLT_CLN |
| DLT_CLN | DLT_CLN | Yes | DLT_CLN |
| DLT_CLN | DEFAULT | Yes | DLT_CLN |
| DLT | ,4MM | No | DLT |
| DEFAULT | DEFAULT | Yes | DLT |

| Update Media Type | Barcode Rule Media Type | Rule Used | Media Type Added To Volume Configuration |
|---|---|---|---|
| DEFAULT | DLT | Yes | DLT |
| DEFAULT | DLT_CLN | Yes | DLT_CLN |
| DEFAULT | HCART | Yes | HCART |
| DEFAULT | 4MM | No | DLT (unless drives in the robot are configured on the robot control host with a different type) |

When setting up the update operation, a rule is not used if the media type in the rule is not compatible with the media type you select in Update Options. See “Updating the Volume Configuration for a Robot” on page 126.

For an API robot, Media Manager determines whether the media type is compatible by mapping it according to the setting in the media mappings dialog box. See “Media Type Mappings (for API robots)” on page 142 for more information.

## Volume Pool

Click the **arrow** to select a volume pool for the volume. This is the pool that the volume will be added to, when a barcode matches the rule.

Whenever the barcode rule is used and the Update Options dialog shows

- `DEFAULT` for the volume pool, then the volume is assigned to the pool you specified in the barcode rule.
- A specific volume pool, then that selection overrides the pool you specified in the barcode rule.

## Maximum Mounts

Specify the maximum number of mounts or cleanings that are allowed for this volume, as follows:

| For | Select |
|---|---|
| Media other than cleaning tapes | The maximum number of mounts to allow. |

| For | Select |
|---|---|
| Cleaning tapes | The number of cleanings to allow. |

When a barcode rule is used, Media Manager adds the number you specify to the volume database for the media ID.

**Note** When you specify 0 (unlimited), a cleaning tape whose barcode happens to match the rule will be assigned a 0 for Cleanings. This means it will not be used unless you subsequently change Cleanings to another value. You can avoid this situation by carefully selecting the barcodes for your cleaning media.

### Description

Enter description. This can be a description of how the barcode rule will be used or any useful description determined by your site. You can enter from 1 to 25 characters.

## Changing a Barcode Rule

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robotic library that has the volume database where you want to change barcode rules.
3. Click **Actions** > **Inventory Robot**.
4. In the dialog box, click **Update Volume Configuration** > **Barcode Rules**.
5. In the dialog box, select a rule that you want to change from the rules listed.
6. Click **Change**.

   A dialog box appears.
7. Specify your changes.

   See “Dialog Box Entries for Adding and Changing Barcode Rules” on page 161 for help in changing the properties of the rule.

**Note** You cannot change the barcode tag. To change a barcode tag, you must delete the rule and then add a rule with a new tag.

## Deleting a Barcode Rule

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robotic library that has the volume database where you want to change barcode rules.
3. Click **Actions** > **Inventory Robot**.
4. In the dialog box, click **Update Volume Configuration** > **Barcode Rules**.
5. In the dialog box, select the rule you want to delete from the list of rules.
6. Click **Delete**.

   In the confirmation dialog box, confirm or cancel the delete.

# Configuring Media ID Generation Rules

**Note** To use media ID generation rules, the robotic library must support barcodes and the robot cannot type be cannot be ACS, LMF, RSM, TLH, or TLM.

For background information see “Media ID Generation Rules” on page 289).

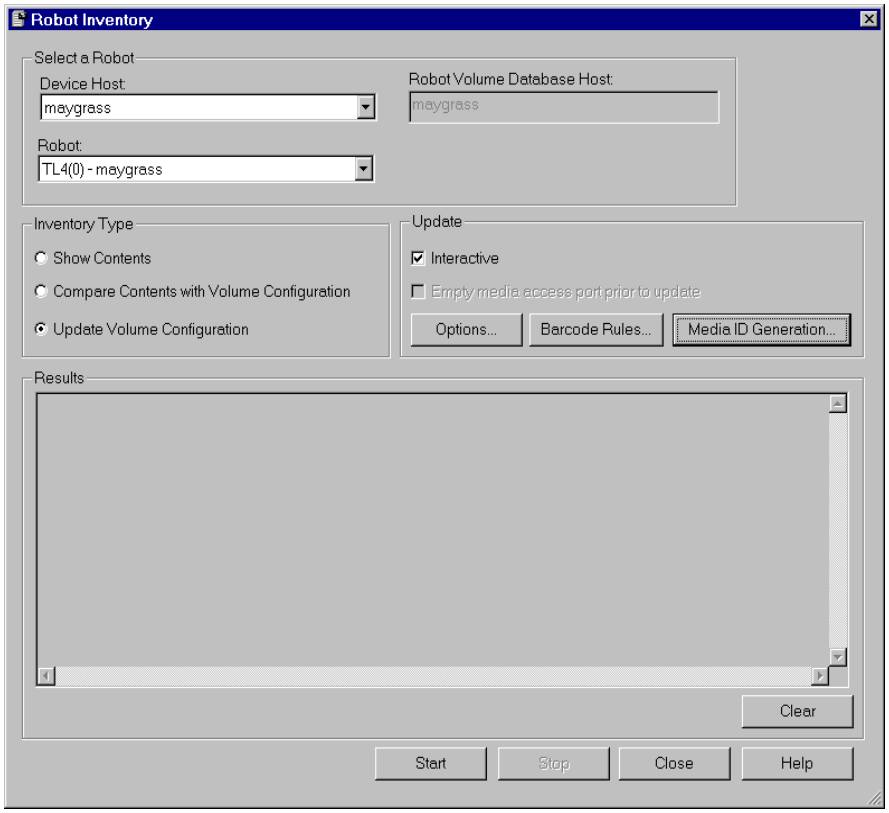
The following topics explain how to use media ID generation rules:

- Adding a New Media ID Generation Rule
- Changing a Media ID Generation Rule
- Deleting a Media ID Generation Rule
- Dialog Box Entries for Adding and Changing Media ID Generation Rules

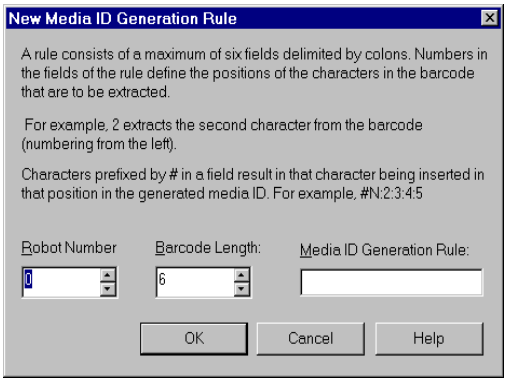
## Adding a New Media ID Generation Rule

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robotic library that has the volume database where you want to change a media ID generation rule.
3. Click **Actions** > **Inventory Robot**.

4. In the dialog box, click **Update Volume Configuration** > **Media ID Generation**.




5. In the Media ID Generation dialog box, click **New**. A dialog box appears.



6. Specify the properties for the new media ID generation rule and click **OK**.

   See “Dialog Box Entries for Adding and Changing Media ID Generation Rules” on page 168 for help on specifying the rule.

## Changing a Media ID Generation Rule

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robotic library that has the volume database where you want to change a media ID generation rule.
3. Click **Actions** > **Inventory Robot**.
4. In the dialog box, click **Update Volume Configuration** > **Media ID Generation**.
5. In the Media ID Generation dialog, select a rule from list.
6. Click **Change**.
7. In the dialog box, specify your changes for the rule. You cannot change the Robot Number or Barcode Length fields.

   See “Dialog Box Entries for Adding and Changing Media ID Generation Rules” on page 168 for help in changing the rule.

## Deleting a Media ID Generation Rule

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robotic library that has the volume database where you want to delete media ID generation rules.
3. Click **Actions** > **Inventory Robot**.
4. In the dialog box, click **Update Volume Configuration** > **Media ID Generation**.
5. In the Media ID Generation dialog, select a rule or rules from list and click **Delete**.
6. In the dialog box, confirm or cancel the delete action.

# Dialog Box Entries for Adding and Changing Media ID Generation Rules

## Robot Number

Specify a robot number where this rule will apply.

## Barcode Length

Specify the length of the barcode for tapes in this robotic library and for this rule.

## Media ID Generation Rule

A rule consists of a maximum of six fields that must be delimited by colons. Numbers in the fields of the rule define the positions of the characters in the barcode that are to be extracted. For example, 2 in a field extracts the second character from the barcode (numbering is from the left). The numbers can be specified in any order.

Characters prefixed by # in a field result in that character being inserted in that position in the generated ID. Any alphanumeric characters that are specified must be valid for a media ID.

The following table shows some examples of rules and the resulting media IDs. You can use rules to create media IDs of many varied formats, but keep in mind that the difference in the label on the media and the generated media ID may make it difficult to keep track of your media.

| Eight-character Tape Barcode | Media ID Generation Rule | Generated Media Manager Media ID |
|---|---|---|
| 032945L1 | 1:2:3:4:5:6 | 032945 |
| 032945L1 | 3:4:5:6:7 | 2945L |
| 032945L1 | #N:2:3:4:5:6 | N32945 |
| 543106L1 | #9:2:3:4 | 9431 |
| 543106L1 | 1:2:3:4:#P | 5431P |

# Rescanning and Updating Barcodes for a Robot

Use the **Rescan/Update Barcodes** command to check the barcodes of volumes in a robotic library and update the volume database to agree with the contents of the robotic library.

**Note** The **Rescan/Update Barcodes** command does not apply to volumes in API robot types.

"Robot Attributes" on page 258 lists the robots that support barcodes.

## When to Use Rescan/Update

Use Rescan / Update Barcodes only to fill in barcodes that are missing from the volume database.

For example, if you added a new volume to your configuration but did not physically insert the volume into the robotic library when the logical volume entry was added, the Media Manager volume database will not include the barcode. In this case, you can use this command to fill in the missing barcode, provided that the media has since been physically inserted in the robotic library.

## When Not to Use Rescan/Update

Do not use this command to correct reports that show a media ID in the wrong slot. In this case, you must do *one* of the following:

- Logically move the volume using **Actions** > **Move**.
- Logically move the volume using **Inventory Robot**. See "Updating the Volume Configuration for a Robot" on page 126.
- Physically move the volume into the correct slot to agree with the volume database.

To obtain an inventory of the robotic library without updating the barcode information in the volume database, select **Show Contents** in the Robot Inventory dialog box.

See "Comparing Robot Contents with the Volume Configuration" on page 123 for more information.

## To Rescan/Update Barcodes

To check barcodes and update the volume database:

1. In NetBackup Administration Console, click **Media and Device Management** > **Media** > **Robots**.
2. Select the robotic library that has the volumes that you want to check and update.
3. In the volume pane, select the volumes.
4. Click **Actions** > **Rescan/Update Barcodes**.

   A dialog box appears with the results of the update.

# Monitoring Storage Devices 5

The Device Monitor provides the tools needed to manage drives and operator service requests.

This chapter explains the Device Monitor and contains the following topics:

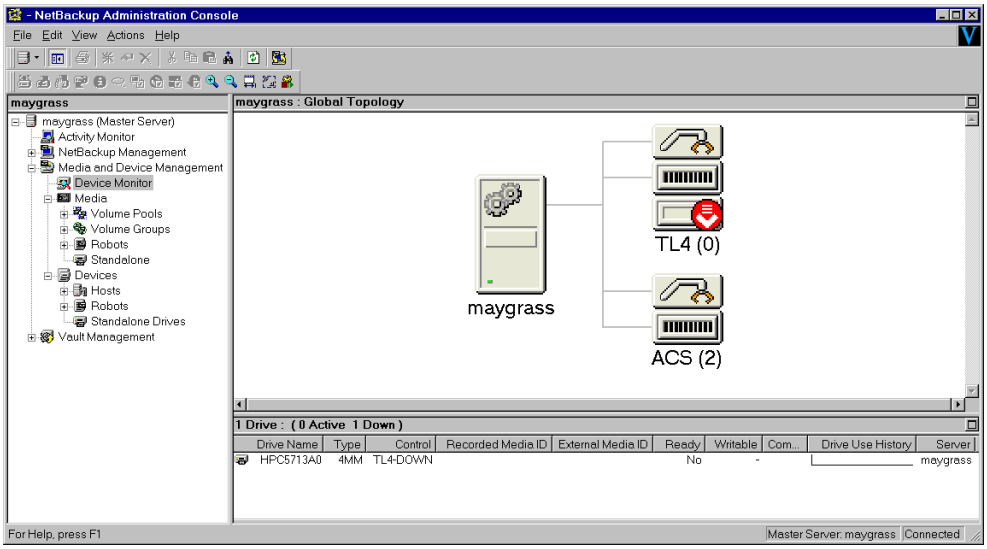
- Starting Device Monitor
- Using the Device Monitor Window
- Controlling the NetBackup Device Manager Service
- Administering Devices on Other Hosts
- Changing the Operating Mode of a Drive
- Resetting a Drive
- Adding or Changing a Drive Comment
- Handling Pending Requests and Pending Actions
- Assigning a Drive to a Pending Request
- Resolving Pending Actions
- Resubmitting Requests
- Denying Requests

## Starting Device Monitor

In the NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.

The Device Monitor window appears.

Device Monitor Window




In addition to the tree pane on the left, two panes are initially displayed on the right when you start the Device Monitor:

- A pane showing global device topology.
- A pane showing drive information.
- In addition, a third pane for pending requests (or pending actions) is displayed if there is a pending request or pending action active.

# Using the Device Monitor Window

The following topics describe various portions of the Device Monitor window:

- Menus and Commands
- Toolbars
- Global Topology Pane
- Drives Status Pane
- Pending Requests Pane
- Status Bar
- Shortcut Menus and Commands
- Tool Tips

- Customizing the Window
- Allowable Media Manager Characters

## Menus and Commands

The Device Monitor window has available the menus and commands shown in the following table.

The menu items are enabled based on what items are currently selected in the topology, drive status, or pending requests panes. For example, if a drive is selected in the topology pane **Up Drive** is enabled on the **Actions** menu.

Device Monitor Menus and Commands

| Menu | Commands |
|---|---|
| **File** | **Change Server** - Displays a dialog box that allows you to change to a different NetBackup media server.<br>**New Console** - Starts another instance of NetBackup Administration Console.<br>**New Window from Here** - Starts another instance of the NetBackup Administration Console node that was active.<br>**Backup, Archive, and Restore** - Starts the NetBackup backup, archive, and restore GUI.<br>**Print Setup** - Displays the standard Windows print setup dialog.<br>**Print** - Prints the topology, drive status, or pending requests pane (when one of these panes is selected).<br>**Close** - Closes the current window.<br>**Exit** - Closes all open windows. |
| **Edit** | **Find** - Displays a dialog to help you find specific data in the columns of the displays. |
| **View** | Contains commands for specifying your viewing preferences for the Device Monitor, including showing and hiding the toolbar or tree, and refreshing the display. See “Customizing the Window” on page 185. |

Device Monitor Menus and Commands (continued)

| Menu | Commands |
|---|---|
| **Actions** | **Note** For NetBackup Datacenter SSO configurations, also see “Changing the Operating Mode of a Drive” on page 187.<br><br>**Up Drive** - Sets the drive to up in automatic volume recognition (AVR) mode. This is the normal and default mode for drives. In AVR mode, a robotic library automatically retrieves, mounts, unmounts, and stores volumes. Manual intervention is necessary only when a request causes an error.<br><br>For standalone drives using labeled volumes, when the volume is mounted and the tape drive is ready, Media Manager automatically reads the recorded media ID and assigns the tape drive.<br><br>For standalone drives using unlabeled volumes, you assign tape drives to requests using **Actions** > **Assign Request**.<br><br>**Up Drive, Operator Control** - Sets the drive to up in operator control mode (OPR). This mode is normally used only for security reasons. Do not use this mode for drives that are being used by NetBackup.<br><br>This command appears on the menu only if it has been enabled. Click **View** > **Options** > **Device Monitor** and select **Allow Drive Up, Operator Controlled**.<br><br>By default, all operations are similar as if in AVR mode. If standalone drive extensions have been disabled by using the DISABLE_STANDALONE_ DRIVE_EXTENSIONS entry in the NetBackup `bp.conf` file, all operations are similar as if in AVR mode except that labeled volumes are not automatically assigned to standalone drives. You must assign a standalone drive to a request using **Actions** > **Assign Request**.<br><br>**Down Drive** - Sets the selected drive to the DOWN mode, so it is not available to Media Manager. In this mode, drives are not under control of Media Manager and cannot be assigned to requests.<br><br>**Reset Drive** - Resets the specified drive, terminating the drive assignment and taking control away from the assigned user. For more information, see “Resetting a Drive” on page 189.<br><br>**Change Drive Comment** - Displays a dialog box for changing the comment for the selected drive. For NetBackup Datacenter SSO configurations, also see “Adding or Changing a Drive Comment” on page 190.<br><br>**Drive Details** - Displays a dialog with information about the selected drive, including drive properties, drive status, and robotic library information.<br><br>**Assign Request** - Assigns a drive to a pending request.<br><br>**Deny Request** - Denies a pending request.<br><br>**Resubmit Request** - Resubmits a pending request.<br><br>**Display Pending Action** - Displays information about the pending action.<br><br>**Stop/Restart Device Manager Service** - Controls the Media Manager device service. |

Device Monitor Menus and Commands (continued)

| Menu | Commands |
|---|---|
| **Help** | **Help Topics** - Provides online help information about the NetBackup Console.<br>**VERITAS Web Page** - Displays the VERITAS web page, if the host has a browser configured.<br>**License Keys** - Provides information about your active and registered license keys.<br>**About NetBackup Administration Console** - Displays program information, version number, and copyright information. You can click **More Info** for more detailed information. |

## Toolbars

The toolbar buttons of the Device Monitor window provide shortcuts for commands that are on the menus.

To show or hide the toolbar buttons:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. Click **View** > **ToolBar**.

To change the display of the toolbar buttons:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. Click **View** > **Customize** > **Toolbars**.

Also see “Customizing the Window” on page 185.

## Global Topology Pane

The Device Monitor topology view shows the state of all devices in the global database It is different from the NetBackup activity monitor topology in that it is a device centric view. It may show multiple NetBackup servers that are sharing the same devices (NetBackup DataCenter SSO option).

A description bar is displayed at the top of this pane. Tool Tips are provided for all of the objects displayed in the topology pane. See “Tool Tips” on page 184.

Your view of the topology pane can be customized, see “Changing the View of the Topology Pane” on page 185.

Device hosts that are shown can not be filtered by modifying the Media Manager `vm.conf` file. The topology information that is displayed is taken from the Media Manager global device database.

## Topology Images

The following images may appear in the topology pane. Shared drives are a NetBackup DataCenter option.

| Description | Topology Image |
|---|---|
| NetBackup master server | |
| NetBackup media server | |
| Robot | |
| Robot media | |
| Drive | |
| Drive that is shared | |

There are also a number of state indicators for drives and shared drives. The images are similar, with the shared drive images having a hand at the bottom of the image.

| Drive State Indicator | Drive | Shared Drive |
|---|---|---|
| Empty | | |
| Tape loaded | | |
| Down | | |
| Reading | | |
| Writing | | |
| Active (reading or writing) | | |
| The control mode for a shared drive is not the same on all hosts sharing the drive. | | |

## Topology Connections

Connections in the topology indicate physical and logical connections of the devices, as follows:

- Master server and media server relationships are indicated and each has a different icon. Robots and drives are connected to a media server.
- Drives that are physically located in a robotic library are shown directly below the robotic library. Standalone drives are represented as individual drive objects.

- Drive to device host connections are shown only if the drive is being used for a request and the drive is in use by NetBackup. Robot to server connections and robotic library to volume database connections are always shown.
- Media is represented as in a robotic library.
- The topology also indicates a connection to its volume database host.

### Selecting Topology Objects

If you use the **Show only items in list selected in topology** option (see "Customizing the Window" on page 185) and select objects in the topology pane you can filter the contents of the lists in the Drives status pane. This action also highlights the connection lines in the topology.

If you do not use the **Show only items in list selected in topology** option and select an object, the object is highlighted in the other panes.

Multiple objects of the same type can be selected by pressing the Ctrl key and selecting another object. If the Ctrl key is pressed and an object of a different type is selected, the selection is not allowed. If the Ctrl key is not pressed and an object is selected, the previous selection will be unselected.

## Drives Status Pane

This pane shows the status of the drives that Media Manager controls on this server. Information in the drive status pane is taken from the Media Manager global device database. The following table describes the columns displayed in this pane.

### Managing the Drives Status Pane

The **Edit** menu has commands for finding items and is useful if you are managing many devices. You can use **View** > **Columns > Layout** to rearrange or hide specific columns in this display. Some of the columns are hidden initially by default.

Drives Status Pane

| Column | Description |
|---|---|
| Drive Name | Drive name assigned to the drive during configuration. |

Drives Status Pane

| Column | Description |
|---|---|
| Type | Drive type. Use this column to find a drive that supports the density required by the request. The drive type to use for each density is as follows:<br>4mm: 4mm cartridge<br>8mm: 8mm cartridge<br>8mm2: 8mm cartridge 2<br>8mm3: 8mm cartridge 3<br>dlt: DLT cartridge<br>dlt2: DLT cartridge tape 2<br>dlt3: DLT cartridge tape 3<br>dtf: DTF cartridge<br>hcart: 1/2-inch cartridge<br>hcart2: 1/2-inch cartridge tape 2<br>hcart3: 1/2-inch cartridge tape 3<br>odiskwm: Optical disk-write many<br>odiskwo: Optical disk-write once<br>qscsi: 1/4-inch cartridge |

Drives Status Pane

| Column | Description |
|---|---|
| Control | Control mode for the drive. Control mode can be any of the following:<br>- *robot_designation.* For drives in a robot. For example, TLD.<br>- DOWN-*robot_designation.* For drives in a robot. For example, DOWN-TLD.<br>- DOWN. For standalone drives only. In this mode, the drive is not available to Media Manager.<br>A drive can be in a DOWN mode because of problems or because it was set to that mode using **Actions** > **Down Drive**.<br>- PEND-*robot_designation*. For drives in a robot. For example, PEND-TLD.<br>- PEND. For standalone drives only.<br>If the drive reports a SCSI RESERVATION CONFLICT status, this column will show PEND. This status means that the drive is reserved when it should not be.<br>Several operating systems (Windows, Tru64, and HP-UX) also may report PEND if the drive reports Busy when opened. This reporting is likely caused by errors in the configuration. See the SCSI Reserve/Release section of the NetBackup Shared Storage Option guide for details.<br>- AVR (up in Automatic Volume Recognition mode). For standalone drives only. This is the normal operating mode.<br>- OPR (up in operator control mode). For standalone drives only.<br>- <Mixed> The control mode for a shared drive is not the same on all hosts sharing the drive (NetBackup DataCenter SSO option only). For shared drives each host can have a different status for the drive. If the control modes *are* all the same, that mode is displayed.<br>If the drive is a shared drive (NetBackup DataCenter SSO option only), click **Actions** > **Drive Details** to view the drive control mode for each host that is sharing this drive. |
| Shared | This column is used for the NetBackup Datacenter SSO feature. Yes, means this drive is configured as a shared drive. No, means the drive is not a shared drive.<br>For NetBackup BusinesServer this column contains the value No, since this feature is not supported. |
| Assigned Host | This column shows the device host that currently has the drive assigned. If the selected drive is not assigned, this column is blank. |
| User | User ID of the person or application whose request is currently assigned to this drive. If the selected drive is not assigned, this column is blank. |

Drives Status Pane

| Column | Description |
|---|---|
| Media Label | Shows whether a labeled or unlabeled volume is mounted on this drive. Yes, means labeled. No, means unlabeled. Labeled volumes can also be Backup Exec volumes. A dash means there is no volume mounted on the drive. |
| Recorded Media ID | ID recorded on the volume mounted on this drive. This identifier is the same as the media ID and should match the external media ID. If no volume or a Backup Exec volume is mounted, this column is blank. |
| External Media ID | External ID of the volume mounted on this drive. This identifier should match the recorded media ID. If no volume is mounted, this column is blank. |
| Ready | Status of the drive, indicating if it is ready to perform an operation on the loaded volume. Yes, means ready. No, means not ready.<br>See the vendor's manual for the drive for instructions to make it ready, if it does not become ready automatically. |
| Writable | Shows whether the volume currently mounted on this drive is write-enabled. Yes, in this column means the volume is write-enabled. No, means the volume is write-protected. A - in this column means there is no volume in the drive. |
| Drive Use History | Shows a graph of relative drive usage. The data for the graph is obtained from the Windows performance monitor. The graph is shown only if the following are true:<br>- The drive is connected to a Windows media server.<br>- A NetBackup job is active (the drive is in use).<br>- The user has permissions to read the Windows registry.<br>- The NetBackup `bp.conf` file has the entry for collecting drive usage enabled. |
| Host Name | The name of the device host that has the drive.<br>If the drive is a shared drive (NetBackup DataCenter SSO option only), use **Actions** > **Drive Details** to view a list of hosts that are sharing this drive. |
| Drive Index | Drive index assigned to the drive during configuration.<br>If the drive is a shared drive (NetBackup DataCenter SSO option only), use **Actions** > **Drive Details** to view the drive index for each host that is sharing this drive. |
| Request ID | If this drive is assigned to a request, this column contains the ID of the request. |
| Comment | Comments that the administrator has added about this drive. See "Adding or Changing a Drive Comment" on page 190. |

# Pending Requests Pane

This pane shows pending requests (or pending actions) for volumes. These usually originate from NetBackup, but can come from a user or VERITAS Storage Migrator.

This pane is not displayed until a pending request or pending action appears. After all requests have been resolved by Media Manager (automatically) or by operator intervention, the Pending Requests pane is again hidden. See "Handling Pending Requests and Pending Actions" on page 190 for more information.

The following table describes the columns that are displayed in this pane for a pending request or action.

## Managing the Pending Requests Pane

The **Edit** menu has commands for finding items and is useful if you are managing many devices. You can use **View** > **Columns > Layout** to rearrange or hide specific columns in this display. Many of the columns are hidden by default.

Pending Requests Pane

| Column | Description |
|---|---|
| Host Name | The name of the device host that has the pending request. |
| Request ID | Identification number for the request or action. This is a system-assigned number that identifies the request.<br>NOTE: A pending action is indicated by an asterisk to the left of the request ID. |
| Recorded Media ID | Media ID of the volume requested by the user. It is the same media ID that is recorded in the volume database. The ID consists of up to six alphanumeric characters that are recorded at the beginning of the volume to identify the volume.<br>A volume with a recorded media ID is termed a *labeled volume* (that is, the volume was labeled by NetBackup or Backup Exec). *Unlabeled volumes* do not have recorded media IDs.<br>When a user requests an unlabeled volume and does not specify a recorded media ID, the external media ID appears in this column by default. This occurs because Media Manager assumes that the recorded and external media IDs are the same. |

Pending Requests Pane

| Column | Description |
|---|---|
| External Media ID | External media ID of the volume requested by the user. The ID consists of up to six alphanumeric characters and is usually written on an external label attached to the volume. The external media ID is *not* recorded on the volume and is used to identify the volume before it is inserted in a robotic library. |
| User | User ID of the person or application making the request. |
| Density | Density of the volume required by the user. You must mount the volume on a drive that supports the required density.<br>Densities correspond to the following drive types (to find a drive of the correct type, check the drive status list.):<br>4mm: 4mm cartridge tape<br>8mm: 8mm cartridge tape<br>8mm2: 8mm cartridge tape 2<br>8mm3: 8mm cartridge tape 3<br>dlt: DLT cartridge tape<br>dlt2: DLT cartridge tape 2<br>dlt3: DLT cartridge tape 3<br>dtf: DTF cartridge<br>hcart: 1/2-inch cartridge tape<br>hcart2: 1/2-inch cartridge tape 2<br>hcart3: 1/2-inch cartridge tape 3<br>odiskwm: Optical disk-write many<br>odiskwo: Optical disk-write once<br>qscsi: 1/4-inch cartridge tape |
| Mode | Specifies whether the volume should be write-enabled. W in this column means you must write-enable the volume. R in this column means you do not have to write-enable the volume, unless specified by site policy. To write-enable a cartridge volume, move the tab off the safe position. |
| Time | Time of day the user made the request for access. |
| Media Description | Describes the media in 25 or less alphanumeric characters. You create the description when you configure volumes. |
| Barcode | Alphanumeric representation of the barcode label on the volume that was requested by the user. The barcode can contain up to 13 characters. |

Pending Requests Pane

| Column | Description |
|---|---|
| Volume Group | Volume group to which this volume belongs. A volume group defines the volume by location and is a logical group of volumes that are at the same physical location. |

## Status Bar

The status bar appears at the bottom of the NetBackup Console window. The status bar

- Shows tool tips (if tool tips are enabled).
- Indicates the name of the media server.
- Indicates if you are connected to the device host you are trying to monitor.

To show or hide the status bar

❖ Click **View** > **Status Bar**.

## Shortcut Menus and Commands

Clicking the right mouse button while the pointer is over a pane or a selection in a pane, displays a shortcut menu with commands that apply to that context. These shortcut commands are also available on the menus or toolbars.

## Tool Tips

Tooltips are helpful information for the toolbar buttons, or items in the topology pane (as you position the pointer).

To enable tool tips

1. In NetBackup Administration Console, click **Device Monitor**.
2. Click **View** > **Customize**.
3. On the **Toolbars** tab, select **Show ToolTips**.

# Customizing the Window

The **View** menu has options for sorting and changing the layout and appearance of the panes.

## Showing or Hiding Columns

You can use **View** > **Columns > Layout** to show or hide columns in the panes of the Device Monitor window.

## Rearranging Columns

You can use **View** > **Columns > Layout** to rearrange the order of columns in the panes of the Device Monitor window.

## Changing the View of the Topology Pane

Click **View** > **Options** > **Device Monitor** and select **Fit topology to window on startup**. This will fit the topology diagram to the pane and not use the default startup size.

Click **View** > **Options** > **Device Monitor** and select **Show only items in list selected in topology**. This allows you to filter the Drives status pane, showing drives based on your selections in the topology diagram.

Click **View** > **Zoom** > **Zoom In** to enlarge the topology diagrams. This can be done multiple times.

Click **View** > **Zoom** > **Zoom Out** to decrease the size of the topology diagrams. This can be done multiple times.

Click **View** > **Zoom** > **Overview Window** to select and focus on a portion of the topology diagram.

Click **View** > **Zoom** > **Fit Window** to size the topology diagram to the size of the current pane.

## Changing the Screen Display Refresh Rate

The refresh rate specifies how often the Device Monitor will query the device host for new display data.

Click **View** > **Options** > **Device Monitor** and set the desired refresh rate.

## Allowable Media Manager Characters

The following set of characters can be used in user-defined names, such as drive comments and drive names that you enter when creating these entities. These characters must be used even when specifying these items in foreign languages.

Do not use a minus as the first character or leave any spaces between characters.

- Alphabetic (A-Z a-z)
- Numeric (0-9)
- Period (.)
- Plus (+)
- Minus (-)
- Underscore (_)

# Controlling the NetBackup Device Manager Service

The NetBackup Device Manager service must be running on the host being monitored or the lists in the Device Monitor detail panes will be blank. You can manage this service as follows:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. Click **Actions** > **Stop/Restart Device Manager Service**.
3. In the dialog box that appears, click the **arrow** to select a different device host.

   The current status field shows the status of this service. The dialog allows you to start, stop, or stop / restart the service.
4. Select the action you want to perform.
5. Click **OK** or **Apply** when done.

**Note** By using **Apply**, you can select device hosts and actions for more than one device host before clicking **OK** to close the dialog box.

**Note** You may find it useful to select **Stop** and click **Apply**, and then select **Start** and click **Apply**.

# Administering Devices on Other Hosts

Initially, you can monitor devices on the server where you are running the Device Monitor. The name of this server and its connection status is shown in the status bar (on the right side) of the Device Monitor window, for example Master Server: spain.

If you change from a NetBackup DataCenter server to a NetBackup BusinesServer server, the functionality available on the new server is limited to the functionality supported by NetBackup BusinesServer.

If you change from a NetBackup BusinesServer server to a NetBackup DataCenter server, complete functionality is available on the new server.

To change to a different server, use the following procedure:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.

2. Click **File** > **Change Server** or click the **arrow** next to the change server icon.

   In the dialog box for **File** > **Change Server**, do one of the following to specify the host to monitor:

   - Enter the name of the host.
   - Select a host from one of the hosts shown in the list.
   - Click **Browse** and select a host.

   You can also click **Remove** to delete a host from the list of hosts.

   Click **OK**.

3. The name of the new device host appears in the status bar and the lists in the Device Monitor window change to show device information for the new device host.

   The NetBackup Device Manager service must be running on the host that you are going to monitor, or the lists in the detail panes will be blank. If it is not running when you attempt to connect, a message box prompts you to start the service. Click **Yes** in this box.

# Changing the Operating Mode of a Drive

It is usually not necessary to change the operating mode of a drive. Drives are set to the UP in AVR mode (the default mode) when you add drives to your configuration, and usually can be left at that setting. Other operating mode settings are used for special purposes.

For RSM robots, Media Manager does not scan the RSM library to update the status for devices. Therefore any physical device status changes done in the Microsoft RSM applet should also be updated in the Device Monitor.

For example, if drive 2 is down in the RSM library, you must deactivate the drive on both the RSM applet *and* in Device Monitor. However if drive 2 is functional but you do not want NetBackup to assign it, then only the RSM applet interface need be updated.

To change the mode of a drive, do the following:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.

2. In the Drives status pane, select a drive or drives.

3. From the **Actions** menu, choose the command for the new operating mode you want (for example, **Down Drive)**.

   If the drive is a shared drive (SSO option), the dialog contains a list of the hosts that are sharing the drive. You can specify any number of hosts where the action will apply.

   See the **Actions** menu in "Menus and Commands" on page 173 for an explanation of the operating mode commands.

## Changing Mode Example

The following example shows the results of changing the operating mode of Drive2 from AVR to DOWN.

**Note** Some columns of the drive status list are not shown in this example.

The following example display shows the Drives status pane *before* changing the drive mode. Notice that the Control column shows AVR and the Ready column shows Yes.

```
                                Recorded External
Drive Type Control User Label MediaID MediaID Ready Writable RequestID
Drive1 qscsi OPR   chg  No    TST401  TST401  Yes   No         0
Drive2 4mm   AVR                              Yes
```

The following display shows the Drives status pane *after* using **Actions** > **Down Drive** to change the operating mode of Drive2 to DOWN. Notice that the Control column shows DOWN and the Ready column now shows No.

```
                                Recorded External
Drive Type Control User Label MediaID MediaID Ready Writable RequestID
Drive1 qscsi OPR   chg  No    TST401  TST401  Yes   No         0
Drive2 4mm   DOWN                              No
```

# Resetting a Drive

**Caution** Do not reset an assigned drive unless directed by site policy or the system administrator. Terminating an active job can destroy user data.

The actions that result from resetting a drive, depend on the state of the drive as follows:

| Drive State | Reset Action |
|---|---|
| DOWN | Media Manager attempts to unload the drive. This occurs for standalone drives, as well as drives in a robot. |
| UP state, not assigned to a user or application and in a ready state | Media Manager attempts to unload the drive. If the drive is not ready, no action occurs. |
| UP state and assigned to a user or application | Removes the tape. This takes control away from the user. |

Use the reset capability with caution. A situation where resetting a drive might be necessary is if a system problem causes the drive to remain assigned after a job is complete. In this case, the drive cannot be used for another request and the only way to regain control of the drive is to reset it.

**Note** Resetting a drive does not perform any SCSI bus or SCSI device resets.

To reset a drive:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. In the Drives status pane, select a drive or drives.
3. Click **Actions** > **Reset Drive**.
4. Verify that the assignment was terminated by checking that the User and Request ID columns are empty for the drive number.

# Adding or Changing a Drive Comment

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. In the Drives status pane, select the drive.
3. Click **Actions** > **Change Drive Comment**.

   The dialog box shows the current comment (if any).

   If the drive is a shared drive (SSO option), the dialog contains a list of hosts that are sharing the drive and the current comments for each host. You can specify the hosts where each drive comment will apply.
4. Enter a comment or change the comment and click OK.

# Handling Pending Requests and Pending Actions

In the following topics, the *operator* is the person responsible for performing the manual intervention. A *user* is a person or application (for example, NetBackup) that initiates requests.

When NetBackup needs a volume to complete a tape mount, it displays a request in the Pending Requests pane. The following is an example request:

**Note** Some columns of the pending requests pane are not shown in this example.

```
              Recorded External
RequestID User MediaID MediaID Density Mode  Time Barcode Volume Group
0         ldr  LDR001  LDR001  4mm     Write 7:22 LDR001  rack_1
```

See the table in “Pending Requests Pane” on page 182 for an explanation of the columns in a pending request display.

Media Manager is able to resolve most requests automatically. For example, if the required volume is labeled and in a robotic library, Media Manager assigns the request as soon as the volume and a drive are available, and then removes the request and also the Pending Requests pane.

## Pending Requests

Media Manager sometimes needs operator assistance to complete a tape mount request. In the following cases, Media Manager is unable to automatically assign the request and the request remains in the Pending Requests pane. In any of these cases, proceed as explained in "Assigning a Drive to a Pending Request" on page 191.

- The required drive is in the Up Under Operator Control mode (OPR mode) and standalone drive extensions were disabled by using the DISABLE_STANDALONE_DRIVE_EXTENSIONS entry in the NetBackup `bp.conf` file.
- The volume in a drive is unlabeled (and the volume being mounted is not a known Backup Exec tape).
- NetBackup issues a write request for an unlabeled volume in a standalone drive and the standalone drive extensions were disabled.

A request for a volume that is displayed in the Pending Requests pane is sometimes called a *mount* request. This term means to make the volume available for reading or writing by placing it in an appropriate drive and then assigning the associated request to that drive.

## Pending Actions

Media Manager also needs operator assistance to complete a tape mount request when the request causes an error. These special requests are called *pending actions*.

A pending action is indicated by an asterisk to the left of the request ID column.

In these cases, the problem must be resolved before proceeding. See "Resolving Pending Actions" on page 195.

# Assigning a Drive to a Pending Request

Use the following procedure to assign a drive to a pending request.

**Note** You can also assign drives to a request by using the mouse to select and drag and drop items between the drive status and pending requests panes. This mouse action is valid only when the drive and request are on the same host.

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.

2. In the Pending Requests pane, select the request. Also, note the contents of the following columns of the request:

| See the Following Column | To Determine |
|---|---|
| Density | The recording density that is required. |
| External Media ID | The ID of the media that is required. |
| Mode | Whether the volume should be write-enabled. |

3. In the Drives status pane:

   a. Find a drive type that matches the density for the request.

      See the table in "Drives Status Pane" on page 178 for a list of the densities that each drive type supports.

   b. Ensure that the drive is in the Up mode and not assigned to another request.

   c. Select the drive.

**Note** Ensure that the drive and the pending request are on the same host.

4. If necessary, get the media, write-enable it, and insert it into the drive.

5. Wait for the drive to become ready, as explained in the drive equipment manual.

6. Click **Actions** > **Assign Request**.

   Verify that the request disappears from the Pending Requests pane.

7. In the Drives status pane, verify that

   - The assigned request ID appears in the Request ID column for the drive.
   - The User column is filled in.

## Assigning a Drive Example 1

**Note** Some columns of the drive status and pending requests panes are not shown in this example.

In this example, a pending request is assigned to a drive using **Actions** > **Assign Request**. The following sample display shows the Pending Requests pane *before* assigning the request.

```
              Recorded External
RequestID User MediaID MediaID Density Mode  Time Barcode Volume Group
2         cas  CAS135  CAS135  4mm     Read  7:30 CAS135  offsite
```

The following display shows the Drives status pane *before* assigning the request. Notice that Drv2 is available (the User and Request ID columns are empty) and is in OPR mode.

```
                              Recorded External
Drive Type Control User Label MediaID MediaID Ready Writable RequestID
Drv1  qscsi OPR    rhs  No    TST401  TST401  Yes   No         0
Drv2  4mm   OPR                                Yes
```

The following display shows the Drives status pane *after* the request is assigned to Drv2. Notice that for Drv2, the Request ID column now shows request 2 and the User column shows cas as the user.

```
                              Recorded External
Drive Type Control User Label MediaID MediaID Ready Writable RequestID
Drv1  qscsi OPR    rhs  No    TST401  TST401  Yes   No         0
Drv2  4mm   OPR    cas        CAS135  CAS135  Yes   Yes        2
```

The Pending Requests pane shows that the request has been cleared.

```
              Recorded External
RequestID User MediaID MediaID Density Mode  Time Barcode Volume Group
```

## Assigning a Drive Example 2

This example shows how to satisfy a typical request where drives are up under Automatic Volume Recognition control (AVR mode).

**Note** Some columns of the drive status and pending requests panes are not shown in this example.

1. Assume that you have the following pending request. The contents of the pending request line determine how to proceed.

```
              Recorded External
```

```
RequestId User MediaID MediaID Density Mode  Time Barcode Volume Group
4         NBU  TV101   TV101   4mm     Write 1:35 TV101  nonrob
```

The first step is to find an available tape drive. The request specifies a recording density of 4mm. This means you need a 4mm cartridge tape drive. The volume is labeled so you do *not* have to assign the drive using **Actions** > **Assign Request**.

**2.** Check the Drives status pane to see if an appropriate tape drive is available.

```
                                Recorded External
Drive Type Control User Label MediaID MediaID Ready Writable RequestID
Drive1 dlt AVR                                No
Drive2 4mm AVR                                No
```

Drive2 is a 4mm cartridge tape drive and is available, since it is not down and there is not a request number in the Request ID column. See the table in “Drives Status Pane” on page 178 for an explanation of each column in the drives status list.

**3.** Get the volume with the external media ID of TV101 and barcode of TV101. Depending on your site’s use of the Volume Group column, the volume group may give an indication of where the media ID is located.

**4.** Insert the volume into the drive. Assume that the tape drive is powered on and ready to receive the volume. Also, assume that when you insert the volume, the tape drive loads and positions it to the beginning.

**5.** Check the Drives status pane to verify that the drive is automatically assigned to request ID 4.

The following display shows that the assignment was successful. Drive2 is assigned to request 4, which is a request to write information on labeled volume TV101.

```
                                Recorded External
Drive Type Control User Label MediaID MediaID Ready Writable RequestID
Drive1 dlt AVR                                No
Drive2 4mm AVR     NBU  Yes   TV101   TV101   Yes Yes        4
```

In this example, the drive is up in AVR mode as indicated by AVR in the Control column. This means Media Manager assigned it automatically (which it does in AVR mode, providing the recorded media ID on the volume header matches the media ID for the request).

The write operation proceeds. When complete, NetBackup or the `tpunmount` command requests Media Manager to release the drive and Drive2 is available for other requests.

# Resolving Pending Actions

A pending action is indicated by an asterisk to the left of the request ID column.

The procedure for resolving a pending action follows:

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. In the Pending Requests pane, select the pending action.
3. Click **Actions** > **Display Pending Action**.

   This opens a message box with a description of the problem and a list of possible actions to correct it. The message box also shows other information, such as user name, recorded media ID, external media IDs, and drive number.
4. Click **OK** after viewing the information.
5. In most cases, you can do one of the following to resolve the action:
   - Correct the error condition and resubmit the request.

     See “Resubmitting Requests” on page 195
   - Click **Actions** > **Deny Request** to deny the request.

     See “Denying Requests” on page 196.

# Resubmitting Requests

The procedure to resubmit a request follows:

1. Correct the problem identified by the pending action message.
2. In the Pending Requests pane, select the request.
3. Click **Actions** > **Resubmit Request**.

   The pending action message disappears from the Pending Requests pane and the operation proceeds.

If a pending action message involves a robotic library, after correcting the problem you may need to resubmit the request that caused the message before the operation can proceed. For example, if a volume is requested after being removed from a robotic library, do the following:

1. Insert the volume in the robotic library.

2. Perform an Update Volume Configuration.

   See “Updating the Volume Configuration for a Robot” on page 126 for complete instructions.

3. Resubmit the request.

# Denying Requests

Some situations may require you to deny requests for service (for example, when drives are not available, you cannot find the volume, or the user is not authorized to use it). Denying a request returns an error message to the user.

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.

2. In the Pending Requests pane, select the request.

3. Click **Actions** > **Deny Request**.

The request is removed from the Pending Requests pane.

# Media Manager Commands and Processes A

This appendix describes Media Manager commands and Media Manager processes. These commands can be executed from a Windows command prompt.

The remaining commands in this appendix are for device management and are started or stopped by the NetBackup Device Manager service (`ltid`) as needed.

- `tpreq` and `tpunmount` are user commands for requesting tape mounts and unmounts for configured drives.
- `tpautoconf` (for NetBackup DataCenter only), `tpclean`, `tpconfig`, and `vmoprcmd` are administrative commands for device management.
- `vmadd`, `vmchange`, `vmcheckxxx`, `vmdelete`, `vmpool`, `vmquery`, `vmrule`, and `vmupdate` are administrative commands for media management.

The following conventions are used in the command descriptions:

- Brackets [ ] indicate that the enclosed component of the command line is optional.
- A vertical bar (or the pipe symbol) | separates optional arguments.

  For example, if a command has the following format, you can choose `arg1` or `arg2` (but not both):

  `command [arg1 | arg2]`
- Italics indicate that the information is user supplied.

# acsd

## NAME

acsd - Automated Cartridge System (ACS) process

## SYNOPSIS

*install_path*`\Volmgr\bin\acsd`

## DESCRIPTION

`acsd` interfaces with Media Manager to automatically mount and unmount tapes that are under Automated Cartridge System (ACS) control. It is initiated by the NetBackup Device Manager service (`ltid`), if the Media Manager device configuration shows drives in an ACS robot. Stopping `ltid` stops `acsd`.

`acsd` performs its tasks by sending requests to the STK LibAttach service which communicates with the server that controls the Automated Cartridge System.

When the connection is established, `acsd` puts the ACS robot in the UP state and can mount and unmount tapes. If the connection cannot be established or Automated Cartridge System errors exist, `acsd` changes the robot to the DOWN state. In this state, `acsd` is still running and returns the robot to the UP state when the problem no longer exists.

Drives are addressed and defined in Media Manager using the following: ACS number, LSM number, Panel number, and Drive number.

Drive cleaning for ACS robots must be configured using ACS library software. Cleaning volumes cannot be defined using Media Manager. In addition, you cannot use the `tpclean` command for cleaning operations on drives under ACS robotic control.

The Internet service number for `acsd` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\acsd` with a single line that contains the service number for `acsd`. The default service number is 13702.

## ERRORS

Media Manager logs ACS and network errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

# rsmd

## NAME

rsmd - Removable Storage Manager (RSM) process

## SYNOPSIS

*install_path*`\Volmgr\bin\rsmd`

## DESCRIPTION

`rsmd` interfaces with Media Manager to automatically mount and unmount tapes that are under Microsoft Windows 2000 Removable Storage Manager (RSM) control.

`rsmd` is initiated by the NetBackup Device Manager service (`ltid`), if the Media Manager device configuration shows drives in a robot controlled by RSM (the Media Manager robot type is rsm). Use the Windows Services applet to stop the NetBackup Device Manager service.

`rsmd` performs its tasks by sending requests to the Microsoft RSM service which communicates with the driver that controls the robot.

When the connection is established, `rsmd` puts the RSM robot is in the UP state and can mount and unmount tapes. If the connection cannot be established or robot errors exist, `rsmd` changes the robot to the DOWN state. In this state, `rsmd` is still running and returns the robot to the UP state when the problem no longer exists.

The Internet service number for `rsmd` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\rsmd` with a line that contains the service number for `rsmd`. The default service number is 13719.

## ERRORS

Media Manager logs any RSM and network errors to the Windows 2000 application event log. Log entries are also made when the state changes between UP and DOWN.

# tl4d

## NAME

tl4d - Tape Library 4MM (TL4) process

## SYNOPSIS

*install_path*`\Volmgr\bin\tl4d`

## DESCRIPTION

`tl4d` interfaces with Media Manager to mount and unmount tapes in a Tape Library 4MM (TL4) robot. It is initiated by the NetBackup Device Manager service (`ltid`), if the Media Manager device configuration shows drives in the robot. Stopping `ltid` stops `tl4d`.

`tl4d` communicates with the robotics through a SCSI interface. When the connection is established (the path for robotics can be opened), tl4d puts the TL4 robot in the UP state and can mount and unmount tapes. If the robotics are inaccessible, `tl4d` changes the robot to the DOWN state. In this state, `tl4d` is still running and returns the robot to the UP state if it is able to make a connection.

The media ID and slot number information for 4 mm tapes in a robot must be defined in the Media Manager volume database before any tapes can be accessed through the NetBackup Device Manager service and `tl4d`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean` for information on setting the frequency for automatic drive cleaning.

The Internet service number for `tl4d` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\tl4d` with a single line that contains the service number for `tl4d`. The default service number is 13713.

## ERRORS

Media Manager logs any Tape Library 4MM and robotic errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

# tl8d

## NAME

tl8d, tl8cd - Tape Library 8MM (TL8) process and control process

## SYNOPSIS

*install_path*`\Volmgr\bin\tl8d`

*install_path*`\Volmgr\bin\tl8cd`

## DESCRIPTION

`tl8d` and `tl8cd` interface with Media Manager to mount and unmount volumes in a Tape Library 8MM robot.

`tl8d` directly interfaces with the NetBackup Device Manager service (`ltid`). A `tl8d` process runs on each host with a drive connection and sends mount and unmount requests to the control process `(tl8cd)`. `tl8cd` communicates with the robotics through a SCSI interface.

For NetBackup DataCenter, Tape Library 8MM robotic control software permits drives in the same robot to be configured on different hosts. `tl8cd` may be running on a different host than `tl8d`, depending on where the SCSI connection resides (see EXAMPLES). When the connection is established (that is, the path for robotics can be opened), `tl8d` puts the TL8 robot in the UP state and can mount and unmount volumes. If the robotics are inaccessible, `tl8d` changes the robot to the DOWN state. In this state, `tl8d` is still running and returns the robot to the UP state if `tl8cd` is able to make a connection.

**Note** If drives are on different NetBackup DataCenter hosts, the robotic information must be entered in the Media Manager configuration on all machines and the robot number must be the same on all machines.

`tl8d` and `tl8cd` are started when the NetBackup Device Manager service is started and stopped when this service is stopped.

The control process, `tl8cd`, is on the host that has the robotic control and is automatically started by `tl8d` on that host (see EXAMPLES). `tl8cd` is stopped when you stop the NetBackup Device Manager service.

The media ID and slot number information for volumes in a robot must be defined in the volume database before any volumes can be accessed through the NetBackup Device Manager service, `tl8d`, and `tl8cd`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean` for information on setting the frequency for automatic drive cleaning.

If the `vm.conf` configuration option `PREVENT_MEDIA_REMOVAL` is enabled when `tl8cd` is active, `tl8cd` disables access to the volumes and media access port by issuing a command to the TL8 robot. If it is necessary to open the door of the cabinet, you must terminate `tl8cd` first. By default, access to the library is allowed.

The drives are logically numbered 1 through *n*, where *n* is the number of drives in the robotic library. Use one or more of the following to determine the correct robot drive numbers:

- The Device Configuration wizard (if the robotic library and drives support serialization).
- The Robot Drive and Slot Layout appendix in the NetBackup Media Manager system administrator's guide.
- The robotic library vendor's documentation on drive indexing.
- The robotic test utility, or experiment by mounting media and watching the operator display.

The Internet service number for `tl8cd` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\tl8cd` with a single line that contains the service number for `tl8cd`. The default service number is 13705.

## ERRORS

Media Manager logs any Tape Library 8MM and robotic errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

## EXAMPLES

In the following diagram, the drives and the robotics are connected to a single host. `ltid` initiates `tl8d`, which in turn initiates `tl8cd`.

```
        host A                  TL8 Robot

     ------------            -------------

     |          |            |           |

     |  ltid    |            |           |

     |  tl8d    |            |           |

     |  tl8cd   |            |-----------|

     |          |         |--| Robotics  |

     |          |         |  |-----------|

     |          |         |--|  drive 1  |

     |----------|         |  |-----------|
```

```
|   SCSI   |------------|  drive 2  |
------------             -------------
```

**Note** The following diagram applies only to NetBackup DataCenter.

In the following diagram, each host is connected to one drive in the robot and the robotics are connected to host A. `ltid` on each host initiates `tl8d`. The `tl8d` on host A also initiates `tl8cd`, since that is where the robotic control is defined. Requests to mount tapes from host B go to `tl8d` on host B, which sends the robotic command to `tl8cd` on host A.

```
    host A            TL8 Robot               host B
------------        -------------         ------------
|          |        |           |         |          |
|  ltid    |        |           |         |  ltid    |
|  tl8d    |        |           |         |  tl8d    |
|  tl8cd   |        |-----------|         |          |
|          |   |----| Robotics  |         |          |
|          |   |    |-----------|         |----------|
|          |   |    |  drive 1  |---------|   SCSI   |
|----------|   |    |-----------|         |----------|
|   SCSI   |--------|  drive 2  |         |          |
------------        -------------         ------------
```

# tldd

## NAME

tldd, tldcd - Tape Library DLT (TLD) process and control process

## SYNOPSIS

*install_path*`\Volmgr\bin\tldd`

*install_path*`\Volmgr\bin\tldcd`

## DESCRIPTION

`tldd` and `tldcd` interface with Media Manager to mount and unmount volumes in a Tape Library DLT (TLD) robot.

`tldd` directly interfaces with the NetBackup Device Manager service (`ltid`). `tldd` runs on each host with a drive connection and sends mount and unmount requests to the control process `(tldcd)`. `tldcd` communicates directly with the robotics through a SCSI interface.

For NetBackup DataCenter, TLD robotic control software permits drives in the same robot to be configured on different hosts. `tldcd` may be running on a different host than `tldd`, depending on where the interface connection resides (see EXAMPLES). When the connection is established (that is, the path for robotics can be opened), `tldd` puts the TLD robot in the UP state and can mount and unmount volumes. If the robotics are inaccessible, `tldd` changes the robot to the DOWN state. In this state, `tldd` is still running and returns the robot to the UP state if `tldcd` is able to make a connection.

**Note** If drives are on different NetBackup DataCenter hosts, the robotic information must be entered in the Media Manager device configuration on all machines and the robot number must be the same on all machines.

`tldd` and `tldcd` are started when `ltid` is started and stopped when this service is stopped.

`tldcd` is on the host that has the robotic control and is automatically started by `tldd` on that host. `tldcd` is stopped when you stop the NetBackup Device Manager service.

The media ID and slot number information for volumes in the robot must be defined in the volume database before any volumes can be accessed through the NetBackup Device Manager service, `tldd`, and `tldcd`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean` for information on setting the frequency for automatic drive cleaning.

The drives are logically numbered 1 through *n*, where *n* is the number of drives in the robotic library. Use one or more of the following to determine the correct robot drive numbers:

- The Device Configuration wizard (if the robotic library and drives support serialization).
- The Robot Drive and Slot Layout appendix in the NetBackup Media Manager system administrator's guide.
- The robotic library vendor's documentation on drive indexing.
- The robotic test utility, or experiment by mounting media and watching the operator display.

The Internet service number for `tldcd` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\tldcd` with a single line that contains the service number for `tldcd`. The default service number is 13711.

## ERRORS

Media Manager logs any Tape Library DLT and robotic errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

## EXAMPLES

In the following diagram, the two drives and the robotics connect to Host A. `ltid` initiates `tldd`, which in turn initiates `tldcd`.

```
        Host A                TLD Robot

      __________          ____________
     |          |        |            |
     |  ltid    |        |            |
     |  tldd    |        |            |
     |  tldcd   |        |------------|
     |          |     |--| Robotics   |
     |          |     |  |------------|
     |          |     |  |            |
     |----------|     |  |------------|
     |   SCSI   |-----|--|  drive 2   |
     |__________|     |  |------------|
                      |--|  drive 1   |
                         |____________|
```

**Note** The following diagram applies only to NetBackup DataCenter.

In the following diagram, each host connects to one drive and the robotics connect to host A. `ltid` on each machine initiates `tldd`. The `tldd` on host A also initiates `tldcd`, since that is where the robotic control is defined. Requests to mount tapes from host B go to `tldd` on host B, which sends the robotic command to `tldcd` on host A.

```
        host A              TLD Robot              host B

     __________          ___________           __________
    |  ltid    |        |           |         |  ltid    |
    |  tldd    |        |           |         |  tldd    |
    |  tldcd   |        |-----------|         |          |
    |          |   |----| Robotics  |         |          |
    |          |   |    |-----------|         |----------|
    |          |   |    |  drive 3  |---------|   SCSI   |
    |----------|   |    |-----------|         |----------|
    |   SCSI   |---|----|  drive 2  |         |          |
    |__________|   |    |-----------|         |__________|
                   |----|  drive 1  |
                        |___________|
```

# tlhd

## NAME

tlhd, tlhcd - Tape Library Half-inch (TLH) process and control process

## SYNOPSIS

*install_path*`\Volmgr\bin\tlhd`

## DESCRIPTION

`tlhd` and `tlhcd` interface with Media Manager to mount and unmount tape volumes in a Tape Library Half-inch (TLH) robot.

`tlhd` directly interfaces with the NetBackup Device Manager service (`ltid`). `tlhd` runs on each host with a drive connection and sends mount and unmount requests to the control process, `tlhcd`.

`tlhcd` communicates with the IBM Automated Tape Library (ATL) library manager, which processes all requests and control functions for the robotic library. TLH robotic control software permits drives in the same robot to be configured on different hosts. `tlhcd` can be running on a different host than `tlhd`, depending on where the IBM library control is configured (see EXAMPLES). When communication with the library is established, `tlhd` puts the TLH robot in the UP state and can request volume mounts and unmounts. If the library or control process is inaccessible, `tlhd` changes the robot to the DOWN state. In this state, `tlhd` is still running and returns the robot to the UP state if `tlhcd` is able to make a connection.

**Note** If drives are on different hosts, the robotic information must be entered in the Media Manager device configuration on all machines and the robot number must be the same on all machines.

`tlhd` and `tlhcd` are automatically started when the NetBackup Device Manager service is started and stopped when this service is stopped.

`tlhcd` is on the host that has the robotic control and is automatically started by `tlhd` on that host. `tlhcd` is terminated when you stop the NetBackup Device Manager service`ltid`.

The Media Manager media ID for volumes to be used in the library must be defined in the volume database before any volumes can be accessed using the NetBackup Device Manager service`ltid`, `tlhd`, and `tlhcd`. Both the initial volume database population and future updates can be accomplished using Media Manager robotic inventory options.

The drives are configured using IBM device names. The robotic test utility, `tlhtest` (or `robtest` if the robot is configured), can be used to determine the device names associated with the robot. You can also use this utility along with IBM's `mtlib` command-line interface to verify library communications, status, and functionality.

Drive cleaning for Tape Library Half-inch robotic control must be configured through an IBM library manager console, since these operations are not made available to applications that are using the IBM library manager. For this reason, cleaning volumes cannot be defined through Media Manager. In addition, you cannot use the Media Manager utilities or the `tpclean (1M)` command for cleaning operations on drives under TLH robotic control.

## ERRORS

Media Manager logs any Tape Library Half-inch and robotic errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

## EXAMPLES

In the following examples the device hosts can be Windows NT, Windows 2000, or the following UNIX servers: AIX, HP-UX, IRIX, DYNIX/ptx, or Solaris.

In the following diagram, the drives are attached to and the robotics are controlled from a single host. `ltid` initiates `tlhd`, which in turn initiates `tlhcd`. The IBM Automated Tape Library service (`lmcpd`) must be running on Host A.

```
  Host A                TLH

 _________          __________
|         |        |          |
| ltid    |        |          |
| tlhd    |        |          |
| tlhcd   |        |----------|
|         |   |----| Robotics |
|---------|   |    |----------|
| lmcpd   |---| |--|003590B1A02|
|---------|     |  |----------|
|  SCSI   |-----|--|003590B1A01|
|_________|     |  |----------|
                |--|003590B1A00|
                   |__________|
```

In the following diagram, each host is connected to at least one drive and the robotics are controlled from Host A. `ltid` on each machine initiates `tlhd`. The `tlhd` on Host A also initiates `tlhcd`, since that is where the robotic control is defined. Requests to mount tapes from Host B go to `tlhd` on Host B, which sends the robotic command to `tlhcd` on Host A.

```
   Host A                TLH                    Host B

 __________          ___________            __________
|          |        |           |          |          |
|  ltid    |        |           |          |  ltid    |
|  tlhd    |        |           |          |  tlhd    |
|  tlhcd   |        |-----------|          |          |
|          |   |----| Robotics  |          |          |
|----------|   |    |-----------|          |----------|
|  lmcpd   |---|    |003590B1A02|---------|   SCSI   |
|----------|        |-----------|          |----------|
|   SCSI   |-----|--|003590B1A01|          |          |
|__________|     |  |-----------|          |__________|
                 |--|003590B1A00|
                    |___________|
```

# tlmd

## NAME

tlmd - Tape Library Multimedia (TLM) process

## SYNOPSIS

*install_path*`\Volmgr\bin\tlmd`

## DESCRIPTION

`tlmd` interfaces with Media Manager to automatically mount and unmount tapes that are under control of a TLM robot. It is initiated by the NetBackup Device Manager service (`ltid`), if the Media Manager device configuration shows drives in an TLM robot. Stopping `ltid` stops `tlmd`.

`tlmd` performs its tasks by sending requests to the DAS server that controls the robot.

When the connection is established, `tlmd` puts the TLM robot in the UP mode and can mount and unmount tapes. If the connection cannot be established or robotic errors exist, `tlmd` changes the robot to the DOWN mode. In this state, `tlmd` is still running and returns the robot to the UP mode when the problem no longer exists.

The Internet service number for `tlmd` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\tlmd` with a single line that contains the service number for `tlmd`. The default service number is 13716.

## ERRORS

Media Manager logs TLM and network errors to the Windows application event log. Log entries are also made when the mode changes between UP and DOWN.

# tpautoconf

## NAME

tpautoconf - Manage the global device database host

## SYNOPSIS

*install_path*`\Volmgr\bin\tpautoconf -get_gdbhost`

*install_path*`\Volmgr\bin\tpautoconf -set_gdbhost` *host_name*

## DESCRIPTION

`tpautoconf` is normally used by the Device Configuration wizard to automatically discover and configure devices. This wizard calls `tpautoconf` with a different set of options.

The `get` and `set` options described here are useful only in special situations; for example, to specify a different host as the global device database host. The global device database host name is automatically defined when NetBackup is installed.

See the Configuring Storage Devices chapter of the NetBackup DataCenter Media Manager system administrator's guide for information about managing the global device database host.

## OPTIONS

`-get_gdbhost`
: Returns the name of the host where the global device database is stored.

`-set_gdbhost` *host_name*
: Set the name of the host where the global device database will be stored.

## EXAMPLES

The following command returns the name of the host where the global device database is stored:

```
tpautoconf -get_gdbhost
```

The following command sets the global device database host to be the host niagra:

```
tpautoconf -set_gdbhost niagra
```

## SEE ALSO

`tpconfig`

# tpclean

## NAME

tpclean - manages tape drive cleaning

## SYNOPSIS

*install_path*`\Volmgr\bin\tpclean -L`

*install_path*`\Volmgr\bin\tpclean -C` *drive_name*

*install_path*`\Volmgr\bin\tpclean -M` *drive_name*

*install_path*`\Volmgr\bin\tpclean -F` *drive_name* *cleaning_frequency*

## DESCRIPTION

`tpclean` allows you to monitor Media Manager tape drive usage and optionally configure tape drives to be automatically cleaned (except drives in ACS, LMF, ODL, RSM, or TLH robots; or shared (SSO) drives).

Media Manager tracks the total amount of time that volumes have been mounted in the drives. You can use `tpclean` to specify a cleaning frequency (in hours) for a drive.

Drive cleaning occurs, if the following are true:

- The mount time exceeds the cleaning frequency.
- The drive is in a robot.
- The Media Manager volume configuration shows a cleaning tape in the robot.

The Comment field in the `tpclean -L` output will contain the message, NEEDS CLEANING, if the following are true. You can then manually clean the drive and reset the mount time using the `-M` option.

- The mount time exceeds the cleaning frequency.
- The drive is a standalone drive or does not have a cleaning tape defined.

For the `-C`, `-M`, and `-F` options, the NetBackup Device Manager service must be running. You must also have administrator privileges to execute this command.

See the reference topics appendix of the Media Manager system administrator's guide for information about the TapeAlert feature that is available with most tape drives, and other related drive cleaning topics.

## OPTIONS

`-C` *drive_name*

Initiates the cleaning of a drive in a robot. The drive must be defined in a robot and a cleaning tape defined in the Media Manager volume configuration. The mount time is reset to zero. The drive name is the name that was assigned to the drive, when it was added.

`-L`

Prints cleaning statistics.

`-M` *drive_name*

Use this option to indicate that the drive has been manually cleaned. The mount time is reset to zero. The drive name is the name that was assigned to the drive, when it was added to the device configuration.

`-F` *drive_name cleaning_frequency*

Sets cleaning frequency for the specified drive to *cleaning_frequency* hours. The drive name is the name that was assigned to the drive when it was added. The value of *cleaning_frequency* must be between 0 and 10,000 hours.

For NetBackup DataCenter, frequency-based cleaning is not supported for shared drives.

## EXAMPLES

The following example displays cleaning statistics. An asterisk next to the drive type means the device is defined as robotic.

```
#tpclean -L
Drive Name   Type   Mount Time  Frequency   Last Cleaned   Comment
**********   ****   **********  **********  ************   *******
qsci_drv0    qscsi      0.0         0           N/A
rob_A_drv1   8mm*      11.4        30       14:33 05/29/92
4mm_drv5     4mm        5.6        10       13:01 06/02/92
dlt_drv6     dlt        3.0         0           N/A
```

The following example sets the cleaning frequency for the drive named `qsci_drv0` to 25 hours. The drive will be flagged as needing cleaning after 25 hours of mount time has occurred.

```
tpclean -F qsci_drv0 25
```

The following example resets the mount time for the drive named `rob_A_drv1` to zero. You would normally use this command after you had manually cleaned the drive.

```
tpclean -M rob_A_drv1
```

The following example initiates the cleaning of drive `rob_A_drv1`. This example assumes the drive is a robotic drive, with a cleaning tape defined. The mount time is reset to zero.

You can use the `-C` option to force the cleaning of a drive prior to reaching *cleaning_frequency*. Normally, robotic drives are cleaned automatically when their mount time exceeds the cleaning frequency.

```
tpclean -C rob_A_drv1
```

**Note** To use a cleaning tape, the Cleanings Remaining for that tape (as shown in the volume list of the Media node in the NetBackup Administration Console or from the `vmquery` command) must be greater than zero. This cleaning count refers to how many more times the cleaning tape can be used. You can change this count using the Media node or the `vmchange` command.

# tpconfig

## NAME

tpconfig - Tape configuration utility

## SYNOPSIS

*install_path*`\Volmgr\bin\tpconfig -d`

*install_path*`\Volmgr\bin\tpconfig -l`

*install_path*`\Volmgr\bin\tpconfig -dl`

*install_path*`\Volmgr\bin\tpconfig -lsavdbhost`

*install_path*`\Volmgr\bin\tpconfig -add -drive -type` *drvtype* `-path` *drivepath* `[-asciiname` *asciidrivename*`] [-index` *drvindex*`] [-shared [yes|no]] [-cleanfreq` *hours*`] [-comment` *comment*`] [-drstatus [UP|DOWN]] [-robot` *robnum* `-robtype` *robtype*`] [-noverify] [-robdrnum` *robdrvnum* `| -VendorDrvName` *venddrvname* `| -ACS` *acsnum* `-LSM` *lsmnum* `-PANEL` *panelnum* `-DRIVE` *drivenum*`]`

*install_path*`\Volmgr\bin\tpconfig -update -drive` *drvindex* `[-type` *drvtype*`] [-path` *drivepath*`] [-newasciiname` *asciidrivename*`] [-shared [yes|no]] [-cleanfreq` *hours*`] [-comment` *comment*`] [-drstatus [UP|DOWN]] [-robot` *robnum* `-robtype` *robtype*`] [-noverify] [-robdrnum` *robdrvnum* `| -VendorDrvName` *venddrvname* `| -ACS` *acsnum* `-LSM` *lsmnum* `-PANEL` *panelnum* `-DRIVE` *drivenum*`]`

*install_path*`\Volmgr\bin\tpconfig -delete -drive` *drvindex*

*install_path*`\Volmgr\bin\tpconfig -multiple_delete -drive` *drvindex1*`:`*drvindex2*`: ...` *drvindexN*

*install_path*`\Volmgr\bin\tpconfig -add -robot` *robnum* `-robtype` *robtype* `-robpath` *robpath* `[-vdbhost` *volume_database_host*`]`

*install_path*`\Volmgr\bin\tpconfig -add -robot` *robnum* `-robtype` *robtype* `-port` *portnum* `-bus` *busnum* `-target` *targetnum* `-lun` *lun* `[-vdbhost` *volume_database_host*`]`

*install_path*`\Volmgr\bin\tpconfig -add -robot` *robnum* `-robtype` *robtype* `-cntlhost` *cntlhost* `[-vdbhost` *volume_database_host*`]`

*install_path*`\Volmgr\bin\tpconfig -update -robot` *robnum* `[-robtype` *robtype*`] [-robpath` *robpath* `| -port` *portnum* `-bus` *busnum* `-target` *targetnum* `-lun` *lun* `| -cntlhost` *cntlhost*`] [-vdbhost` *volume_database_host*`]`

*install_path*`\Volmgr\bin\tpconfig -delete -robot` *robnum*

*install_path*`\Volmgr\bin\tpconfig -multiple_delete -robot` *robnum1*`:`*robnum2*`: ...` *robnumN*

*install_path*`\Volmgr\bin\tpconfig -savdbhost` *standalone_volume_database_host*

## DESCRIPTION

The `tpconfig` command can be used to configure drives and robots for use with NetBackup. The default for *install_path* is `C:\Program Files\VERITAS`.

When your device configuration changes are complete, stop and restart the NetBackup Device Manager service.

## OPTIONS

`-l`
: Lists the current device configuration, without volume database host names.

`-d`
: Lists the current configuration information, including volume database host names.

**Note** The following option is only applicable for NetBackup DataCenter.

`-lsavdbhost`
: Lists the volume database host for standalone drives. This is the host where the NetBackup Volume Manager Service maintains the volume configuration for standalone drives.

`-add`
: Adds a drive or a robot, depending on the accompanying options.

`-update`
: Changes the configuration information for a drive or robot. For example, you can add a drive to a robot.

`-delete`
: Deletes a drive or robot, depending on the accompanying options.

`-multiple_delete`
: Deletes multiple drives or robots, depending on the accompanying options.

**Note** The following option is applicable only for NetBackup DataCenter.

`-savdbhost` *standalone_volume_database_host*
Sets the volume database host for standalone drives that attach to this host.

`-drive`
Use this option with the `-add` option to specify that the action is for a drive.

`-drive` *drvindex*
Use this option with the `-update`, `-delete,or -multiple_delete` options to specify the drive index and that the action is for a drive.

`-type` *drvtype*
Specifies the type of drive that you are configuring.

This can be any of the following for NetBackup DataCenter:

`4mm` for 4mm tape drive, `8mm` for 8mm tape drive, `8mm2` for 8mm tape drive 2, `8mm3` for 8mm tape drive 3, `dlt` for DLT tape drive, `dlt2` for DLT tape drive 2, `dlt3` for DLT tape drive 3, `hcart` for Half-inch cartridge drive, `hcart2` for Half-inch cartridge drive 2, `hcart3` for Half-inch cartridge drive 3, qscsi for Quarter-inch cartridge drive.

This can be any of the following for NetBackup BusinesServer:

`4mm` for 4mm tape drive, `8mm` for 8mm tape drive, `dlt` for DLT tape drive, `hcart` for Half-inch cartridge drive, qscsi for Quarter-inch cartridge drive.

`-path` *drivepath*
Specifies the Windows system name for the drive. For example, TAPE0.

`-comment` *comment*
Adds a comment about the drive. This field is useful for storing SCSI inquiry data so you can easily check the drive type and firmware level.

`-index` *drvindex*
A drive index is a unique number that is used to identify the drive. When you add a drive you are not required to supply a drive index, since the next available drive index is used by Media Manager. Each drive on a particular host must have a unique index number.

`-drstatus UP|DOWN`
Sets the initial status of the drive to the Up or Down state. You can also perform this action with options in the Device Management window.

`-cleanfreq` *hours*

**Note** Not used with shared drives.

Specifies the number of hours between drive cleanings. When you add a drive, NetBackup starts recording the amount of time that volumes are mounted in that drive.

If the drive is in a robot and a cleaning volume is defined in the robot, cleaning occurs when the accumulated mount time exceeds the time that you specify for cleaning frequency. NetBackup resets the mount time when the drive is cleaned.

If the drive is standalone or if a cleaning tape is not defined, the message NEEDS CLEANING appears in the comment field of the `tpclean -L` output. To clean the drive, use the `tpclean` command.

`-robot` *robnum*

A unique number that identifies the robot to NetBackup. You assign the robot number when you add the robot using the `add` option.

For NetBackup DataCenter, robot numbers must be unique for all robots that share the same volume database host (and therefore use the same volume database). This applies regardless of the robot type or the host that controls them. For example, if you have two TSD robots controlled by different hosts, but they have the same volume database host, then the robot numbers must be different.

`-robtype` *robtype*

Specifies the type of robot that you are configuring and can be any of the types supported by NetBackup on Windows servers.

The type of robot can be any of the following for NetBackup DataCenter:

`acs` for Automated Cartridge System, `rsm` for Removable Storage Manager (Windows 2000 only), `tl4` for Tape Library 4mm, `tl8` for Tape Library 8mm, `tld` for Tape Library DLT, `tlh` for Tape Library Half-inch, `tlm` for Tape Library Multimedia, `ts8` for Tape Stacker 8mm, `tsd` for Tape Stacker DLT.

The type of robot can be any of the following for NetBackup BusinesServer:

`rsm` for Removable Storage Manager (Windows 2000 only), `tl4` for Tape Library 4mm, `tl8` for Tape Library 8mm, `tld` for Tape Library DLT, `ts8` for Tape Stacker 8mm, `tsd` for Tape Stacker DLT.

`-noverify`

If this option is specified, drive paths are not verified. Normally, `tpconfig` verifies that the no rewind on close drive path has the correct minor number bits relating to no rewind, variable, Berkeley-style, and so on. This option is normally not required, but may be helpful if using non-standard platform device files. If this option is specified, caution should be taken in making sure the device files are correct.

`-robdrnum` *robdrvnum*

Specifies the physical location (within the robot) of the drive. If you assign the wrong number, NetBackup does not detect it, but an error eventually occurs because the robotic control attempts to mount media on the wrong drive.

You can usually determine the physical location by checking the connectors to the drives or the vendor documentation.

The Robot Slot and Layout appendix of the Media Manager system administrator's guide shows drive layouts for many of the robots that NetBackup supports.

**Note** The following four ACS options are not supported in NetBackup BusinesServer.

`-ACS` *acsnum*

`-LSM` *lsmnum*

`-PANEL` *panelnum*

`-DRIVE` *drivenum*

These options specify the configuration for ACS (Automated Cartridge System) robots.

*acsnum* specifies the number for the robotic library as configured on the ACS library software host.

*lsmnum* specifies the Library Storage Module that has this drive.

*panelnum* specifies the robot panel where this drive is located.

*drivenum* specifies the number of this drive.

**Note** The following two options are not supported in NetBackup BusinesServer.

`-VendorDrvName` *venddrvname*

Specifies the IBM device name for a TLH robotic drive or the DAS drive name for a TLM robotic drive.

`-shared yes|no`

Specify `yes`, if the drive you are adding or updating will be shared among hosts.

`-asciiname` *asciidrivename*

Specifies a name for the drive. This name identifies the drive to Media Manager. If you do not specify a drive name, Media Manager generates a name.

For NetBackup DataCenter, if you are adding or updating shared drives, make this name as descriptive as possible.

`-newasciiname` *asciidrivename*
Specifies a new name for the drive.

**Note** For a SCSI-controlled robot on NetBackup DataCenter, specify the `-port`, `-bus`, `-target`, and `-lun` options if the robotic control is on the local Windows host and there is no changer name associated with the robotic library.
If the robot control is on the local Windows 2000 host and supported by Windows 2000, configure the robot using `-robpath` *pathname* (using the changer name as *pathname*).
If the robotic control is on a remote host, use the `-cntlhost` option.

**Note** For NetBackup BusinesServer if a TLD or TL8 robot is used on and supported by Windows 2000, configure it using `-robpath`.

`-port` *portnum*
Specifies the SCSI port number to which the robot connects. You can find this information in the registry.

`-bus` *busnum*
Specifies the SCSI bus number to which the robot connects.

`-target` *targetnum*
Specifies the target number (or SCSI ID) to which the robot connects.

`-lun` *lun*
Specifies the logical unit number.

**Note** The following option is only applicable for NetBackup DataCenter.

`-cntlhost` *cntlhost*
For a robot whose robotic control is on another host, this option specifies the host that controls the robotic library.

This option applies only to TL8, TLD, and TLH robots that can have the robotic control on another host, and to ACS and TLM robots.

For an ACS robot, specify the host name where the ACS library software is installed.

For a TLM robot, specify the host name where the DAS software is installed.

`-robpath` *robpath*
If the robot that you are adding or updating has a changer name associated with it, and is on UNIX host or Windows 2000 host, use this option.

**Note** The following option is only applicable for NetBackup DataCenter.

`-vdbhost` *volume_database_host*
For a robot, this specifies the volume database host. This is the host that will have the information about the media in the robot.

## EXAMPLES

**Note** In the following examples, the command that is entered is shown on multiple lines because of page limitations. The actual command is entered on one line.

### EXAMPLE 1: ROBOTIC CONTROL ON LOCAL WINDOWS SERVER

The following example adds a robot that connects directly to a Windows host, and also adds drives to that robot. For NetBackup BusinesServer there is only one host (the master), so the -vdbhost option is not needed.

1. Add the robot using the following command:

   ```
   tpconfig -add -robot 7 -robtype tld -port 0 -bus 0 -target 2 lun
   0 -vdbhost walleye
   ```

2. If there are drives in the robot that have not been configured, add them.

   The following command configures the drive with the system name of Tape0 under control of the robot configured in step 1 (`Tape0` has been attached and recognized by the server.)

   ```
   tpconfig -add -drive -type dlt -path Tape0 -comment "DEC
   DLT2000 8414" -index 0 -drstatus up -robot 7 -robtype tld
   -robdrnum 1 -asciiname DLT2000_D1
   ```

   The command in this example uses the comment field. This field is useful for storing the drive's SCSI inquiry data so that drive type and firmware level can be easily checked.

3. If the robot contains drives that are currently configured as standalone drives, update the drive configuration to place them under robotic control.

   The following commands update the configuration for drives 1 and 2:

   ```
   tpconfig -update -drive 1 -type dlt -robot 7 -robtype tld
   -robdrnum 1
   ```

   ```
   tpconfig -update -drive 2 -type dlt -robot 7  -robtype tld
   -robdrnum 2
   ```

**Note** It is important that you assign the correct robot drive number to the drives. If robot drive numbers are incorrect, tape mounts or backups may fail.

### EXAMPLE 2: ROBOTIC CONTROL ON REMOTE HOST

**Note** The following example applies only to NetBackup DataCenter.

This example adds a robot that connects to another host. It assumes that one or more tape drives that are in the robot, connect to the Windows host where you are currently managing devices.

1. Add the robot by executing the following command:

   ```
   tpconfig -add -robot 9 -robtype tld -cntlhost perch  -vdbhost
   perch
   ```

   Ensure that the robot number matches the one on the control host.

2. If the robot contains drives that are currently configured as standalone, update the drive configuration to place them under robotic control.

   The following commands update the configuration for drives 1 and 2:

   ```
   tpconfig -update -drive 1 -type dlt -robot 9  -robtype tld
   -robdrnum 1
   ```

   ```
   tpconfig -update -drive 2 -type dlt -robot 9  -robtype tld
   -robdrnum 2
   ```

**Note** It is important that drives are assigned the correct robot drive number. If robot drive numbers are incorrect, tape mounts or backups may fail.

3. If there are drives in the robot that have not been configured, add them now.

   The following command configures the drive with the system name of Tape0 under control of the robot configured in step 1. (Tape0 has been attached and recognized by the Windows server.)

   ```
   tpconfig -add -drive -type dlt -name Tape0 -comment "DEC
   DLT2000 8414" -index 3 -drstatus up -robot 9 -robtype tld
   -robdrnum 3 -asciiname DLT2000_D3
   ```

### EXAMPLE 3: CONFIGURING NEW STANDALONE DRIVES

The following is an example of adding a standalone drive, after the drive is installed:

```
tpconfig -add -drive -type dlt -name Tape0 -comment "DEC
DLT2000 8414" -index 6 -asciiname DLT2000_standalone
```

# tpreq

## NAME

tpreq - request a tape volume for mounting and associate a file name with the assigned drive

## SYNOPSIS

*install_path*`\Volmgr\bin\tpreq -m` *media_id* `[-a` *accessmode*`] [-d` *density*`] [-p` *poolname*`] [-f]` *filename*

## DESCRIPTION

This command initiates a mount request for a tape volume on a removable media device. The information that you specify with this command identifies and registers the specified file as a logical identifier for the mount request with Media Manager and manages access to the volume.

Media Manager automatically mounts the media if it is in a robotic drive. Otherwise, an operator mount request appears in the Device Monitor window. `tpreq` will not complete normally in the case of a mount request for a robotic drive, if operator intervention is required. These requests also appear in the Device Monitor window.

When the operation is complete, use the `tpunmount` command to remove the file name from the directory in which the file was created.

## OPTIONS

`-m` *media_id*

Specifies the media ID of the volume to be mounted. You can enter the ID in upper or lowercase; Media Manager converts it to uppercase.

`-a` *accessmode*

Specifies the access mode of the volume. Valid access modes are `w` and `r`. If the access mode is `w` (write), the media must be mounted with write enabled. The default is `r` (read), which means the media may be write protected.

`-d` *density*

Specifies the density of the drive. This option determines the type of drive on which the tape volume is mounted. The default density is dlt.

Valid densities for NetBackup DataCenter follow:

4mm for 4-mm cartridge, 8mm for 8-mm cartridge, 8mm2 for 8-mm cartridge 2, 8mm3 for 8-mm cartridge 3, dlt for DLT cartridge, dlt2 for DLT cartridge 2, dlt3 for DLT cartridge 3, hcart for 1/2 Inch cartridge, hcart2 for 1/2 Inch cartridge 2, hcart3 for 1/2 Inch cartridge 3, qscsi for 1/4-inch cartridge.

For NetBackup DataCenter, the half-inch cartridge densities (hcart, hcart2, and hcart3) can be used to distinguish between any supported half-inch drive types. However, tape requests can only be assigned to drives of the associated media type. For example, a tape request with density hcart2 specifying a media ID with media type HCART2 will be assigned to an hcart2 drive. Likewise, a tape request with density hcart specifying an media ID with media type HCART will be assigned to an hcart drive. The same rules apply to the DLT densities (dlt, dlt2, and dlt3) and the 8MM densities (8mm, 8mm2, and 8mm3).

Valid densities for NetBackup BusinesServer follow:

4mm for 4-mm cartridge, 8mm for 8-mm cartridge, dlt for DLT cartridge, hcart for 1/2 Inch cartridge, qscsi for 1/4-inch cartridge.

The mount request must be performed on a drive type that satisfies the density.

`-p` *poolname*

Specifies the volume pool where the volume resides. *poolname* is case sensitive. The default is None.

`-f` *filename*

Specifies the file to be associated with the volume.

The file name can be a single name or a complete path. If you specify only a file name, the file is created in the current working directory. If you specify a path, the file is created in the directory named in the path. *filename* cannot be an existing file.

If the `tpreq` command is successful, Media Manager creates a file with the name that you specified. This file contains the name of the tape device where the media is mounted. Do not delete this file. Use the `tpunmount` command to remove it.

Specifying `-f` before *filename* is optional.

# tpunmount

## NAME

tpunmount - removes a tape volume from a drive and tape file from the directory

## SYNOPSIS

*install_path*`\Volmgr\bin\tpunmount [-f]` *filename* `[-force]`

## DESCRIPTION

`tpunmount` removes a tape file from the directory and physically removes the tape volume from the drive (if the media was mounted).

Standalone drives are *not* unloaded when the `DO_NOT_EJECT_STANDALONE` option is specified in the `vm.conf` file (and the `-force` option is *not* specified).

The tape file and the device must be closed before you can use `tpunmount`.

## OPTIONS

`-f` *filename*

Specifies the file associated with the media. You must specify a file name.

Specifying `-f` before *filename* is optional.

`-force`

Ejects the volume from a standalone drive, even if `DO_NOT_EJECT_STANDALONE` was specified in the `vm.conf` file.

## EXAMPLE

The following command unmounts the tape volume associated with file `tape1` and removes the file from the current directory:

```
tpunmount tape1
```

# ts8d

## NAME

ts8d - Tape Stacker 8MM (TS8) process

## SYNOPSIS

*install_path*`\Volmgr\bin\ts8d`

## DESCRIPTION

`ts8d` interfaces with Media Manager to mount and unmount tapes in a Tape Stacker 8MM robot. It is initiated by the NetBackup Device Manager service (`ltid`), if the Media Manager device configuration shows drives in a Tape Stacker 8MM. Stopping this service stops `ts8d`.

`ts8d` communicates directly with the robotics through a SCSI interface. When the connection is established (the path for robotics can be opened), `ts8d` puts the TS8 robot in the UP state and can mount and unmount tapes. If the robotics are inaccessible, `ts8d` changes the robot to the DOWN state. In this state, `ts8d` is still running and returns the robot to the UP state if it is able to make a connection.

The media ID and slot number information for 8mm tapes in a robot must be defined in the volume database before any tapes can be accessed through the NetBackup Device Manager service and `ts8d`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean` for information on setting the frequency for automatic drive cleaning.

The Internet service number for `ts8d` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\ts8d` with a single line that contains the service number for `ts8d`. The default service number is 13709.

## ERRORS

Media Manager logs any Tape Stacker 8MM and robotic errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

# tsdd

## NAME

tsdd - Tape Stacker DLT (TSD) process

## SYNOPSIS

*install_path*`\Volmgr\bin\tsdd`

## DESCRIPTION

`tsdd` interfaces with Media Manager to mount and unmount tapes in Tape Stacker DLT (TSD) robots. It is initiated by the NetBackup Device Manager service (`ltid`), if the Media Manager device configuration shows drives in the Tape Stacker DLT (TSD). Stopping this service stops `tsdd`.

`tsdd` communicates directly with the robotics using a SCSI interface. When the connection is established (the path for robotics can be opened), `tsdd` puts the TSD robot in the UP state and can mount and unmount tapes. If the robotics are inaccessible, `tsdd` changes the robot to the DOWN state. In this state, `tsdd` is still running and returns the robot to the UP state if it is able to make a connection.

The media ID and slot number information for DLT tapes in a robot must be defined in the volume database before any tapes can be accessed through the NetBackup Device Manager service and `tsdd`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean` for information on setting the frequency for automatic drive cleaning.

The Internet service number for `tsdd` must be in `%SystemRoot%\system32\drivers\etc\services`. To override the services file, create the file *install_path*`\Volmgr\database\ports\tsdd` with a single line that contains the service number for `tsdd`. The default service number is 13714.

## ERRORS

Media Manager logs any Tape Stacker DLT robot and robotic errors to the Windows application event log. Log entries are also made when the state changes between UP and DOWN.

# vmadd

## NAME

vmadd - Add volumes to the volume database

## SYNOPSIS

*install_path*\Volmgr\bin\vmadd -m *media_id* -mt *media_type* [-h *volume_database_host*] [-verbose] [-b *barcode*] [-rt *robot_type*] [-rn *robot_number*] [-rh *robot_host*] [-rc1 *rob_slot*] [-rc2 *rob_side*] [-p *pool_number*] [-mm *max_mounts* | -n *cleanings*] [-op *optical_partner*] [-d "*media_description*"]

## DESCRIPTION

Add volumes to the Media Manager volume database.

## OPTIONS

-m *media_id*

Specifies the media ID of the volume to add. The media ID can be a maximum of 6 ASCII characters.

For NetBackup DataCenter if you are adding an optical disk, specify the media ID for the A side of the optical platter. Media IDs for an API robot type (ACS, TLH, TLM, LMF, or RSM) must always match the barcodes.

For NetBackup BusinesServer, media IDs for an RSM robot must always match the barcodes.

-mt *media_type*

Specifies the media type of the volume to add.

Valid media types for NetBackup DataCenter are: 4mm, 8mm, 8mm2, 8mm3, dlt, dlt2, dlt3, dtf, hcart, hcart2, hcart3, odiskwm, odiskwo, qcart, 4mm_clean, 8mm_clean, 8mm2_clean, 8mm3_clean, dlt_clean, dlt2_clean, dlt3_clean, dtf_clean, hcart_clean, hcart2_clean, hcart3_clean.

Valid media types for NetBackup BusinesServer are: 4mm, 8mm, dlt, hcart, qcart, 4mm_clean, 8mm_clean, dlt_clean, hcart_clean.

**Note** The following option is only applicable for NetBackup DataCenter.

-h *volume_database_host*

Name of the host with the volume database where the volume will be added. You should ensure that the host specified matches the volume database host name associated with the robot or set of standalone drives, as indicated in the device configuration. If no host is specified, the host where you execute the command is assumed.

`-verbose`
Selects verbose mode.

`-b` *barcode*
Specifies the barcode attached to the volume.

`-rt` *robot_type*
Specifies the robot type of the robot where the volume is located.

Valid robot types for NetBackup DataCenter are: none, acs, lmf, odl, rsm, tl4, tl8, tld, tlh, tlm, ts8, tsd, tsh.

Valid robot types for NetBackup BusinesServer are: none, rsm, tl4, tl8, tld, ts8, tsd.

`-rn` *robot_number*
Unique, logical identification number for the robot where the volume is located.

`-rh` *robot_host*
Name of the host which controls the robot, where the volume is located.

`-rc1` *rob_slot*
Robot coordinate 1 is the slot number in the robot where the volume is located.

For NetBackup DataCenter, do not enter slot information for Media Manager API robot types. The robot software tracks the slot locations for these robots.

For NetBackup BusinesServer, do not enter slot information for Media Manager RSM robot types. The robot software tracks the slot locations for these robots.

**Note** The following option is only applicable for NetBackup DataCenter.

`-rc2` *rob_side*
Robot coordinate 2 is the platter side for optical disks (A or B).

`-p` *pool_number*
Index of the volume pool which will contain this volume. You can use `vmpool -listall` to determine the index for a given pool name.

`-mm` *max_mounts*
Maximum number of mounts allowed for this volume. Only used for non-cleaning media. When this limit is exceeded, the volume can be mounted for read operations only.

`-n` *cleanings*
Number of cleanings remaining for this volume. Only used for cleaning media.

**Note** The following option is only applicable for NetBackup DataCenter.

`-op` *optical_partner*
: If this is an optical disk, specify the media ID of the opposite side of the optical platter.

`-d "`*media_description*`"`
: Media description of the volume. The double quote marks are required if the description contains any spaces.

## EXAMPLES

The following command adds volume AJU244 in the NetBackup volume pool to the volume database on the host named llama. For NetBackup BusinesServer there is only one host (the master), so the -h option is not needed.

The volume, with a barcode of AJU244, is in slot 2 of TLD robot 1. For write operations, the volume may be mounted a maximum of 1000 times.

**Note** This command is usually entered on one line.

```
vmadd -m AJU244 -mt dlt -h llama -b AJU244 -rt tld -rn 1 -rh llama
-rc1 2 -p 1 -mm 1000 -d "vmadd example"
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`vmchange, vmdelete, vmpool, vmquery`

# vmchange

## NAME

vmchange - change media information in the Media Manager volume database

## SYNOPSIS

Change volume group residence

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -vg_res -rt` *robot_type* `-rn` *robot_number* `-rh` *robot_host* `-v` *volume_group*

Change volume residence

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -res -m` *media_id* `-mt` *media_type* `-rt` *robot_type* `-rn` *robot_number* `-rh` *robot_host* `-v` *volume_group* `-rc1` *rob_slot* `[-rc2` *rob_side*`]`

Change volume expiration date

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -exp` *mm/dd/yy hh:mm:ss* `-m` *media_id*

Change the barcode for a volume

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -barcode` *barcode* `-m` *media_id* `[-rt` *robot_type*`]`

Change the media description for a volume

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -d "`*media_description*`" -m` *media_id*

Associate this volume with a different pool

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -p` *pool_number* `-m` *media_id*

Change a volume's maximum mount count

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -maxmounts` *max_mounts* `-m` *media_id*

Change a volume's number of mounts count or cleanings

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -n` *num_mounts/cleanings* `-m` *media_id*

Change a volume's media type

*install_path*`\Volmgr\bin\vmchange [-h` *volume_database_host*`] -new_mt` *media_type* `-m` *media_id*

Change a volume's robot type

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -new_rt *robot_type* -m *media_id* -rn *robot_number*

Change a volume's group

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -new_v *volume_group* [-m *media_id* |-b *barcode* -mt *media_type* -rt *robot_type*]

Change a volume's vault name

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -vltname *vault_name* -m *media_id*

Change the date the volume was sent to the vault

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -vltsent *mm/dd/yy hh:mm:ss* -m *media_id*

Change the date when the volume returns from the vault

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -vltreturn *mm/dd/yy hh:mm:ss* -m *media_id*

Change a volume's vault slot number

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -vltslot *vault_slot* -m *media_id*

Change the volume's vault session id

*install_path*\Volmgr\bin\vmchange [-h *volume_database_host*] -vltsession *vault_session_id* -m *media_id*

Move (eject) volumes from an ACS, TLH, or TLM robot to standalone

*install_path*\Volmgr\bin\vmchange -api_eject -map *map_id* -w [-h *volume_database_host*] -res -ml *media_id1:media_id2: ... media_idn* -rt *robot_type* -rn *robot_number* -rh *robot_host* [-v *volume_group*]

Move (eject) multiple volumes from a TL8 or TLD robot to standalone

*install_path*\Volmgr\bin\vmchange -multi_eject -w [-h *volume_database_host*] -res -ml *media_id1:media_id2: ... media_idn* -rt *robot_type* -verbose -rn *robot_number* -rh *robot_host*

Move (inject) multiple volumes into a TL8 or TLD robot

*install_path*\Volmgr\bin\vmchange -multi_inject -w -res -rt *robot_type* -verbose -rn *robot_number* -rh *robot_host*

Get robot information for a TL8 or TLD robot type

*install_path*`\Volmgr\bin\vmchange -res -robot_info -verbose -rn` *robot_number* `-rt` *robot_type* `-rh` *robot_host*

## DESCRIPTION

Change volume information in the Media Manager volume database.

## OPTIONS

**Note** The following option is only applicable for NetBackup DataCenter.

`-h` *volume_database_host*
: Name of the host that has the volume database which keeps information about the media in robots and standalone drives. If no host is specified, the host where you execute the command is assumed.

`-vg_res`
: Change volume group residence.

`-rt` *robot_type*
: Specifies the robot type of the robot where the volume is located.

  Valid robot types for NetBackup DataCenter are: none, acs, lmf, odl, rsm, tl4, tl8, tld, tlh, tlm, ts8, tsd, tsh.

  Valid robot types for NetBackup BusinesServer are: none, rsm, tl4, tl8, tld, ts8, tsd.

`-rn` *robot_number*
: Unique, logical identification number for the robot where the volume is located.

`-rh` *robot_host*
: Name of the host which controls the robot, where the volume is located.

`-v` *volume_group*
: A volume group is a logical grouping that identifies a set of volumes that reside at the same physical location.

`-res`
: Change the volume's residence.

`-m` *media_id*
: Specifies the media ID of the volume to change.

`-mt` *media_type*
: Specifies the media type of the volume to change.

Valid media types for NetBackup DataCenter are: 4mm, 8mm, 8mm2, 8mm3, dlt, dlt2, dlt3, dtf, hcart, hcart2, hcart3, odiskwm, odiskwo, qcart, 4mm_clean, 8mm_clean, 8mm2_clean, 8mm3_clean, dlt_clean, dlt2_clean, dlt3_clean, dtf_clean, hcart_clean, hcart2_clean, hcart3_clean.

Valid media types for NetBackup BusinesServer are: 4mm, 8mm, dlt, hcart, qcart, 4mm_clean, 8mm_clean, dlt_clean, hcart_clean.

`-rc1` *rob_slot*

Robot coordinate 1 is the slot number in the robot where the volume is located.

For NetBackup DataCenter, do not enter slot information for API robot types. The robot software tracks the slot locations for these robots.

For NetBackup BusinesServer, do not enter slot information for RSM robot types. The robot software tracks the slot locations for these robots.

**Note** The following option is only applicable for NetBackup DataCenter.

`-rc2` *rob_side*

Robot coordinate 2 is the platter side for optical disks (A or B).

`-exp` *mm/dd/yy hh:mm:ss*

Expiration date for this volume.

`-barcode` *barcode*

Specifies the barcode attached to the volume.

`-d "`*media_description*`"`

Media description for the volume. The double quote marks are required if the description contains any spaces.

`-p` *pool_number*

Index of the volume pool which will contain this volume. You can get the pool index using `vmpool -listall`.

`-maxmounts` *max_mounts*

Maximum number of mounts allowed for this volume. Only used for non-cleaning media.

`-n` *num_mounts/cleanings*

For non-cleaning media, *num_mounts* is the number of times this volume has been mounted.

For cleaning media, *cleanings* is the number of cleanings left for this cleaning tape.

`-new_mt` *media_type*

Specifies the media type of the volume to change. See the `-mt` option for a list of media types.

`-new_rt` *robot_type*
Specifies the robot type. See the `-rt` option for a list of robot types.

`-new_v` *volume_group*
A volume group is a logical grouping that identifies a set of volumes that reside at the same physical location.

`-b` *barcode*
Specifies the barcode attached to the volume.

`-vltname` *vault_name*
Specifies the name of the logical vault configured for the robot that ejected the volume.

`-vltsent` *mm/dd/yy hh:mm:ss*
Specifies the date the volume was sent offsite.

`-vltreturn` *mm/dd/yy hh:mm:ss*
Specifies the date the volume was requested for return from the vault vendor. For catalog backup volumes, this is the date that the volume will be requested for return from the vault vendor.

`-vltslot` *vault_slot*
Specifies the vault vendor's slot number for the slot that this volume occupies.

`-vltsession` *vault_session_id*
Specifies the id of the vault session that ejected this media.

`-api_eject`
Eject ACS, TLH, or TLM volumes from the specified robot.

`-map` *map_id*
Specifies the media access port. For ACS robot types this is the CAP ID (which has the format: ACS, LSM, CAP).

`-w`
Wait flag. This flag must be used with the eject, multiple eject, and multiple inject commands.

`-verbose`
Selects verbose mode.

`-ml` *media_id1:media_id2: ... media_idn*
Specifies a list of media to be ejected from the robot.

`-robot_info`
Used to retrieve information about a robotic library. This option is valid only for TLD and TL8 robot types

`-multi_eject`
Use the robotic library's media access port to eject multiple volumes.

`-multi_inject`
Use the robotic library's media access port to inject multiple volumes.

## EXAMPLES

The following command changes the expiration date of volume AJS100:

```
vmchange -exp 12/31/99 23:59:59 -m AJS100
```

The following command changes the pool (which contains volume AJS999) to pool 1 (which is the NetBackup pool):

```
vmchange -h dill -p 1 -m AJS999
```

The following command ejects volumes `abc123` and `abc124` from ACS robot number 700. The residences for these two volumes are changed to standalone.

```
vmchange -res -api_eject -w -ml abc123:abc124 -rt acs -rn 700 -rh
verbena -map 0,0,0
```

## CAUTIONS

Only limited validation of the option parameters is done.

Some robotic libraries implement different functionality for their media access ports. For example, some libraries have front-panel inject and eject features that conflict with NetBackup's use of the media access port (for example, Spectra Logic Bullfrog). Other libraries require front-panel interaction when using the media access port (for example, Spectra Logic Gator).

Make sure you read the operator manual for your robotic library to gain an understanding of its media access port functionality. Libraries such as the ones noted may not be fully compatible with NetBackup's inject and eject features if not properly handled. Other libraries may not be compatible at all.

## SEE ALSO

`vmadd, vmdelete, vmpool, vmquery`

# vmcheckxxx

## NAME

vmcheckxxx - Report the media contents of a robotic library

## SYNOPSIS

*install_path*`\Volmgr\bin\vmcheckxxx -rt` *robot_type* `-rn` *robot_number* `[-rh` *robot_host*`] [-h` *volume_database_host*`] [[-if` *inventory_filter_value*`] [-if` *inventory_filter_value*`] ...] [-full] [-list]`

## DESCRIPTION

Report the media contents of a robotic library and optionally compare its contents with the volume configuration.

If no options are specified, the media contents of the robot and the volume configuration are listed along with a list of any mismatches detected.

## OPTIONS

`-rt` *robot_type*

Specifies the robot type of the robot to inventory.

Valid robot types for NetBackup DataCenter are: none, acs, lmf, odl, rsm, tl4, tl8, tld, tlh, tlm, ts8, tsd, tsh.

Valid robot types for NetBackup BusinesServer are: none, rsm, tl4, tl8, tld, ts8, tsd.

`-rn` *robot_number*

Unique, logical identification number of the robot to inventory.

`-rh` *robot_host*

Name of the host which controls the robot. If no host is specified, the host where you execute this command is assumed.

---

**Note** The following two options are only applicable for NetBackup DataCenter.

---

`-h` *volume_database_host*

Name of the host that has the volume database which contains information about the volumes in a robot. If no host is specified, the host where you execute this command is assumed.

`-if` *inventory_filter_value*

Specifies inventory filter values. Multiple `-if` options may be specified. The inventory filter value is an ACS scratch pool ID, a TLH volume category, or an LMF barcode prefix.

The `-if` and `-full` options cannot be specified together.

`-full`

Specifies full inventory. The `-full` and `-if` options cannot be specified together.

`-list`

Lists the robot contents.

## EXAMPLES

The following command lists the media contents of TLD robot 1 and the volume configuration for that robot on the host named niagra, along with a list of any mismatches that are detected:

```
vmcheckxxx -rt tld -rn 1 -rh niagra -h niagra
```

The following command lists the contents of TLH robot 2 that is connected to the host where the vmcheckxxx command was executed:

```
vmcheckxxx -rt tlh -rn 2 -list
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`vmupdate`

# vmdelete

## NAME

vmdelete - Delete volumes from the volume database

## SYNOPSIS

*install_path*`\Volmgr\bin\vmdelete [-h` *volume_database_host*`] [-m` *media_id* | `-v` *volume_group*`]`

## DESCRIPTION

Delete volumes from the volume database.

## OPTIONS

**Note** The following option is applicable only for NetBackup DataCenter.

`-h` *volume_database_host*
: Name of the host that has the volume database which contains information about the volumes in a robot. If no host is specified, the host where you execute the command is assumed.

`-m` *media_id*
: Specifies the media id of the volume to delete from the volume database.

`-v` *volume_group*
: Specifies the volume group to delete. All volumes in this group are deleted from the volume database.

## EXAMPLES

The following command deletes a single volume:

```
vmdelete -m AJS144
```

The following command deletes all volumes with the volume group name of DELETE_ME:

```
vmdelete -v DELETE_ME
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`vmadd, vmchange, vmquery`

# vmoprcmd

## NAME

vmoprcmd - perform operator functions on drives

## SYNOPSIS

*install_path*`\Volmgr\bin\vmoprcmd [-h` *device_host*`] -down | -up | -upopr | -reset` *drive_index* `| -downbyname | -upbyname | -upoprbyname | -resetbyname` *drive_name* `| -crawlreleasebyname` *drive_name* `| -comment` *drive_index* `["`*comment*`"] | -commentbyname` *drive_name* `["`*comment*`"] | -assign` *drive_index* *mount_request_id* `| -assignbyname` *drive_name* *mount_request_id* `| -deny | -resubmit` *mount_request_id* `| -d [pr | ds | ad] | -help`

## DESCRIPTION

Perform operator functions on drives. The `-h` option is not required, but you must choose one and only one of the other options listed below.

## OPTIONS

`-h` *device_host*

Name of the device host where the drives are attached and configured. If no host option is specified, the device host where you execute the command is assumed.

For NetBackup BusinesServer, the device host is the host where Media Manager is installed.

`-down | -up | -upopr | -reset` *drive_index*

`-down` Sets the drive to the DOWN state, if it is not assigned.

`-up` Sets the drive to UP in Automatic Volume Recognition (AVR) mode. This is the normal mode for all drives.

`-upopr` Sets the drive to UP in Operator (OPR) mode. This mode is normally used only for security reasons. For a drive in a robot, OPR and AVR are treated identically while the robot process is up.

`-reset` Resets the specified drive, terminating the drive assignment and taking control away from the assigned user.

**Caution** Do not reset an assigned drive unless directed by site policy or the system administrator. Terminating an active job can destroy user data.

`-downbyname` | `-upbyname` | `-upoprbyname` | `-resetbyname` *drive_name*
: These options are similar to `-down`, `-up`, `-upopr`, and `-reset` respectively, except the drive is specified by the drive name instead of drive index.

`-comment` *drive_index* `["`*comment*`"]`
: Add a comment for the drive. The quotes are required if your comment contains any spaces. If you do not specify *comment*, any existing comments for the drive are deleted.

`-commentbyname` *drive_name* `["`*comment*`"]`
: This option is similar to the `-comment` option, except the drive is specified by the drive name instead of drive index.

`-assign` *drive_index* *mount_request_id*
: Assign a drive to a mount request.

`-assignbyname` *drive_name* *mount_request_id*
: This option is similar to the `-assign` option, except the drive is specified by the drive name instead of drive index.

`-deny` | `-resubmit` *mount_request_id*
: `-deny` Denying a mount request returns an error message to the user.

  `-resubmit` Resubmit a mount request. If a pending action message involves a robot, you must correct the problem and resubmit the request that caused the message.

`-d [pr | ds | ad]`
: If none of the following optional display parameters are specified, all information is displayed.

  `pr` Display pending requests.

  `ds` Display the status of drives under control of Media Manager.

  `ad` Display additional status of drives under control of Media Manager.

`-help`
: Display the usage statement for this command.

`-crawlreleasebyname` *drive_name*
: This option forces all hosts (that are registered to use the drive) to issue a SCSI release command to the drive. Issue this option on the host that is the SSO device allocator (DA host) or use the -h option to specify the DA host.

**Caution** Use this option after a PEND status has been seen in Device Monitor. Do not use this option during backups.

## EXAMPLES

The following command sets the drive, with a drive index of 0, to UP mode:

```
vmoprcmd -up 0
```

The following command displays the drive status of all drives:

```
vmoprcmd -d ds
```

The following command displays pending requests and the drive status of all drives on the device host named crab:

```
vmoprcmd -h crab
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`tpconfig(1M)`

# vmpool

## NAME

vmpool - Manage volume pools

## SYNOPSIS

*install_path*`\Volmgr\bin\vmpool [-h volume_database_host] -listall [-b] | -listscratch | -add` *pool_name* `"`*description*`"` *host uid gid* `| -change` *pool_name* `"`*description*`"` *host uid gid* `| -delete` *pool_name* `| -set_scratch` *pool_name* `| -unset_scratch` *pool_name*

## DESCRIPTION

Use this command to add, change, delete, or list volume pools.

The `-h` option is not required, but you must choose one and only one of the other seven options (for example, `-listscratch`).

## OPTIONS

**Note** The following option is only applicable for NetBackup DataCenter.

`-h` *volume_database_host*
: Name of the host that has the volume database which keeps information about the media in a robot. If no host is specified, the host where you execute the command is assumed.

`-listall [-b]`
: List information about all volume pools. You can use the `-b` option to specify a brief format for volume pool information.

`-listscratch`
: List all configured scratch pools.

`-add` *pool_name* `"`*description*`"` *host uid gid*
: Add a new volume pool.

`-change` *pool_name* `"`*description*`"` *host uid gid*
: Change an existing volume pool.

`-delete` *pool_name*
: Delete a volume pool.

*"description"*
: Description of the volume pool. The double quote marks are required if the description contains any spaces.

*host*

Name of the host that will be permitted to request and use volumes in this volume pool.

For NetBackup DataCenter to permit only a specific host to access the volume pool, enter the name of that host. To permit any host to access the volume pool, enter ANYHOST. Using the value ANYHOST is recommended.

For NetBackup BusinesServer, you can only specify the value ANYHOST.

*uid*

Enter the default value, -1 (ANY), to permit any user id to access the pool.

*gid*

Enter the default value, -2 (NONE), to permit only the user id specified by *uid* to request or access the volume pool.

`-set_scratch` *pool_name*

If *pool_name* is a previously defined volume pool, *pool_name* will become the scratch pool and its description will not be changed. The NetBackup, DataStore, and None volume pools cannot be changed to scratch pools.

If *pool_name* is a new volume pool, a new pool will be created with "Scratch Pool" as the description.

Only one scratch pool at a time can be defined.

`-unset_scratch` *pool_name*

Undefines *pool_name* as the scratch pool and defines it as a regular volume pool. The pool can be deleted using `vmpool -delete` *pool_name*.

## EXAMPLES

The following command adds a new pool named MyPool on the host named llama with the default host, user id, and group id permissions:

```
vmpool -h llama -add MyPool "my description with spaces" ANYHOST -1
-2
```

The following command lists all pools configured on the host where the command is executed:

```
vmpool -listall -b
```

## NOTES

Only limited validation of the option parameters is done.

*uid* and *gid* should only be used for restricting access to volumes by user or by group on UNIX hosts.

# vmquery

## NAME

vmquery - Query the volume database, or assign and unassign volumes

## SYNOPSIS

*install_path*`\Volmgr\bin\vmquery [-h` *volume_database_host*`, ... -h` *volume_database_host*`] [-b | -w] -a | -m` *media_id* `| -v` *volume_group* `| -rn` *robot_number* `| -rt` *robot_type* `| -mt` *media_type* `| -p` *pool_number* `| -pn` *pool_name* `| -res` *robot_type robot_number robot_host rob_slot rob_side* `| -assignbyid` *media_id media_type pool_number stat asg_time* `| -deassignbyid` *media_id pool_number stat*

## DESCRIPTION

Query the volume database for volume information. The `-h`, `-b`, and `-w` options are not required, but you must choose only one of the other (eleven) options.

The `-b` or `-w` option can be used in conjunction with any of the other eleven options, but the `-b` or `-w` options cannot be specified together.

## OPTIONS

**Note** The following option is applicable only for NetBackup DataCenter.

`-h` *volume_database_host*

Name of the host that has the volume database maintaining information about the volumes in a robot. If no host is specified, the host where you execute the command is assumed. Up to 100 volume database hosts can be queried.

`-b`

Specifies the brief output format for volume information. This option can be used in conjunction with any of the other eleven options.

`-w`

Specifies the wide output format for volume information. This option includes additional information not shown by the `-b` option and can be used in conjunction with any of the other eleven options.

`-a`

Show all volumes.

`-m` *media_id*

Query volumes by media id. The media id is a maximum of 6 ASCII characters.

`-v` *volume_group*

Query volumes by volume group. A volume group is a logical grouping that identifies a set of volumes that reside at the same physical location.

`-rn` *robot_number*

Query volumes by robot number. A robot number is a unique, logical identification number for the robot where the volume is located.

`-rt` *robot_type*

Query volumes by the type of the robot where the volume is located.

Valid robot types for NetBackup DataCenter are: none, acs, lmf, odl, rsm, tl4, tl8, tld, tlh, tlm, ts8, tsd, tsh.

Valid robot types for NetBackup BusinesServer are: none, rsm, tl4, tl8, tld, ts8, tsd.

`-mt` *media_type*

Query volumes by media type.

Valid media types for NetBackup DataCenter are: 4mm, 8mm, 8mm2, 8mm3, dlt, dlt2, dlt3, dtf, hcart, hcart2, hcart3, odiskwm, odiskwo, qcart, 4mm_clean, 8mm_clean, 8mm2_clean, 8mm3_clean, dlt_clean, dlt2_clean, dlt3_clean, dtf_clean, hcart_clean, hcart2_clean, hcart3_clean.

Valid media types for NetBackup BusinesServer are: 4mm, 8mm, dlt, hcart, qcart, 4mm_clean, 8mm_clean, dlt_clean, hcart_clean.

`-p` *pool_number*

Query volumes by pool number. Pool number is an index into the volume pool. You can use `vmpool -listall` to determine the index for a given pool name.

`-pn` *pool_name*

Query volumes by pool name.

`-res` *robot_type robot_number robot_host rob_slot rob_side*

Query volumes by residence.

*robot_host*

Name of the host which controls the robot, where the volume is located.

*rob_slot*

This is the slot number in the robot (robot coordinate 1) where the volume resides.

*rob_side*

This is the platter side (robot coordinate 2) for optical disks (A or B). If the volume is not an optical disk, specify zero for *rob_side*.

`-assignbyid` *media_id media_type pool_number stat asg_time*
Assign volume by media id, pool, and status.

*stat*

Status applies only to volumes that are assigned to NetBackup or Storage Migrator.

A status of 0 means the volume is assigned to NetBackup regular backups.

A status of 1 means the volume is assigned to NetBackup catalog backups.

A status of 2 means the volume is assigned to Storage Migrator (valid with NetBackup DataCenter only).

A status of 3 means the volume is assigned to Storage Migrator for Microsoft Exchange or Storage Migrator for Windows 2000.

*asg_time*

Applies only to volumes assigned to NetBackup or Storage Migrator (NetBackup DataCenter only).

*asg_time* is the time when the volume was assigned and is the number of seconds since 00:00:00 UTC, January 1, 1970. *asg_time* was originally created using the time() call.

`-deassignbyid` *media_id pool_number stat*
Unassign volume by media id, pool, and status.

**Caution** Unassigning volumes may cause inconsistencies between the application media database and the volume database, leading to possible data loss. You *must* use a NetBackup application interface (for example, NetBackup Console) to expire the media after unassigning volumes.

## EXAMPLES

The following command lists all volume information, in brief format from the volume database on the host named llama:

```
vmquery -h llama -b -a
```

The following command assigns volume A23456, which is in pool 1 (NetBackup), and sets the status to 0 and the assign time to 12/31/98 15:50:22:

```
vmquery -assignbyid A23456 8mm 1 0 915141022
```

The following command unassigns volume A23456, which is in pool 1 (NetBackup), with a status of 0:

```
vmquery -deassignbyid A23456 1 0
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`vmadd, vmchange, vmdelete, vmpool`

# vmrule

## NAME

vmrule - Manage barcode rules

## SYNOPSIS

*install_path*`\Volmgr\bin\vmrule [-h` *volume_database_host*`] -listall [-b] | -add` *barcode_tag media_type pool_name max_mounts "description"* `| -change` *barcode_tag media_type pool_name max_mounts "description"* `| -delete` *barcode_tag*

## DESCRIPTION

Use this command to add, change, delete, or list barcode rules. The `-h` option is not required, but you must chose one and only one of the other four options.

## OPTIONS

**Note** The following option is only applicable for NetBackup DataCenter.

`-h` *volume_database_host*
: Name of the host that has the volume database which contains information about the volumes in a robot. If no host is specified, the host where you execute the command is assumed.

`-listall [-b]`
: List information about all barcode rules. You can use the `-b` option to specify a brief format for the barcode rule information that is displayed.

`-add` *barcode_tag media_type pool_name max_mounts "description"*
: Add a new barcode rule.

`-change` *barcode_tag media_type pool_name max_mounts "description"*
: Change a barcode rule.

`-delete` *barcode_tag*
: Delete a barcode rule.

*barcode_tag*
: Specifies the barcode prefix which will invoke the barcode rule.

*media_type*
: Specifies the media type of the volume, a barcode rule attribute. This affects whether the rule will be used and also affects the media type for volumes added using a robot inventory update.

Valid media types for NetBackup DataCenter are: 4mm, 8mm, 8mm2, 8mm3, dlt, dlt2, dlt3, dtf, hcart, hcart2, hcart3, odiskwm, odiskwo, qcart, 4mm_clean, 8mm_clean, 8mm2_clean, 8mm3_clean, dlt_clean, dlt2_clean, dlt3_clean, dtf_clean, hcart_clean, hcart2_clean, hcart3_clean.

Valid media types for NetBackup BusinesServer are: 4mm, 8mm, dlt, hcart, qcart, 4mm_clean, 8mm_clean, dlt_clean, hcart_clean.

*pool_name*

Specifies the pool to which the volumes will be added.

*max_mounts*

Maximum number of mounts allowed for this volume (when the volume is added). This option is used only for non-cleaning media. When this limit is exceeded, the volume can only be mounted for read operations.

*"description"*

Description of the barcode rule. The double quote marks are required if the description contains any spaces.

## EXAMPLES

The following command creates a rule that defines any tape with a barcode starting with ABC is a DLT tape in the NetBackup pool. The tape can be mounted up to 100 times for writes and is given a description.

```
vmrule -add ABC dlt NetBackup 100 "DLT cleaning tape"
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`vmupdate`

# vmupdate

## NAME

vmupdate - Inventory the media contents of a robotic library and update the volume database

## SYNOPSIS

*install_path*`\Volmgr\bin\vmupdate -rt` *robot_type* `-rn` *robot_number* `[-rh` *robot_host*`] [-h` *volume_database_host*`] [[-if` *inventory_filter_value*`] [-if` *inventory_filter_value*`] ...] [-full] [-recommend] [-interactive] [-involgrp` *volume_group*`] [-outvolgrp` *volume_group*`] [-mt` *media_type*`] [-p` *pool_name*`] [-use_barcode_rules] [-use_seed] [-mp` *media_id_prefix*`] [-no_sides] [-no_format_optical] [-overwrite_labels] [-empty_map]`

## DESCRIPTION

Inventory the media contents of a robotic library and update the volume database. If no options are specified, the volume configuration is updated to match the robot contents.

## OPTIONS

`-rt` *robot_type*

Specifies the robot type of the robot to inventory.

Valid robot types for NetBackup DataCenter are: none, acs, lmf, odl, rsm, tl4, tl8, tld, tlh, tlm, ts8, tsd, tsh.

Valid robot types for NetBackup BusinesServer are: none, rsm, tl4, tl8, tld, ts8, tsd.

`-rn` *robot_number*

Unique, logical identification number for the robot to inventory.

`-rh` *robot_host*

Name of the host which controls the robot. If no host is specified, the host where you execute this command is assumed.

**Note** The following two options are only applicable for NetBackup DataCenter.

`-h` *volume_database_host*

Name of the host that has the volume database which contains information about the volumes in a robot. If no host is specified, the host where you execute this command is assumed.

`-if` *inventory_filter_value*

Specifies inventory filter values. Multiple `-if` options may be specified. The inventory filter value is an ACS scratch pool ID, a TLH volume category, or an LMF barcode prefix.

The `-if` and `-full` options cannot be specified together.

`-full`

Specifies full inventory. The `-full` and `-if` options cannot be specified together.

`-recommend`

Lists changes required to update the volume configuration.

`-interactive`

Prompts you before updating the volume configuration.

`-involgrp` *volume_group*

Specifies the volume group for media moved into the robot.

`-outvolgrp` *volume_group*

Specifies the volume group for media moved out of the robot.

`-mt` *media_type*

Specifies the media type of the volume.

Valid media types for NetBackup DataCenter are: 4mm, 8mm, 8mm2, 8mm3, dlt, dlt2, dlt3, dtf, hcart, hcart2, hcart3, odiskwm, odiskwo, qcart, 4mm_clean, 8mm_clean, 8mm2_clean, 8mm3_clean, dlt_clean, dlt2_clean, dlt3_clean, dtf_clean, hcart_clean, hcart2_clean, hcart3_clean.

Valid media types for NetBackup BusinesServer are: 4mm, 8mm, dlt, hcart, qcart, 4mm_clean, 8mm_clean, dlt_clean, hcart_clean.

`-p` *pool_name*

Specifies the name of the volume pool to which new media will be assigned.

`-use_barcode_rules`

Specifies that barcode rules will be used for assigning attributes to new media.

`-use_seed`

Specifies automatic generation of media IDs for media with no barcodes.

`-mp` *media_id_prefix*

Specifies the prefix that is used as a seed to generate new media IDs for media with no barcodes.

`-no_sides`

Specifies that any new optical media IDs will not always contain platter side A or B.

`-no_format_optical`
: Specifies to NOT format new optical media.

`-overwrite_labels`
: Specifies that existing labels will be overwritten when formatting optical media.

`-empty_map`
: Specifies that volumes in the media access port (map) will be moved into the robot before the robot inventory is started. This option is only valid for TL8, TLD, or TLM robot types.

## EXAMPLES

The following command updates the volume configuration on the host named mymaster to match the contents of TLD robot 7 connected to the host macris:

```
vmupdate -rt tld -rn 7 -rh macris -h mymaster
```

## NOTES

Only limited validation of the option parameters is done.

## SEE ALSO

`vmcheckxxx`

# Media Manager Reference Topics B

This chapter includes the following Media Manager reference and conceptual topics:

- Robot Overview
- Correlating Device Files to Physical Drives When Adding Drives
- Drive Cleaning
- Volume Pools and Volume Groups
- Barcodes
- vmd Security
- How Media Manager Selects a Drive for a Robotic Mount Request
- Administrators Quick Reference
- Media Manager Configuration File (vm.conf)

## Robot Overview

In Media Manager, a robot is a peripheral device that contains a mechanism for the automated mounting and dismounting of media in tape or optical disk drives. A robot may also be called a robotic library, media changer, automated library, jukebox, or tape stacker. Media Manager considers any of these types of devices to be robots. Media Manager software that controls robots is referred to as robotic control software.

### Media Manager Robot Types

Media Manager classifies robots by robot type, according to one of the following:

- The physical characteristics of the robot.

  Library usually refers to a larger robot, in terms of slot capacity or number of drives.

  Stacker usually refers to a robot with one drive and low media capacity (6 - 12 media slots).

- The media type commonly used by that class of robots.

  4 MM and 8 MM are examples of media types.

- The communication methods used by the underlying robotics (for example, SCSI-based or API robots).

  ACS and LMF robots are examples of robots classified by vendor API.

**Note** ACS, LMF, RSM, TLH, and TLM Media Manager robot types are often grouped together and the term API robot is used to identify these robot types.

The following table lists the Media Manager robot types, with drive and slot limits for each type. Visit the VERITAS support web site (`http://www.support.veritas.com`) to determine which robot type applies to the model of robot that you are using.

Media Manager Robot Types

| Robot Type | Description | Drive Limits | Slot Limits |
|---|---|---|---|
| ACS | Automated Cartridge System | 1680 (per the ACS Library Software host) | No limit |
| LMF | Library Management Facility | 256 | No limit |
| ODL | Optical Disk Library | 12 | 490 |
| RSM | Removable Storage Manager | 256 | No limit |
| TL4 | Tape Library 4MM | 2 | 15 |
| TL8 | Tape Library 8MM | No limit | 16000 |
| TLD | Tape Library DLT | No limit | 16000 |
| TLH | Tape Library Half-inch | 256 | No limit |
| TLM | Tape Library Multimedia | 250 | No limit |
| TS8 | Tape Stacker 8MM | 2 | 21 |
| TSD | Tape Stacker DLT | 1 | 14 |
| TSH | Tape Stacker Half-inch | 1 | 10 |

## Media Manager Media Types

Media Manager uses media types to differentiate tape or optical media with differing physical characteristics. Each Media Manager media type may represent a specific physical media type, for example Sony AIT media can have a Media Manager media type of 8MM, 8MM2, or 8MM3.

The following table lists the Media Manager media types:

Media Manager Media Types

| Media Type | Description |
|---|---|
| QCART | 1/4 inch cartridge tape |
| HCART | 1/2 inch cartridge tape |
| HCART2 | 1/2 inch cartridge tape 2 |
| HCART3 | 1/2 inch cartridge tape 3 |
| 4MM | 4MM cartridge tape |
| 8MM | 8MM cartridge tape |
| 8MM2 | 8MM cartridge tape 2 |
| 8MM3 | 8MM cartridge tape 3 |
| DLT | DLT cartridge tape |
| DLT2 | DLT cartridge tape 2 |
| DLT3 | DLT cartridge tape 3 |
| DTF | DTF cartridge tape |
| REWR_OPT | Rewritable optical disk |
| WORM_OPT | WORM optical disk |
| HC_CLN | 1/2 inch cleaning tape |
| HC2_CLN | 1/2 inch cleaning tape 2 |
| HC3_CLN | 1/2 inch cleaning tape 3 |

Media Manager Media Types (continued)

| Media Type | Description |
|---|---|
| 4MM_CLN | 4MM cleaning tape |
| 8MM_CLN | 8MM cleaning tape |
| 8MM2_CLN | 8MM cleaning tape 2 |
| 8MM3_CLN | 8MM cleaning tape 3 |
| DLT_CLN | DLT cleaning tape |
| DLT2_CLN | DLT cleaning tape 2 |
| DLT3_CLN | DLT cleaning tape 3 |
| DTF_CLN | DTF cleaning tape |

Use the 8MM2, 8MM3, DLT2, DLT3, HCART2, or HCART3 media types when you have more than one type of 8MM, DLT or 1/2 inch cartridge tape in the same robotic library and you want to differentiate between them.

For example, if a robotic library has DLT7000 and DLT4000 drives, you do not want to accidently load a tape that was written in a DLT7000 drive into a DLT4000 drive. In this case, you can specify the DLT media type for DLT7000 tapes and DLT2 for DLT4000 tapes, assuming the drive types were configured using the same convention.

**Note** In a robotic library, all of the volumes of a particular vendor media type *must* be the same Media Manager media type.

In the example that follows for a TLH robot type, the HCART2 media type is not valid. Both volumes must be HCART or both must be HCART2.

```
Volume     TLH Media Type      Media Manager Media Type
ABC123       3490E                   HCART
ABC156       3490E                   HCART2
```

## Robot Attributes

Media Manager configures and controls a robot device differently depending on the robot type. The following tables list the attributes that dictate how these robot types differ.

**Note** See the NetBackup release notes or visit the VERITAS support web site for more detailed information on supported peripherals, platforms, and firmware levels tested.

ACS Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | No |
| LAN Control | Yes |
| Remote Robot Control | No. Each host that has ACS drives attached has robotic control. |
| NDMP Support | Yes |
| Shared Drives Support | Yes |
| Media Type Support | DLT<br>DLT2<br>DLT3<br>HCART<br>HCART2<br>HCART3 |
| Barcode Support | Yes. Depends on ACS library software. Barcodes are assumed to be the same as the media ID. |
| Drive Cleaning Support | No. Drive cleaning is managed by ACS library software. |
| Media Access Port Support | Yes, for eject only. |
| Media Manager Tracks Slots | No |
| For More Information | See the ACS appendix, “Automated Cartridge System (ACS)” on page 355. |
| Robot Examples | STK 97*xx*<br>STK L180<br>STK L700<br>STK Powderhorn Silo |

ACS Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| Host Supported | Windows (requires STK LibAttach software).<br>UNIX (not Linux) |

LMF Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | No |
| LAN Control | Yes |
| Remote Robot Control | Yes |
| NDMP Support | No |
| Shared Drives Support | No |
| Media Type Support | HCART<br>HCART2<br>HCART3 |
| Barcode Support | Yes. Depends on LMF software. Barcodes are assumed to be the same as the media ID. |
| Drive Cleaning Support | No. Managed by the library. |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | No |
| For More Information | See the LMF appendix in the NetBackup DataCenter Media Manager system administrator's guide for UNIX. |
| Robot Examples | Fujitsu F6458 |
| Host Supported | UNIX Solaris |

ODL Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |
| LAN Control | No |
| Remote Robot Control | No |
| NDMP Support | No |
| Shared Drives Support | No |
| Media Type Support | REWR_OPT<br>WORM_OPT |
| Barcode Support | No, but the robot has inventory capability and can report whether a slot has media. |
| Drive Cleaning Support | No |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup DataCenter Media Manager device configuration guide for UNIX. |
| Robot Examples | HP Optical Disk Libraries<br>HP SureStore Optical Libraries |
| Host Supported | UNIX |

RSM Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | No |
| LAN Control | No |

RSM Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| Remote Robot Control | No |
| NDMP Support | No |
| Shared Drives Support | No |
| Media Type Support | 4MM<br>8MM<br>8MM2<br>8MM3<br>DLT<br>DLT2<br>DLT3<br>HCART<br>HCART2<br>HCART3<br>QIC |
| Barcode Support | Yes, if the robot supports barcodes. Barcodes are assumed to be the same as the media ID. |
| Drive Cleaning Support | No, drive cleaning is supported using the RSM utilities in Windows 2000. |
| Media Access Port Support | Eject is supported. Inject is not supported, but the Windows 2000 RSM Inject wizard can be used. |
| Media Manager Tracks Slots | No |
| For More Information | See the RSM appendix, “Microsoft Removable Storage Manager (RSM)” on page 371. |
| Robot Examples | Exabyte 210<br>Quantum DLTStor |
| Host Supported | Windows 2000 |

TL4 Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |
| LAN Control | No |
| Remote Robot Control | No |
| NDMP Support | No |
| Shared Drives Support | No |
| Media Type Support | 4MM |
| Barcode Support | No, but the robot has inventory capability and can report whether a slot has media. |
| Drive Cleaning Support | Yes |
| Media Access Port Support | No |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup Media Manager device configuration guide for UNIX. |
| Robot Examples | ADIC 4mm DAT Autochanger<br>HP DAT Autoloader |
| Host Supported | Windows<br>UNIX |

TL8 Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |
| LAN Control | No |

TL8 Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| Remote Robot Control | Yes |
| NDMP Support | Yes |
| Shared Drives Support | Yes |
| Media Type Support | 8MM<br>8MM2<br>8MM3 |
| Barcode Support | Yes |
| Drive Cleaning Support | Yes |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup Media Manager device configuration guide for UNIX. |
| Robot Examples | IBM 7331<br>Qualstar 46120<br>Exabyte X200 |
| Host Supported | Windows<br>UNIX |

TLD Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |
| LAN Control | No |
| Remote Robot Control | Yes |
| NDMP Support | Yes |

TLD Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| Shared Drives Support | Yes |
| Media Type Support | DLT<br>DLT2<br>DLT3<br>DTF<br>8MM<br>8MM2<br>8MM3<br>HCART<br>HCART2<br>HCART3 |
| Barcode Support | Yes |
| Drive Cleaning Support | Yes |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup Media Manager device configuration guide for UNIX. |
| Robot Examples | ADIC Scalar 1000 DLT<br>ATL 7100<br>Breece Hill Q210<br>HP SureStore DLT Library<br>IBM 3575<br>Spectra Logic 9000<br>STK 97*xx* |
| Host Supported | Windows<br>UNIX |

TLH Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | No |
| LAN Control | Yes |
| Remote Robot Control | Yes |
| NDMP Support | No |
| Shared Drives Support | Yes |
| Media Type Support | HCART<br>HCART2<br>HCART3 |
| Barcode Support | Yes. Depends on IBM ATL software. Barcodes are assumed to be the same as the media ID. |
| Drive Cleaning Support | No. Managed by the library. |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | No |
| For More Information | See the TLH appendix, “IBM Automated Tape Library (ATL)” on page 379. |
| Robot Examples | IBM 3494 |
| Host Supported | Windows<br>UNIX |

TLM Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | No |

TLM Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| LAN Control | Yes |
| Remote Robot Control | No. Each host that has TLM drives attached has robotic control. |
| NDMP Support | No |
| Shared Drives Support | Yes |
| Media Type Support | 4MM<br>8MM<br>8MM2<br>8MM3<br>DLT<br>DLT2<br>DLT3<br>DTF<br>HCART<br>HCART2<br>HCART3<br>REWR_OPT (HP9000-800 only)<br>WORM_OPT (HP9000-800 only) |
| Barcode Support | Yes. Depends on DAS software. Barcodes are assumed to be the same as the media ID. |
| Drive Cleaning Support | Yes |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | No |
| For More Information | See the TLM appendix, “ADIC Distributed AML Server (DAS)” on page 391. |
| Robot Examples | ADIC AML/J<br>ADIC AML/S<br>ADIC Scalar 10000 |

TLM Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| Host Supported | Windows<br>UNIX |

TS8 Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |
| LAN Control | No |
| Remote Robot Control | No |
| NDMP Support | No |
| Shared Drives Support | No |
| Media Type Support | 8MM<br>8MM2<br>8MM3 |
| Barcode Support | Yes |
| Drive Cleaning Support | Yes |
| Media Access Port Support | No |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup Media Manager device configuration guide for UNIX. |
| Robot Examples | Exabyte 10*x*<br>Exabyte 210 |
| Host Supported | Windows<br>UNIX |

TSD Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |
| LAN Control | No |
| Remote Robot Control | No |
| NDMP Support | Yes |
| Shared Drives Support | No |
| Media Type Support | DLT<br>DLT2<br>DLT3 |
| Barcode Support | No, but the robot has inventory capability and can report whether a slot has media. |
| Drive Cleaning Support | Yes |
| Media Access Port Support | No |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup Media Manager device configuration guide for UNIX. |
| Robot Examples | Sun StorEdge L280<br>Quantum DLTStor |
| Host Supported | Windows<br>UNIX |

TSH Robot Attributes

| Attribute | Comment |
|---|---|
| SCSI Control | Yes |

TSH Robot Attributes (continued)

| Attribute | Comment |
|---|---|
| LAN Control | No |
| Remote Robot Control | No |
| NDMP Support | No |
| Shared Drives Support | No |
| Media Type Support | HCART<br>HCART2<br>HCART3 |
| Barcode Support | No, but the robot has inventory capability and can report whether a slot has media. |
| Drive Cleaning Support | Yes |
| Media Access Port Support | Yes |
| Media Manager Tracks Slots | Yes |
| For More Information | See the NetBackup Media Manager device configuration guide for UNIX. |
| Robot Examples | IBM 3590 B11 Autoloader |
| Host Supported | UNIX |

## Table-Driven Robotics

Table-driven robotics provides support for some new library devices without the need to modify any robotic library control binaries. This feature uses external device mapping files for supported robots and drives.

This means that support for your new or upgraded devices may be accomplished without waiting for a patch from VERITAS. Since the external device mapping files include pertinent information relating to the operation and control of libraries, support for some new devices may only require that you download an updated external mapping file when any device changes are made to your configuration.

See “External Device Mapping Files” on page 29 for information on how to download the latest mapping files for your devices.

## Robotic Test Utilities

You can use the robotic test utilities for configured robots by executing *install_path*\volmgr\bin\robtest.exe and selecting the desired robotic library.

From each test utility, you can obtain a list of available test commands by entering a question mark.

Use the `drstat` command to determine the drive addressing parameters for ACS, LMF, TLH, and TLM robot types. This command is available in the robotic test utilities for these robot types.

For most robot types, the drive addressing parameter is the robot drive number.

For ACS robot types, drives are addressed by ACS, LSM, Panel, and Drive number. For TLH robot types, drives are addressed by the IBM device name. For TLM robot types, drives are addressed by the DAS drive name.

## Robotic Processes

A Media Manager robotic and possibly a robotic control process exist for each robotic library that you install on a Windows media server.

Every Media server that has a drive in a robotic library has a robotic process for that robotic library. The robotic process receives requests from the NetBackup Device Manager and sends necessary information directly to the robotics or to a robotic control process.

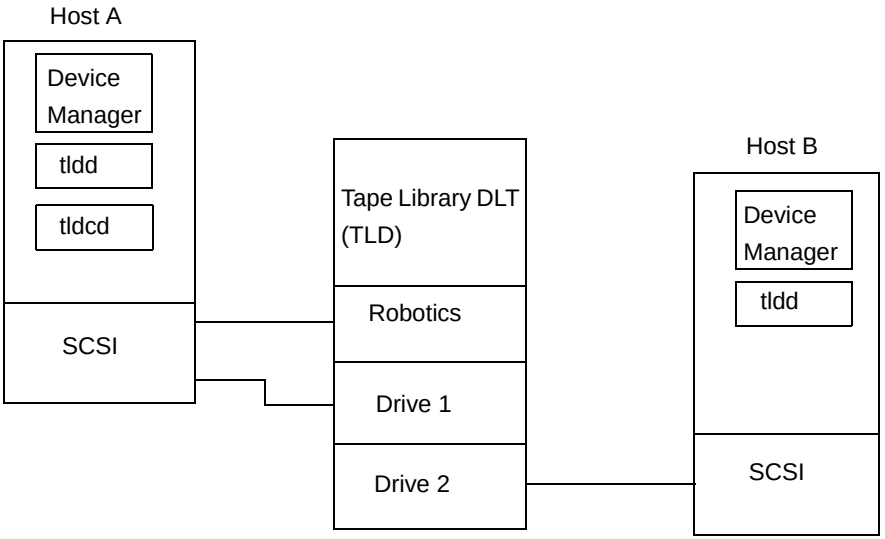
Robotic control processes exist only for robot types that support *library sharing* (or *robot sharing*). Library sharing allows different drives in a robot to be connected to different hosts. Library sharing is not supported in NetBackup BusinesServer.

For example, each drive in a Tape Library DLT (TLD) robot can be attached to a different host and each host would have a `tldd` process. The robotics, however, are controlled by a single host and only that host has the robotic control process, `tldcd`. When it is necessary to mount a tape, the robotic process (`tldd`), on the host with the drive, sends control information to the robotic control process (`tldcd`) on the host controlling the robotics.

The following figure shows the processes and where they run for a Tape Library DLT (TLD) robot. In this diagram

- Each host connects to one drive and has a robotic process, `tldd`.
- The robotic control and therefore the robotic control process, `tldcd`, is on Host A.

The NetBackup Device Manager services on host A and B start `tldd`. The `tldd` process on Host A also starts `tldcd`. Requests to mount tapes from host B go to `tldd` on Host B, which then sends the robotic command to `tldcd` on Host A.




Starting the NetBackup Device Manager service on a media server starts the robotic and robotic control processes for all robots configured on that host. Stopping this service stops these processes.

The Services tab of the NetBackup Activity Monitor has commands for starting and stopping all services, including the NetBackup Device Manager service. You can also start and stop this service through commands on the Device Monitor **Actions** menu or the Media and Device Management **Actions** menu. In addition, “Media Manager Commands and Processes” on page 197 describes commands for controlling robotic processes that run on Windows media servers.

When a robotic or robotic control process is running, the NetBackup Activity monitor processes tab shows it in the UP or DOWN state. When a connection is made to the appropriate robotic library, the corresponding process is in the UP state and can mount or unmount tapes (or platters). If the connection cannot be made or errors exist, the process changes to the DOWN state. In the DOWN state the process is still running and returns to the UP state when the connection is made or problems no longer exist.

The following table lists the robotic and robotic control processes for each robot type that are supported on Windows media servers.

Robotic and Robotic Control Processes

| Robot | Process | Description |
|---|---|---|
| Automated Cartridge System (ACS) | `acsd` | `acsd` runs on the NetBackup server and communicates mount and unmount requests to the host that controls the ACS robotics. |
| Tape Library DLT (TLD) | `tldd`<br>`tldcd` | `tldd`, runs on a NetBackup server that has a drive in the Tape Library DLT. This process receives NetBackup Device Manager requests to mount and unmount volumes, and sends these requests to the robotic-control process, `tldcd`.<br>`tldcd` runs on the NetBackup server that has the robotic control and communicates with the Tape Library DLT robotics through a SCSI interface. |
| Tape Library 4MM (TL4) | `tl4d` | `tl4d` runs on the host that has a Tape Library 4MM. This process receives NetBackup Device Manager requests to mount and unmount volumes and communicates these requests to the robotics through a SCSI interface. |
| Tape Library 8MM (TL8) | `tl8d`<br>`tl8cd` | `tl8d`, runs on a NetBackup server that has a drive in the Tape Library 8MM. This process receives NetBackup Device Manager requests to mount and unmount volumes, and sends these requests to the robotic-control process, `tl8cd`.<br>`tl8cd` runs on the NetBackup server that has the robotic control and communicates with the TL8 robotics through a SCSI interface. |
| Tape Library Half-inch (TLH) | `tlhd`<br>`tlhcd` | `tlhd`, runs on each NetBackup server that has a drive in the Tape Library Half-inch. This process receives NetBackup Device Manager requests to mount and unmount volumes and sends these requests to the robotic-control process.<br>`tlhcd` runs on the NetBackup server that has the robotic control and communicates with the TLH robotics through a SCSI interface |
| Tape Library Multimedia (TLM) | `tlmd` | `tlmd` runs on the NetBackup server and communicates mount and unmount requests to the host that controls the TLM robotics. |
| Tape Stacker 8MM (TS8) | `ts8d` | `ts8d` runs on the NetBackup server that has a Tape Stacker 8MM attached. This process receives NetBackup Device Manager requests to mount and unmount volumes and communicates these requests to the robotics through a SCSI interface. |

Robotic and Robotic Control Processes (continued)

| Robot | Process | Description |
|---|---|---|
| Tape Stacker DLT (TSD) | `tsdd` | `tsdd` runs on the NetBackup server that has a Tape Stacker DLT attached. This process receives NetBackup Device Manager requests to mount and unmount volumes and communicates these requests to the robotics through a SCSI interface. |
| Removable Storage Manager (RSM) | `rsmd` | `rsmd` runs on a Windows 2000 NetBackup server. `rsmd` interfaces with NetBackup Device Manager to mount and unmount tapes that are under Microsoft RSM control. |

# Correlating Device Files to Physical Drives When Adding Drives

The following two topics may not be necessary, if you used the Device Configuration Wizard to configure your drives, and the drives and robotic libraries both support device serialization.

- Correlating On Windows Hosts.
- Correlating On UNIX Hosts.

If you are configuring shared drives, see the NetBackup SSO system administrator's guide for more information.

## Correlating On Windows Hosts

When selecting the drive address (for example, robot drive number) for a tape drive, match the logical device name with the drives in the physical drive layout as follows:

1. Note the SCSI target of the drive and check the Windows Tape Devices display to determine which device name (for example, Tape0) was assigned to the drive.
2. Correlate the SCSI target to the drive address using the robot's interface panel or checking the indicators on the rear panel of the tape drive.
3. Determine the physical drive address (for example, number) by checking labels on the robot itself or by using the diagrams in the Robot Drive and Slot Layout appendix. This appendix shows the layout for many of the robots that Media Manager supports.
4. Configure the robot and then add the drives.

When you add the drives, check your notes to ensure that you are assigning the correct drive address to each device path.

5. Optionally, use the appropriate robotic test utility to verify the configuration.

   a. Stop the NetBackup Device Manager service (`ltid`).

   b. Start `ltid` to start the Automatic Volume Recognition process (`avrd`). Also start the remote robotic control process, if robotic control is not local to this host.

      You must stop and restart `ltid` to ensure that the current device configuration has been activated.

   c. Use the robotic test utility to mount a tape on a drive.

   d. Use the Device Monitor to verify the tape was mounted on the correct robot drive.

   For example, assume you have the following drives in a TLD robot and have the device names configured as follows:

   Drive 1: `Tape0`

   Drive 2: `Tape1`

   Drive 3: `Tape2`

   Also assume that in step c you requested that the tape be mounted on Drive 1. If the device name for the drive is correctly configured, the Device Monitor shows the tape mounted on Drive 1. Unload and unmount the tape from Drive 1 using the robotic test utility. It may be necessary to unload the drive with a command from another host or from the drive's front panel, if the true data path to the drive where the tape was mounted is not on the host with direct robotic control. Repeat the test for each drive.

   During your testing, if the Device Monitor shows the tape mounted on a drive other than the drive you specified in the test utility, the device name for that drive is not correctly configured. For instance, if you mounted a tape on Drive 2 and the Device Monitor shows the tape mounted on Drive 3, the device name for Drive 2 is incorrect. Replace the Drive 2 device name (`Tape1`) with the correct device name (`Tape2`) for Drive 3. You may need to use a temporary device name while making these changes. In this case, you also know that the device name for Drive 3 is incorrect. Possibly, the device names were swapped during configuration.

## Correlating On UNIX Hosts

Establish device file to physical drive correlation during installation when you create the device files for each drive. The following is a general procedure:

1. Determine the physical location of each drive within the robotic library. This is usually shown on the connectors to the drives or in the vendor's documentation. The Robot Drive and Slot Layout appendix shows drive locations in many of the robots that Media Manager supports.

2. Physically connect the drives to SCSI adapters in your host.

3. Record the adapter and SCSI addresses to which you connected each drive.

4. Create device files for each drive based on the SCSI addresses of the drives and adapters. Add the device file using your notes from step 3 to complete the correlation between device files and physical drive location.

5. Configure the robot and then add the drives.

   When you add the drives, check your notes to ensure that you are assigning the correct drive address (for example, robot drive number) to each device path.

6. Optionally, you can use the appropriate robotic test utility to verify the configuration.

   a. Stop the device daemon (`ltid`).

   b. Start `ltid` to start the Automatic Volume Recognition daemon (`avrd`). Also start the remote robotic control daemon, if robotic control is not local to this host.

      You must stop and restart `ltid` to ensure that the current device configuration has been activated.

   c. Use the robotic test utility to mount a tape on a drive.

   d. Use the Device Monitor to verify the tape was mounted on the correct robot drive.

   For example, assume you have the following drives in a TLD robot and have the device paths configured as follows:

   Drive 1: `/dev/rmt/0cbn`

   Drive 2: `/dev/rmt/1cbn`

   Drive 3: `/dev/rmt/3cbn`

   Also assume that in step c you requested that the tape be mounted on Drive 1. If the device path for the drive is correctly configured, the Device Monitor shows the tape mounted on Drive 1. Unload and unmount the tape from Drive 1 using the robotic test utility. It may be necessary to unload the drive with a command from another host or from the drive's front panel, if the true data path to the drive where the tape was mounted is not on the host with direct robotic control. Repeat the test for each drive.

During your testing, if the Device Monitor shows the tape mounted on a drive other than the drive you specified in the test utility, the device path for that drive is not correctly configured. For instance, if you mounted a tape on Drive 2 and the Device Monitor shows the tape mounted on Drive 3, the device path for Drive 2 is incorrect. Replace the Drive 2 device path (`/dev/rmt/1cbn`) with the correct device path (`/dev/rmt/3cbn`) for Drive 3. You may need to use a temporary device path while making these changes. In this case, you also know that the device path for Drive 3 is incorrect. Possibly, the device paths were swapped during configuration.

# Drive Cleaning

For drives in libraries that are under ACS, LMF, RSM, or TLH robotic control, the library software controls drive cleaning. To manage drive cleaning, use the robot vendor or operating system administrative interfaces for these robots.

**Note** Library-based cleaning is not supported by Media Manager for most robots, since robotic library and operating systems vendors have implemented this type of cleaning in many different ways.

This topic on drive cleaning covers the following areas:

- Frequency-Based Cleaning
- On-Demand Cleaning
- TapeAlert
- Using a Cleaning Tape

## Frequency-Based Cleaning

**Note** Frequency-based cleaning is not supported for shared drives (SSO), since there is no single device path where tape mount time can be accurately counted.

When you add a drive, you can specify the number of hours (cleaning frequency) a drive will be used between drive cleanings. Media Manager updates the mount time for the drive each time a tape is unmounted. You can also change the cleaning frequency value.

If the following conditions are met, drive cleaning occurs when the accumulated mount time exceeds the time you specified for cleaning frequency:

- The drive is in a robotic library that supports cleaning (see “Robot Attributes” on page 258).
- A cleaning tape is configured and available in Media Manager for the robotic library.

- The cleaning tape has cleanings remaining.

Media Manager cleans the drive immediately after the unmount. Drive cleaning never causes an unmount in the middle of an active backup. The mount time is reset after the drive is cleaned. The cleaning frequency value remains the same.

A cleaning can occur within a backup if you are spanning tapes. For example, if cleaning is due after the first tape is full, Media Manager cleans the drive before proceeding to the next tape.

Leaving media in a drive for extended periods does not affect cleaning frequency because Media Manager increments the mount time only when the media is actually assigned to a process.

To set, change or reset the cleaning frequency, use the `tpclean` command (see the appendix, “Media Manager Commands and Processes” on page 197).

## On-Demand Cleaning

If the drive is standalone or if a cleaning tape is not defined, the message NEEDS CLEANING appears in the Comment field of the output from the `tpclean -L` command. You can then use the `tpclean` command to clean the drive and reset the accumulated mount time to zero after cleaning the drive.

You can manually clean a drive regardless of the cleaning frequency and accumulated mount time. You can clean standalone and robotic drives if a cleaning tape of the correct media type and residence for the drive has been added to the appropriate volume database.

## TapeAlert

Reactive cleaning using TapeAlert is a function of the tape drive. If a drive supports the TapeAlert feature and TapeAlert is enabled on the drive, Media Manager polls the drive for status from TapeAlert.

TapeAlert allows reactive cleaning for most drive types. Not all platforms, robots, and drives, at all firmware levels, support this type of reactive cleaning. In the cases where TapeAlert is not supported on a particular drive, frequency-based cleaning may be utilized (see “Frequency-Based Cleaning” on page 277 and “TapeAlert and Frequency-based Cleaning” on page 279).

Since TapeAlert provides the same type of cleaning as library-based cleaning (also known as robotic cleaning or auto cleaning), it is recommended that you disable library-based cleaning when using TapeAlert (for most vendor’s robots).

### Requirements for TapeAlert and Media Manager

To use TapeAlert with Media Manager, you need the following conditions to be met. No additional configuration is needed.

- The drive must support the TapeAlert feature and the feature must be enabled on the drive.

  To determine if drives support TapeAlert, see the VERITAS support site for information on drive support for TapeAlert.
- A cleaning tape is configured and available in Media Manager for the robotic library.
- The cleaning tape has cleanings remaining.

### TapeAlert and Media Manager

A drive with TapeAlert knows how many read and write errors it has encountered within a certain time period. Although these errors are recoverable, once a threshold is reached a CLEAN_NOW or CLEAN_PERIODIC flag is set by TapeAlert.

If Media Manager finds either of these flags set, it performs a cleaning at *one* of the following times:

- At the end of a backup or restore to the drive.
- Prior to the next backup or restore to the drive.

### TapeAlert and Frequency-based Cleaning

Using TapeAlert *with* frequency-based cleaning ensures that a given drive will get cleaned at least every *x* hours, depending on the cleaning frequency value. In addition the drive may be cleaned sooner, if the CLEAN_NOW or CLEAN_PERIODIC flags are set by the drive.

Using TapeAlert *without* frequency-based cleaning, ensures that the tape will be cleaned only when the drive sets its CLEAN_NOW or CLEAN_PERIODIC flags.

## Using a Cleaning Tape

You can specify the number of cleanings that are allowed for a cleaning tape. This number is decremented with each cleaning and when it is zero, Media Manager stops using the cleaning tape. At this point, you can use a new cleaning tape or increase the number of cleanings allowed. You can also change this number of cleanings at any time in Media Manager.

# Volume Pools and Volume Groups

This topic on volume pools and groups covers the following areas:

- Volume Pools
- Volume Groups
- Volume Pools and Groups Example
- Scratch Volume Pools
- Moving Volumes

## Volume Pools

A volume pool is used to identify a logical set of volumes by usage. Associating volumes with a volume pool protects them from access by unauthorized applications. You can create volume pools for applications or other reasons; and as you add volumes, associate them with the appropriate pool. You can also move unassigned volumes to a different pool later.

With the exception of the NetBackup and DataStore volume pools, you must create a volume pool before you can add volumes to it. By default, Media Manager creates volume pools, named NetBackup and DataStore.

During initial configuration, it is easiest to create all of your volume pools first if you want to use volume pools other than the NetBackup volume pool. Then as you add volumes, you can assign them to these volume pools.

You can also configure a scratch volume pool (see “Scratch Volume Pools” on page 283).

## Volume Groups

A volume group is a logical grouping that identifies a set of volumes that reside at the same physical location. Volume groups are an administration convenience for logically moving multiple volumes (where a logical move means to change the volume attributes to show the new location). Using a volume group lets you move a set of volumes between a robotic library and a standalone location, or delete them from the configuration by specifying the group name, rather than each individual media ID. Volume groups are also convenient for tracking location, such as when a group is moved offsite.

The following are the rules for assigning volume groups:

- All volumes in a group must be the same media type.

  However, a media type and its corresponding cleaning media type are allowed in the same volume group (for example, DLT and DLT_CLN).

- All volumes in a robotic library *must* belong to a volume group. You cannot add volumes to a robotic library without specifying a group or having Media Manager generate a name.
- The only way to clear a volume group name is to move the volume to standalone and not specify a volume group.
- More than one volume group can share the same location. For example, a robotic library can contain volumes from more than one volume group and you can have more than one standalone volume group.
- All members of a group must be in the same robotic library or be standalone. That is, Media Manager will not let you add a group (or part of a group) to a robotic library, if it already exists in another robotic library.

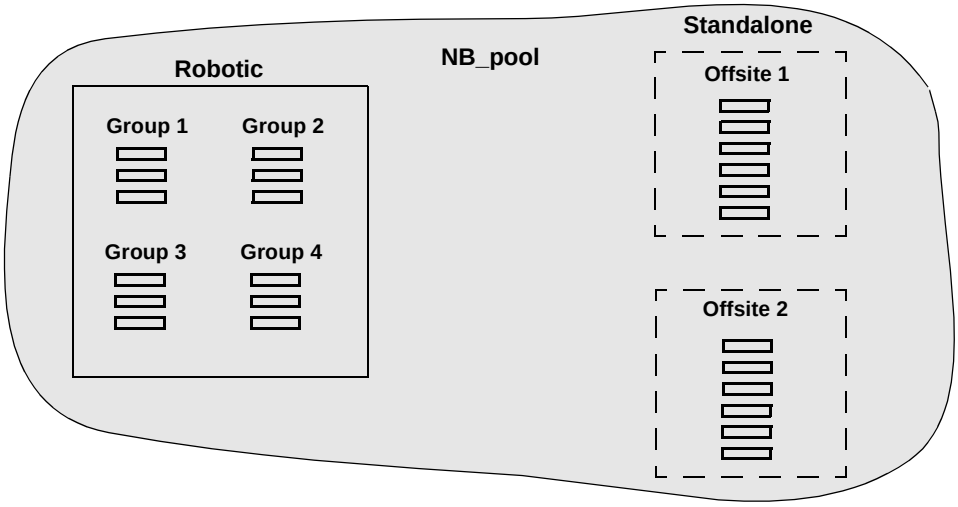
Do not confuse volume pools with volume groups. Remember that

- A volume pool identifies a set of volumes by usage.
- A volume group identifies a set of volumes by physical location and, like the volume pool, is specified when you add the volume. Groups are convenient for updating the configuration when moving volumes (for example from robotic to standalone).

## Volume Pools and Groups Example

The following figure shows an example with one volume pool (NB_pool) and several volume groups. In this example, volumes can be moved between the groups in the robotic library and the groups that are offsite. All volumes, however, remain in the same pool.

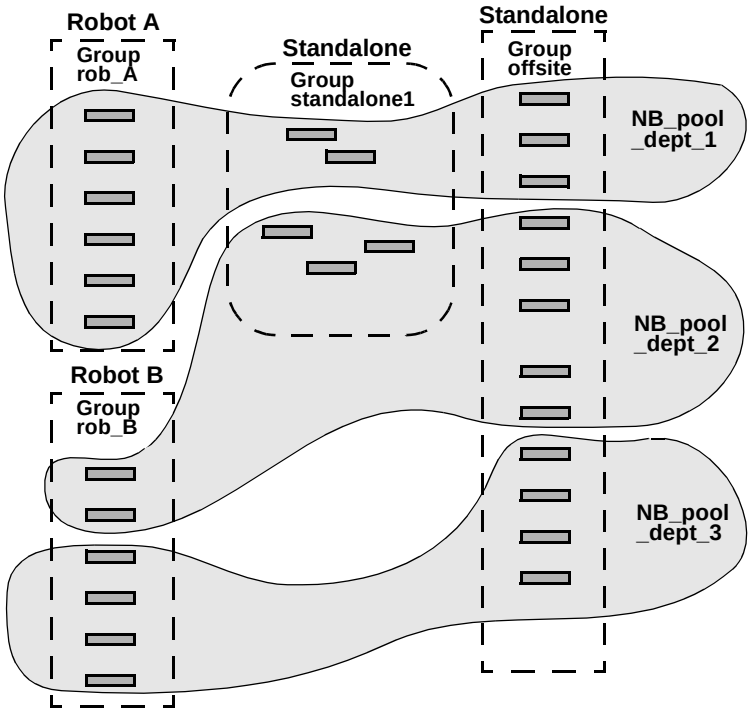
Volume Pool With Multiple Volume Groups



In the following figure, members of the same volume pools are in different volume groups. The important thing to notice in this example is that the data intended for use by different departments are kept on separate volumes by assigning different volume pools. The volumes in a pool can be in more than one physical location and in more than one volume group.

In this example, the volumes in NB_pool_dept_1 are spread among the rob_A, standalone1, and offsite volume groups. These groups also have volumes from more than one pool (though the volumes in each group must all be the same type).

Volume Groups With Multiple Volume Pools




It is also possible to configure a scratch pool from which Media Manager can transfer volumes when another volume pool has no media available (see “Scratch Volume Pools” on page 283).

## Scratch Volume Pools

The scratch pool is an optional volume pool that you can configure. Each media server in your configuration can have one scratch pool configured. If a scratch pool is configured, Media Manager moves volumes from that pool to other pools that have do not have volumes available.

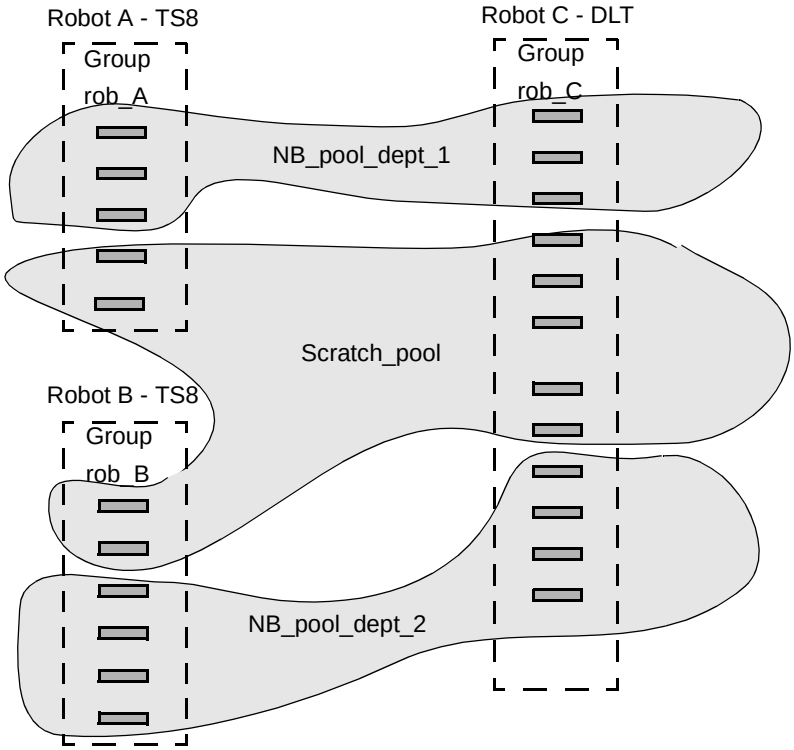
See “Adding a New Volume Pool or Scratch Volume Pool” on page 78 for configuration information.

For example in the following figure, the scratch pool is named Scratch_pool and the three robots contain volumes from that pool in addition to those from other pools. Assume the following

- NetBackup requires a DLT volume, so Media Manager attempts to assign one from NB_pool_dept_1 in Robot C.
- Robot C has no unassigned volumes available in the NB_pool_dept_1 pool.

Media Manager searches the scratch pool for an unassigned DLT volume in Robot C. If there is an available volume, Media Manager moves it to NB_pool_dept_1 and assigns it to NetBackup. Otherwise, a media unavailable status is logged.

Scratch Pools




The following list contains important notes on scratch pool usage:

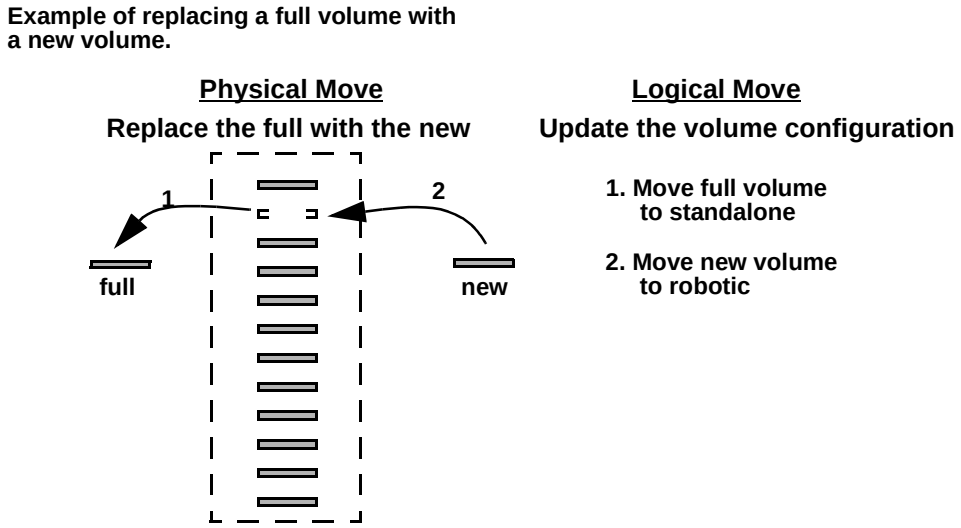
- If the scratch pool contains assigned volumes, these volumes remain in the scratch pool. Media Manager does not move assigned volumes to other pools as it does with unassigned volumes.
- Media Manager will not assign volumes while they are in a scratch pool. For example, if a NetBackup policy or schedule specifies the scratch pool, all requests for those volumes are denied.
- Volumes moved from a scratch pool to another pool remain in that new pool. Media Manager does not automatically move it again for any reason, but you can manually reassign it to another volume pool.
- To have Media Manager manage the allocation of your volumes to your volume pools, do one of the following:
  - Create volume pools as required, but do not add any volumes to the pools.
  - Create a scratch pool and add all of your volumes to it. Media Manager will move volumes to the other pools as they are required.

## Moving Volumes

When you move volumes in or out of a robotic library or from one robotic library to another, you must physically and logically move the volume (see the following figure).

- The physical part of the move is done when you insert or remove the volume. For some robot types, you can use Media Manager to physically move the volume (using Inject/Eject options).
- The logical part of the move is done when you use Media Manager to move volumes. Media Manager updates the volume database to show the volume at the *new* location.

Example of Moving Volumes




Common instances when you move volumes are as follows:

- Replacing full volumes in a robotic library. When a volume is full and there are no more empty slots in the robotic library, you move the full volume to standalone and configure a volume for the empty slot, or move a volume into that slot. Use the same process to replace a defective volume.
- Moving volumes from a robotic library to an offsite location or from an offsite location into a robotic library. When you move tapes to an offsite location, you move them to standalone.
- Moving volumes from one robotic library to another (for example, if a robotic library is down).
- Changing the volume group for a volume or volumes.

In one move operation, you can move a single volume, multiple volumes, or combinations of single and multiple volumes. You are limited only in that you cannot move volumes to an invalid location (for example, DLT media to an 8-mm robot).

The best approach is to keep your moves simple by selecting and moving only one type of media at a time to a single destination. For example, if you have to move 8 mm and 4 mm cartridge tapes, do it in separate moves.

# Barcodes

Reading barcodes is a function of the robotic library hardware. When a robotic library has a barcode reader, it scans the media for barcodes and saves the results. This associates the slot number and the barcode with the media in that slot. Media Manager obtains this association from the robotic library.

VERITAS suggests that you use media with barcodes in robots that can read barcodes. Barcodes offer the following advantages:

- Automatic media ID assignment.

  When you add new media to a robot, Media Manager is able to assign media IDs according to the criteria that you specify.

- More accurate tracking of volume location.

  The Update Volume Configuration option can easily determine which volumes are in a robot.

- Increased performance.

  Media Manager functions well whether or not barcodes are used. However, not using barcodes can adversely affect performance for some robots.

  A robot that reads barcodes will perform a scan each time it moves a tape. This is normal and is done in order to store the correct barcode in memory or to verify a previously saved barcode. However, if a barcode is missing, the robot will retry the scan multiple times, degrading performance.

**Note** Volumes in an API robot have a real or a logical barcode. This volume identifier is used as the Media Manager media ID. This volume identifier is the volume serial number in ACS, LMF, TLH, and TLM robots and must be six characters or less. For RSM robots, the last six characters of the media name are used. If these characters contain spaces, only the characters back to the first space are used.

When selecting barcodes for your volumes keep the following points in mind:

- Barcodes appear on labels that you attach to the outside of tape volumes.

Barcodes are not generally used on optical disks and Media Manager does not support barcodes for optical disk libraries (ODL robots).

- Media Manager supports barcodes with a maximum of eight characters (a maximum of six characters in API robots).
- When you buy barcode labels for use with Media Manager, always follow the robotic library vendor's recommendations. The following are some general guidelines:

  Ensure that the barcodes have the correct number of characters.

  Barcodes can represent any combination of alpha and numeric characters, but different robots support different lengths of barcodes. See the vendor's documentation to determine the requirements for a specific robot type.

  Use barcodes without spaces (leading spaces, trailing spaces, or spaces between any characters). Otherwise, the robot or Media Manager can have difficulty interpreting them.
- You can match barcodes to media IDs by getting custom labels with six-character barcodes in the same series as your media IDs. For example, to match a set of media IDs from AA0000 to ZZ9999, get barcode labels in that series.

  However, except for API robots, the barcode for a tape does not have to match the media ID.
- When a robotic library can contain more than one media type, a good strategy for assigning barcodes is to assign specific characters in the barcode to different media types using media ID generation rules (see "Media ID Generation Rules" on page 289). Another approach is to use barcodes to differentiate between data tapes and cleaning tapes, or between volume pools.

## Barcode Rules

A barcode rule specifies the criteria for assigning attributes to new robotic volumes. These attributes are assigned by Media Manager according to the barcode on the volume that is detected by the robotic library. In Media Manager, you choose whether to use barcode rules when you set up the robot inventory update operation.

The following table shows some example barcode rules. Rules are sorted first according to the number of characters in the barcode tag and then in the order you add them. Two exceptions are the <NONE> and <DEFAULT> rules, which are always at the end of the list.

Example Barcode Rules

| Barcode Tag | Media Type | Volume Pool | Max Mounts/ Cleanings | Description |
|---|---|---|---|---|
| 0080 | 8MM | b_pool | 55 | new 008 volumes |
| DLT | DLT | d_pool | 200 | dlt backup |
| CLD | DLT_CLN | None | 30 | dlt cleaning |
| CLT | 8MM_CLN | None | 20 | 8-mm cleaning |
| TS8 | 8MM | t_pool | 0 | 8-mm backup |
| TS | 8MM | None | 0 | 8-mm no pool |
| <NONE> | DEFAULT | None | 0 | no barcode |
| <DEFAULT> | DEFAULT | NetBackup | 0 | other barcodes |

When a robot update operation uses Media Manager barcode rules and a new barcode is detected in a slot, Media Manager searches the rules starting at the top of the list and checks for a barcode tag that matches the new barcode. If a tag matches, the media type for the rule is checked to ensure that it is compatible with the type you specified for the robot update. If the media type also matches, Media Manager uses the rule's media type, volume pool, maximum number of mounts (or number of cleanings), and description when it assigns attributes in the volume database.

**Note** Media Manager will not use barcode rules for barcodes that are being used by existing volumes.

For example, assume that you select the following Update Options for a new 8-mm tape in a TS8 robot:

Media Type: 8MM

Volume Group: 00_000_TS8

Use Barcode Rules: YES

Volume Pool: DEFAULT

If a new tape in this robotic library has a barcode of TS800001, Media Manager uses the rule with the barcode tag of TS8 and uses the following attributes for the tape:

Media ID: 800001 (last six characters of barcode)

Volume Group: 00_000_TS8

Volume Pool: t_pool

Max Mounts: 0 (infinite)

If a new tape has a barcode of TS000001, Media Manager uses the rule with the barcode tag of TS and the attributes for the tape are:

Media ID: 000001 (last six characters of barcode)

Volume Group: 00_000_TS8

Volume Pool: None

Max Mounts: 0 (infinite)

## Media ID Generation Rules

**Note** To use media ID generation rules, the robot must support barcodes and the robot cannot type be cannot be ACS, LMF, RSM, TLH, or TLM.

Using media ID generation rules allows you to manage your barcodes when you do not want to use the default rule for media ID generation. You control how Media Manager media IDs are created by defining rules that specify which characters of a barcode on tape will be used in the media ID. You also can specify that alphanumeric characters are to be inserted into the ID.

For example, two eight-character barcodes might be `S00006L1` and `000006L1`. If you do not specify media ID generation rules, Media Manager uses the right-most six characters of the barcode to create its media IDs. In this example, the same media ID for the two barcodes would be created.

Rules can be defined with respect to a robot and barcode lengths. Multiple barcode creation entries can be specified, allowing the ID generation to be specific for each robot; or for each barcode format having different numbers of characters in the barcode. This allows flexibility for multi-media.

# vmd Security

Media Manager vmd security works in conjunction with NetBackup authentication / authorization security to control user access to vmd (the NetBackup Volume Manager service).

Media Manager vmd security consists of the following levels of security. Each successive level provides more security. These levels are explained in the following topics:

- "Media Manager vmd Authentication / Authorization" on page 292.
- "Media Manager Server-Based vmd Security" on page 293.
- "Media Manager Enhanced vmd Authorization" on page 294.

## Possible NetBackup and Media Manager Conflicts

Media Manager authentication / authorization may affect systems where NetBackup authentication / authorization has been enabled.

Connections to vmd will fail if the following are all true:

- Authentication / authorization are enabled.
- An AUTHORIZATION_REQUIRED entry is present in vm.conf.
- The caller of vmd does not have the required permission to use vmd functions.

If authentication / authorization is needed in NetBackup but not in Media Manager, you can do one of the following:

- Add SERVER entries in vm.conf.
- Have no SERVER and no AUTHORIZATION_REQUIRED entries in vm.conf.

## NetBackup Authentication/Authorization

NetBackup *authentication* verifies NetBackup client to server access and also controls access to the services available on that host.

NetBackup *authorization* verifies if a NetBackup administration user has permission to use the services available on that host. Authorization provides additional security over the security provided by authentication.

The steps you use to set up security levels for your NetBackup master server apply generally to setting up security for Media Manager media servers. See the NetBackup system administrator's guide (UNIX or Windows) for more information including the following:

- Explanations of authentication and authorization.

- Explanations of Enhanced Authentication.
- Explanations of Enhanced Authorization.
- Definition of the NetBackup configuration file (`bp.conf`).
- Definitions of the `methods.txt`, `methods_allow.txt`, and `authorize.txt` files.
- Information on `bpauthsync(1M)`, `vopied(1M)`, and `vopie_util(1M)` man pages.

# Media Manager vmd Authentication/Authorization

Media Manager security for vmd works in conjunction with the following to control access to vmd:

- NetBackup authentication / authorization
- Media Manager server-based security
- Media Manager enhanced authorization

The following two tables provide an overview of Media Manager vmd security. Server Name, used in these matrices, refers to SERVER entries in the vm.conf file.

See "Media Manager Configuration File (vm.conf)" for more information about SERVER, AUTHORIZATION_REQUIRED, and PREFERRED_GROUP entries.

## No vm.conf Entry Present

The following table describes Media Manager vmd security when there is *no* AUTHORIZATION_REQUIRED entry in the vm.conf file.

If Authentication is not enabled (see the fourth row in the table), the resulting security reduces to Media Manager server-based security.

vmd Security Matrix - No AUTHORIZATION_REQUIRED Entry in vm.conf

| Access to vmd Functionality? | Server Name is in vm.conf | No Server Names in vm.conf (or there is no vm.conf File) | Server Name is Not in vm.conf (other Server Names are) in vm.conf |
|---|---|---|---|
| **Authentication Failed** | Denied | Denied | Denied |
| **Authentication Enabled and User is Authorized** | Allowed | Allowed | Allowed (overrides server-based security) |
| **Authentication Enabled and User is Not Authorized** | Allowed (uses server-based security) | Allowed (uses server-based security) | Denied |
| **Authentication Not Enabled** | Allowed | Allowed | Denied |

### vm.conf Entry Present

The following table describes Media Manager `vmd` security when there *is* an `AUTHORIZATION_REQUIRED` entry in the `vm.conf` file.

vmd Security Matrix - AUTHORIZATION_REQUIRED Entry is in vm.conf

| Access to vmd Functionality? | Server Name is in vm.conf | No Server Names in vm.conf | Server Name is Not in vm.conf (other Server Names are) in vm.conf |
|---|---|---|---|
| **Authentication Failed** | Denied | Denied | Denied |
| **Authentication Enabled and User is Authorized** | Allowed | Allowed | Allowed (overrides server-based security) |
| **Authentication Enabled and User is Not Authorized** | Allowed (uses server-based security) | Denied (disables server-based security) | Denied |
| **Authentication Not Enabled** | Allowed | Denied | Denied |

Your level of security is dependent upon your use of the following:

- Authentication
- Authorization
- `SERVER` entries

## Media Manager Server-Based vmd Security

`SERVER` entries in `vm.conf` are used for server-based Media Manager `vmd` security. Without any `SERVER` entries present on a particular host and without the `AUTHORIZATION_REQUIRED` entry present, other hosts can access `vmd` on the host. You can add `SERVER` entries allowing only specific hosts to remotely access `vmd`.

If a host's `vm.conf` file contains *any* `SERVER` entries, there *must* also be a `SERVER` entry for that host or it will not be able to manage its own devices.

The fourth row of the table in "No vm.conf Entry Present" on page 292 provides an overview of Media Manager server-based `vmd` security.

## Media Manager Enhanced vmd Authorization

The set of commands that Media Manager Enhanced Authorization allows users to execute are limited to those commands that interact with `vmd`. Other administration commands that manipulate the Media Manager database and configuration files directly can not be used by administrators through Enhanced Authorization.

The Media Manager commands that are allowed with Enhanced Authorization follow:

- vmadd
- vmchange
- vmdelete
- vmoprcmd
- vmpool
- vmquery
- vmrule

### Setting up Enhanced Authorization

If you want to control user access to administer Media Manager `vmd` commands, see the Enhanced Authentication and Authorization chapter of the UNIX NetBackup system administrator's guide for instructions on using enhanced authentication and authorization.

# How Media Manager Selects a Drive for a Robotic Mount Request

When a mount request is issued, `ltid` queries `vmd` on the volume database host(s) for the media ID specified. If the media ID is found, `vmd` returns the location of the media (which robotic library and the storage slot number, if applicable).

If a drive exists that meets the following criteria, the mount request is forwarded to the appropriate robotic process.

- The drive is configured.
- The drive is in the robotic library that contains the media.
- The drive allows the requested media density.

The robotic process is managing the drives and requests for locally-attached or shared drives in the robotic library that contains the requested media. The process (for example, `tldd`) does the following:

- Determines which of the drives are currently available. Some of the things that are checked to determine drive availability follow. Is the drive
  - Configured as DOWN?
  - Already assigned?
  - Of a compatible type?
  - Reserved by another host?
- Picks the drive that was used least recently.

The time stamp used by drive selection is contained in robotic process memory. If the process is stopped and restarted, everything starts out equal again. The first drive as shown by `tpconfig -d` in the drive configuration will be used first, then the second, and so on. This time stamp is based on the dismount time, *not* the mount time.

When selecting drives among a set of drives and some of the drives are shared (SSO) and some are not, a non-shared drive is chosen first (if one is available). This is so the shared drives can be used on other hosts that are sharing the drives.

# Administrators Quick Reference

The following tables provide a quick reference to information that you will frequently use while using Media Manager.

## Media Manager Commands

See “Media Manager Commands and Processes” on page 197 for detailed information on most of the commands shown in the following table.

**Note** Services should be started and stopped using the **Services** applet in the Windows control panel. If they are started from the command line, some will occupy that NetBackup Console session until they are stopped.

The commands listed are located in *install_path*`\volmgr\bin`.

Commands

| Command | Description |
|---|---|
| | **Administrator Utilities** |
| `robtest` | Starts the robotic test utilities.<br>NOTE: This utility is not officially supported. |

Commands (continued)

| Command | Description |
|---|---|
| | **Starting Services and Processes** |
| `acsd` | The Automated Cartridge System robotic process. This process is started by `ltid`. |
| `avrd` | The Automatic Volume Recognition process. This process is started by `ltid`. |
| `ltid` | Starts the NetBackup Device Manager service. Starting `ltid` also starts the robotic, robotic control, and Media Manager volume (`avrd`) processes. |
| `tl4d` | The Tape Library 4MM robotic process. This process is started by `ltid`. |
| `tl8cd` | Starts the Tape Library 8MM robotic-control process. This process is started by `ltid`. |
| `tl8d` | The Tape Library 8MM robotic process. This process is started by `ltid`. |
| `tldcd` | Starts the Tape Library DLT robotic-control process. This process is started by `ltid`. |
| `tldd` | The Tape Library DLT robotic process. This process is started by `ltid`. |
| `tlhcd` | Starts the Tape Library Half-inch robotic-control process. This process is started by `ltid`. |
| `tlhd` | The Tape Library Half-inch robotic process. This process is started by `ltid`. |
| `tlmd` | The Tape Library Multimedia process. This process is started by `ltid`. |
| `ts8d` | The Tape Stacker 8MM robotic process. This process is started by `ltid`. |
| `tsdd` | The Tape Stacker DLT robotic process. This process is started by `ltid`. |
| `vmd` | The NetBackup Volume Manager service. This process is started by `ltid`. |
| | **Stopping Services and Processes** |
| `stopltid` | Stops the device, robotic, and robotic-control services. |
| `tldcd -t` | Stops the Tape Library DLT robotic-control process. |
| `tl8cd -t` | Stops the Tape Library 8MM robotic-control process. |

Commands (continued)

| Command | Description |
|---|---|
| `tlhcd -t` | Stops the Tape Library Half-inch robotic-control process. |

## Log Files

The following table contains descriptions of important Media Manager log files.

Logs

| Log File | Description |
|---|---|
| Event Viewer | Contains general Media Manager logging, including errors. |
| `daemon/`*ddmmyy*`.log` | Contains debug information for the NetBackup Volume Manager service (`vmd`) and its associated processes (`oprd` and `rdevmi`).<br>The path is *install_path*`\volmgr\debug\daemon`. |
| `reqlib/`*ddmmyy*`.log` | Contains debug information on the processes that request `vmd`.<br>The path is *install_path*`\volmgr\debug\reqlib`. |
| `tpcommand/`*ddmmyy*`.log` | Contains debug information for device configuration. Includes information for `tpconfig`, `tpautoconf`, and the NetBackup GUIs.<br>The path is *install_path*`\volmgr\debug\tpcommand`. |
| `ltid/`*ddmmyy*`.log` | Contains debug information for `ltid`, the NetBackup Device Manager service.<br>The path is *install_path*`\volmgr\debug\ltid`. |
| acsssi/event.log | Contains debug and error information for the `acsssi` component of ACS robotic control. |

# Media Manager Configuration File (vm.conf)

The *install_path*`\volmgr\vm.conf` file contains entries for media and device management. This file usually is created by NetBackup, but if it does not exist you need to create it to add entries.

The entries that this file can contain are as follows. See “Example vm.conf File” on page 308 for an example configuration file.

## ACS Media Mapping

`ACS_`*mediatype*

Maps ACS (Automated Cartridge System) media types to Media Manager media types.

For more information, see the appendix, “Automated Cartridge System (ACS)” on page 355.

## Authorization Required

`AUTHORIZATION_REQUIRED`

If this entry is specified, Media Manager and NetBackup utilities must have authorization to connect to `vmd`; or a `SERVER` entry must be present in the `vm.conf` file. This entry is recommended for maximum security.

If this entry is not specified, Media Manager and NetBackup utilities may connect to `vmd` without specific authorization, except in the case when a non-matching `SERVER` entry is present in `vm.conf`.

## AVRD Scan Delay

`AVRD_SCAN_DELAY =` *number_of_seconds*

If this entry is specified, `avrd` will wait *number_of_seconds* between normal scan cycles. You can use this entry to minimize tape mount times. Without this entry present, a mount request is delayed by an average of 7.5 seconds.

The minimum for *number_of_seconds* is 1. The maximum is 180. 0 is converted to 1 second. The default is 15 seconds. Using a value greater than the default will delay mount requests and the displaying of drive status information in the Device Monitor.

**Caution** Setting *number_of_seconds* to a value that allows media to be changed within one scan cycle could cause NetBackup to be unaware of a media change and cause a loss of data.

## Backup Exec - Mapping Media Types

*backup_exec_media_type* = *netbackup_robot_number netbackup_media_type*

This entry maps Backup Exec media types to NetBackup media types and is used with the Backup Exec tape reader feature. This entry can be used when a NetBackup robot has different drives of a similar type configured.

For example in a Backup Exec configuration, you have a robot with two DLT drives. Both drives are considered to be DLT and all media in this robot have a media type of BE_DLT. You plan to move your Backup Exec media to be used with NetBackup.

In your NetBackup configuration, you have a different robot (robot 1) with two DLT drives. One drive is configured as DLT (Drive0) and the other drive is DLT3 (Drive1). The Backup Exec DLT media type can map to DLT or DLT3.

If a *backup_exec_media_type* entry is *not* specified, the Backup Exec media type will be mapped to the media type of the drive with the lowest index. Based on information not shown for this example, Drive0 is determined to have the lowest drive index. Drive0 is DLT, so Backup Exec media type DLT will be mapped to the NetBackup media type DLT. (This is equivalent to specifying `BE_DLT = 1 DLT`.)

If you do not want this default mapping, you can add a *backup_exec_media_type* entry to specify that for this robot, the Backup Exec DLT media type maps to the NetBackup DLT3 media type (`BE_DLT = 1 DLT3`).

*backup_exec_media_type* is the Backup Exec media type.

*netbackup_robot_number* is the NetBackup robot number. For standalone drives, the robot number must be -1. For example, `BE_DLT = -1 DLT`

*netbackup_media_type* is the NetBackup media type (see "Media Manager Media Types" on page 257).

Allowable and default mappings are as follows:

| Backup Exec Media Type | NetBackup Media Type | Default Mapping |
|---|---|---|
| BE_8MM | 8MM, 8MM2, 8MM3 | 8MM |
| BE_DLT | DLT, DLT2, DLT3 | Media type of the drive with the lowest index |
| BE_HALF_INCH | HCART, HCART2, HCART3 | Media type of the drive with the lowest index |

## Backup Exec - Mapping Robots

`BE_CHANGER_NAME_`*name* `=` *netbackup_robot_number*

This entry maps robots used in Backup Exec to NetBackup robots and is used with the Backup Exec tape reader feature. This entry is required when a robot is not serialized.

`BE_CHANGER_NAME_`*name* is the Backup Exec changer (robot) name. There cannot be any spaces in this field. For example if the robot name is HP 1, this field would be `BE_CHANGER_NAME_HP1`.

*netbackup_robot_number* is the NetBackup robot number.

The following are some examples of entries:

```
BE_CHANGER_NAME_HP4 = 1
BE_CHANGER_NAME_EXABYTE1 = 2
```

## Client Port Range

`CLIENT_PORT_WINDOW =` *start end*

Specifies the range of nonreserved ports on this computer that are used for connecting to `vmd` on other computers.

For example the following entry permits ports from 4800 through 5000:

```
CLIENT_PORT_WINDOW = 4800 5000
```

If you specify 0 for *start*, the operating system determines the nonreserved port to use. If you do not specify a `CLIENT_PORT_WINDOW` entry, the operating system determines the nonreserved port.

## DAS Client Name

`DAS_CLIENT =` *client_name*

Specifies the DAS client name that the TLM robot uses for communications with the DAS server. By default this is the host name of the Media Manager server.

See the appendix, “ADIC Distributed AML Server (DAS)” on page 391 for more information.

## Days To Keep Debug Logs

`DAYS_TO_KEEP_LOGS =` *days*

Specifies the number of days to keep debug logs before `vmd` deletes them. 0 means that the logs are not deleted. The default is 0.

## Device Host for Configuration Analyzer

`DEVICE_HOST =` *host_name*

Specifies the hosts that are included in the configuration analyzer interface. These entries may be manually added. Entries are automatically added when the NetBackup Volume Manager service restarts, based on robot host names appearing in volume groups. These entries have no effect on the Media and Device Management interface's host lists.

## Disable Automatic Path Remapping

`DISABLE_AUTO_PATH_CORRECTION`

Disables automatic device path remapping. With this entry, the device configuration will remain unchanged when the NetBackup Device Manager service is started. This may result in the device configuration becoming out of sync with the host's view of devices following a reboot.

## Disallow Non-NDMP Request on NDMP Drive

`DISALLOW_NONNDMP_ON_NDMP_DRIVE`

In NetBackup, all read types of operations (restore, the read-portion of duplicates, import, and verify) and the write-portion of duplicates are not scheduled. Therefore these operations compete for available drives.

NetBackup attempts to use an available drive based on the type of request:

- For a NDMP backup or restore request, the drive must be a NDMP drive.
- For a non-NDMP request of any kind, NetBackup always tries to find an available non-NDMP drive. But, if a non-NDMP drive is not available and a NDMP drive *is* available, the operation will be done using the slower NDMP drive.

  If a `DISALLOW_NONNDMP_ON_NDMP_DRIVE` entry is specified on master or media servers, NetBackup will *not* assign a non-NDMP request to available NDMP drives.

  Be aware when specifying this entry, that because some operations may have to wait for available non-NDMP drives to become available, the media mount timeout value may have to be increased (by using an entry in the UNIX `bp.conf` file or in the registry on Windows).

## Do Not Eject Standalone Tapes

`DO_NOT_EJECT_STANDALONE`

If this entry is specified, tapes in any standalone drives will not be ejected when a backup has completed (tapes will be ejected, if end of media is reached during a backup). This entry can be used in a NetBackup environment, where it is desirable to keep a standalone drive ready after successful backups are performed.

The NO_STANDALONE_UNLOAD file is also used to control tape ejects in standalone drives. Refer to the appendices of the NetBackup system administrator's guides for Windows servers for more information about this file.

## Inventory Robot Filter

INVENTORY_FILTER = *robot_type robot_number mode value1* [*value2 . . .*]

Used for robotic inventory filtering in ACS, TLH, or LMF robot types. This entry must be added to the configuration file on the media server where you plan to do the robotic inventory.

See the appendices, "Automated Cartridge System (ACS)" on page 355 and "IBM Automated Tape Library (ATL)" on page 379 for more information.

**Note** This entry is required if you are doing a robot inventory for an ACS robot and the ACS library software host is an STK Library Station.

*robot_type* can be ACS, TLH, or LMF.

*robot_number* is the number of the robot as configured in Media Manager.

*mode* is BY_ACS_POOL for ACS, BY_CATEGORY for TLH, or BY_PREFIX for LMF robot types.

The following are some examples:

```
INVENTORY_FILTER = ACS 0 BY_ACS_POOL 4 5
INVENTORY_FILTER = TLH 0 BY_CATEGORY FFFA CDB0
INVENTORY_FILTER = LMF 0 BY_PREFIX zzz yy
```

## Media ID Generation

MEDIA_ID_BARCODE_CHARS = *robot_num barcode_length media_ID_rule*

**Note** To use this entry, the robot must support barcodes and the robot type cannot be ACS, LMF, RSM, TLH, or TLM.

This entry controls Media Manager media ID generation. You choose how IDs are created by defining rules that specify which characters of a barcode on tape will be used. You also can specify alphanumeric characters to be inserted in the ID.

Multiple barcode creation entries can be specified, allowing the media ID generation to be specific for each robot; or for each barcode format having different numbers of characters in the barcode. This allows flexibility for multi-media.

If `MEDIA_ID_BARCODE_CHARS` entries are not present or you enter an invalid entry, Media Manager uses the rightmost six characters of the barcode to create its media ID.

*robot_num* is the robot number.

*barcode_length* is the length of the barcode.

A *media_ID_rule* consists of a maximum of six fields delimited by colons. Numbers in the fields of the rule define the positions of the characters in the barcode that are to be extracted (numbering is from the left). For example, 2 in a field extracts the second character from the barcode. The numbers can be specified in any order.

Characters prefixed by # in a field result in that character being inserted in that position in the generated ID. Any alphanumeric characters that are specified must be valid for a media ID. You can use rules to create media IDs of many varied formats, but keep in mind that the difference in the label on the media and the generated media ID may make it difficult to manage your media. The following is an example rule and the resulting media ID:

```
Barcode on the tape: 032945L1
Media ID rule:       #N:2:3:4:5:6
Generated media ID:  N32945
```

Also see “Media ID Generation Rules” on page 289.

## Media ID Prefix

`MEDIA_ID_PREFIX =` *media_id_prefix*

Defines the media ID prefixes to use for media without barcodes. You add the media to a robot with Update Volume Configuration option.

See “Changing the Update Options” on page 132.

## Preferred Group

`PREFERRED_GROUP =` *netgroup_name*

This entry is used by all callers in Media Manager and NetBackup (other than `bpgetmedia` and `bptm`) for authentication / authorization for `vmd`. *netgroup_name* is case sensitive.

If this entry is specified, a check is made to determine if the user is a member of domain\group. This check is limited to Windows global groups. If `PREFERRED_GROUP` is set to a domain local group, a match does not occur and the user's primary domain\group is used.

If a PREFERRED_GROUP entry is not specified or the user is not a member of the domain\group, the user's primary domain\group is obtained. If the domain name is an empty string or the name of the local machine, it is considered to be local.

If a PREFERRED_GROUP entry is not specified, the HKEY_LOCAL_MACHINE\SOFTWARE\VERITAS\NetBackup*CurrentVersion*\Config registry key is checked for an entry.

To achieve a platform independent implementation, *netgroup_name* is case sensitive. The following is an example entry:

```
PREFERRED_GROUP =  NTDOMAINNAME\Backup Operators
```

## Prevent Media Removal (TL8 Robots)

```
PREVENT_MEDIA_REMOVAL
```

**Note** Specifying this entry changes the default operation for TL8 robots. Without this entry present, Media Manager allows the removal of media.

If this entry is specified, TL8 robots will execute the SCSI command PREVENT MEDIUM REMOVAL. You then will not be able to open the robot's main door or gain access to the media access port while the robotic control daemon is running. You can override this action by doing one of the following:

- Use the test utility and execute allow media removal.
- Use inject/eject for access, when adding or moving volumes.

## Random Port Numbers

```
RANDOM_PORTS = YES|NO
```

Specifies whether Media Manager chooses port numbers randomly or sequentially when it requires a port number for communication with Media Manager on other computers.

- If RANDOM_PORTS = YES (the default), Media Manager chooses port numbers randomly from those that are free in the allowed range. For example, if the range is from 1024 through 5000, Media Manager chooses randomly from the numbers in this range.
- If RANDOM_PORTS = NO, Media Manager chooses numbers sequentially, starting with highest number that is available in the allowed range. For example, if the range is from 1024 through 5000, Media Manager chooses 5000 (assuming it is free). If 5000 is being used, port 4999 is chosen.

By default, a `RANDOM_PORTS` entry is not present in the Media Manager configuration file. This means that Media Manager uses the random method for selecting port numbers.

If you are specifying `RANDOM_PORTS = NO` in the NetBackup configuration file, you should also specify `RANDOM_PORTS = NO` in the Media Manager configuration file.

## Required Network Interface

`REQUIRED_INTERFACE =` *host_name*

Specifies the network interface that Media Manager uses when connecting to another Media Manager server. A Media Manager server can have more than one network interface and by default, the operating system determines the one to use. To force Media Manager connections to be through a specific network interface, use this entry and specify the network host name of that interface.

In the following example, host1 is the network host name of the interface.

```
REQUIRED_INTERFACE = host1
```

Refer to the NetBackup system administrator's guide for more information on NetBackup network configuration.

## RSM Media Mapping

`RSM_`*mediatype*

Maps Windows 2000 Removable Storage Manager (RSM) media types to Media Manager media types.

See the appendix, "Microsoft Removable Storage Manager (RSM)" on page 371 for more information.

## Scratch Pool Configuration

`SCRATCH_POOL =` *pool_name*

Configures the specified volume pool as the scratch pool. The scratch pool is a special volume pool from which media is moved as needed into volume pools that have no available media.

You can specify any scratch pool name, except the names: NetBackup, DataStore, or None. If the specified volume pool does not exist, Media Manager creates it and sets the host, user, group, and description for the pool to ANYHOST, root, NONE, and Scratch Pool, respectively.

If you subsequently delete the SCRATCH_POOL entry, the specified volume pool will no longer be the scratch pool.

See “Adding a New Volume Pool or Scratch Volume Pool” on page 78.

## Server Entry

SERVER = *host_name*

This entry is used for security and specifies which hosts can monitor and control devices on this host. Without any SERVER entries and authentication enabled, any host can manage the devices and volumes on the local host.

For security you can add entries allowing only specific hosts to remotely access the devices. If a host’s vm.conf file contains any SERVER entries, there must also be a SERVER entry for that host or it will not be able to manage its own devices.

## SSO DA Re-register Interval

SSO_DA_REREGISTER_INTERVAL = *minutes*

This entry is used only with the optional shared storage option (SSO) feature.

ltid on a scan host periodically re-registers its shared drives with vmd/DA to ensure that it is still providing the drive scanning function on behalf of other hosts sharing the drives. This re-registration allows conditions such as a device allocator restart to have minimal impact on use of shared drives.

5 minutes is the default for the re-registration interval. You can use this entry to tune this interval. After adding this entry, ltid must be stopped and restarted for the change to take effect.

## SSO DA Retry Time

SSO_DA_RETRY_TIMEOUT = *minutes*

This entry is used only with the optional shared storage option (SSO) feature.

If ltid encounters problems during communications with vmd/DA, or a failure while attempting to reserve a shared drive, it delays before trying again.

3 minutes is the default for the delay. You can use this entry to tune this delay period. After adding this entry, ltid must be stopped and restarted for the change to take effect.

## SSO Host Name

`SSO_HOST_NAME =` *host_name*

This entry is used only with the optional shared storage option (SSO) feature.

Specifies the name used by the current host to register, reserve, and release shared drives with `vmd/DA`. The default is the local host name.

## SSO Scan Ability Factor

`SSO_SCAN_ABILITY =` *scan_factor*

This entry is used only with the optional shared storage option (SSO) feature.

A scan ability factor ranges from 1 to 9, with a default value of 5. This factor allows the assignment of scan hosts to be prioritized, if a drive's scan host changes. Scan hosts that have a higher scan ability factor are chosen first.

## TLH Media Mapping

`TLH_`*mediatype*

Maps IBM ATL media types in Tape Library Half-inch (TLH) robots to Media Manager media types.

See the appendix, "IBM Automated Tape Library (ATL)" on page 379 for more information.

## TLM Media Mapping

`TLM_`*mediatype*

Maps DAS media types in Tape Library Multimedia (TLM) robots to Media Manager media types.

See the appendix, "ADIC Distributed AML Server (DAS)" on page 391 for more information.

## Verbose Message Logging

`VERBOSE`

Causes most Media Manager processes to be started with verbose logging enabled.

Use this option only if problems occur or if requested by VERITAS support. After the problem is resolved, remove any debug logs that were created or add a `DAYS_TO_KEEP_LOGS` entry.

## Example vm.conf File

The following is an example of a `vm.conf` file, on host yak:

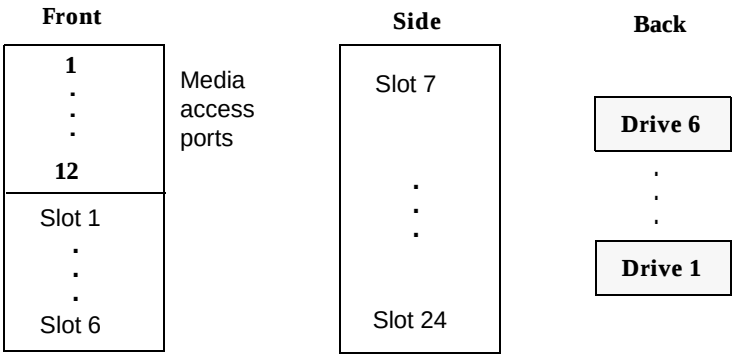
```
SERVER = yak
SERVER = whale
MEDIA_ID_PREFIX = NV
MEDIA_ID_PREFIX = NETB
ACS_3490E = HCART2
SCRATCH_POOL = ScratchPool
```

# Robot Drive and Slot Layouts C

This appendix contains diagrams of slot layouts and drive locations in some of the more popular robots supported by Media Manager. If your robot is not included here, see the vendor's documentation for the device.

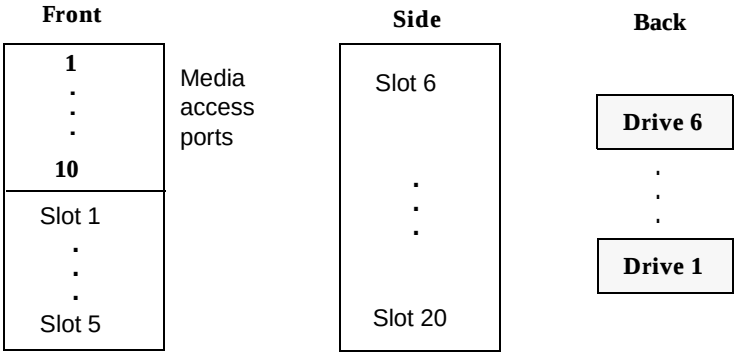
# ADIC Scalar 100 LTO
# DELL PV-136T
# IBM 3583 (TLD)

The following slot mapping diagram shows a 6 drive, 24 slot model with 12 media access ports. Other robot models vary and have up to 72 slots.



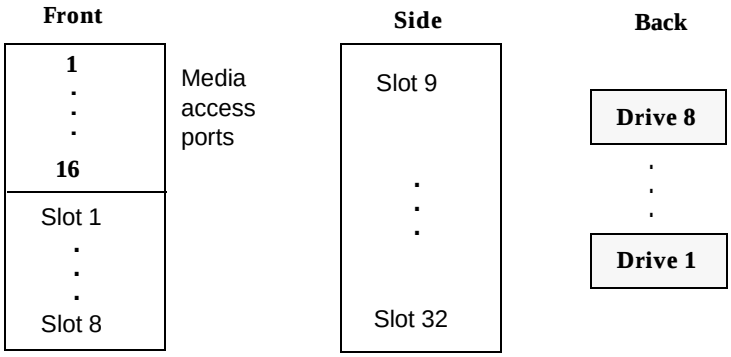

# ADIC Scalar 100 DLT
# ADIC Scalar 100 SDLT
# IBM 7337 (TLD)

The following slot mapping diagram shows a 6 drive, 20 slot model with 10 media access ports. Other robot models vary and have up to 60 slots.

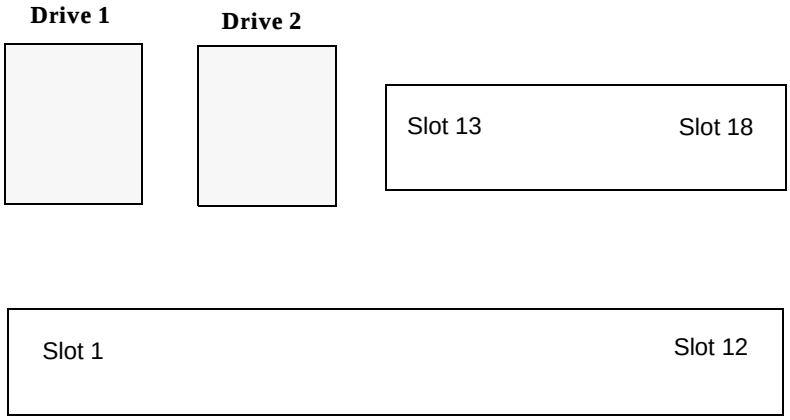


# ADIC Scalar 100 AIT (TL8)

The following slot mapping diagram shows an 8 drive, 32 slot model with 16 media access ports. Other robot models vary and have up to 96 slots.

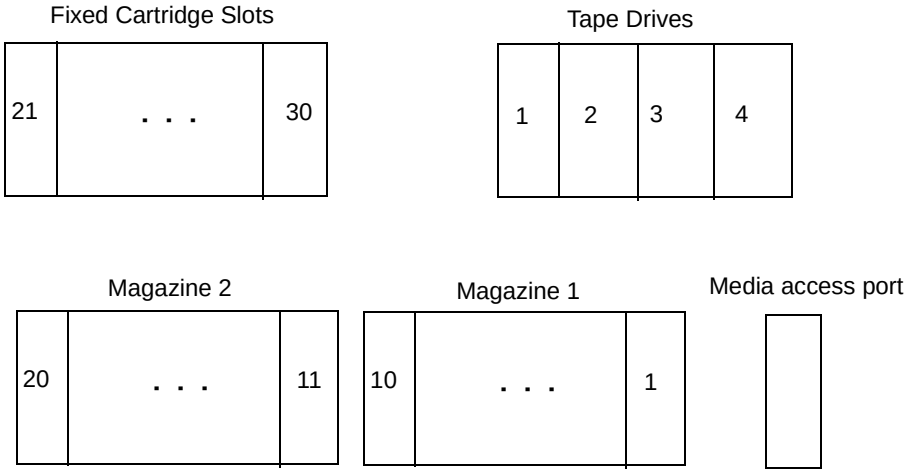



# ADIC Scalar 218 (TLD)

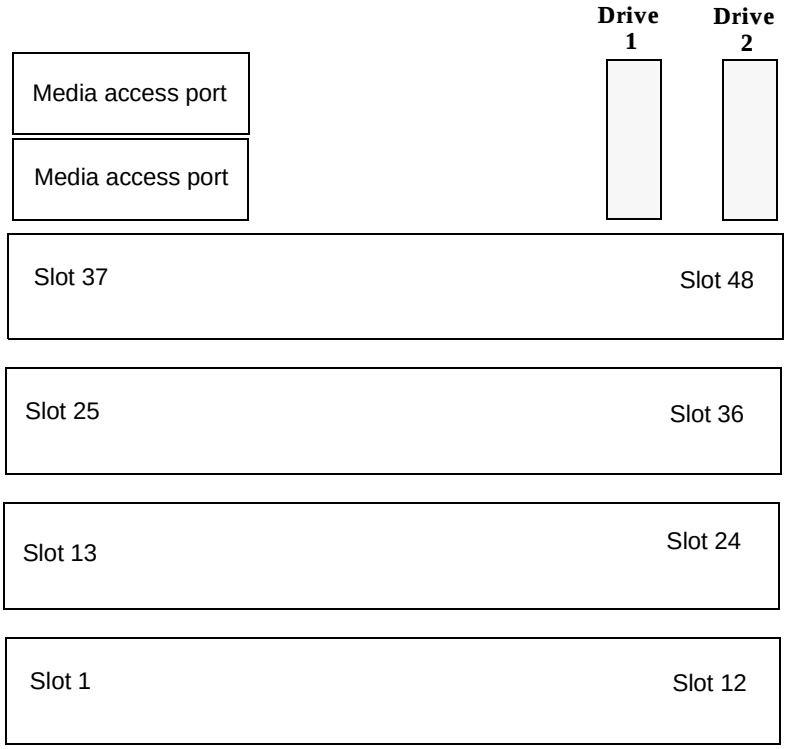



**Note** With a barcode reader installed, the slot physically labeled as slot 1 is disabled, and physical slots 2 through 18 become known in Media Manager as slots 1 through 17. With a virtual media access port configured, physical slot 12 becomes the port and physical slots 2-11 and 13-18 become known in Media Manager as slots 1-16.

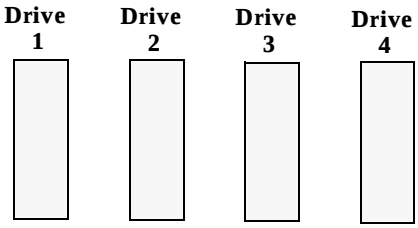
# Exabyte 430
# Sony LIB-304 (TL8)



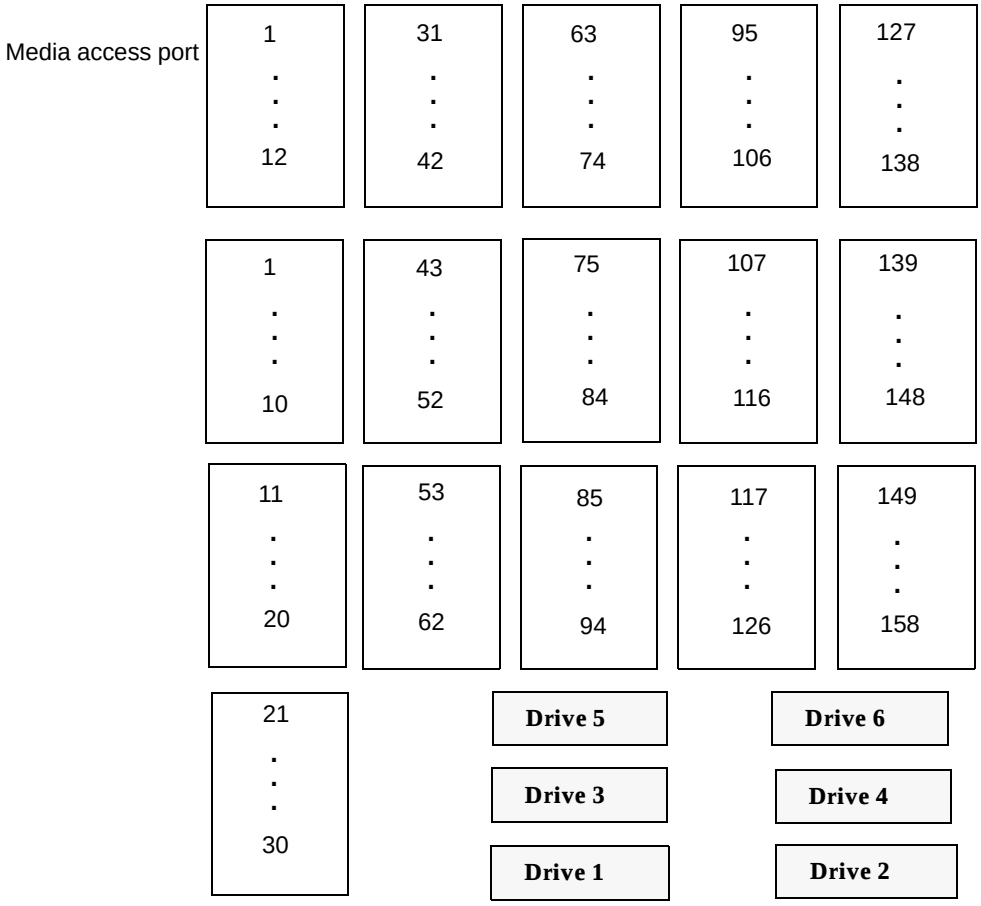
# ADIC Scalar 448/458 (TLD)




Drives are installed right to left, but are numbered left to right. With a four drive configuration, the drive numbering is as follows:



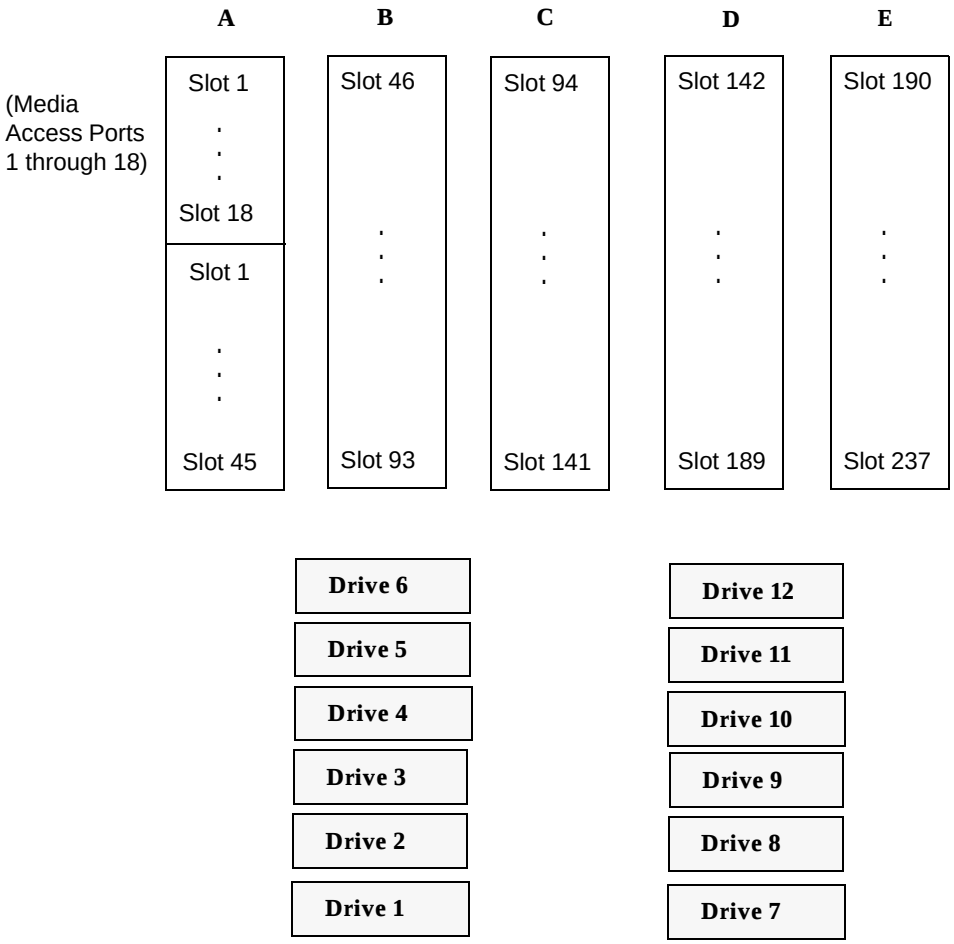
# ADIC Scalar 1000 - DLT version (TLD)



# ADIC Scalar 1000 - AIT/AIT2 (TL8)

The slot mapping shown below is for a 12 drive, 237 slot model. Other robot models may vary.

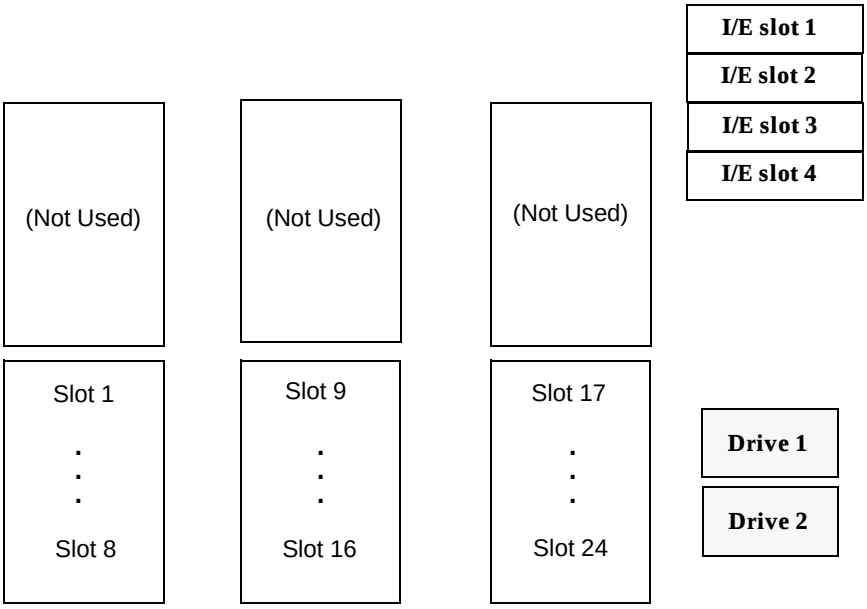
**Note** This view of the media access ports is looking through the glass door from the front.



# ADIC VLS DLT (TSD)

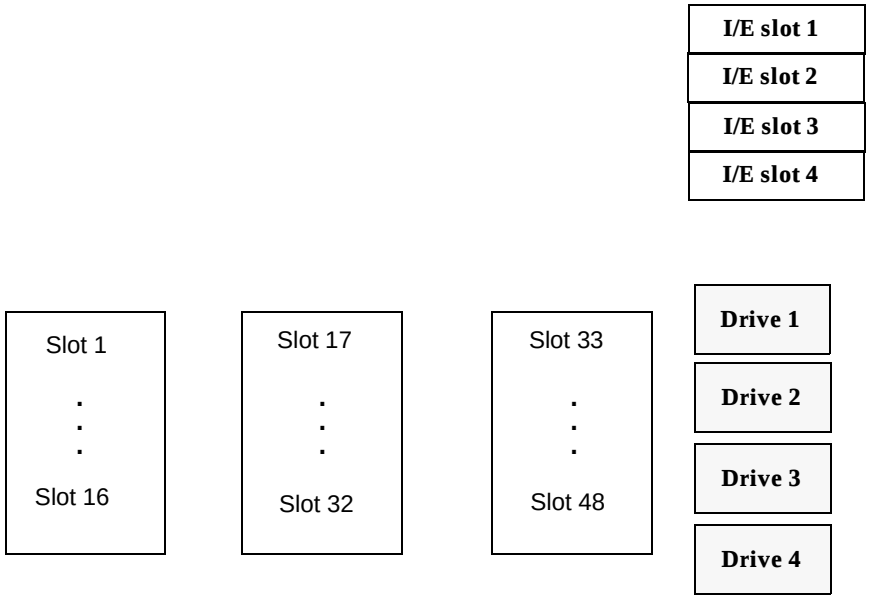
**Drive 1 (the only drive)**

# ATL 2/28 DLT Library (TLD)

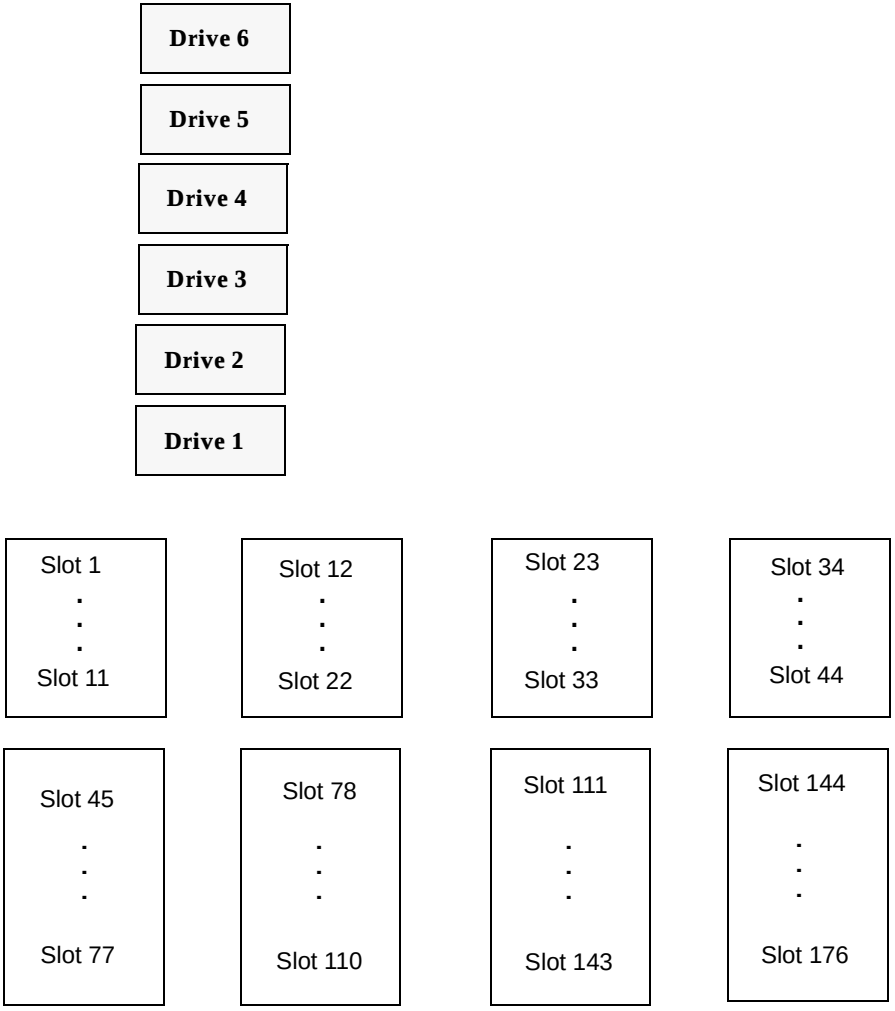


# ATL 4/52 DLT Library
# ATL 2/52 DLT Library
# Compaq TL810
# Compaq TL812
# Compaq TL894
# Sun StorEdge L1800 (TLD)

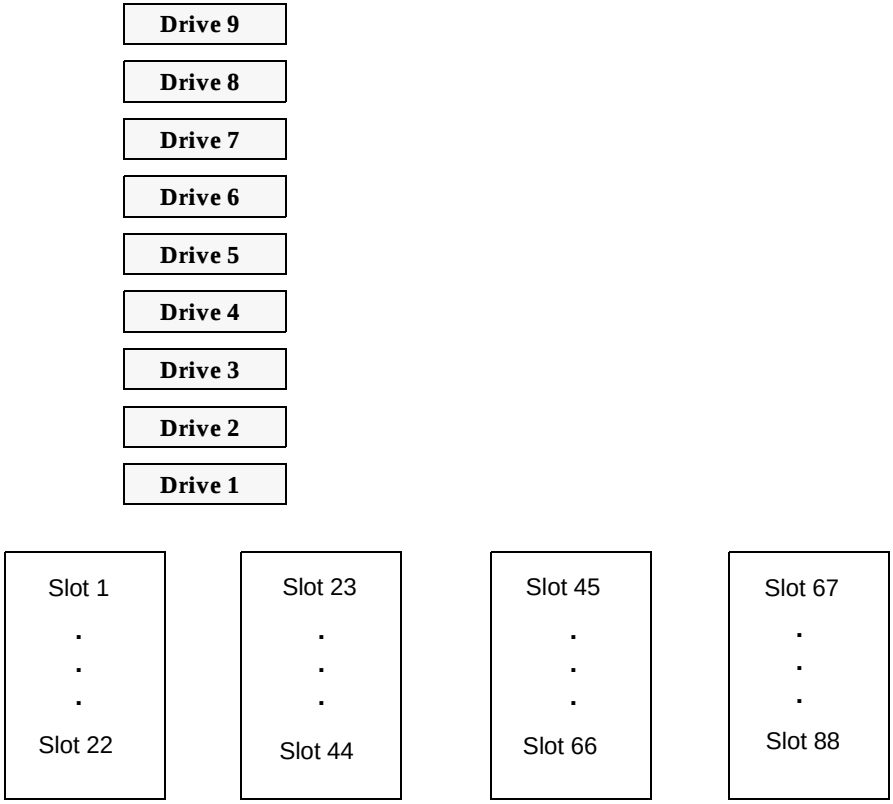
The slot mapping shown below represents the ATL 4/52. The ATL 2/52 is similar with only two drives.



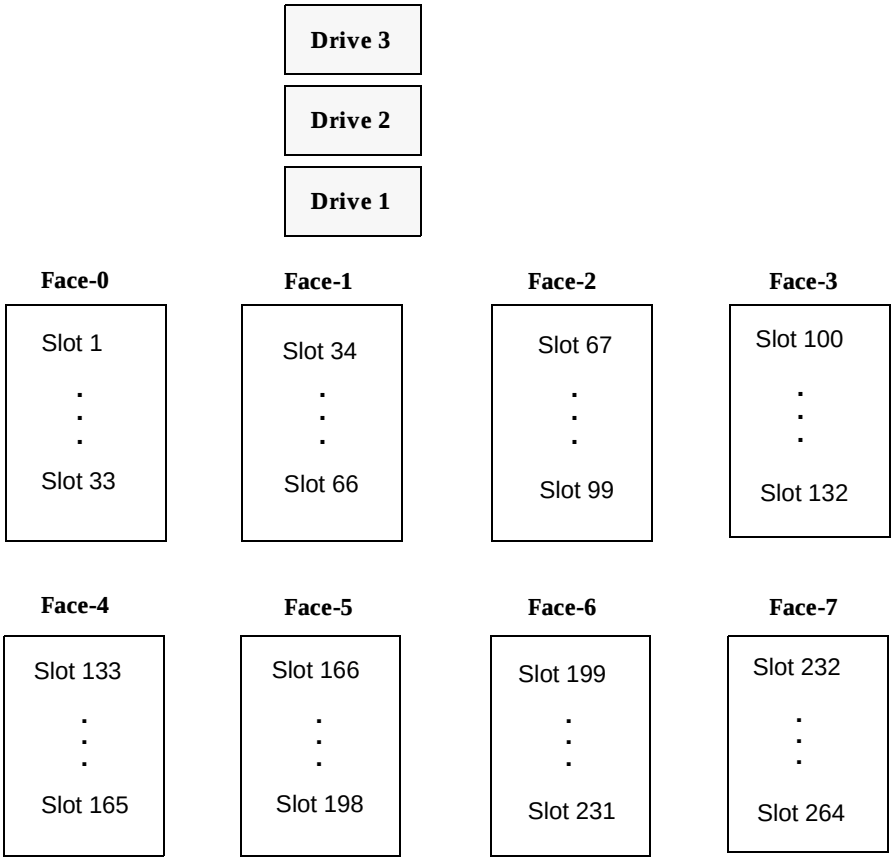
# ATL 6/176 DLT Library Compaq TL826 Compaq TL896 (TLD)



# ATL 9/88 DLT Library (TLD)



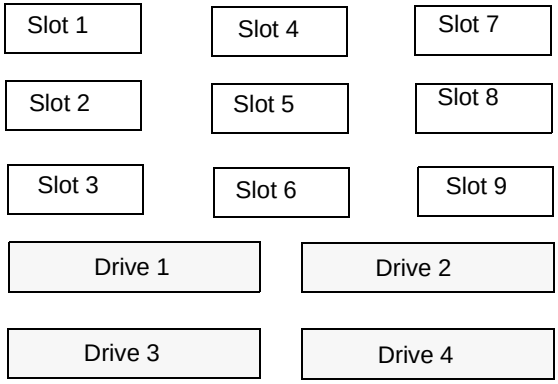
# ATL 3/264 (2640) DLT Library
# Compaq TL820
# Compaq TL822
# Compaq TL893 (TLD)



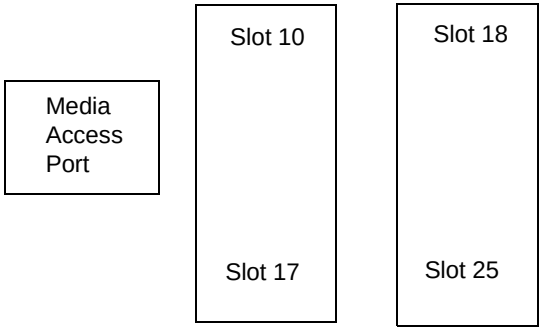
# ATL P1000
# Sun StorEdge L1000 (TLD)

The slot mapping shown below apply to libraries that are configured with 25 slots. Other configurations may vary.

Back (Inside view of back wall from the front

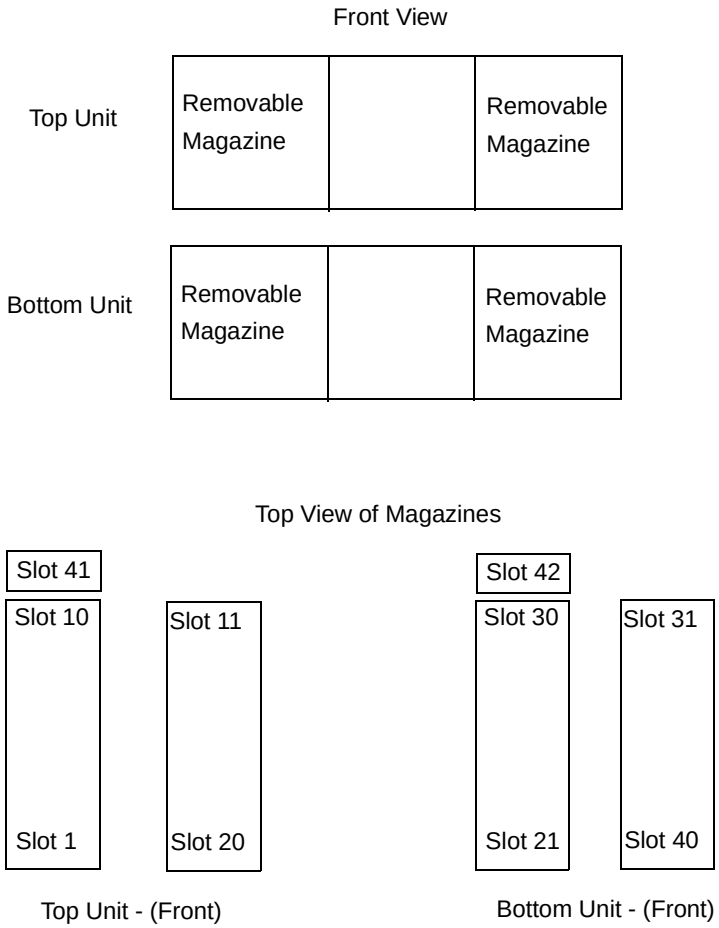



Front (Inside view of front wall from the back



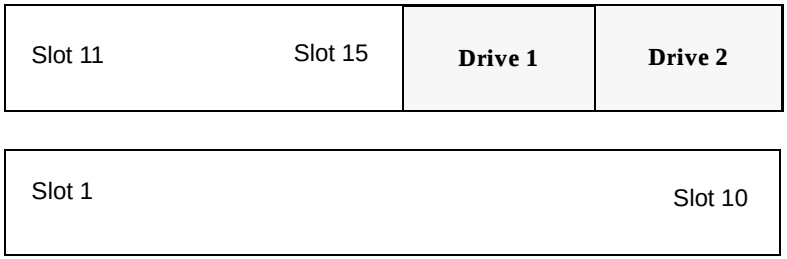
# ATL M1500
# M4 Data M1500 (TLD)

The slot mapping below shows a robot with two units, each unit having two removable magazines. For NetBackup BusinesServer, only a single unit is allowed and the fixed slot is 21.



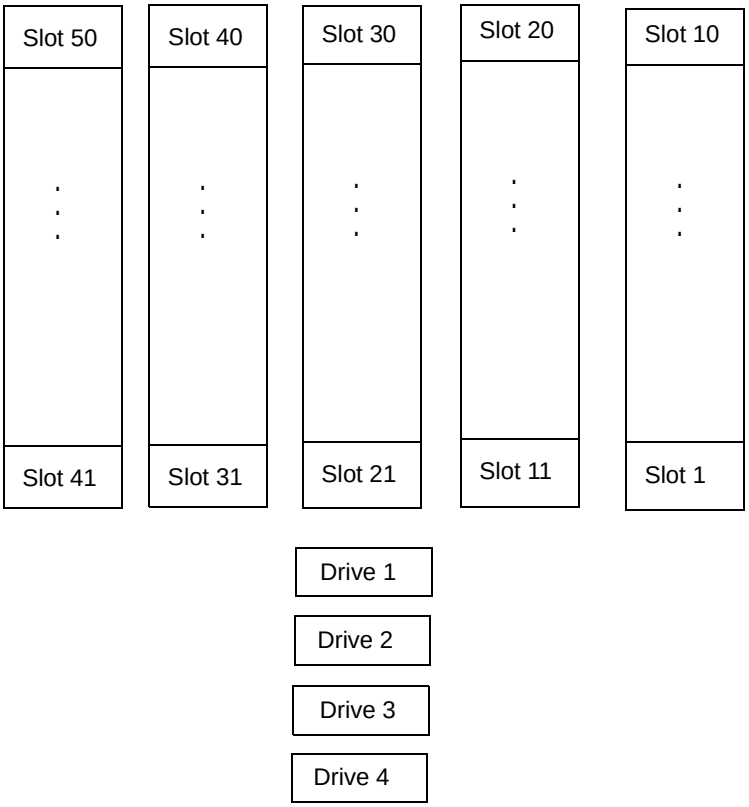
# Breece Hill Q2.15
# IBM 7337-305
# IBM 3447-105 (TLD)

**(Top View)**

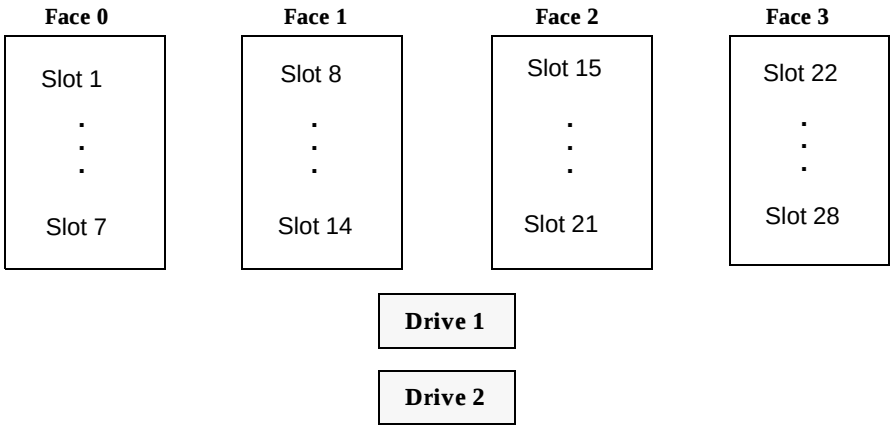


# Breece Hill Q4.50 (TLD)

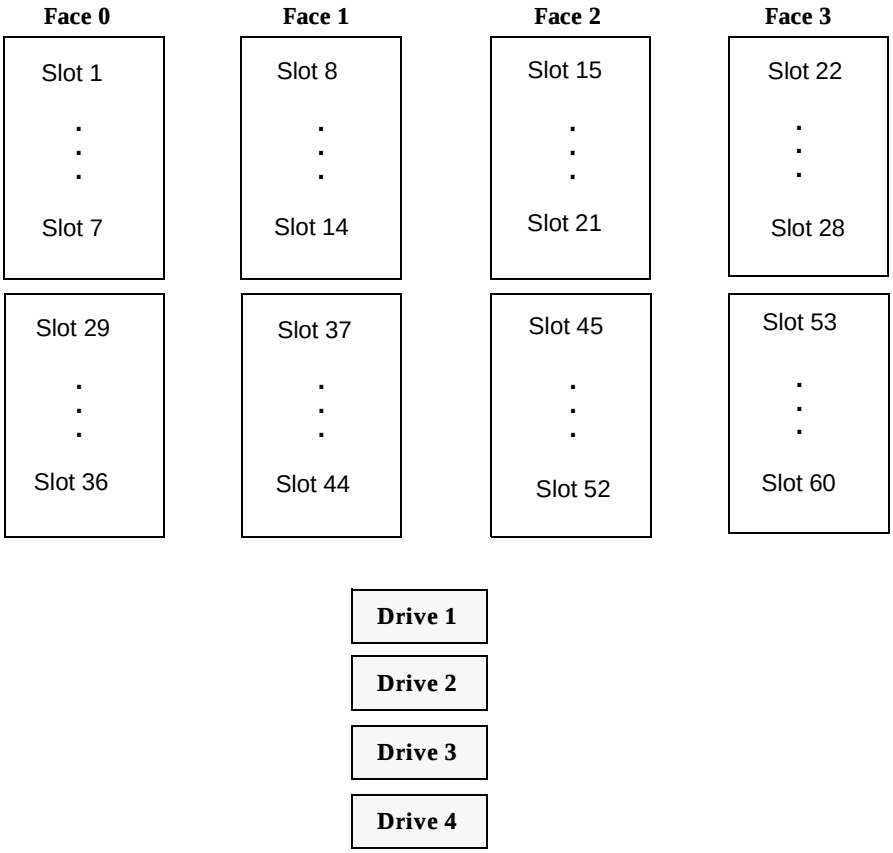
The following is a front view.



# Breece Hill Q7 (TLD)

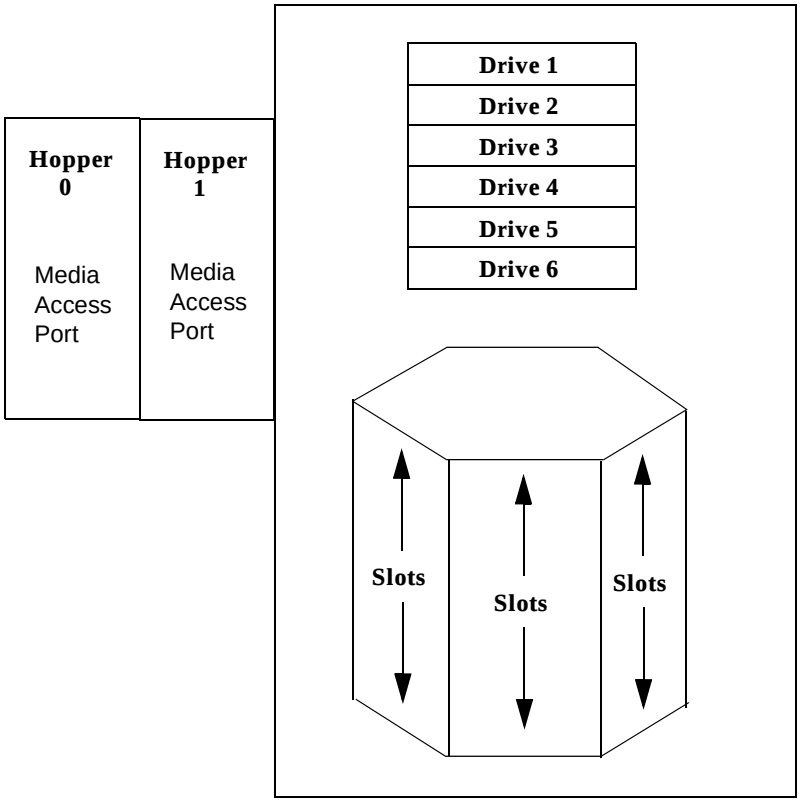


# Breece Hill Q47 (TLD)

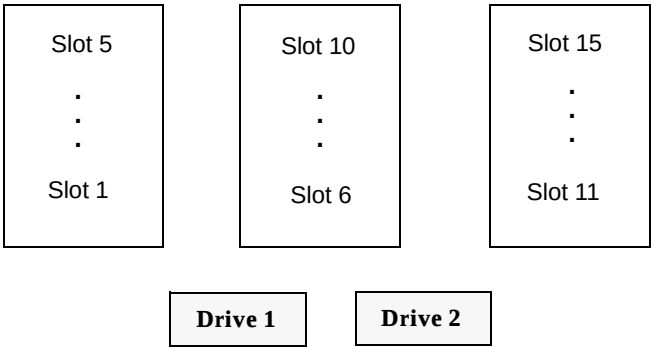


# Breece Hill Q70
# Breece Hill Q210
# Breece Hill Q140 (TLD)

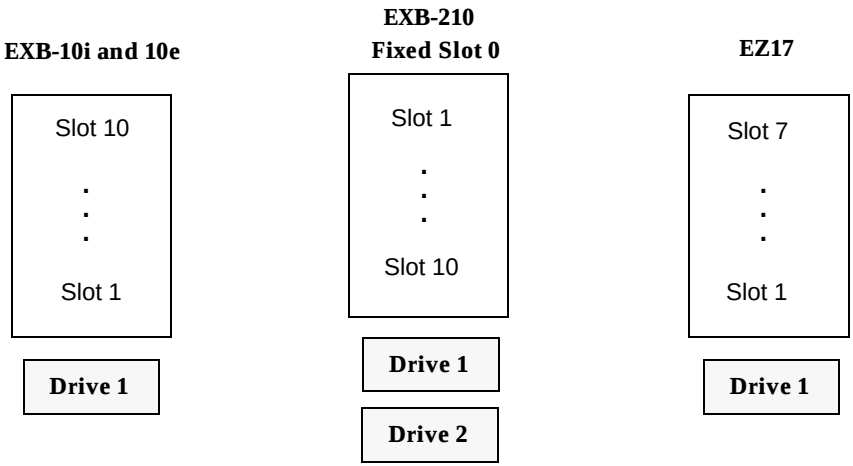
The slot figure shown below represents the Breece Hill Q210.



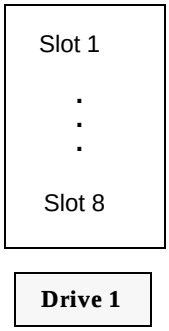
# Compaq 35/70 (TLD)



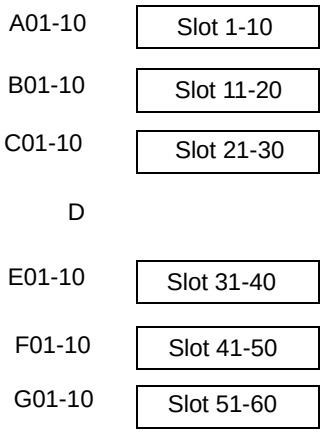

# Exabyte 10i, 10e, 10h
# Exabyte 210
# Exabyte EZ17 (TS8)



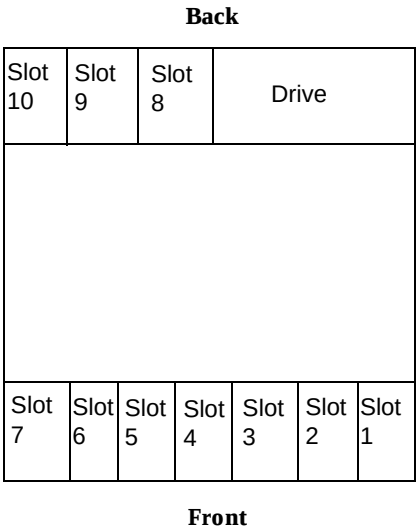
# Exabyte 18D (TLD)



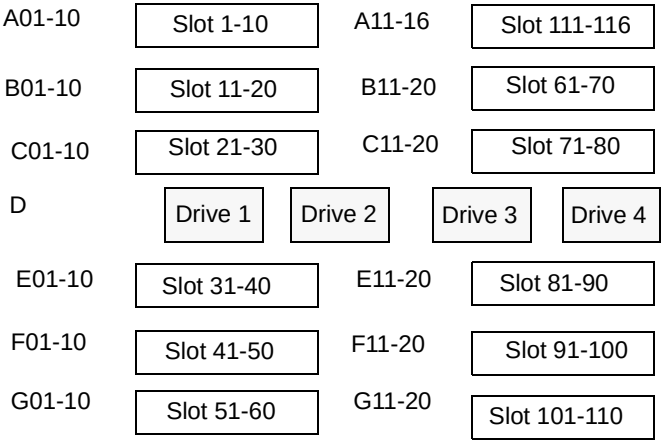

# Exabyte 60 (TL8)



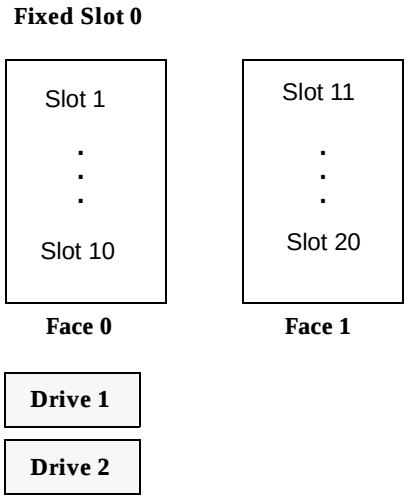
# Exabyte 110L (TLD)



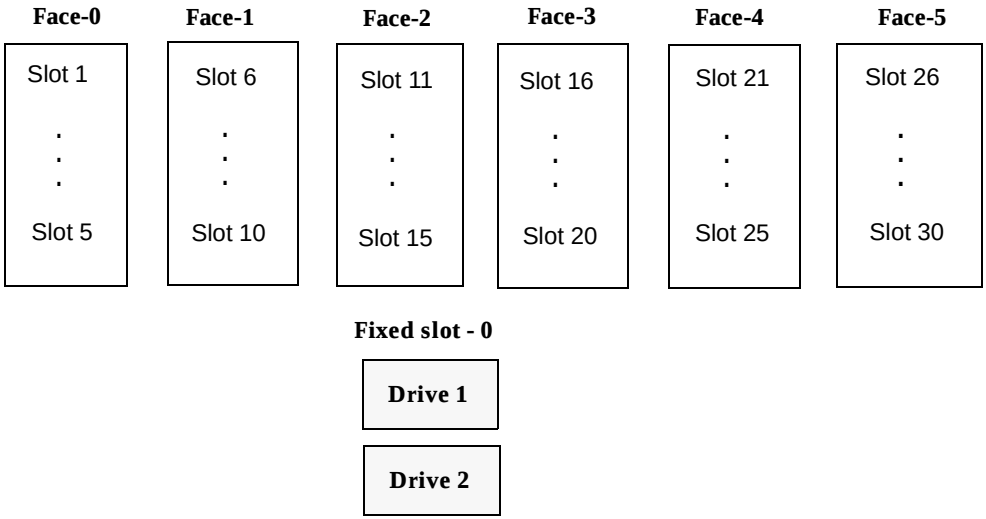

# Exabyte 120 (TL8)



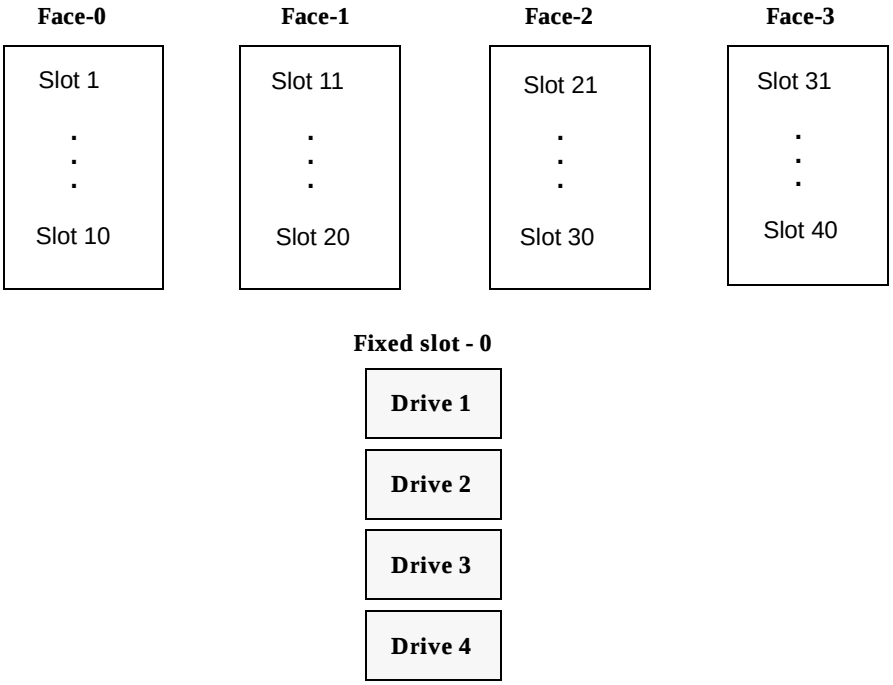
# Exabyte 220
# ADIC Scalar AIT 220
# Sun StorEdge L400 (TL8)



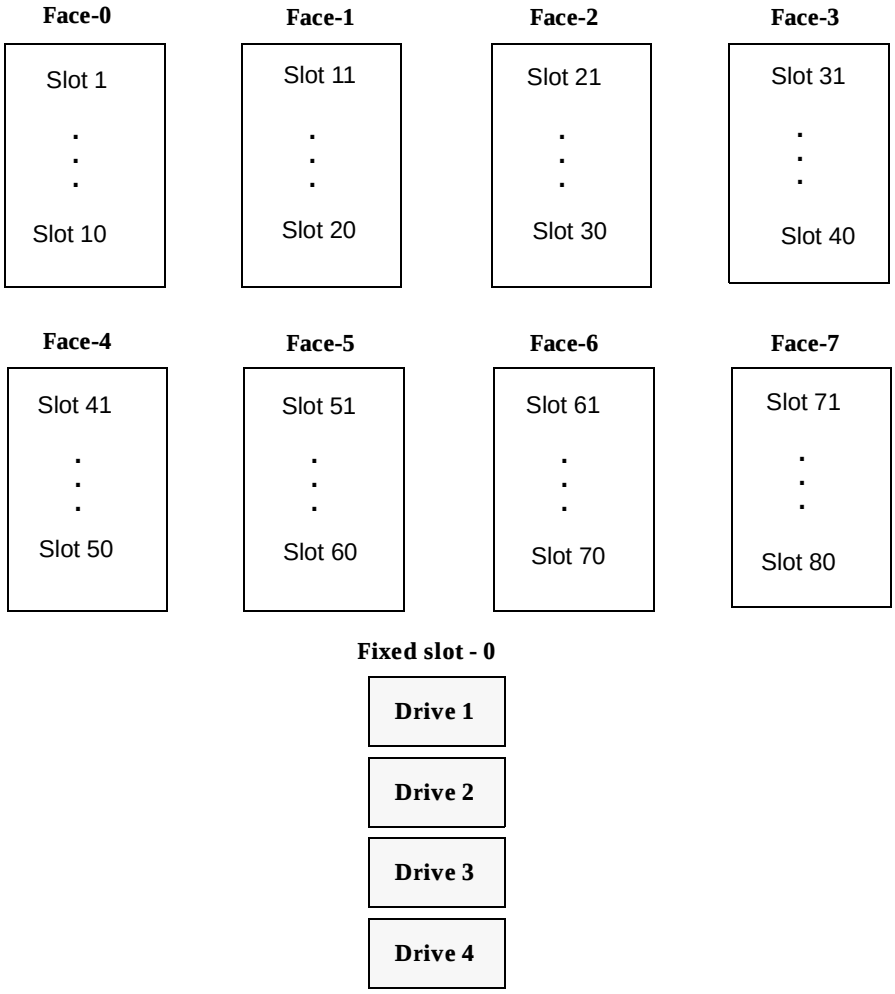

# Exabyte 230D (TLD)



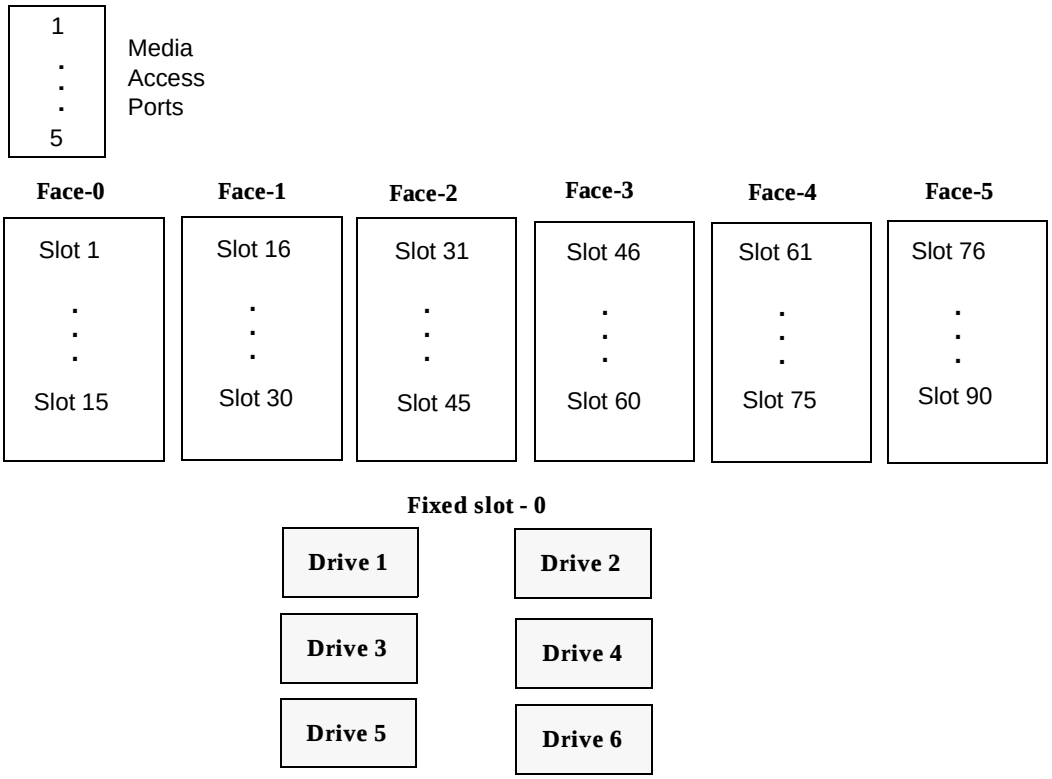
# Exabyte 440 (TL8)



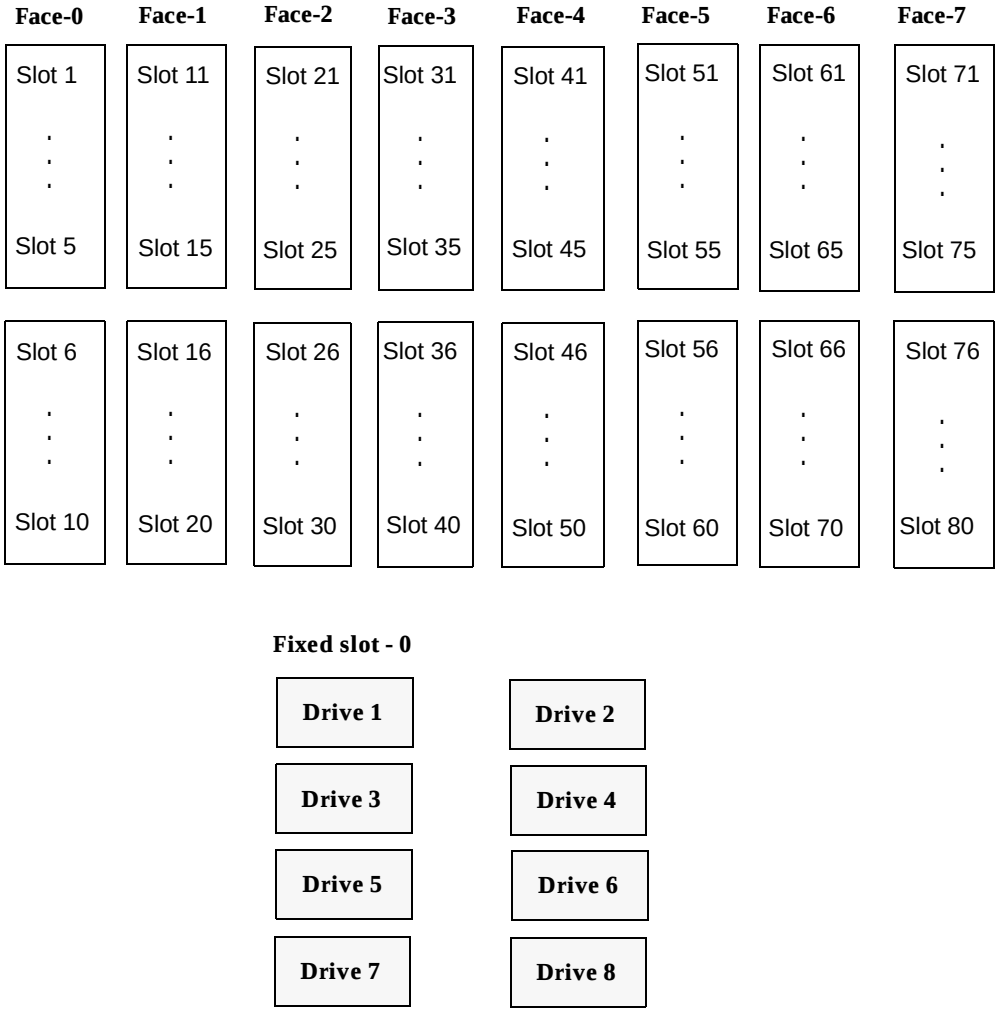
# Exabyte 480
# ADIC Scalar AIT 480 (TL8)



# Exabyte 690D (TLD)



# Exabyte X80 (TL8)



# Exabyte X200 (TL8)

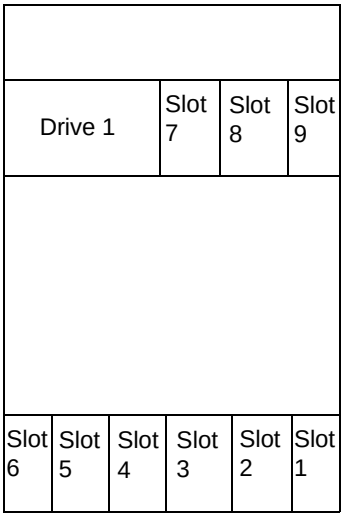
| Face-0 | Face-1 | Face-2 | Face-3 | Face-4 | Face-5 | Face-6 | Face-7 |
|---|---|---|---|---|---|---|---|
| Slot 1 : Slot 6 | Slot 31 : Slot 36 | Slot 61 : Slot 66 | Slot 91 : Slot 96 | Slot 121 : Slot 126 | Slot 151 : Slot 156 | Slot 181 : Slot 186 | Slot 211 : Slot 216 |
| Slot 7 : Slot 12 | Slot 37 : Slot 42 | Slot 67 : Slot 72 | Slot 97 : Slot 102 | Slot 127 : Slot 132 | Slot 157 : Slot 162 | Slot 187 : Slot 192 | Slot 217 : Slot 222 |
| Slot 13 : Slot 18 | Slot 43 : Slot 48 | Slot 73 : Slot 78 | Slot 103 : Slot 108 | Slot 133 : Slot 138 | Slot 163 : Slot 168 | Slot 193 : Slot 198 | Slot 223 : Slot 228 |
| Slot 19 : Slot 24 | Slot 49 : Slot 54 | Slot 79 : Slot 84 | Slot 109 : Slot 114 | Slot 139 : Slot 144 | Slot 169 : Slot 174 | Slot 199 : Slot 204 | Slot 229 : Slot 234 |
| Slot 25 : Slot 30 | Slot 55 : Slot 60 | Slot 85 : Slot 90 | Slot 115 : Slot 120 | Slot 145 : Slot 150 | Slot 175 : Slot 180 | Slot 205 : Slot 210 | Slot 235 : Slot 240 |

**Fixed slot - 0**

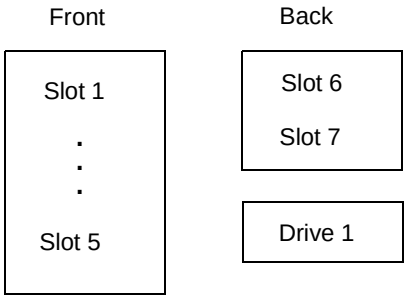
| | |
|---|---|
| Drive 1 | Drive 2 |
| Drive 3 | Drive 4 |
| Drive 5 | Drive 6 |
| Drive 7 | Drive 8 |
| Drive 9 | Drive 10 |

# HP SureStore 1/9 Sun StorEdge L9 (TLD)

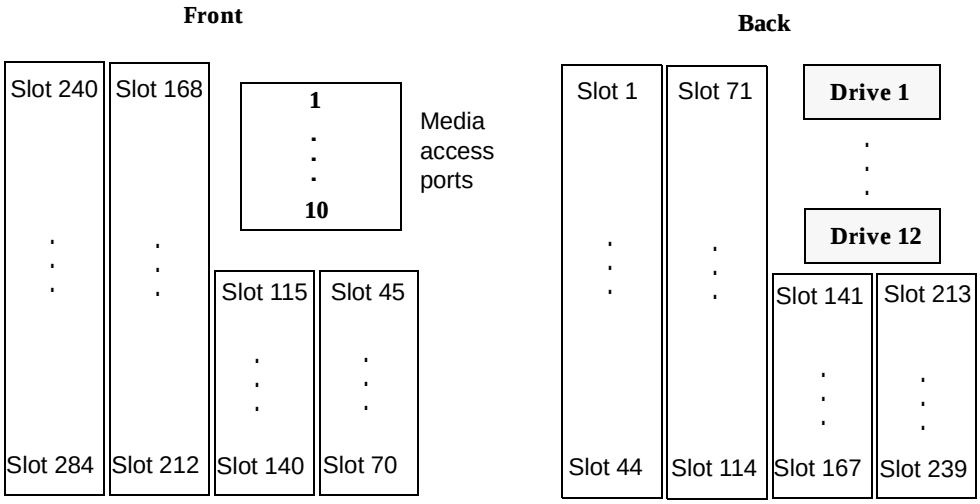
This is a top view of the robot.




# IBM 3581 ADIC Fastor (TLD)

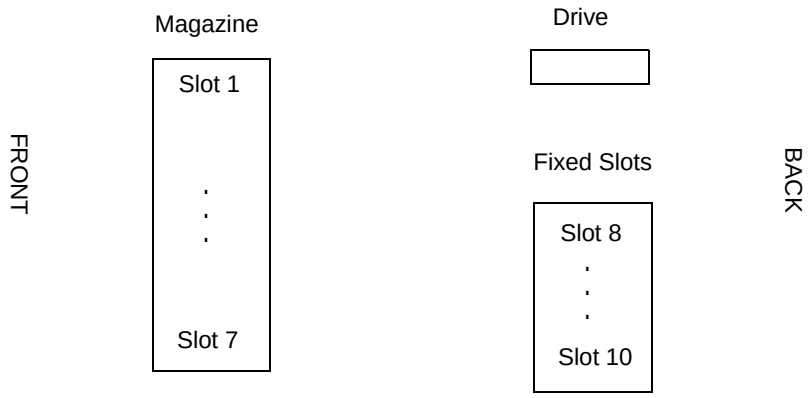


# IBM 3584 (TLD)

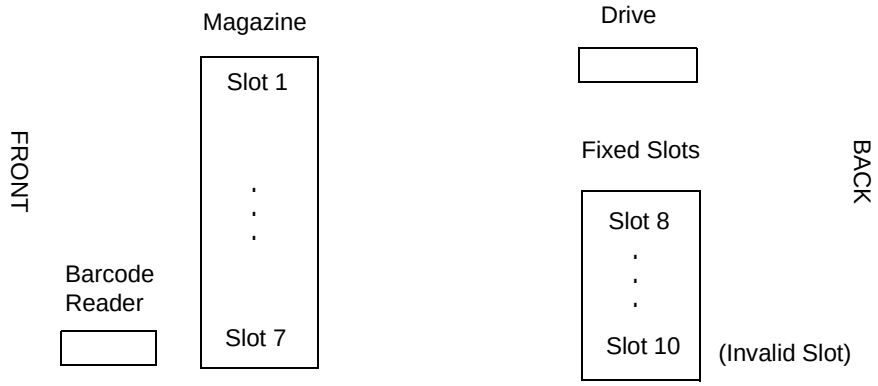

Front
Slot 240
Slot 168
1
10
Media access ports
Slot 115
Slot 45
Slot 284
Slot 212
Slot 140
Slot 70
Back
Slot 1
Slot 71
Drive 1
Drive 12
Slot 141
Slot 213
Slot 44
Slot 114
Slot 167
Slot 239

# NEC Autoloader DLT (TLD)

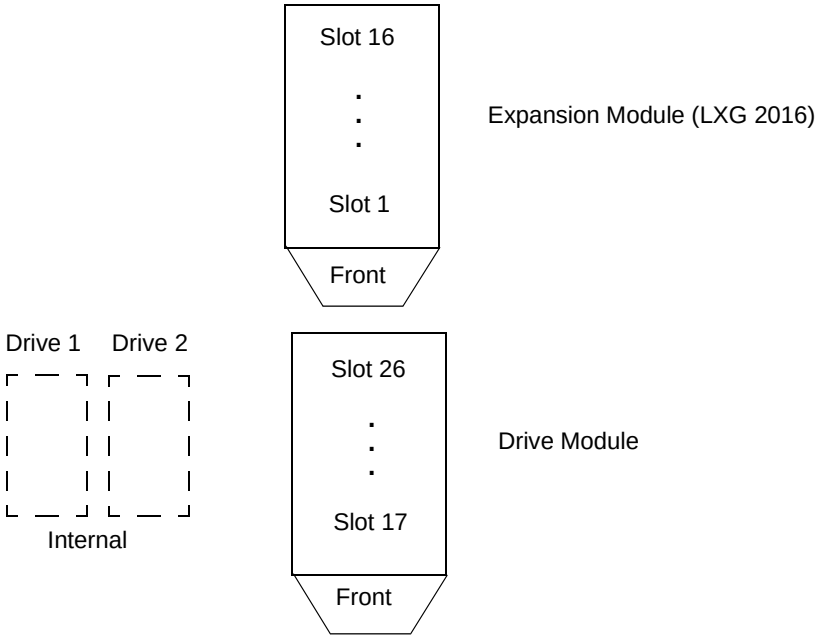
The following diagram shows a standard model.



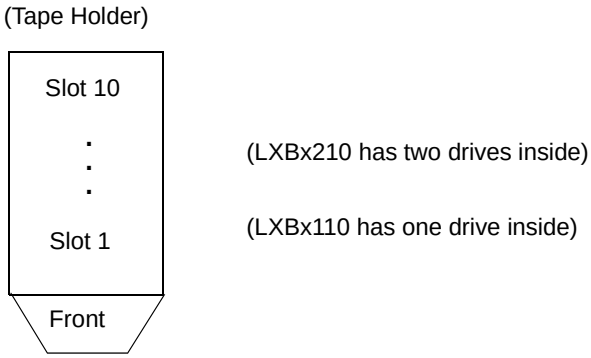

The following diagram shows a model with a barcode reader.



# Overland Data DLT Library Xpress Compaq StorageWorks DLT Mini-Library (TLD)

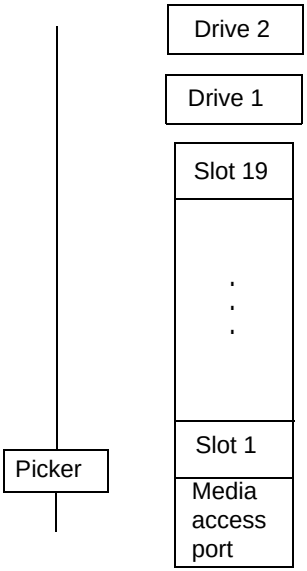


# Overland Data LXBx110
# Overland Data LXBx210
# Compaq TL891
# Compaq TL892 (TLD)



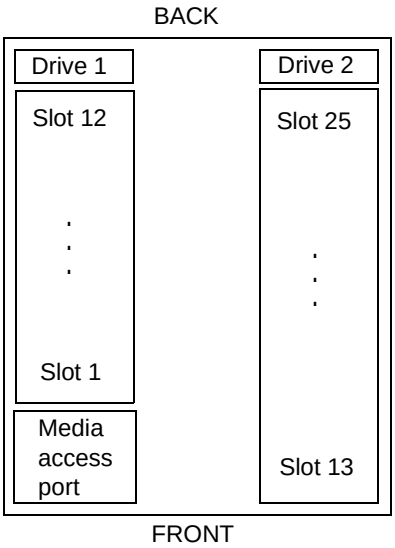
# Overland Data Library Pro (TL8)

The following is the top view.

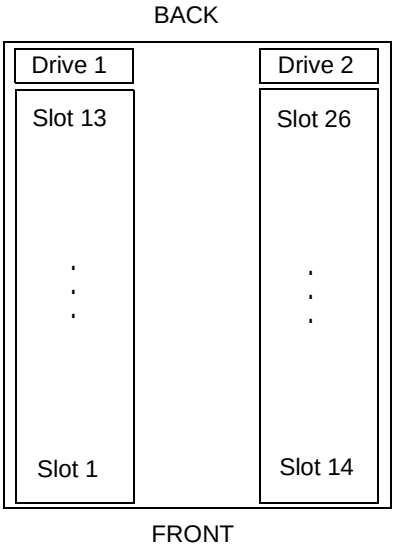


# Overland Data NEO
# Overland Data LxL1u11 (TLD)

The following diagram shows a robot with the media access port enabled.

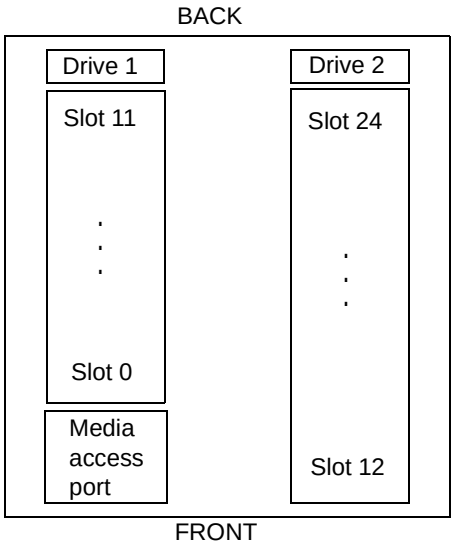



The following diagram shows a robot with the media access port disabled and is also similar to the LxL1u11 model which only supports one drive and 11 slots.

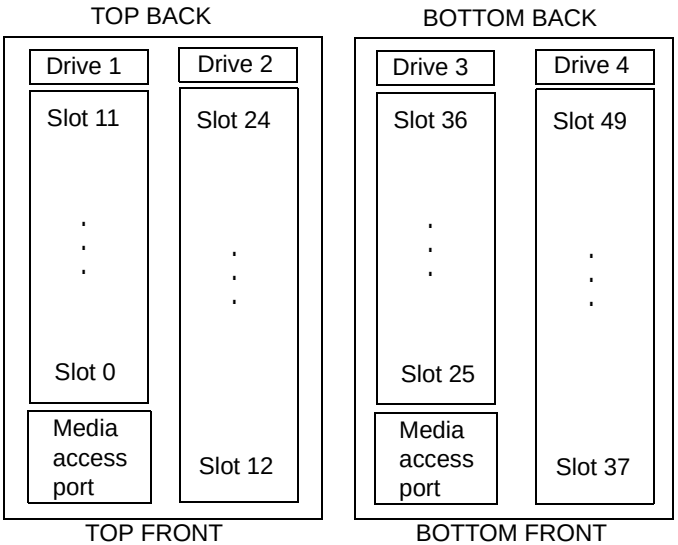


# Compaq Storage Works MSL 5026 Compaq Storage Works MSL 5052 (TLD)

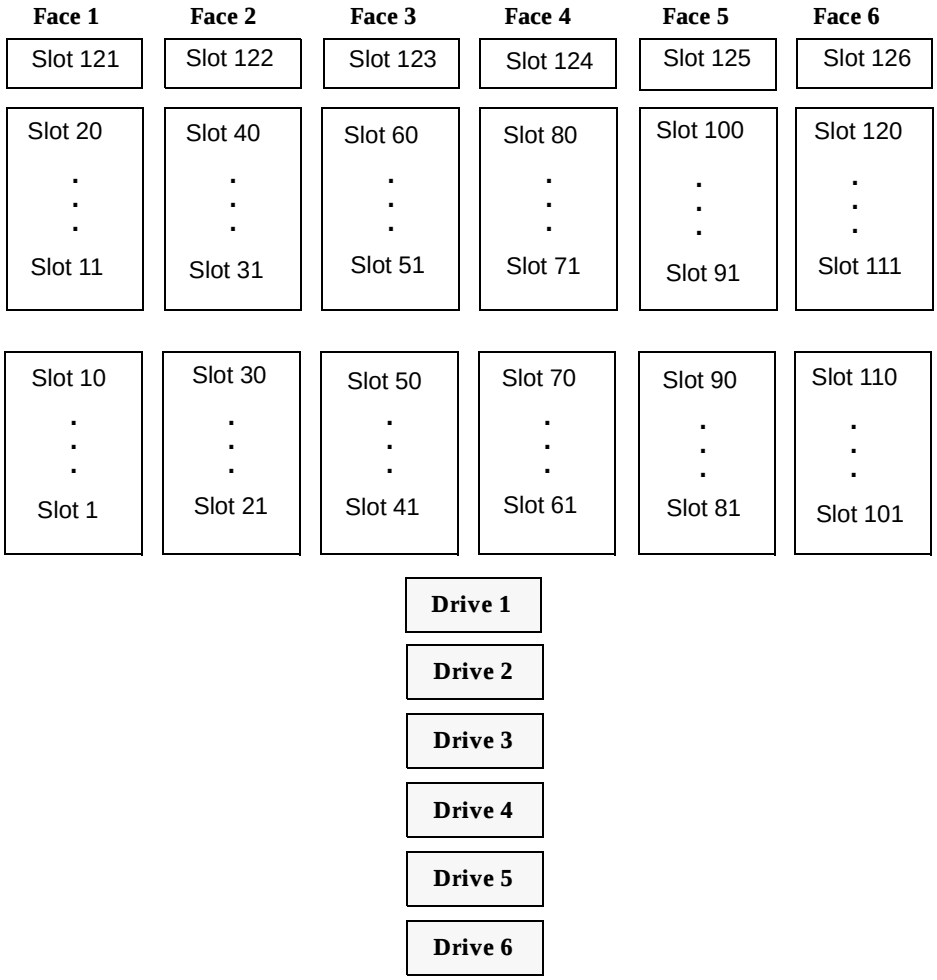
The following diagram shows a 5026 robot model.




The following diagram shows a 5052 robot model.

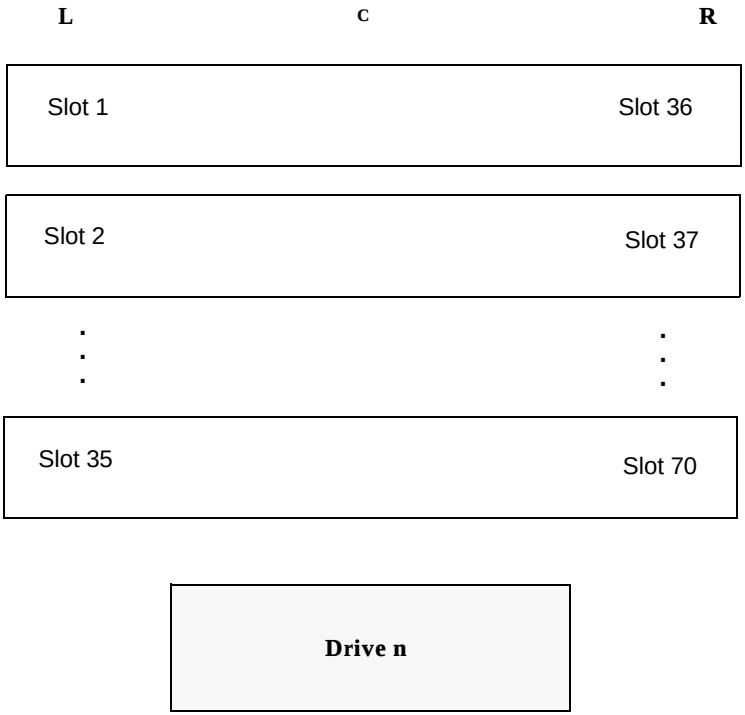


# Qualstar 46120 (TL8)



# Sony DMS (TLD)

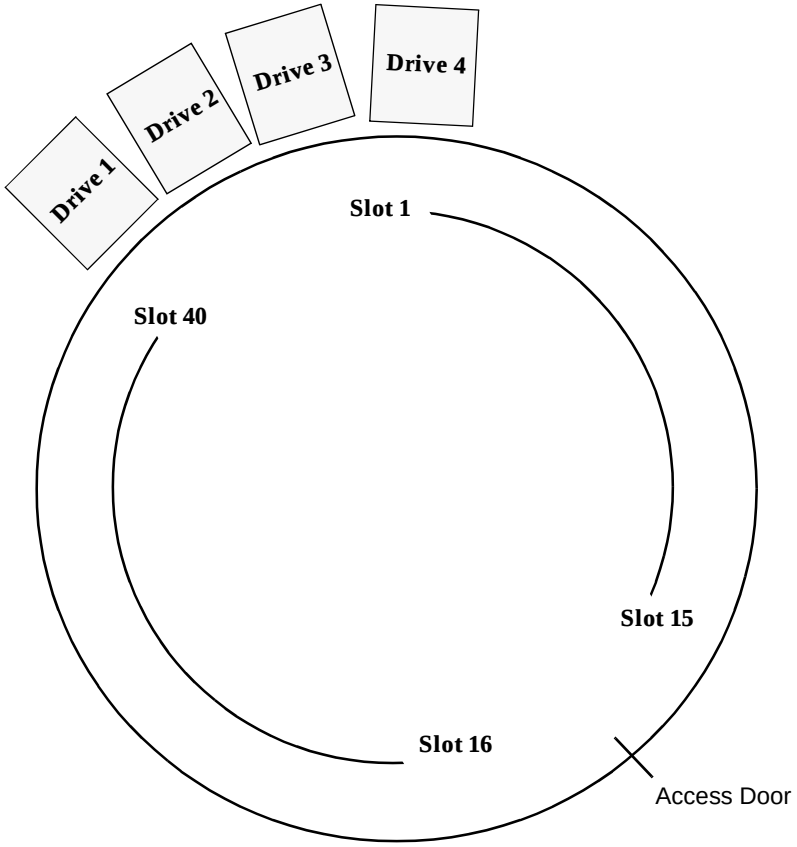
This slot diagram is for the Sony DMS-B35 with one drive configured. Other models differ.




**Note** Some cassettes requires two slots. For example, if a large cassette is in slot 1, slot 36 is unusable.

# Spectra Logic 9000/20
# Spectra Logic 9000/40 (TL8)

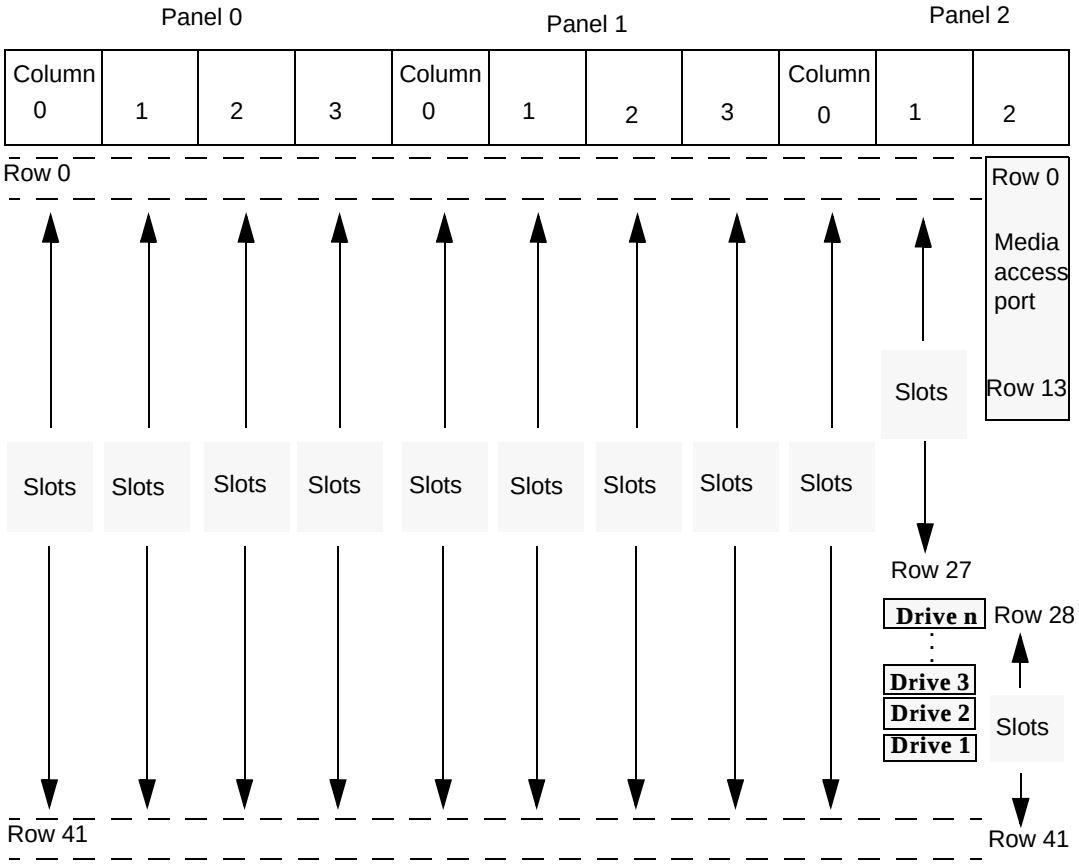
The slot figure shown below represents the 9000 / 40. The 9000 / 20 is similar with fewer slots.



# STK 9710
# STK 9740
# HP SureStore 10/588 (A4845A) (TLD)

Drive and cell capacity are configurable. The following diagram is based on an STK 9710 configuration. Other STK library configurations may vary.

For example, STK 9740 libraries may number drives from the top down. Also 9740 drives may be installed in Panel 0, not in Panel 2.

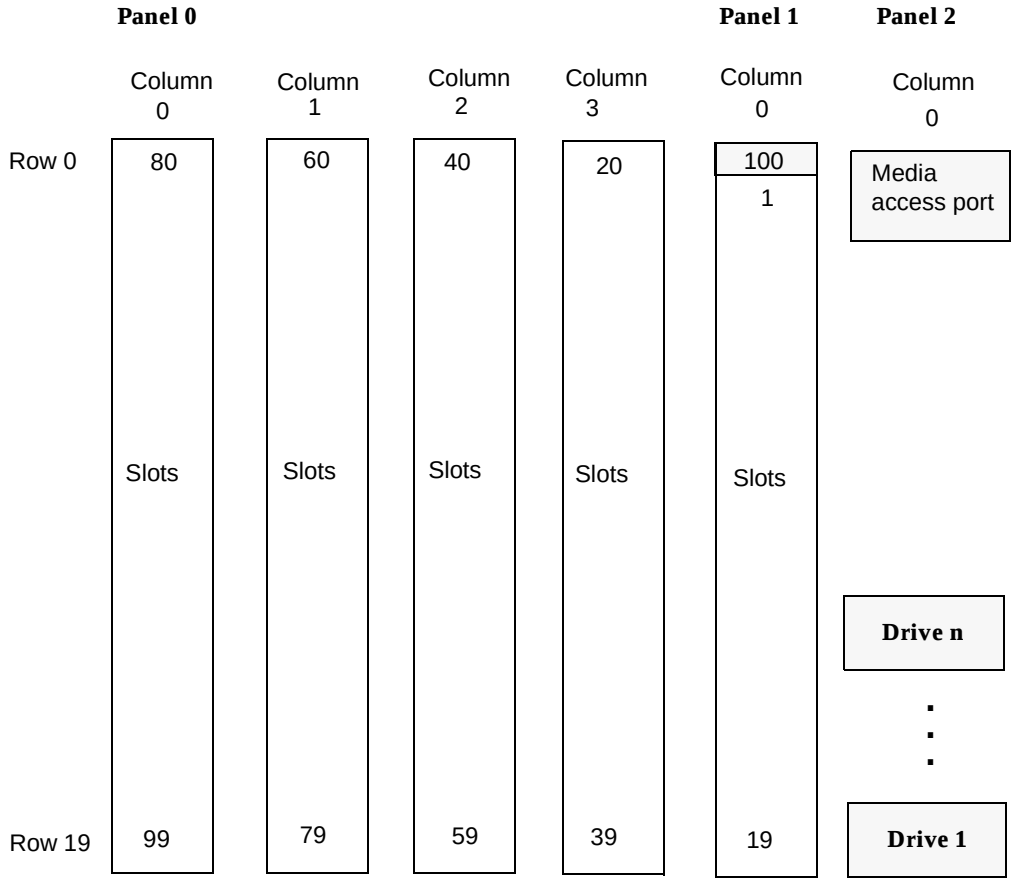



TLD slot numbering is different than STK Cell Element numbering. To obtain the TLD slot number, add 1 to the STK Cell Element. For example, STK Cell Element 224 corresponds to TLD slot 225. Cell elements are labeled on the inside walls of the robot. See your STK documentation for more information on library cell mapping.

TLD drives are numbered from 1 to *n*. The drive number can be obtained by adding one to the STK drive index, which starts at zero.

For STK libraries under ACS control, enter the STK drive parameters (ACS, LSM, panel, and drive) directly into the device configuration.

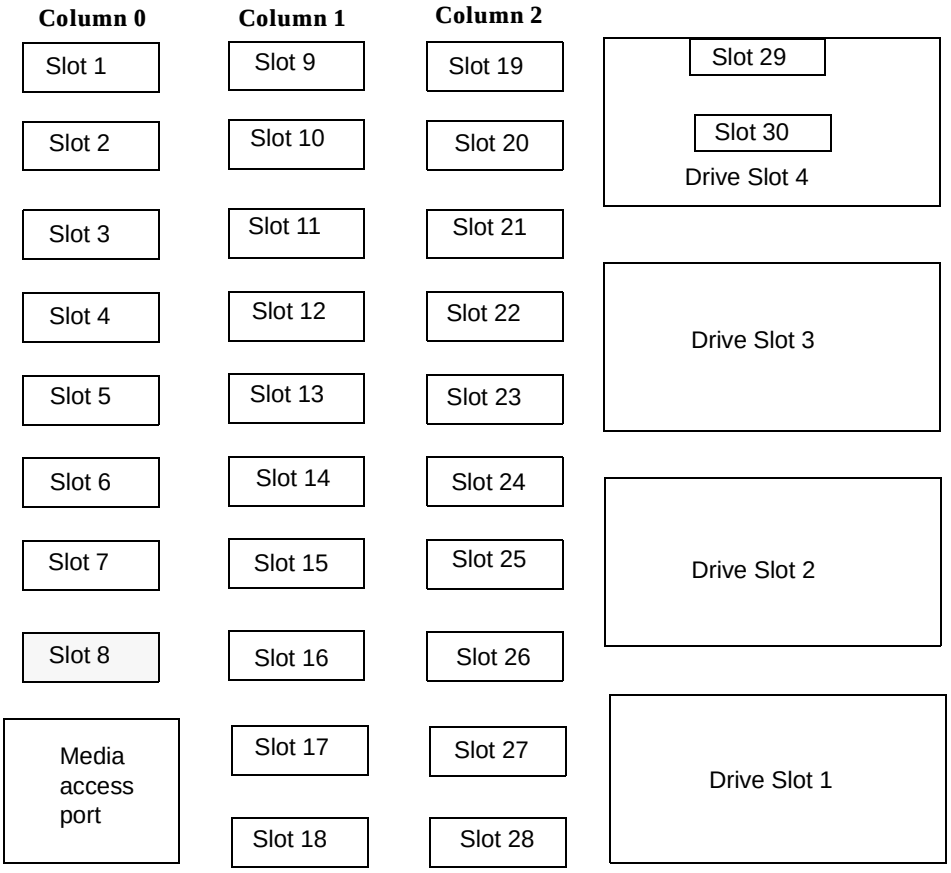
# STK 9714
# HP SureStore E 6/100 (A4846A) (TLD)




**Note** See your STK documentation for more information on 9714 library cell mapping.

# STK 9730
# STK 9738
# DELL 130T
# HP SureStore E 3/30 (A4853A) (TLD)

If auto cleaning is set, slots 9 through 30 (or 9 through 28) become slots 8 through 29 (or 8 through 27). The slot labeled below as slot 8 becomes reserved for library use (for a cleaning tape). Other configurations may vary.

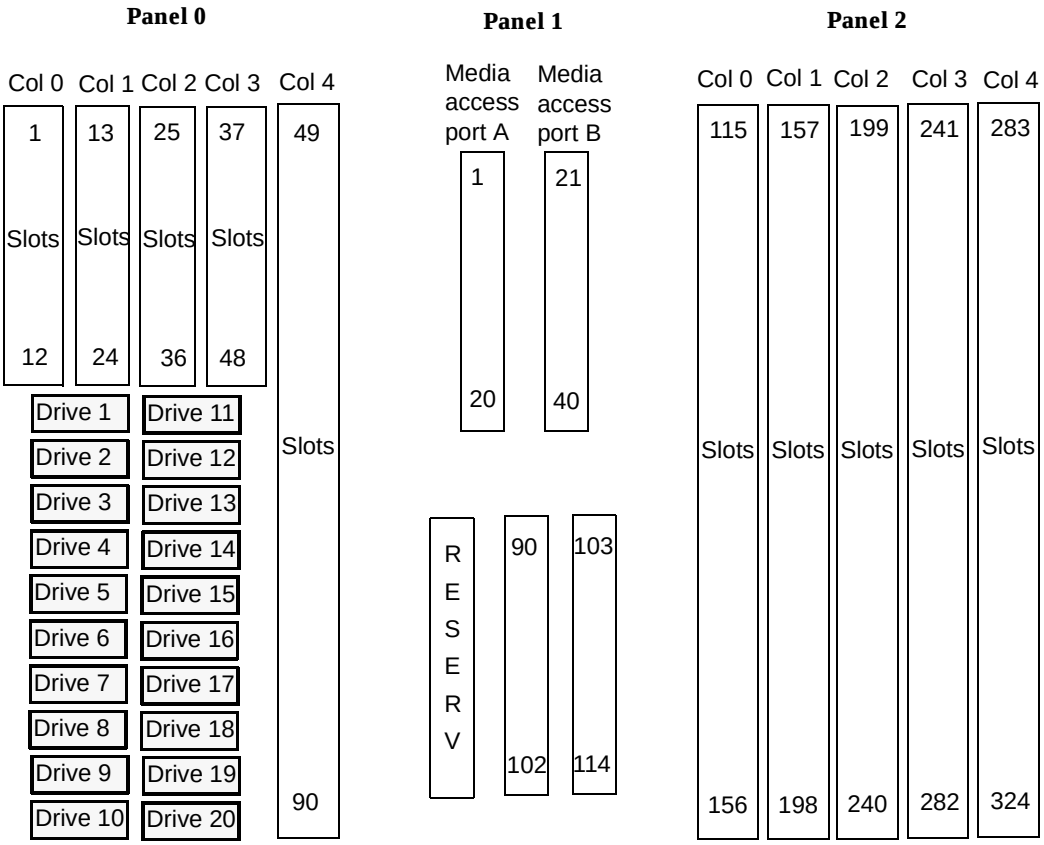



| Drives | Cartridges | MAP |
|---|---|---|
| 1-4 | 28 or 30 | 1 |

Represents a cleaning cartridge cell if auto clean is enabled

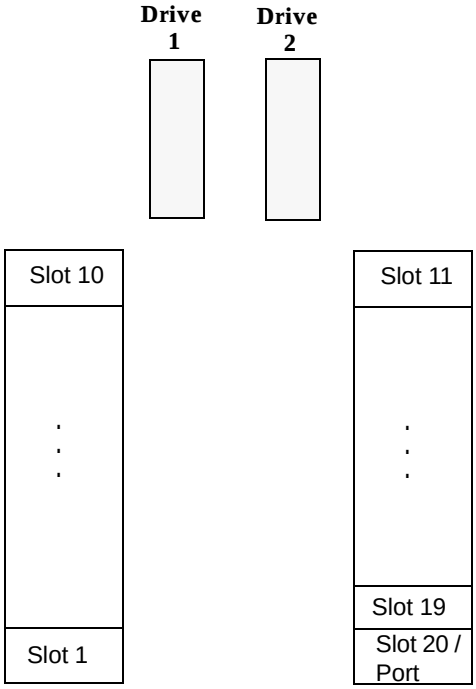
Note: If a drive is not installed in slot 3, additional storage cells can be

# STK L700
# Sun StorEdge L700
# HP SureStore E 20/700 (A5597A) (TLD)

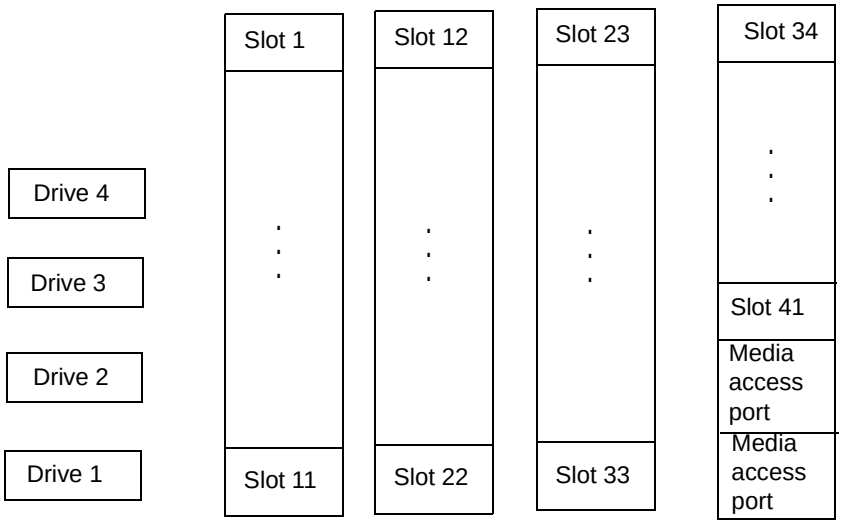


# STK L20
# NCR 6461 (TLD)

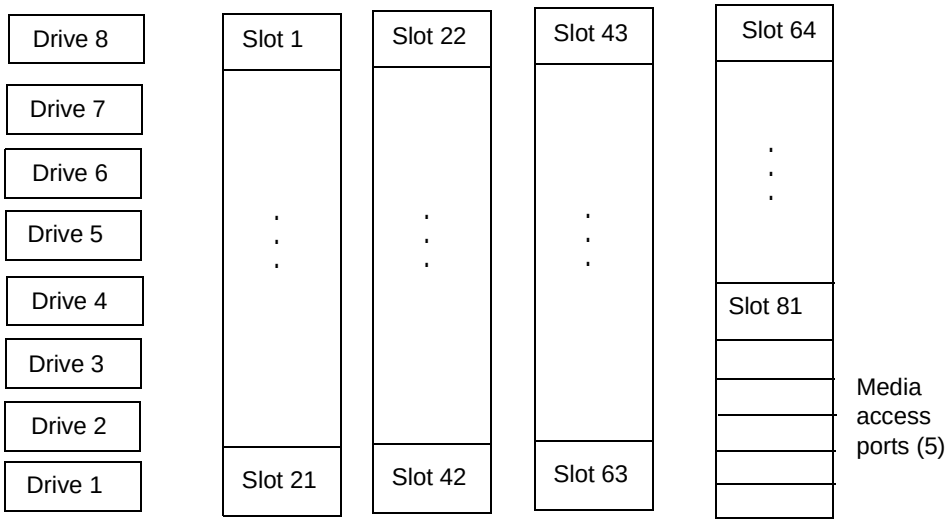
If the media access port is turned on in the configuration, slot 20 becomes the media access port and is unusable for storage.



# STK L40 (TLD)




# STK L80 (TLD)



# Automated Cartridge System (ACS) D

Under Media Manager, robotic support for Automated Cartridge System robots is classified as ACS and these robots are considered API robots (a Media Manager grouping of robots where the robot manages its own media).

Media Manager operates differently with a StorageTek ACS robot (STK library or STK silo) than it does with most other robots. The main difference is that Media Manager does not keep slot locations for the media, since this information is provided by the ACS library software component of an ACS robot.

The *ACS library software* component can be any of the following STK products (see the figure "Automated Cartridge System Sample Configuration" on page 356).

- Automated Cartridge System Library Software (ACSLS)
- STK Library Station
- Storagenet 6000 Storage Domain Manager (SN6000)

  This STK hardware serves as a proxy to another ACS library software component (such as, ACSLS).

*Automated Cartridge System (ACS)* can refer to any of the following:

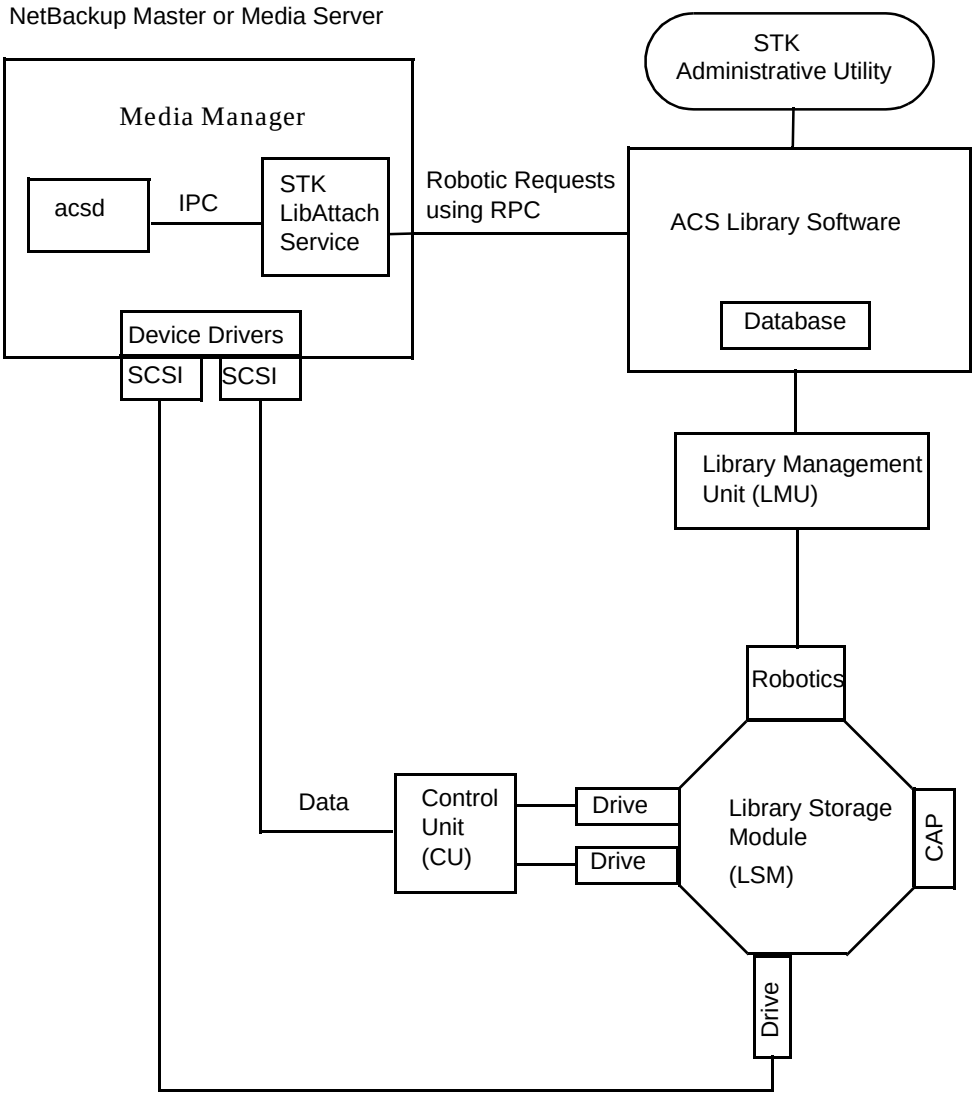
- A type of Media Manager robotic control.
- The StorageTek (STK) system for robotic control.
- The highest-level component under STK's ACS library software, which refers to a specific standalone robotic library or to multiple libraries connected with a media passthru mechanism.

The topics in this appendix

- Explain how Media Manager components handle media requests for an ACS robot.
- Cover configuration and operational differences to be aware of when using these robots.
- Explain various advanced ACS topics.

The following figure shows a typical Automated Cartridge System configuration. The table, “Automated Cartridge System Components” on page 357, explains the major components in this configuration.

Automated Cartridge System Sample Configuration



Automated Cartridge System Components

| Component | Description |
|---|---|
| Media Manager server | Acts as a client to the ACS library software host.<br>The ACS robotic process (`acsd`) formulates requests for mounts, unmounts, and inventories. An API then routes these requests to the STK LibAttach service using IPC communications. This service sends the requests to the ACS library software. |
| STK LibAttach Service | Library Attach for Windows is an ACS library software client application that enables Windows servers to use the StorageTek Nearline enterprise storage libraries. LibAttach provides the connection between Windows and ACS library software, through a TCP/IP network. |
| ACS library software (can be any of the following)<br>- Automated Cartridge System Library Software (ACSLS)<br>- STK Library Station<br>- Storagenet 6000 Storage Domain Manager (SN6000) | Receives robotic requests from Media Manager and uses the Library Management Unit to find and mount, or unmount the correct cartridge on requests involving media management.<br>On compatible host platforms, you may be able to configure ACS library software and Media Manager software on the same host. |
| Library Management Unit (LMU) | Provides the interface between the ACS library software and the robot. A single LMU can control multiple ACS robots. |
| Library Storage Module (LSM) | Contains the robot, drives, and/or media. |
| Control Unit (CU) | The Media Manager server connects to the drives through device drivers and a Control Unit (tape controller). The Control Unit may have an interface to multiple drives. Some Control Units also allow multiple hosts to share these drives.<br>Most drives do not require a separate Control Unit. In these cases, the Media Manager server connects directly to the drives. |
| CAP | Cartridge Access Port. |

# Media Requests

A request for media in an ACS robot begins in the same manner as other media requests. The NetBackup Device Manager service, `ltid`, receives the request for a specific tape volume and drive density, and queries the NetBackup Volume Manager service, `vmd`, for the location of the media. `vmd` returns only the robot number and media type, since Media Manager does not manage slot information for media in an ACS robot.

`ltid` verifies that the requested volume's media type and density are compatible. Next, `ltid` checks its internal tables (these tables are based on the device databases) to determine if there is an available drive and sends a mount request to the ACS process, `acsd`.

`acsd` formulates the request and uses Internal Process Communications (IPC) to send it to the STK LibAttach service. The request is then sent to the ACS library software by the LibAttach service.

ACS library software locates the media and sends the necessary information to the Library Management Unit, which directs the robotics to mount the media in the drive. When the LibAttach service (on the Media Manager server) receives a successful response from the ACS library software, it returns the status to `acsd`.

`acsd` waits for `avrd` to scan the drive. When the drive is ready, `acsd` sends a message to `ltid` that completes the mount request and enables the requesting application (for example, NetBackup) to start sending data to the drive.

# Configuring ACS Robotic Control

When adding an ACS robot, specify the robot number, robot type, and the name of the host that contains the ACS library software. A device file is not used. The robotic control path is through the ACS library software host, and requests are handled by LibAttach (on Windows servers) or the acsssi process (on UNIX servers).

Also see "Configuring Storage Devices" on page 9 for information on configuring ACS robots.

# Configuring ACS Drives

The ACS robot uses DLT or 1/2-inch cartridge tape drives. If an ACS robot contains more than one type of DLT or 1/2-inch cartridge tape drive, you can configure an alternate drive type (see the table "Default and Allowable ACS Media Types" on page 365).

This means that there can be up to three different DLT and three different 1/2-inch cartridge drive types in the same robot. If you are using alternate drive types, it is important that the volumes are configured using the same alternate media type. A total of six drive types is possible, as follows: DLT, DLT2, DLT3, HCART, HCART2, and HCART3.

Use the same methods to create or identify device files for these drives as for other drives. If the drives are SCSI and connect to the robot through a shared control unit, you must specify the logical unit number (lun) for each drive, as they share the same SCSI ID. Refer to the system documentation for your platform and operating system for details on configuring drives and logical unit numbers.

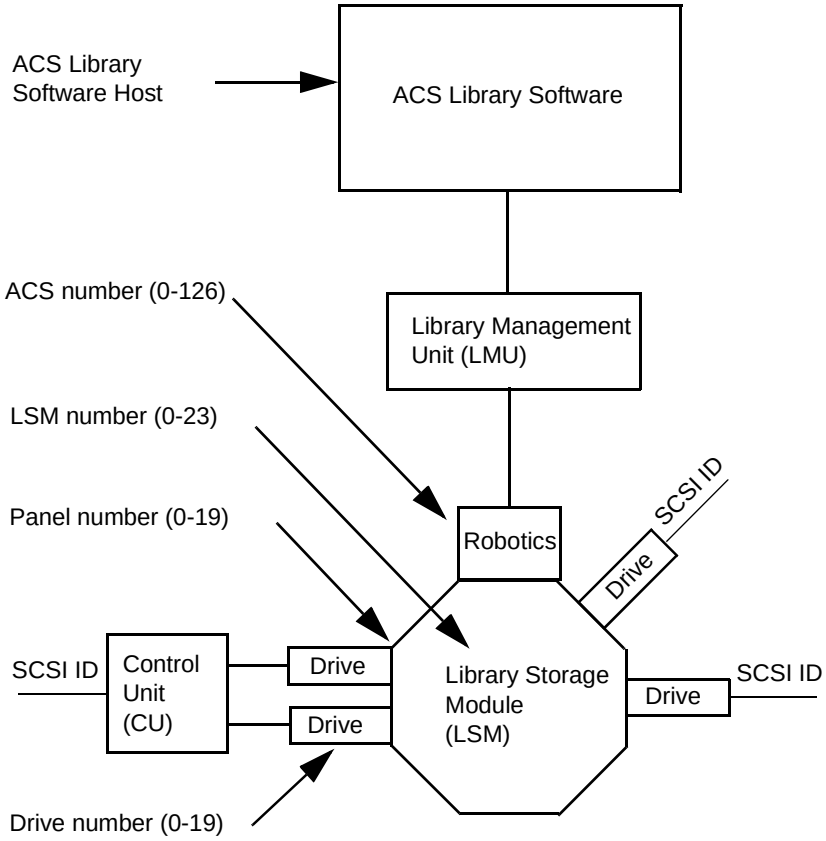
Although device file configuration is essentially the same as for other robot-controlled drives, you must include the following additional information when defining the drives in Media Manager as robotic:

- ACS number - The index, in ACS library software terms, that identifies the robot that has this drive.
- LSM number - The Library Storage Module that has this drive.
- Panel number - The panel where the drive is located.
- Drive number - The physical number of the drive in ACS library software terms.

Also see “Configuring Storage Devices” on page 9 for information on configuring ACS drives.

The following figure shows how this information is used.

ACS Robot and Drive Configuration Information




# Using the STK SN6000

The StorageTek SN6000 provides tape drive virtualization. Logical tape drives are presented to host operating system interfaces (tape drivers), while robotic control is accomplished through the ACS API.

Some SN6000 configurations may involve a different number of *logical* drives compared to the number of *physical* drives (or equivalent resources) available for satisfying requests for drives. Also, the relationship between the number of logical drives and physical drives may change if hardware failures occur.

NetBackup scheduling, drive allocation, and drive assignment algorithms are only able to determine *logical* drive availability, and will attempt to fully utilize all configured and available logical drives. If the number of logical drives being utilized exceeds the number

of physical drives available, a NetBackup job may be started when insufficient drive resources are available to satisfy the job. The NetBackup job will encounter a resource issue when the scheduler initiates a job resulting in an ACS tape mount request. The mount request will then be re-queued within the ACS robotic process.

## Should SN6000 Drives Be Configured as Shared Drives?

The answer depends on how you connect hosts to SN6000 ports. Each SN6000 port presents a distinct set of logical drives. Drives accessed from different ports have different ACS drive addresses (ACS, LSM, Panel, and Drive numbers) for each drive, as well as different serial numbers.

### Hosts Connected To a Single Port

If multiple hosts are connected to a single port, the logical drives accessible through that port are shared among the hosts connected to that port. The drive address and serial number is the same for each host on that port. In this type of configuration, the drives should be configured as *shared drives* in the NetBackup device configuration.

You must enter the Shared Drives license key on each media server where ACS drives in the SN6000 are configured.

### Hosts Connected To Different Ports

If each host is connected to a different port, each host will have its own set of logical drives and the drives should *not be* configured as shared drives in the NetBackup device configuration.

With this type of configuration, the SN6000 hardware is providing drive sharing and the NetBackup scheduler and robotic drive selection components are unable to avoid oversubscribing the drives. Tuning of the media mount timeout and backup policy windows may be needed to avoid backup, restore, or duplication delays, and media mount timeouts.

You must enter the Shared Drives license key on each media server where ACS drives in the SN6000 are configured.

#### NetBackup Tuning When Using Different Ports

Since there is a fixed limit for the number of drives that can be in use at any one time in this type of configuration, you should configure backup windows so the different NetBackup storage units tied to the same physical drives are active only at non-overlapping times. Also, raise or set the media mount timeout to infinite to prevent job failures when the job cannot get a physical drive due to all the drives being busy.

# Adding ACS Volumes

The normal method for adding media is to

1. Add barcode labels and then insert the media into the robot.

   Issue the ACS `enter` command from the STK Administrative interface (`ACSSA`) or use the Media Manager utility, `acstest`.

   The Library Storage Module reads the barcode labels and passes the barcode information on to the ACS library software, which uses the barcodes for volume IDs (volume ID is the ACS term for media ID). The ACS library software also records the location of the tape within the robot.

2. Define the media to Media Manager using the ACS volume IDs as media IDs. Do one of the following to define the media:

   - Update the volume configuration as explained in "Updating the Volume Configuration for a Robot" on page 126.
   - Add new volumes as explained in "Adding New Volumes" on page 87.

   Since the ACS volume IDs and barcodes are the same, Media Manager also has the barcodes for the media. Note that you do not enter a slot location because that information is managed by ACS library software.

3. Use **Show Contents** and **Compare Contents with Volume Configuration** from the Media and Device Management Robot Inventory dialog to verify your configuration.

# Removing ACS Volumes

You can remove tapes using the STK utility or by using Media Manager.

## Removing Volumes Using the STK Utility

If you remove media from an ACS robot, for example through the Cartridge Access Port using the STK administrative utility (see the figure "Automated Cartridge System Sample Configuration" on page 356), you must logically move the media to standalone in the Media Manager volume database. To accomplish this, do one of the following:

- Update the volume configuration, as explained in "Updating the Volume Configuration for a Robot" on page 126.
- Move volumes, as explained in "Moving Volumes" on page 97.

If you do not do this, Media Manager will not be aware that the media is missing and may issue mount requests for it. The result is an error, such as Misplaced Tape.

It does not matter, however, if you move media from one location to another within the robot. The ACS library software will find the requested media, if its database is current.

### Removing Volumes Using Media Manager

You can remove volumes using one of the following methods. Either of these methods performs the logical move and the physical move.

- Use the `vmchange` command (see the commands appendix)
- Use the NetBackup Administration Console (see "Methods for Ejecting Volumes From a Robot" on page 85).

## Robot Inventory Operations

**Note** An `INVENTORY_FILTER` entry is required in the `vm.conf` file if you are doing a robot inventory for an ACS robot and the ACS library software host is an STK Library Station.

Media Manager considers an ACS robot as one that supports barcodes. The following sequence explains what occurs when you select an operation that requires a robotic inventory of an ACS robot:

1. Media Manager requests volume information from the ACS library software.
2. The server responds by providing a listing of the volume IDs and media types from its database. The following table is an example of the ACS information that Media Manager receives:

| ACS Volume ID | ACS Media Type |
|---|---|
| 100011 | DLTIV |
| 200201 | DD3A |
| 202201 | DD3B |
| 203201 | DD3C |
| 300210 | DD3D |

| ACS Volume ID | ACS Media Type |
|---|---|
| 412840 | STK1R |
| 412999 | STK1U |
| 521212 | JLABEL |
| 521433 | STK2P |
| 521455 | STK2W |
| 668712 | KLABEL |
| 770000 | LTO_100G |
| 770006 | LTO_35GB |
| 775500 | SDLT |
| 900100 | EECART |
| 900200 | UNKNOWN |

3. Media Manager translates the volume IDs into media IDs and barcodes. For example in the previous table, volume ID 100011 becomes media ID 100011 and the barcode for that media ID is also 100011.

4. Media Manager maps the ACS media types into the Media Manager media types, as explained in step 5 or step 6.

5. If the operation does not require updating the volume configuration, Media Manager uses the media type defaults for ACS robots when it creates its report (see the table "Default Media Types for ACS Robots" on page 144). "Show Contents Reports for API Robots" on page 120 shows an example of this report.

6. If the operation requires updating the volume configuration, Media Manager selects the media type as follows:

a. Media Manager tries to use mappings that you have set for this update using the Media Type Mappings dialog box (click **Media type mappings** in the Update Options dialog box). See “Changing the Update Options” on page 132.

b. If you have not set any media type mappings, Media Manager tries to use any ACS_*mediatype* settings in the `vm.conf` file (see “vm.conf Map Entries for ACS Robots” on page 365).

c. If the `vm.conf` file does not exist or if it does not map the media type, Media Manager uses the default for ACS robots (see the table “Default and Allowable ACS Media Types” on page 365).

The Update Volume Configuration report for an ACS robot is similar to the figure shown for an API robot in “To Update the Volume Configuration for a Robot” on page 128.

# vm.conf Map Entries for ACS Robots

See “Media Manager Configuration File (vm.conf)” on page 297 for an overview of the `vm.conf` file.

The second column in the following table shows the defaults that Media Manager uses when assigning media types in ACS robots.

The third column shows the media types to which you can change the defaults by creating map entries in the media mappings dialog or the `vm.conf` file.

Default and Allowable ACS Media Types

| ACS Media Type | Default Media Manager Media Type | Allowable Media Types through Mappings |
|---|---|---|
| 3480 | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| 3490E | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| DD3A | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3 |
| DD3B | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3 |
| DD3C | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3 |
| DD3D | HC2_CLN (1/2-inch cartridge cleaning tape 2) | HC_CLN, HC2_CLN, HC3_CLN |

Default and Allowable ACS Media Types (continued)

| ACS Media Type | Default Media Manager Media Type | Allowable Media Types through Mappings |
|---|---|---|
| DLTIII | DLT (Digital Linear Tape) | DLT, DLT2, DLT3 |
| DLTIIIXT | DLT (Digital Linear Tape) | DLT, DLT2, DLT3 |
| DLTIV | DLT (Digital Linear Tape) | DLT, DLT2, DLT3 |
| STK1R | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| STK1U | HC_CLN (1/2-inch cartridge cleaning tape) | HC_CLN, HC2_CLN, HC3_CLN |
| EECART | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| JLABEL | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| STK2P | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3 |
| STK2W | HC2_CLN (1/2-inch cartridge cleaning tape 2) | HC_CLN, HC2_CLN, HC3_CLN |
| KLABEL | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| LTO_100G | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| LTO_50GB | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| LTO_35GB | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| LTO_10GB | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| LTO_CLN2 | HC_CLN (1/2-inch cartridge cleaning tape) | HC_CLN, HC2_CLN, HC3_CLN |
| LTO_CLN3 | HC_CLN (1/2-inch cartridge cleaning tape) | HC_CLN, HC2_CLN, HC3_CLN |
| LTO_CLN1 | HC_CLN (1/2-inch cartridge cleaning tape) | HC_CLN, HC2_CLN, HC3_CLN |
| SDLT | DLT3 (Digital Linear Tape) | DLT, DLT2, DLT3 |

Default and Allowable ACS Media Types (continued)

| ACS Media Type | Default Media Manager Media Type | Allowable Media Types through Mappings |
|---|---|---|
| UNKNOWN<br>(Used for unknown ACS media types) | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3, HC_CLN, HC2_CLN, HC3_CLN, DLT, DLT2, DLT3, DLT_CLN, DLT2_CLN, DLT3_CLN |

If the defaults do not provide the desired mapping, you can change the defaults by creating a *install_path*`\Volmgr\vm.conf` file and adding ACS_*mediatype* entries.

For example, the following `vm.conf` entry maps the ACS media type `3490E` to the `HCART2` media type. Without this entry, Media Manager assigns `HCART` to `3480` and `3490E` ACS media types.

```
ACS_3490E = HCART2
```

The following entry maps ACS `DLTIV` to the `DLT2` media type:

```
ACS_DLTIV = DLT2
```

Without this entry, Media Manager assigns `DLT` to all ACS `DLT` media types, including `DLTIV`.

The third column in the table shows the media types that you can specify in ACS_*mediatype* entries. For example, you cannot specify either of the following entries:

```
ACS_DD3A = DLT
ACS_DD3A = HCART4
```

# Advanced ACS Robot Topics

The following sections cover the following advanced topics:

- ACS Process (acsd)
- ACS Robotic Test Utility (acstest)
- Robotic Inventory Filtering

## ACS Process (acsd)

`acsd` provides robotic control for mounting and dismounting volumes, and requesting inventories of volumes in a robotic library that is under the control of ACS library software. `acsd` interacts with and is started by the NetBackup Device Manager service (`ltid`).

`acsd` requests SCSI tape unloads through the system's tape driver before using the ACS API to request tape dismounts. This matches other types of Media Manager robotic control, and accommodates configurations involving SCSI multiplexors. Loaded tapes are not forcibly ejected when a dismount operation occurs.

## ACS Robotic Test Utility (acstest)

`acstest` allows you to verify ACS communications and provides a remote system administrative interface to an ACS robot. It can also be used to query, mount, unload, and dismount volumes. In addition, `acstest` allows you to define, delete, and populate ACS library software scratch pools.

`acstest` depends on the STK LibAttach service being started successfully. You can verify this service is started by using the Services icon from the Windows control panel. `acstest` attempts to communicate with ACS library software using the LibAttach service.

`acstest` should not be used while `acsd` is servicing requests. Communication problems may occur if `acsd` and `acstest` are making ACS requests at the same time.

The usage format follows:

`acstest -r` *ACS_library_software_host* `[-d` *device_name ACS, LSM, panel, drive*`]` ... `[-C` *sub_cmd*`]`

The following example assumes that the LibAttach service has been started:

*install_path*`\volmgr\bin\acstest -r einstein -d Tape0 0,0,2,1`

## Robotic Inventory Filtering

If your site has many volumes configured under ACS library software but you only want NetBackup to use a subset of them, you may be able to use inventory filtering.

**Note** An `INVENTORY_FILTER` entry is required if you are doing a robot inventory for an ACS robot and the ACS library software host is an STK Library Station.

Partial inventory functionality for ACS is accomplished by using the STK Administrative interface to create an ACS library software scratch pool or set of scratch pools. Then NetBackup can use these pools for backups, as in the following example:

1. Use the following STK Administrative interface (`ACSSA`) command to create a scratch pool, ID 4, with 0 to 500 as the range for the number of volumes:

   ```
   ACSSA> define pool 0 500 4
   ```

2. Use the following STK Administrative interface (`ACSSA`) command to define the volumes in scratch pool 4:

   ```
   ACSSA> set scratch 4 600000-999999
   ```

3. On the Media Manager server where the inventory request will be initiated add an `INVENTORY_FILTER` entry in the `vm.conf` file.

   `INVENTORY_FILTER = ACS` *robot_number* `BY_ACS_POOL` *acs_scratch_pool1* `[`*acs_scratch_pool2* `...]`

   where

   *robot_number* is the number of the robot as configured in Media Manager.

   *acs_scratch_pool1* is the scratch pool ID as configured in ACS library software.

   *acs_scratch_pool2* is a second scratch pool ID (up to 10 scratch pools are allowed).

   The following entry causes ACS robot number 0 to query scratch volumes from STK pool IDs 4, 5, and 6.

   ```
   INVENTORY_FILTER = ACS 0 BY_ACS_POOL 4 5 6
   ```

The list of volumes returned in an ACS partial inventory includes the volumes that currently exist in the ACS scratch pool. ACS library software moves volumes out of the scratch pool after they have been mounted.

Therefore, a partial inventory *also* includes those volumes in the Media Manager volume database which Media Manager can validate exist in the robotic library, whether or not the volumes are in the ACS scratch pool. This complete list of volumes that exist in the robotic library is returned to prevent losing track of previously mounted volumes.

# Microsoft Removable Storage Manager (RSM) E

Media Manager provides support for robotics under control of the Microsoft Windows 2000 Removable Storage Manager (RSM) interface.

In Media Manager, RSM-attached robotic devices are

- Classified as Media Manager robot type RSM
- Considered API robots (the robot manages its own media)

Support for these devices is different than for other types of Media Manager robotic control. This appendix provides an overview of those differences.

## Media Manager and Microsoft RSM

Microsoft RSM presents a common interface to devices that are RSM-compatible and attached to a Windows 2000 server. Media Manager supports the changer library devices listed on the Microsoft web site that contain drives that are shown in the supported drives list on the VERITAS support web site. Many of these devices vary in their support of features like barcodes and tape cleaning (tape cleaning is supported using the RSM applet see “Microsoft RSM Interface” on page 372).

Microsoft *RSM Libraries* represent physical layouts of the system (for example, robots and drives) and *RSM Media Pools* represent a logical layout of RSM media.

Media Manager *libraries* represent an individual changer, silo, robot, and so on. Also, Media Manager uses *Volume Pool* for a logical grouping of media (for example, all tapes currently available for backups) and *Volume Group* for a physical grouping of media (for example, all the tapes in a specific robot).

Because the devices and media are directly managed by Microsoft RSM, the Media Manager RSM process (`rsmd`) must always be running to configure media in Media Manager.

### Considerations When Using Microsoft RSM

Before you configure a robot as an RSM robot, consider the following:

- Your Media Manager device host must be running Windows 2000.
- Microsoft Removable Storage Manager will control the robot and drives, rather than Media Manager.
- Media Manager library sharing, standalone drives, and shared drives (Shared Storage Option) are not supported.
- A robot configured as an RSM robot, cannot also be used as a Media Manager direct-controlled (SCSI) robot (for example, TLD).
- RSM libraries could potentially be used by other applications.

### Microsoft RSM Interface

You use the Microsoft Removable Storage Manager to configure and manage your RSM media and devices. This interface is located in the **Computer Management** applet under the **Administrative Tools** folder in the **Start** menu. Documentation on how to use this interface is provided by Microsoft.

## Media Requests Involving an RSM Robot

A request for media in an RSM robot begins in the same manner as other media requests. The NetBackup Device Manager service (`ltid`) receives the request and queries the NetBackup Volume Manager service (`vmd`) for the location of the media. `vmd`, in this case, returns only the robot number and the type RSM for the robot.

Since Microsoft RSM manages the media and slots in RSM robots, the Media Manager volume database does not contain slot information for media in an RSM robot.

`ltid` then queries the volume database to retrieve the identifier (GUID or Globally Unique ID) assigned by RSM. `ltid` sends this information, along with the media name to the Media Manager RSM process (`rsmd`).

`rsmd` forwards the request to the Microsoft RSM software (the Removable Storage service running in Windows 2000). The Removable Storage service locates the media and directs the robotics to mount the media in the drive. When the host (where Media Manager is installed) receives a success response from the Removable Storage service, it allows the requesting application (for example, NetBackup) to start sending data to the drive.

## Configuring RSM Robotic Control

Before adding any devices, it is important to verify that the Removable Storage service is aware of your device. Use the Removable Storage Manager applet (see “Microsoft RSM Interface” on page 372) to verify this.

Adding RSM-attached robots is similar to adding any robot in Windows 2000. But instead of specifying the corresponding robot type for the device, you specify RSM as the Media Manager robot type. See “Adding Robots” on page 30 for information on configuring RSM robots.

As an alternative to using the **Devices** node of the NetBackup Administration Console, the following example uses the `tpconfig` command to configure an RSM robot:

```
tpconfig -add -robot 123 -robtype rsm -robpath changer0
```

The command returns:

```
Added robot number 123 of type RSM to configuration
```

# Configuring RSM Drives in Media Manager

Before configuring any device make sure that the Removable Storage service is aware of your device, by using the Removable Storage Manager applet (see “Microsoft RSM Interface” on page 372). Also, in order to configure an RSM drive, first configure the corresponding robot and be sure to specify this robot when configuring the drive.

Configuring a drive is similar to configuring any other drive on a Windows 2000 device host. See “Adding Drives” on page 39 for information on configuring RSM drives.

As an alternative to using the **Devices** node of the NetBackup Administration Console, the following example uses the `tpconfig` command to configure an RSM drive:

```
tpconfig -add -drive -type dlt -name Tape0 -robot 123 -robtype rsm
                                                          -robdrnum 1
```

The command returns:

```
added drive index 0 of type dlt to configuration
```

## Verifying a Configuration

You can use the `tpconfig -d` command to verify your configuration, which displays results similar to the following:

```
Index DriveName                 DeviceName   Type  Multihost  Status
***** *********                 **********   ****  *********  ******
  0   Drive0                    \\.\Tape0     dlt      NO       UP
        RSM(123) Definition     DRIVE=1

  Currently defined robotics are:
  RSM(123)   RSM Device Name = \\.\Changer0,
             volume database host = host5
```

## Activating a Configuration

If your changes are complete, stop and restart the NetBackup Device Manager service (this also stops and restarts any robotic processes).

1. Stop the NetBackup Device Manager service using **Stop/Restart Device Manager Service**, found on the **Actions** menu of the **Devices** node of the NetBackup Administration Console.

   In the dialog box, the arrow to the right of the **Device Host** box allows you to select a device host. The Current Status box shows the status of this host.

2. Start the NetBackup Device Manager service using **Stop/Restart Device Manager Service**.

# Adding RSM Volumes

Because the devices and media are directly managed by Microsoft RSM, RSM keeps track of volumes using its own database.

The method for adding media for an RSM robot is as follows:

1. Use the Microsoft RSM applet (see “Microsoft RSM Interface” on page 372) to move volumes from the Free Media Pool (the default media pool) to the NetBackup Media Pool. All volume activity (for example, mounts or dismounts) is through the NetBackup Media Pool.

   Media names have to be unique within the Microsoft RSM library, even among different media types. For Media Manager to recognize media names they should be on both the Media Name and Side Name in the Microsoft RSM property sheet for the media.

   The media ID used in the Media Manager volume database is the last six characters of the RSM media name. Therefore, two volumes with RSM media names of A000001 and B000001 are *not* considered to be unique by Media Manager.

   If the last six characters of the RSM media name contain spaces, only the characters back to the first space are used. For example, for an RSM media name of AA BBB CCCC, the Media Manager media ID will be CCCC.

2. Since RSM volumes are tracked by their physical and partition GUIDs, volumes that are added must be located in the RSM database to capture their GUIDs. Therefore volumes added by Media Manager have to exist within the RSM NetBackup Media Pool for that robot.

   Define the volumes for Media Manager using one of the following procedures:

- Update the volume configuration as explained in “Updating the Volume Configuration for a Robot” on page 126.
- Add new volumes as explained in “Adding New Volumes” on page 87.

Update the configuration when media has been moved or may have moved residences (see “Removing Tapes from the Robot” on page 375).

3. Use **Show Contents** and **Compare Contents with Volume Configuration** from the Robot Inventory dialog of the **Media** node to verify your configuration.

4. The NetBackup “Allow media overwrite” setting must allow overwrite on MTF1 (this is necessary because Free Media Labels are in MTF format). To set this,

   a. From the NetBackup Administration Console, click the **Host Properties** node.

   b. In the Host Properties window select the media server and click **Actions** > **Properties**.

   c. On the **Media** tab in the dialog box that appears, select the **MTF1** setting.

# Removing Tapes from the Robot

1. Use the Media Manager eject command, as explained in “Moving Volumes” on page 97 to remove the media from the RSM library.

2. Remove the media from the library as directed by the Removable Storage Manager interface. RSM moves volumes that have been ejected to the Off-line Media library.

   Media Manager moves the volume to standalone in the Media Manager volume database. Media Manager also moves the volume to the RSM NetBackup Standalone Media media pool.

# Robot Inventory Operations

Media Manager considers an RSM robot as one that supports barcodes. The following sequence explains what occurs when you select an operation that requires a robotic inventory for an RSM robot:

1. Media Manager requests volume information from the Removable Storage service.

2. The Removable Storage service responds by providing a list of media names and associated information from its database. Media Manager then displays a list of volumes obtained from the service along with their RSM and Media Manager media types.

   The following table indicates an example of information displayed by Media Manager:

   Example RSM Information

| RSM Media Name | Robot Contents RSM Media Type | Robot Contents Media Manager Media Type |
|---|---|---|
| MC120 | AIT1_8mm | 8mm |
| NN0402 | DDS_4mm | 4mm |
| 002455 | MP2_8mm | 8mm |

3. Media Manager maps the RSM media types into Media Manager media types and barcodes, as explained in step 4 or step 5.

4. If this is an operation that does not require updating the volume configuration, Media Manager uses the media type defaults for RSM robots (see the table, “Default Media Types for RSM Robots” on page 145) when it creates its report.

5. If this is an operation that requires updating the volume configuration, Media Manager selects the media type as follows:

   a. Media Manager tries to use mappings that you have set for this update using the Media Type Mappings dialog box (to access this dialog box, click **Media type mappings** in the Update Options dialog box). See “Changing the Update Options” on page 132.

   b. If you have not set any media type mappings, Media Manager tries to use the RSM_*mediatype* settings in the `vm.conf` file (see “vm.conf Map Entries For RSM Robots” on page 377).

   c. If `vm.conf` does not exist or if it does not map the media type, Media Manager uses the default for RSM robots (see the table, “Default and Allowable RSM Media Types” on page 377).

The Update Volume Configuration report for an RSM robot is similar to the figure shown for API robots in “To Update the Volume Configuration for a Robot” on page 128.

# vm.conf Map Entries For RSM Robots

See “Media Manager Configuration File (vm.conf)” on page 297 for an overview of the `vm.conf` file.

The second column in the following table shows the defaults that Media Manager uses when assigning media types in RSM robots. The third column shows the media types to which you can change the defaults, by creating map entries in `vm.conf`.

Default and Allowable RSM Media Types

| RSM Media Type | Default Media Manager Media Type | Allowable Media Types Through Mappings |
|---|---|---|
| DDS_4MM | 4MM | 4MM |
| MINI_QIC | QCART (1/4-inch cartridge) | QCART |
| TRAVAN | QCART | QCART |
| QIC | QCART | QCART |
| MP_8MM | 8MM | 8MM, 8MM2, 8MM3 |
| MP2_8MM | 8MM | 8MM, 8MM2, 8MM3 |
| AME_8MM | 8MM | 8MM, 8MM2, 8MM3 |
| AIT1_8MM | 8MM | 8MM, 8MM2, 8MM3 |
| DLT | DLT | DLT, DLT2, DLT3 |
| STK_EAGLE | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| LTO_ULTRIUM | HCART | HCART, HCART2, HCART3 |
| LTO_ACCELIS | HCART | HCART, HCART2, HCART3 |
| IBM_MAGSTAR_3590 | HCART | HCART, HCART2, HCART3 |
| IBM_MAGSTAR_MP | HCART | HCART, HCART2, HCART3 |

Default and Allowable RSM Media Types

| RSM Media Type | Default Media Manager Media Type | Allowable Media Types Through Mappings |
|---|---|---|
| STK_DATA_D3 | HCART | HCART, HCART2, HCART3 |
| CLEANER_CARTRIDGE | HC_CLN (1/2-inch cartridge) | HC_CLN, HC2_CLN, HC3_CLN, 4MM_CLN, 8MM_CLN, 8MM_CLN2, 8MM_CLN3, DLT_CLN, DLT2_CLN, DLT3_CLN |
| UNKNOWN | HCART | HCART, HCART2, HCART3, 4MM, 8MM, 8MM2, 8MM3, QCART, DLT, DLT2, DLT3 |

If the default types do not provide the desired mapping, you can change the defaults by creating a `vm.conf` file and adding RSM_*mediatype* entries to it.

For example, the following `vm.conf` entry maps the RSM media type `unknown` to the `8MM` media type. Without this entry, Media Manager assigns `unknown` to `HCART` media types.

```
RSM_UNKNOWN = 8MM
```

The third column in the table shows the media types that Media Manager allows you to specify in RSM_*mediatype* entries. For example, you *cannot* specify the following entry. This entry is illegal because Media Manager does not permit you to map RSM `UNKNOWN` to the `8MM` cleaning media type.

```
RSM_UNKNOWN = 8MM_CLN
```

# IBM Automated Tape Library (ATL) F

Media Manager provides support for robotics under control of the IBM Automated Tape Library (ATL), including the IBM Magstar 3494 Tape Library.

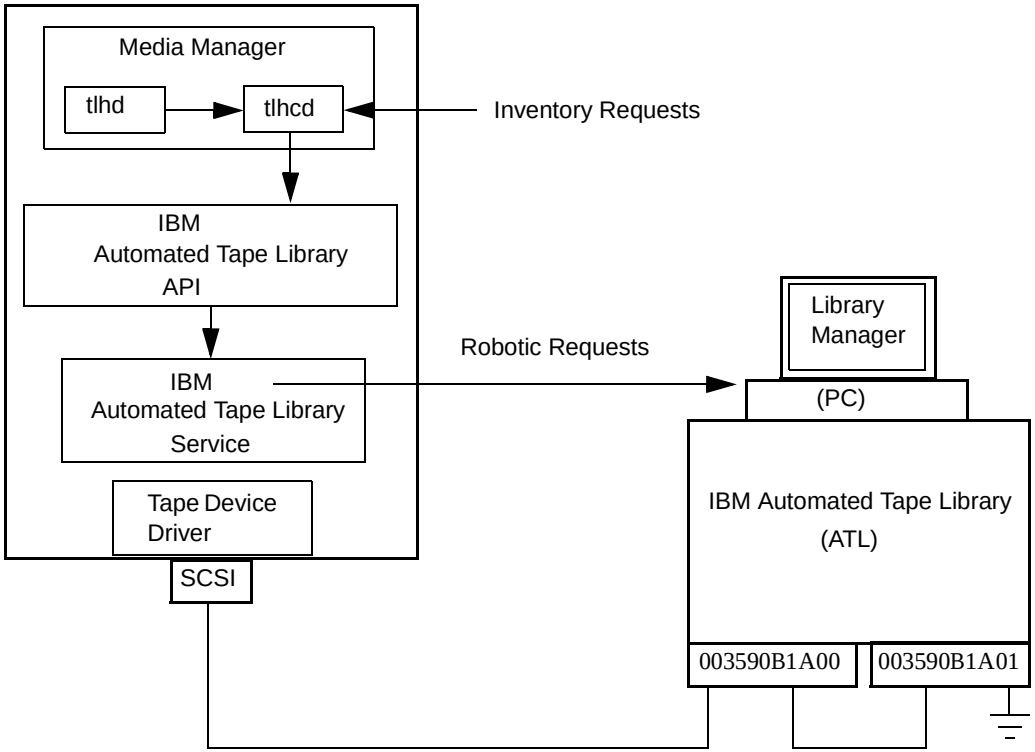
Under Media Manager, robotic support for ATL robots is classified as Tape Library Half-inch (TLH) and these robots are considered API robots (the robot manages its own media). Support for these devices is different than for other types of Media Manager robotic control. This appendix provides an overview of those differences.

The following figures show two possible ATL configurations. The table “Automated Tape Library Components” on page 382 explains the major components in these configurations.

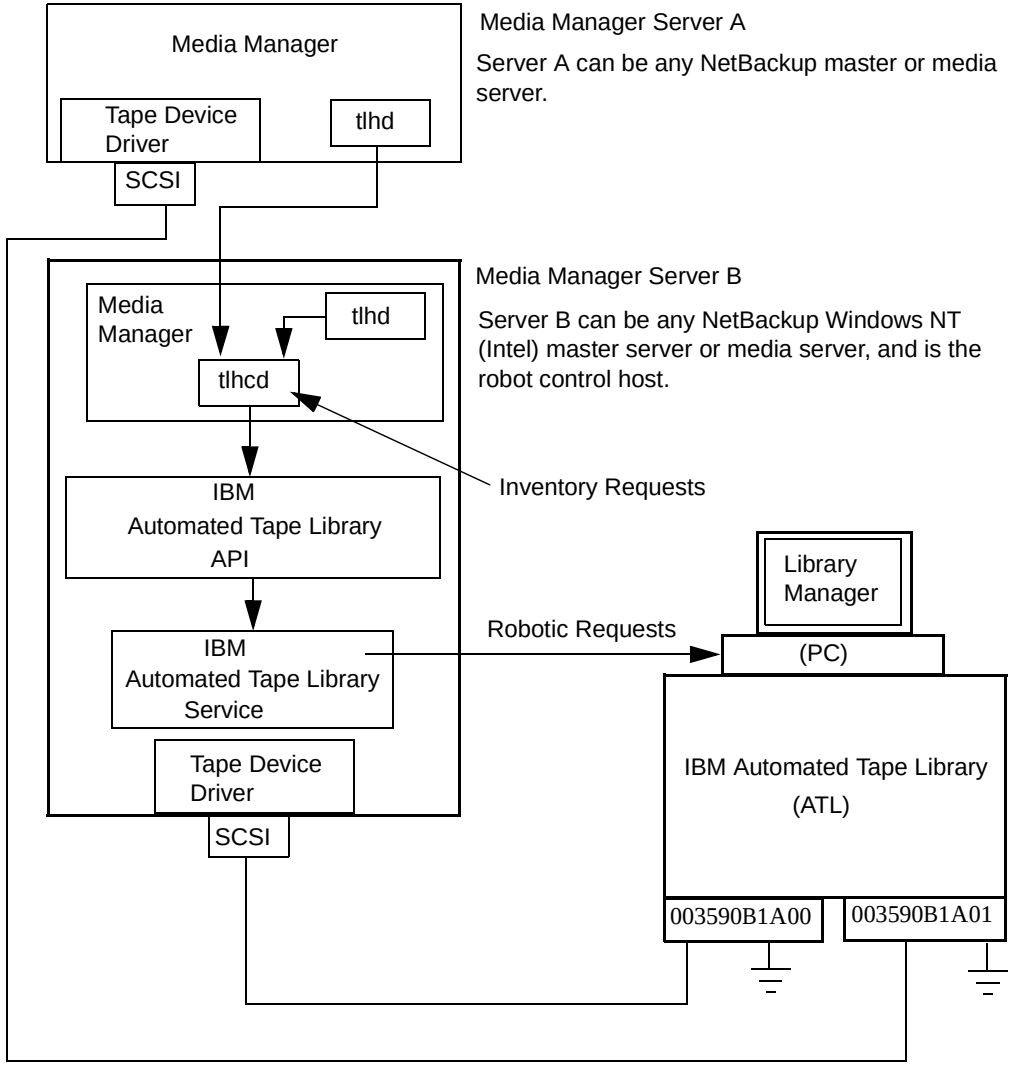
Robotic Control on Host with ATL Drives

Media Manager Server

This server can be a NetBackup master or media server.



Robotic Control and Robot Connection on Separate Hosts



Automated Tape Library Components

| Component | Description |
|---|---|
| Media Manager Server | This host has Media Manager software installed and acts as a client to the Automated Tape Library through the IBM ATL service. The Netbackup Device Manager service forwards mount and dismount requests to the Tape Library Half-inch service (`tlhd`). |
| Tape Library Half-inch process (`tlhd`) | This process resides on a Media Manager server and passes mount and dismount requests to the Tape Library Half-inch control process (`tlhcd`) on the robotic control host. |
| Tape Library Half-inch control process (`tlhcd`) | This process receives mount or dismount requests from `tlhd`, or robot inventory requests through an external socket interface. `tlhcd` must reside on the same system that communicates with the IBM ATL service. |
| IBM Automated Tape Library service | A component of IBM ATL support. This software handles all communications with the Library Manager and must be running on any system from which the Automatic Tape Library is directly controlled. |
| Library Manager | A component of IBM ATL support that provides control of the robotics and robotic library. This is a PC that is usually located within the robot cabinet. |
| IBM Automated Tape Library (ATL) | An IBM name representing a physical library under automated robotic control, including the IBM Magstar 3494 Tape Library. |

# Media Requests for a TLH Robot

A request for media in a TLH robot in an IBM Automated Tape Library begins in the same manner as other media requests. The Media Manager device service (`ltid`) receives the request and queries the Media Manager volume service (`vmd`) for the location of the media. The volume service, in this case, returns only the robot number and type for the TLH robot, since Media Manager does not manage slot information for media in a TLH robot.

`ltid` verifies that the type and density of the requested volume are compatible. Next, `ltid` checks its internal tables (these tables are based on the device databases) to determine if there is an available drive and sends a mount request to the TLH process (`tlhd`). This process passes the request to the TLH control process (`tlhcd`).

`tlhcd` resides on the host that has the Automatic Tape Library. This can be the same host where `tlhd` is running or another host. The control process communicates with the IBM ATL service through Tape Library system calls from an application library interface.

The IBM service passes the information to the Library Manager, which then locates the media and directs the TLH robotics to mount the media in the drive. When the host (where Media Manager is installed) receives a success response from the Library Manager, it allows NetBackup to start sending data to the drive.

# Configuring TLH Robotic Control

When adding Tape Library Half-inch robotic control to Media Manager, first ensure that the IBM Automated Tape Library (that is, the IBM 3494) has been physically connected and configured.

For information on initially configuring the IBM components of the Automated Tape Library, see the IBM SCSI Tape Drive, Medium Changer, and Library Device Drivers Installation and User's Guide (or related publications). For information on platform support for TLH robotic control, see the NetBackup release notes.

## Robotic Control on a Windows System

The following topics explain the steps for configuring robotic control when the Media Manager server is a Windows system.

### Determine the Library Name

Use the library name when configuring the robot in NetBackup. This name is set up when the Automated Tape Library is first configured (see the IBM system documentation). The library name is configured in the `C:\winnt\ibmatl.conf` file. Determine the library name by viewing the file.

The following is an example entry in that file:

```
3494AH          176.123.154.141         ibmpc1
```

Where:

- `3494AH` is the library name.

- `176.123.154.141` is the IP address of the PC workstation that is running the Library Manager software.
- `ibmpc1` is the host name of the PC workstation that is running the Library Manager software.

## Verify Library Communications

After you determine the library name, verify library communications through the IBM-provided `mtlib` interface. Resolve all errors before attempting to configure IBM 3494 (TLH) support in Media Manager.

To verify communications with a specific library, specify the library name with the `mtlib` command. For example, if the library name is 3494AH, the following command verifies communications with the library:

```
mtlib -l 3494AH -qL
```

The following is the output from this command:

```
Library Data:
operational state..........Automated Operational State
                           Dual Write Disabled
functional state...........000
input stations.............1
output stations............1
input/output status........ALL input stations empty
                           ALL output stations empty
machine type...............3494
sequence number............11398
number of cells............141
available cells............129
subsystems.................2
convenience capacity.......30
accessor config............01
accessor status............Accessor available
                           Gripper 1 available
                           Gripper 2 available
                           Vision system operational
comp avail status..........Primary library manager installed.
                           Primary library manager available.
                           Primary hard drive installed.
                           Primary hard drive available.
                           Convenience input station installed.
                           Convenience input station available.
                           Convenience output station installed.
                           Convenience output station available.
library facilities.........00
```

```
bulk input capacity........0
bulk input empty cells.....0
bulk output capacity.......0
bulk output empty cells....0
avail 3490 cleaner.........0
avail 3590 cleaner.........92
```

### Configure the Robotic Library Name

Configure the robotic path as explained in “Configuring Storage Devices” on page 9. When the configuration is complete you can view the robotic device information.

The following example uses `tpconfig -d` to view the robotic device information This example has one TLH drive and one TLD drive.

```
tpconfig -d

Index  DriveName           Device Name    Type   Shared    Status
*****  *********           ***********    ****   *******   ******
 0    DRIVE2              \\.\tape0       hcart    No        UP
        TLH(0) IBM Device Name = 003590B1A00
 1    DRIVE1              \\.\tape1       dlt      No        UP
        TLD(5) Definition   DRIVE=1
Currently defined robotics are:
  TLH(0)     library name = 3494AH, volume database host = grozer
  TLD(5)    SCSI port=3, bus=1, target=6, lun=0    volume database
                                                        host = grozer
Standalone drive volume database host = grozer
```

In this example, note the following line:

```
  TLH(0)     library name = 3494AH, volume database host = grozer
```

Where `3494AH` is the library name and `grozer` is the volume database host for this robot.

## Configuring Drives for TLH Robots

The TLH robot has half-inch cartridge tape drives, usually with a SCSI interface. You must install a system tape driver according to the appropriate system and vendor documentation.

See “Configuring Storage Devices” on page 9 for instructions on adding drives to your Media Manager configuration.

**Caution** When adding drives to Media Manager, it is important to assign the correct IBM device name to each drive. If the device name is incorrect, tape mounts or backups may fail.

Use the Media Manager TLH test utility to determine the TLH drive designations. The following example uses `tlhtest` and shows which drives in the robot are under Media Manager control:

```
tlhtest -r 3494AH
```

The following is the output from `tlhtest` (the user entered the `drstat` command on the third line). You would use 003590B1A00 and 003590B1A01 when adding these drives in Media Manager.

```
Opening 3494AH
Enter tlh commands (? returns help information)
drstat
Drive information:
  device name:            003590B1A00
  device number:          0x156700
  device class:           0x10 - 3590
  device category:        0x0000
  mounted volser:         <none>
  mounted category:       0x0000
  device states:          Device installed in ATL.
                          Dev is available to ATL.
                          ACL is installed.
Drive information:
  device name:            003590B1A01
  device number:          0x156600
  device class:           0x10 - 3590
  device category:        0x0000
  mounted volser:         <none>
  mounted category:       0x0000
  device states:          Device installed in ATL.
                          Dev is available to ATL.
                          ACL is installed.
QUERY DEVICE DATA complete
```

# Cleaning TLH Drives

The IBM ATL interface does not allow applications to request or configure drive cleaning. For this reason, you cannot assign cleaning tapes to a TLH robot in the Media Manager volume configuration. You must configure drive cleaning by using an IBM administrative interface.

# Adding TLH Volumes

For TLH robots in an Automated Tape Library, the preferred method for adding volumes is as follows:

1. Add barcode labels and then insert the media into the robot using the media access port.

   The Library Manager reads barcodes and classifies the media by media type. A category is assigned to each volume. Some volume categories will restrict application access to certain volumes. Volume locations are tracked by the Library Manager.

2. Define the media to Media Manager by using the ATL volume IDs as media IDs. To accomplish this, do one of the following:

   - Update the volume configuration, as explained under "Updating the Volume Configuration for a Robot" on page 126.
   - Add new volumes, as explained under "Adding New Volumes" on page 87.

   Because the ATL volume IDs and barcodes are the same, Media Manager has the barcodes for the media. Notice that you do not enter slot location because that information is kept by the ATL software.

3. Use **Show Contents** and **Compare Contents with Volume Configuration** from the Robot Inventory dialog of the **Media** node to verify your configuration.

# Removing Tapes from the Robot

1. Physically remove the media from the library using one of the following:

   - An IBM Library Manager interface.
   - The `eject` command in the Media Manager `tlhtest` utility.
   - The `vmchange` command (see the commands appendix).
   - The NetBackup Administration Console (see "Methods for Ejecting Volumes From a Robot" on page 85).

2. If you use the `vmchange` command or the NetBackup Administration Console, you can skip this step.

   Update the Media Manager volume database to indicate the new location of the media as being standalone. To accomplish this, do one of the following:

   - Update the volume configuration, as explained in "Updating the Volume Configuration for a Robot" on page 126.

- Move volumes, as explained in “Moving Volumes” on page 97.

Otherwise, Media Manager is not aware that the media is missing and may issue mount requests for it. The result is an error such as Misplaced Tape.

It does not matter if you physically move media from one location to another within the robot. The Automated Tape Library will find the media when Media Manager requests it.

# Robot Inventory Operations

Media Manager considers a TLH robot as one that supports barcodes. The following sequence explains what occurs when you select an operation that requires a robotic inventory for a TLH robot:

1. Media Manager requests volume information from the Library Manager through the Library Manager Control Point IBM service.

2. The Library Manager responds by providing a list of volume IDs and volume attributes from its database. Media Manager then filters out volume categories that cannot be used and displays a list of volumes obtained along with a translated version of the volume’s media type. The media type is based upon the attributes that were returned.

   The following table shows an example of the types of information that Media Manager receives:

| TLH Volume ID | TLH Media Type |
|---|---|
| PFE011 | 3480 |
| 303123 | 3490E |
| CB5062 | 3590J |

3. Media Manager translates the volume IDs into media IDs and barcodes. In the previous table, volume ID PFE011 becomes media ID PFE011 and the barcode for that media ID is also PFE011.

4. Media Manager maps the TLH media types to the Media Manager media types as explained in the following two steps

5. If this is an operation that does not require updating the volume configuration, Media Manager uses the media type defaults for TLH robots (see the table, “Default Media Types for TLH Robots” on page 146) when it creates its report.

6. If this is an operation that requires updating the volume configuration, Media Manager selects the media type as follows:

   a. Media Manager tries to use mappings that you have set for this update in the Media Type Mappings dialog box. See “Changing the Update Options” on page 132.

   b. If you have not set any media type mappings, Media Manager tries to use any TLH_*mediatype* settings in the `vm.conf` file (see “vm.conf Map Entries For TLH Robots” on page 390).

   c. If the `vm.conf` file does not exist or it does not map the media type, Media Manager uses the default for TLH robots (see the table, “Default and Allowable TLH Media Types” on page 390).

The Update Volume Configuration report for a TLH robot is similar to the figure shown for an API robot in “To Update the Volume Configuration for a Robot” on page 128.

# Robotic Inventory Filtering

If your site has many volumes configured, but you only want NetBackup to use a subset of them, you may be able to use inventory filtering.

The IBM Library Manager maintains the concept of a volume category, which can be used to classify volumes into pools, including pools by application.

On the Media Manager server where the inventory request will be initiated, you can add an `INVENTORY_FILTER` entry in the `vm.conf` file. The format for this entry follows:

`INVENTORY_FILTER` = *robot_type robot_number filter_type value1* `[`*value2* `. . .]`

where

*robot_type* is the robot type (`TLH` in upper case).

*robot_number* is the robot number.

*filter_type* is the keyword (`BY_CATEGORY`).

*value1* is a filter value of type IBM category (if *filter_type* = `BY_CATEGORY`).

*value2* is a second filter value (up to 10 filter values are allowed).

For example:

```
INVENTORY_FILTER = TLH 0 BY_CATEGORY 0xcdb0
```

# vm.conf Map Entries For TLH Robots

See “Media Manager Configuration File (vm.conf)” on page 297 for an overview of the `vm.conf` file.

The second column in the following table shows the defaults that Media Manager uses when assigning media types in TLH robots. The third column shows the media types to which you can change the defaults by creating map entries in the `vm.conf` file.

Default and Allowable TLH Media Types

| TLH Media Type | Default Media Manager Media Type | Allowable Media Types Through Mappings |
|---|---|---|
| 3480 | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| 3490E | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| 3590J | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| 3590K | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| UNKNOWN (for unknown TLH media types) | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3 |

If the defaults do not provide the desired mapping, you can change the defaults by creating an *install_path*`\volmgr\vm.conf` file and adding TLH_*mediatype* entries.

For example, the following `vm.conf` entry maps the TLH media type `3490E` to the `HCART2` media type. Without this entry, Media Manager assigns `HCART` to TLH `3490E` media types.

```
TLH_3490E = HCART2
```

The third column in the table shows the media types that Media Manager allows in TLH_*mediatype* entries. For example, you cannot specify the following entry:

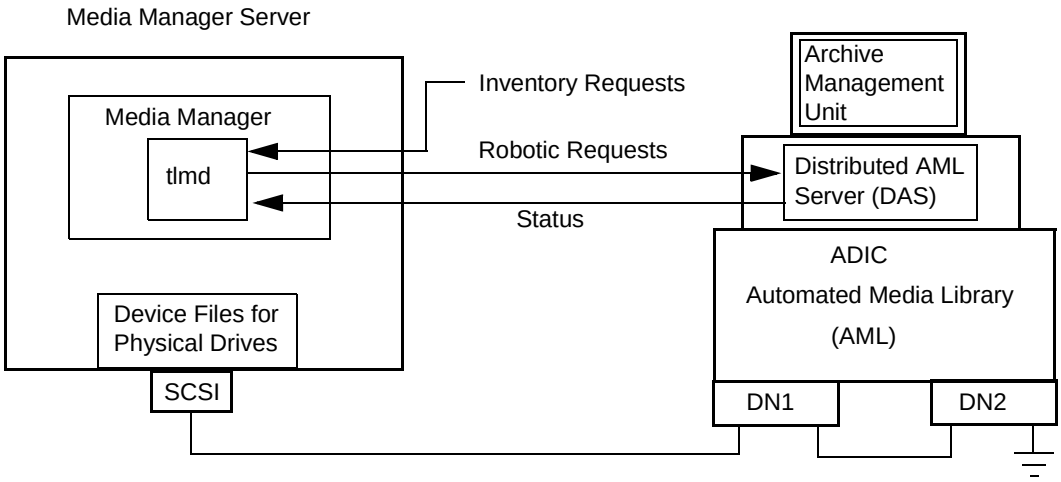
```
TLH_3590J = HCART4
```

# ADIC Distributed AML Server (DAS) G

Media Manager provides support for robotics under control of an ADIC Distributed AML Server (DAS) and Scalar Distributed Library Controller (SDLC), including those in the ADIC Automated Media Library (AML) family.

Under Media Manager, robotic support for DAS robots is classified as Tape Library Multimedia (TLM) and these robots are considered API robots (the robot manages its own media). Support for these devices is different than for other types of Media Manager robotic control and this appendix provides an overview of those differences.

The following figure shows a possible DAS configuration. The table “Distributed AML Server Configuration” on page 392 explains the major components in this sample configuration.



Distributed AML Server Configuration

| Component | Description |
|---|---|
| Media Manager Server | A host that has Media Manager software and acts as a client to the Distributed AML Server.<br>Netbackup Device Manager service forwards mount and dismount requests to the TLM service (`tlmd`). |
| TLM process (`tlmd`) | This process passes mount and dismount requests to the Distributed AML Server and handles return status. `tlmd` also receives and handles robot inventory requests. |
| Archive Management Unit (AMU) | A PC running the IBM OS/2 or Windows NT operating system, usually located in or near the AML cabinet. The ADIC software runs on the AMU. |
| Distributed AML Server (DAS)<br>Scalar Distributed Library Controller (SDLC) | A client/server software product that resides in the Archive Management Unit and provides shared access to the family of ADIC Automated Media Libraries (AML).<br>The Media Manager robotic process (or TLM process) acts as a client to the Distributed AML Server. |
| Automated Media Library (AML) | An ADIC multimedia robotic library. |

# Media Requests Involving a TLM Robot

A request for media in a TLM robot begins in the same manner as other media requests. The Media Manager device service, `ltid`, receives the request and queries the Media Manager volume service, `vmd`, for the location of the media. The volume service, in this case, returns only the robot number and type TLM robot. The Media Manager volume database does not manage slot information for media in a TLM robot.

`ltid` verifies that the type and density of the requested volume are compatible. Next, `ltid` checks its internal tables (these tables are based on the device databases) to determine if there is an available drive and sends a mount request to the TLM process, `tlmd`. This process passes the request to the Distributed AML Server software (which resides in the Archive Management Unit).

The Distributed AML Server locates the media and directs the robotics to mount the media in the drive. When the host (where Media Manager is installed) receives a success response from the Distributed AML Server, it allows the requesting application (for example, NetBackup) to start sending data to the drive.

**Note** With TLM robotic control, the Media Manager server is actually a DAS client and sends robotic control requests to the DAS server. This relationship pertains only to the DAS client/server model and is not related in any way to the concept of NetBackup servers or clients.

# Configuring TLM Robotic Control

When adding TLM robotic control to Media Manager, first ensure that the ADIC Automated Media Library has been physically connected and configured.

For information on initially configuring the ADIC components of the Automated Media Library, see the ADIC documentation. Pay close attention to the DAS component, which is described in the DAS installation and administration guide (an ADIC document).

For information on platform support for TLM robotic control, see the NetBackup release notes.

# Allocating TLM Drives to Media Manager

Before configuring drives in Media Manager, you must configure the DAS server to allocate the desired drives to a specific DAS client (Media Manager server). The following are some topics pertaining this configuration.

**Note** See the ADIC documentation for detailed instructions on configuring the DAS server.

## Installing ADIC Software

Use the following procedure to install and configure ADIC software for the DAS client component. Also refer to the ADIC users guide for Windows DAS clients.

1. Set the following system environment variables and values on the Windows host (right-click on **My Computer** > **Properties** > **Environment**).

   Variable Name: DAS_CLIENT

   Variable Value: *name_of_NetBackup_media_server*

   Variable Name: DAS_SERVER

   Variable Value: *name_of_DAS_server*

2. Copy the following DLLs to `windows\system32` (or *install_path*`\Volmgr\bin`).

```
aci.dll
ezrpcw32.dll
winpc32.dll
```

3. Run `portinst.exe`

   This installs the NobleNet Portmapper for TCP service. Set this service to start automatically when the server is started. NobleNet Portmapper is provided with the Windows DAS client.

## Configuring the DAS Client Name

The DAS client name for the Media Manager server is configured in the DAS configuration file on the DAS server. It is important that this name is the same as the one being used by Media Manager and that it is a valid DAS client name.

By default, the Media Manager server uses, as its DAS client name, the host name that it obtains from the `gethostname()` system call. This name is usually the one that you want to use for the DAS client name in the configuration on the DAS server.

However, if this name happens to be one that is invalid for DAS clients you will have to use another name. For example, DAS 1.30C1 has a restriction on having hyphens in DAS client names. If the host name (where Media Manager is installed) happens to have a name such as dolphin-2, the DAS server will not recognize it.

A similar problem exists if a Media Manager server's short host name is used as the DAS client name, but `gethostname()` returns the long host name.

In either of these instances, you can resolve the problem as follows:

1. Substitute a valid DAS client name on the DAS server. For example, use dolphin2.

2. Use this same name in a `DAS_CLIENT` entry in the `/usr/openv/volmgr/vm.conf` file on the Media Manager server. These entries are of the form:

   `DAS_CLIENT` = *DASclientname*

   Where *DASclientname* is the name that you want Media Manager to use as its DAS client name. In this example, this entry would be

   ```
   DAS_CLIENT = dolphin2
   ```

3. Stop and start the `ltid` service to enable the TLM process to use the new DAS client name.

4. When the client names are correct, restart DAS with the latest version of its configuration file and then reallocate the drives to Media Manager.

## Use DASADMIN to Allocate Drives

When the client names are correct, allocate the drives to the Media Manager server by using the DASADMIN administrative command. The DAS administrative drive allocation commands are not available from the Media Manager TLM test utility interface. You must use a DAS administrative interface on the DAS server or the DAS client administrative interface.

The following example shows how DASADMIN can be used to allocate drives, by using a DAS administrative interface:

```
LD_LIBRARY_PATH=/usr/local/aci/lib
export LD_LIBRARY_PATH
DAS_SERVER=dasos2box
export DAS_SERVER
DAS_CLIENT=grouse
export DAS_CLIENT
cd /usr/local/aci/admin
./dasadmin listd
```

The following is output from this command:

```
==>listd for client:  successful
   drive: DN1  amu drive: 01  st: UP  type: N  sysid:
     client: grouse  volser:   cleaning 0  clean_count: 17
   drive: DN2  amu drive: 02  st: UP  type: N  sysid:
     client: mouse   volser:   cleaning 0  clean_count: 4
./dasadmin allocd
```

The following is output from this command:

```
==> usage: dasadmin allocd drive-name UP|DOWN clientname
```

(First allocate it DOWN on one client, then UP on another as in the following:)

```
./dasadmin allocd DN2 DOWN mouse
./dasadmin allocd DN2 UP grouse
```

# Configuring Drives for TLM Robots

The TLM robot has half-inch cartridge tape drives, usually with a SCSI interface. You must install a system tape driver according to the appropriate system and vendor documentation.

See “Configuring Storage Devices” on page 9 for instructions on how to add the drives to a Media Manager configuration.

**Caution** When adding drives to Media Manager, it is especially important to assign the correct DAS drive name to each drive. If the drive name is incorrect, tape mounts or backups may fail.

Use the Media Manager TLM test utility to determine the DAS drive designations. The following example uses `tlmtest`:

```
tlmtest -r dasos2box
```

The following is the output from this utility (the user entered the `drstat` command on the third line).

```
Current client name is 'grouse'.
Enter tlm commands (? returns help information)
drstat
Drive 1: name = DN1, amu_name = 01, state = UP, type = N,
         client = grouse, volser = , cleaning = NO, clean_count = 17
Drive 2: name = DE3, amu_name = 03, state = UP, type = E,
         client = grouse, volser = , cleaning = NO, clean_count = 480
Drive 3: name = DE4, amu_name = 04, state = UP, type = E,
          client = grouse, volser = , cleaning = NO, clean_count = 378
DRIVE STATUS complete
```

This output indicates that DAS drive names DN1, DE3, and DE4 should be used. It also shows that grouse is the client name that is being used for the Media Manager server.

# Configuring Shared Drives for TLM Robots

Using TLM robots with SSO requires that the ADIC DAS server be configured to allow drives to be allocated in DAS simultaneously to all device hosts sharing the drives. DAS server version 3.01.4 or higher may be needed.

When configuring these robot types, perform steps similar to those in the following example. This example has two UNIX servers (server_1 has IP address xxx.xxx.xxx.xxx and server_2 has IP address yyy.yyy.yyy.yyy).

1. Modify the DAS server's `\ETC\CONFIG` file to create a client entry with `hostname` set to `any`.

   ```
   client client_name = NetBackup-shared
   # ip address = 000.000.000.000
   hostname = any
   ```

2. Place the IP addresses of the servers that will use the shared client entry in the `\MPTN\ETC\HOSTS` file on the DAS server.

   ```
   xxx.xxx.xxx.xxx server_1
   ```

```
yyy.yyy.yyy.yyy server_2
```

3. Using the DASADMIN interface, allocate the drives UP on the shared client (`NetBackup-shared`).

4. On each of the device hosts that are sharing the drives, create an entry in the `vm.conf` file with the shared DAS client name, such as the following:

   ```
   DAS_CLIENT = NetBackup-shared
   ```

5. Test the DAS configuration using `robtest` and `tlmtest`, setting the client name (specify `client NetBackup-shared` in `tlmtest`) and running the drive status command, `drstat`.

# Providing Common Access to Volumes

If you use the same volume database for all Media Manager servers (recommended), each of them must have access to the same sets of volumes (volsers) in the DAS configuration. Otherwise, when you perform an update volume configuration from one of the servers, the volumes that are not configured for that server will be logically moved to a standalone residence.

As a test, you can inventory a TLM robot from each Media Manager server and compare the results. If all the inventory reports are not the same, correct the DAS configuration. Then, perform a DAS shutdown and restart.

# Adding TLM Volumes

The normal method for adding media in or for a TLM robot is as follows:

1. Add barcode labels and then insert the media into the library using an insert area.

   Issue the DAS insert directive from either a DAS administrative interface or from the Media Manager utility, `tlmtest`. You can obtain the insert area name from the DAS configuration file.

   The AMU Archive Management Software reads barcodes, classifies the media by media type, and maintains storage cell locations for all media.

2. Define the media to Media Manager by using the DAS volsers as media IDs.

   To accomplish this, do one of the following:

   - Update the volume configuration, as explained under “Updating the Volume Configuration for a Robot” on page 126.

- Add new volumes, as explained under “Adding New Volumes” on page 87.

Because the DAS volsers and barcodes are the same, Media Manager now also has the barcodes for the media. Notice that you do not enter slot location because that information is kept by the DAS software.

3. Use **Show Contents** and **Compare Contents with Volume Configuration** from the Media and Device Management Robot Inventory dialog to verify your configuration and maintain consistency between the DAS database and the Media Manager volume configuration. That is, update the Media Manager configuration when media has moved or may have moved.

# Removing Tapes from the Robot

1. Physically remove the media from the library using one of the following:
   - A DAS administrative interface.
   - The `eject` command in the Media Manager `tlmtest` utility.
   - The `vmchange` command (see the commands appendix).
   - The NetBackup Administration Console (see “Methods for Ejecting Volumes From a Robot” on page 85).

2. If you use the `vmchange` command or the NetBackup Administration Console, you can skip this step.

   Update the Media Manager volume database to indicate the new location of the media as being standalone. To accomplish this, do one of the following:
   - Update the volume configuration, as explained in “Updating the Volume Configuration for a Robot” on page 126.
   - Move volumes, as explained in “Moving Volumes” on page 97.

   Otherwise, Media Manager is not aware that the media is missing and may issue mount requests for it. The result is an error such as “Misplaced Tape”.

   It does not matter if you physically move media from one location to another within the robot. The DAS AMU will find the media when Media Manager requests it.

# Robot Inventory Operations

Media Manager considers a TLM robot as one that supports barcodes. The following sequence explains what occurs when you select an operation that requires a robotic inventory for a TLM robot:

1. Media Manager requests volume information from the Distributed AML Server through a DAS application library call.

2. The Distributed AML Server responds by providing a list of volume IDs and associated information from its database. Media Manager filters out volumes that are not occupied in their home cell locations or in drives, then displays a list of volumes obtained along with their media types, according to the Distributed AML Server.

   The following table indicates an example of information displayed by Media Manager:

| TLM Volser | TLM Media Type |
|---|---|
| A00250 | 3480 |
| J03123 | 3590 |
| DLT001 | DECDLT |
| MM1200 | 8MM |
| NN0402 | 4MM |
| 002455 | UNKNOWN |

3. Media Manager translates the volsers directly into media IDs and barcodes. In the previous table, volser A00250 becomes media ID A00250 and the barcode for that media ID is also A00250.

4. Media Manager maps the TLM (DAS) media types into the Media Manager media types as explained in the following two steps.

5. If this is an operation that does not require updating the volume configuration, Media Manager uses the media type defaults for TLM robots when it creates its report. See the table “Default Media Types for TLM Robots” on page 147.

6. If this is an operation that requires updating the volume configuration, Media Manager selects the media type as follows:

**a.** Media Manager tries to use mappings that you have set for this update in the Media Type Mappings dialog box. See “Changing the Update Options” on page 132.

**b.** If you have not set any media type mappings, Media Manager tries to use the `TLM_`*mediatype* settings in the `vm.conf` file (see “vm.conf Map Entries For TLM Robots” on page 401).

**c.** If the `vm.conf` file does not exist or if it does not map the media type, Media Manager uses the default for TLM robots (see the table “Default and Allowable TLM Media Types” on page 401).

The Update Volume Configuration report for a TLM robot is similar to the figure shown for an API robot in “To Update the Volume Configuration for a Robot” on page 128.

# vm.conf Map Entries For TLM Robots

See “Media Manager Configuration File (vm.conf)” on page 297 for an overview of the `vm.conf` file.

The second column in the following table shows the defaults that Media Manager uses when assigning media types in TLM robots. The third column shows the media types to which you can change the defaults by creating map entries in the `vm.conf` file.

Default and Allowable TLM Media Types

| TLM Media Type | Default Media Manager Media Type | Allowable Media Types Through Mappings |
|---|---|---|
| 3480 | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| OD_THICK | none<br>(OD_THICK is translated to media type REWR_OPT for robot contents reports. OD_THICK is ignored for all other robotic inventory operations) | none |
| OD_THIN | none | none |
| DECDLT | DLT (Digital Linear Cartridge) | DLT, DLT2, DLT3 |
| 8MM | 8MM | 8MM, 8MM2, 8MM3 |
| 4MM | 4MM | 4MM |
| D2 | none | none |
| VHS | none | none |
| 3590 | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| CD | none | none |
| TRAVAN | none | none |
| DTF | DTF | DTF |
| BETACAM | none | none |
| AUDIO_TAPE | none | none |

Default and Allowable TLM Media Types

| TLM Media Type | Default Media Manager Media Type | Allowable Media Types Through Mappings |
|---|---|---|
| BETACAMCL | none | none |
| SONY_AIT | 8MM | 8MM, 8MM2, 8MM3 |
| LTO | HCART (1/2-inch cartridge) | HCART, HCART2, HCART3 |
| DVCM | none | none |
| DVCL | none | none |
| UNKNOWN (For unknown TLM media types) | HCART2 (1/2-inch cartridge 2) | HCART, HCART2, HCART3, DLT, DLT2, DLT3, 8MM, 8MM2, 8MM3 |

If the defaults do not provide the desired mapping, you can change the defaults by creating an *install_path*`\volmgr\vm.conf` file and adding `TLM_`*mediatype* entries to it.

For example, the following `vm.conf` entry maps the TLM media type `3480` to the `HCART2` media type. Without this entry, Media Manager assigns `HCART` to TLM `3480` and `3590` media types.

```
TLM_3480 = HCART2
```

The third column shows the media types that Media Manager allows you to specify in `TLM_`*mediatype* entries. For example, you *cannot* specify the following entry. This entry is illegal because Media Manager does not permit you to map TLM `3590` to the `DLT2` media type.

```
TLM_3590 = DLT2
```

# Glossary

### access control list (ACL)

Security information associated with files on some file systems.

### ACS

Automated Cartridge System. ACS can refer to any of the following:

- A type of Media Manager robotic control. This robot type is supported only by NetBackup DataCenter servers.
- The StorageTek (STK) system for robotic control.
- The highest-level component under STK's ACS library software, which refers to a specific standalone robotic library or to multiple libraries connected with a media passthru mechanism.

### active job

A job for which NetBackup is currently processing backup or restore data.

### activity logs

See "debug logs."

### activity monitor

A NetBackup administration utility that displays information about NetBackup jobs and provides limited control over them.

### administration client

See "remote administration console."

### administrator

A user that is granted special privileges to install, configure, and manage the operation of a system, network, or application.

### AIT

Sony Advanced Intelligent Tape, a type of tape drive or media type.

### alternate-client restore

See “redirected restore (different client).”

### alternate-target restore

See “redirected restore (different target).”

### alternate path restore

See “redirected restore (different path).”

### alternate read server

A server used to read a backup image which was originally written by a different media server. The media server specified as Alternate Read Server must have access to the media containing the backup image or images it is configured to read.

### archive

A special kind of backup where NetBackup backs up the selected files, and if the backup is successful, deletes the files from the local disk. In this manual, references to backups also apply to the backup portion of archive operations except where otherwise noted.

### archive bit

A file-status bit that the Microsoft based operating system sets when it writes a file, thereby indicating that the file has changed.

### attributes for a policy

Configuration parameters that control the behavior of NetBackup during operations involving this policy.

### autochanger

See “robotic library.”

### autoloader

See “robotic library.”

### automatic backup

A scheduled backup by the master server.

### back up

The act of copying and saving files and folders to storage media.

### backup

Refers to the process of copying and saving files and directories to storage media. For example, *the backup is complete*. This term can also refer to the collection of data that NetBackup saves for a client during a backup or archive. For example, *duplicate the backup*.

Backup is two words when used as a verb. For example, *back up the file*.

### backup, archive, and restore interface

The name of the NetBackup Microsoft Windows and Java based user interfaces for clients. On servers these interfaces can be started through the NetBackup Administration Console.

### backup window

The period of time during which backups can begin.

### block size

The number of bytes in each block of data written on the media during a backup.

### bp

A backup, archive, and restore utility for users on NetBackup UNIX clients. It has a character-based, menu interface that can be run from terminals that do not have X Windows capabilities.

### bpadm

An administrator utility that runs on NetBackup UNIX servers. It has a character-based, menu interface that can be run from terminals that do not have X Windows capabilities.

### bp.conf file

A NetBackup configuration file on UNIX servers and also on UNIX, Macintosh, and OS/2 clients.

### bp.ini file

NetBackup initialization file for Novell NetWare target clients.

### bpcd

NetBackup Client service on Windows and the NetBackup Client daemon on UNIX.

**bprd**

NetBackup Request Manager service on Windows and NetBackup Request daemon on UNIX.

**cancel a job**

Terminating a job and removing it from the job queue.

**carousel**

See “robotic library.”

**catalogs**

Internal NetBackup and Media Manager databases. These catalogs contain information about configuration, media, devices, status, errors, and the files and directories in the stored backup images.

**CDF**

Context-dependent file, which is a type of directory structure on a Hewlett-Packard system.

**changer**

See “robotic library.”

**class**

See “policy.”

**client**

The system with the files to back up, archive, or restore.

**client-user interface**

See “user interface.”

**cluster**

See master and media server cluster.

**command lines**

Commands that users can execute either from the system prompt or in scripts.

**compression**

The process of compacting data to enable more efficient transmission and storage.

### configuration

The parameters that govern the behavior of an application. This term can also refer to the manner in which a network or system is laid out or connected (for example, a network configuration).

### consolidated eject

A process of ejecting media for more than one Vault session at a time. A Consolidated Eject can be performed for one or more logical vaults at one time.

### consolidated report

A process of generating reports for more than one Vault session at a time. A Consolidated Report can be performed for one or more logical vaults at one time. Consolidated reports are organized by report title, not by vault.

### cpio

A UNIX command that can be used for copying files to or from a cpio archive on disk or tape.

### ctime

The time that a UNIX inode was changed.

### cumulative-incremental backup

A backup that is scheduled by the administrator on the master server and backs up files that have changed since the last successful full backup. All files are backed up if no prior backup has been done. Also see “differential-incremental backup.”

### daemon

A program on a UNIX system that runs in the background and performs some task (for example, starting other programs when they are needed). Daemons are generally referred to as services or processes on Windows server systems.

### database-agent clients

Clients with additional NetBackup software that is designed to back up relational databases.

### database-extension clients

See “database-agent clients.”

### debug logs

Logs that can be optionally enabled for specific NetBackup and Media Manager programs and processes and then used to investigate problems.

### destination storage unit

A storage unit to which Vault sends the data from a duplication operation. If the duplicated backup images are to be vaulted, then the destination storage unit must correspond to the robotic volume group.

### device delays

Delays caused by the device that are beyond the control of the storage application. An example is the time required to position tape under the read and write heads.

### device host

A host (that has Media Manager installed) where a drive or robotic control is attached or is defined.

### device monitor

A Media Manager administration utility that provides monitoring and manual control of Media Manager storage devices. For example, an administrator or computer room operator can use this utility to manually reset devices or set them to the UP or DOWN state.

### DHCP

Dynamic host configuration protocol. This TCP/IP protocol automatically assigns temporary IP addresses to hosts when they connect to the network.

### differential-incremental backup

Scheduled by the administrator on the master server and backs up files that have changed since the last successful incremental or full backup. All files are backed up if no prior backup has been done. Also see “cumulative-incremental backup.”

### directory depth

The number of levels below the current directory level that the NetBackup interfaces show in their directory and file list displays.

### directory tree

The hierarchical structure in which files are organized on a disk. Each directory lists the files and directories that are directly below it in the tree. On UNIX, the topmost directory is called the root directory.

**disaster recovery**

Recovering data from backups after a disk crash or other catastrophe.

**disk**

Magnetic or optical disk storage media.

**disk-image backup**

A bit-by-bit rather than a file system backup of a disk drive on a Windows platform.

**DLT**

Digital-linear tape or tape drive type.

**Domain Name Service (DNS)**

A program that handles name translation for network communications.

**drive cleaning**

The use of a special cleaning tape to clean the heads on a drive.

**duplicate image**

A copy of a backup image.

**eject**

Move media out of a robotic library.

**encryption**

Provides additional security by encrypting backup data on the client. This capability is available only with the NetBackup Encryption option.

**entry and exit ports**

See “media access port.”

**exclude list**

A list that designates files or directories to exclude from automatic backups.

**expiration (image)**

The date and time when NetBackup stops tracking a backup image.

### expiration (volume)

The date and time when the physical media (tape) is considered to be no longer usable.

### external media ID

This is an identifier written on a media cartridge or canister to help the operator identify the volume before inserting it into a drive or robot. For labeled media, the external media ID should be the same as the media ID recorded on the media.

### EVSN

See “external media ID.”

### FlashBackup

A special type of raw-partition backup that requires the NetBackup FlashBackup separately-priced option (this option is available only for NetBackup DataCenter).

### flush level

Controls how often Netbackup clears its log files on a Novell NetWare or Microsoft Windows client platform.

### fragment

A part of a backup or archive image. NetBackup can be configured to divide images into fragments when they exceed a certain size or span tapes.

### frequency (backup)

How often NetBackup performs scheduled backups. For example, if the frequency is seven days then backups occur once a week.

### FROZEN media state

If a volume is FROZEN, NetBackup keeps it indefinitely and can restore from it but not use it for further backups or archives.

### full backup

A backup that copies, to a storage unit, all files and directories that are beneath a specified directory.

### FULL media state

If this appears in a report or listing, it indicates the volume is FULL and cannot hold more data or be used for further backups.

### global attributes

NetBackup configuration attributes that affect all policies.

### GDM Dashboard

The name for the Global Data Manager interface. The Dashboard enables monitoring job and drive activity on multiple master servers, as well as providing alerts to problem conditions.

### GDM Managed Server

A NetBackup master server that appears as a managed master server in the left pane of the GDM Dashboard.

### GDM Server

A NetBackup master server that has the Global Data Manager license activated. When logging into this host, the user can monitor the activity on multiple master servers using the GDM Dashboard interface. If the host has installed the Advanced Reporter option, the reports show information on multiple master servers.

### Global Data Manager (GDM)

A separately-priced option (for UNIX servers) that provides an interface with a tree view where the administrator can view and administer multiple master servers. The server where the option is installed is called a GDM Server.

### Global Device Database

A single host that serves as the repository for global device configuration information. When you install NetBackup, by default the master server is configured as the global device database host.

### GNU tar

A public domain version of the UNIX tar program.

### goodies directory

A directory containing programs, scripts, and other files that are not formally supported.

### GUI

Graphical user interface.

### hard link

On UNIX, a hard link is a pointer to the inode for the data. On a Windows server, a hard link is a directory entry for a file. Every file can be considered to have at least one hard link. On NTFS volumes each file can have multiple hard links, and a single file can appear in many directories (or even in the same directory with different names).

### heap level

A parameter for memory-heap debugging on a Novell NetWare or Windows NetBackup client.

### hierarchical storage management

The process of automatically migrating selected files from a managed file system to specified migration levels on secondary storage, while maintaining transparent access to those files.

### host

A computer that executes application programs.

### host name

Name by which a host computer is identified by programs and other computers in the network.

### HSM

See storage migrator.

### image

The collection of data that NetBackup saves for an individual client during each backup or archive. The image contains all the files, directories, and catalog information associated with the backup or archive.

### import

The process of recreating NetBackup records of images so the images can be restored.

### include list

A list that designates files or directories to add back in from the exclude list.

### incremental backup

See “cumulative-incremental backup” and “differential-incremental backup.”

### inject

Move media into a robotic library.

### inport

See “media access port.”

### inode

A UNIX data structure that defines the existence of a single file.

### install_path

Directory where NetBackup and Media Manager software is installed. The default on Windows servers is `C:\Program Files\VERITAS` and on UNIX it is `/usr/openv`.

### jbpSA

The Java-based NetBackup interface for performing user backups, archives, and restores.

### jnbSA

The Java-based NetBackup interface for administrators.

### job

A parcel of work submitted to a computer. NetBackup jobs are backups, archives, or restores.

### kernel

The nucleus of an operating system.

### keyword phrase

A textual description of a backup.

### kill a job

See “cancel a job.”

### label

Identifier of a tape or optical disk volume. A recorded label includes a media ID.

A barcode label allows a barcode scanner to be used for media tracking.

### library

See “robotic library.”

### link

See “hard link” or “symbolic link.”

### LMF - Library Management Facility

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

### load

(noun) Amount of work that is being performed by a system or the level of traffic on a network. For example, network load affects performance.

(verb) Copy data to internal memory. For example, load the installation program.

(verb) Used to indicate tape drive initialization done when new media is being added.

### logs

Files where a computer or application records information about its activities.

### mailslot

See “media access port.”

### man pages

Online documentation provided with UNIX computer systems and applications.

### Master and media server cluster

A NetBackup master server and the remote media servers that it is using for additional storage. It is possible to configure clusters only with NetBackup DataCenter servers. NetBackup BusinesServer supports only a single server, the master.

### Master of Masters

A NetBackup host where Global Data Manager software is installed. When logging into this host, the interface has a tree view where the administrator can view and administer multiple master servers.

### master server

The NetBackup server that provides administration and control for backups and restores for all clients and servers in a master and media server cluster. NetBackup BusinesServer supports only a single server and it is the master.

### media

Physical magnetic tapes, optical disks, or magnetic disks where data are stored.

### media access port

A slot or other opening in a robot where you can insert or remove a tape without having to access the interior of the robot. After inserting a tape, you move it to a slot by using an inject command. Prior to removing a tape, you move it to the port by using an eject command. The inject and eject commands are supported through the add and move screens in the Media Manager administration interface.

### media host

NetBackup server to which the job (client) is sending the data.

### media ID

An identifier that is written on a volume as part of the recorded label.

### Media Manager

Software that is part of NetBackup and manages the storage devices and removable media.

### Media Manager Host

Host where Media Manager is installed (may have devices attached).

### media server

A NetBackup server that provides storage within a master and media server cluster. The master can also be a media server. A media server that is not the master is called a remote media server. NetBackup BusinesServer does not support remote media servers.

### menu interface

A character-based interface for use on terminals that do not have graphical capabilities.

### mount

Make a volume available for reading or writing.

### mount point

The point where a file system on a disk logically connects to a system's directory structure so the file system is available to users and applications.

### MPX

See “multiplexing.”

### mtime

The point in time when a UNIX or NTFS file is modified.

### multiplexing

The process of sending concurrent-multiple backups from one or more clients to a single storage device and interleaving those images onto the media.

### multiplexed group

A set of backups that were multiplexed together in a single multiplexing session.

### NDMP

Network data management protocol. NetBackup requires the NetBackup for NDMP separately-priced option to support NDMP.

### NetBackup Client service

NetBackup Windows service that runs on clients and servers and listens for connections from NetBackup servers and clients in the network. When a connection is made, this service starts the necessary programs.

### NetBackup configuration options

On UNIX servers and on UNIX and Macintosh, clients, these settings are made in the `bp.conf` file. On NetWare target and OS/2 clients, they are in the `bp.ini` file. On Windows servers and Windows clients, these settings are called properties and are made through the Backup, Archive, and Restore interface or the Host Properties dialog in the NetBackup Administration Console.

### NetBackup databases

See catalogs.

### NetBackup Database Manager service

NetBackup Windows service that runs on the master server and manages the NetBackup internal databases (called catalogs). This service must be running on the master server during all NetBackup administrative operations.

### NetBackup Device Manager service

The NetBackup Windows service that runs on a NetBackup server and starts the robotic control processes and controls the reservation and assignment of volumes. This service runs only if the server has devices under Media Manager control. The process is `ltid`.

### NetBackup properties

Same as NetBackup configuration options but are called NetBackup properties on Microsoft Windows platforms.

### NetBackup Request Manager service

The NetBackup Windows service that runs on the master server and starts the scheduler and receives requests from clients.

### NetBackup Volume Manager service

A NetBackup Windows service that runs on a NetBackup server, allows remote administration of Media Manager, and manages volume information. The process is `vmd`.

### NIS

Network information service.

### NLM

NetWare loadable module.

### NFS

Network file system.

### nonrobotic

See “standalone.”

### ODL

Optical disk library. This robot type is supported only by NetBackup DataCenter servers.

### offsite volume group

A volume group in which media will appear after having been ejected from the robot for vaulting. When Vault ejects media it is moved from the robotic volume group to the off-site volume group.

### offsite volume pool

A volume pool that contains media that is to be ejected and vaulted. Backup images written to an off-site volume pool by an original NetBackup backup policy or by Vault's duplication feature will be ejected and vaulted. More than one off-site volume pool can be specified for the Eject step of a Vault profile.

### original backup

A backup image created by a backup job. A single backup image or all backup images created by an Inline Tape Copy (multiple copy) configuration are considered original backups. A backup image created by a duplication job is not an original backup.

### outport

See "media access port."

### partitions

The logical partitions into which a magnetic disk is divided.

### patch

A program that corrects a problem or adds a feature to an existing release of software.

### path length

Number of characters in a pathname.

### pathname

The list of directories in the path to a destination directory or file.

### PC clients

NetBackup clients that have Microsoft Windows, Macintosh, or IBM OS/2 operating systems.

### peername

The name by which a computer identifies itself when establishing connections to other systems.

### policy

Defines the backup characteristics for a group of one or more clients that have similar backup requirements.

### port

A location used for transferring data in or out of a computer.

Also see “media access port.”

### primary copy

The copy of an image that NetBackup uses to satisfy restores. When NetBackup duplicates an image, the original is designated as the primary copy.

### privileges

The tasks or functions that a user, system, or application is authorized to perform.

### profile

A vault profile is a way to save configuration settings. Specific parameters for duplication, catalog backup, eject, and report or any combination of these steps, are configured within a profile.

### progress report

Log where NetBackup records events that occur during user operations.

### proxy restore

A proxy restore allows the user to restore files that he has write access to, on a machine other than his desktop. The files must be in a backup of the machine to which they are being restored.

### QIC

Quarter-inch-cartridge tape.

### queued job

A job that has been added to the list of jobs to be performed.

### raw-partition backup

Bit-by-bit backup of a partition of a disk drive on UNIX. On Windows, this is called a disk-image backup.

### rbak

The program that Apollo clients use to read data from tape during a restore.

### recorded media ID

This is an identifier written as part of the label on a volume and used by Media Manager to ensure that the correct volume is mounted. The recorded media ID should match the external media ID.

### redirected restore (different client)

Restoring files to your client when they were originally backed up from a different client. The administrator using the interface on the master server can direct a restore to any client (this variation is called a server directed restore).

### redirected restore (different target)

On a Novell NetWare server platform running the NetBackup target version of client software, this operation restores files to a different target than the one from which they were backed up.

### redirected restore (different path)

Restores files to a different directory than the one from which they were backed up.

### registry

A Microsoft Windows database that has configuration information about hardware and user accounts.

### remote administration console

A Windows NetBackup client that has the administration interface software installed and can be used to administer NetBackup servers.

### remote media server

A media server that is not the master. Note that only NetBackup DataCenter supports remote media servers. NetBackup BusinesServer supports only a single server, the master.

### residence

In Media Manager, information about the location of each volume is stored in a volume database. This residence entry contains information, such as robot number, robot host, robot type, and media type.

### resource

A Novell NetWare term that refers to a data set on the target. For example, in DOS, resources are drives, directories, and files. Also see “target service.”

### restore

(verb) The act of restoring selected files and directories from a previous backup or archive and returning them to their original directory locations (or to a different directory).

(noun) The process of restoring selected files and directories from a previous backup and returning them to their original directory locations (or to a different directory).

### retention level

An index number that corresponds to a user-defined retention period. There are 10 levels from which to choose (0 though 9) and the retention period associated with each is configurable. Also see “retention period.”

### retention period

The length of time that NetBackup keeps backup and archive images. The retention period is specified on the schedule.

### robotic arm

The component of a robotic library that physically selects the media (tape or optical disk).

### robotic library

Refers to a robot and its accompanying software. A robotic library includes a collection of tapes or optical platters used for data storage and retrieval. For example, a Tape Library DLT (TLD) refers to a robot that has TLD robotic control.

### robotic volume group

A volume group from which media will be ejected and vaulted. When Vault duplicates backups, they are duplicated to media in the robotic volume group.

### root

The highest level directory in a hierarchical directory structure. In MS-DOS, the root directory on a drive is designated by a backslash (for example, the root on drive C is C:\). On UNIX, the root directory is designated by a slash (/).

Also, a UNIX user name having administration capability.

### RS-232

An industry-standard interface for serial communications and sometimes used for communicating with storage peripherals.

### RSM Interface

Application in Windows 2000 used to manage Removable Storage Manager (RSM) devices.

### RSM - Removable Storage Manager

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

Also, a component of the Windows 2000 operating system that manages storage devices.

### RVSN

See “recorded media ID.”

### schedules

Controls when backups can occur in addition to other aspects of the backup, such as: the type of backup (full, incremental) and how long NetBackup retains the image.

### SCSI

Small computer system interface. This is a type of parallel interface that is frequently used for communicating with storage peripherals.

### server-directed restore

Using the user interface on the master server to restore files to any client. Only the administrator can perform this operation.

### server independent restore

Restoring files by using a NetBackup server other than the one that was used to write the backup. This feature is available only with NetBackup DataCenter.

### server list

The list of servers that a NetBackup client or server refers to when establishing or verifying connections to NetBackup servers. On a Windows server and Microsoft Windows clients, you update the list through a dialog box in the interface. On a UNIX server and UNIX and Macintosh clients, the list is in the `bp.conf` file. On NetWare target and OS/2 clients, the list is in the `bp.ini` file.

### service

A program on a Windows server system that runs in the background and performs some task (for example, starting other programs when they are needed). Services are generally referred to as daemons on UNIX systems.

### session

An instance of NetBackup checking its schedules for backups that are due, adding them to its worklist, and attempting to complete all jobs in the worklist. For user backups and archives, a session usually consists of a single backup or archive.

### Session (Vault)

A vault session consists of executing a particular profile or profiles.

### shared drives

See “Shared Storage Option (SSO).”

### Shared Storage Option (SSO)

A separately priced VERITAS software option that allows tape drives (standalone or in a robotic library) to be dynamically shared among multiple NetBackup and Storage Migrator servers.

This option is supported only on NetBackup DataCenter servers.

### SMDR

Storage management data requestor, a Novell NetWare program that provides its services transparently to all SMS modules and lets remote and local modules communicate with one another.

### SMS

Novell NetWare storage management services.

### source volume group

A volume group from which Vault can select backups to duplicate. This parameter is used to restrict the list of backups from all backups that reside on media in any volume group to backups that reside on media in a single volume group. Where a volume group corresponds to a particular robot, the profile will duplicate only backups on media in that robot. The Source Volume Group is normally only specified if you have multiple robots attached to the same server, for example you want to duplicate backups that reside in robot 0 to media that reside in robot 1.

### SSO

See “Shared Storage Option (SSO).”

### stacker

Usually a small robotic library that contains one drive only. See “robotic library.”

### standalone

A qualifier used with drives and media to indicate they are not associated with a robot. For example, a standalone tape drive is one where you must manually find and insert tapes before using them. A standalone volume is one that is located in a standalone drive or is stored outside of a drive and designated as standalone in the volume configuration.

### status code

A numerical code, usually accompanied by a troubleshooting message, that indicates the outcome of an operation.

### storage migrator

Refers to the VERITAS Storage Migrator line of hierarchical storage management products for UNIX and Windows. These products make extra room on a disk by transparently moving data to other storage and then transparently retrieving the data when it is needed by a user or application.

Storage Migrator is available only for NetBackup DataCenter servers.

### storage unit

Refers to a storage device where NetBackup or Storage Migrator stores files. It can be a set of drives in a robot or consist of one or more single tape drives that connect to the same host.

### SUSPENDED media state

If a volume is SUSPENDED, NetBackup can restore from it but cannot use it for backups. NetBackup retains a record of the media ID until the last backup image on the volume expires.

### symbolic link

On a UNIX system, this is a pointer to the name of the file that has the source data.

### TapeAlert

Allows reactive cleaning for most drive types and is a function of the tape drive.

### tape format

The format that an application uses to write data on a tape.

### tape marks

A mark that is recorded between backup images on a tape.

### tape overhead

The space required for data that is not part of the backup images. For example, tape marks and catalogs of what are on the tape are considered overhead.

### tape spanning

Using more than one tape to store a single backup image.

### tar

Tape Archive program that NetBackup uses to extract backup images during a restore.

### target

See “target service.”

### target service

A Novell NetWare service that needs storage management. The SMS views all services (for example, print services, communication services, workstations) as targets.

### Target Service Agent

A Target-service agent is a Novell NetWare agent that prepares the target's data for SMS during a backup and for the target during a restore.

### TLD - Tape Library DLT

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

### TLH - Tape Library Half-inch

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

### TLM - Tape Library Multimedia

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

### TL4 - Tape Library 4MM

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

### TL8 - Tape Library 8MM

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

### timeout period

The period of time that an application has allotted for an event to occur.

### TIR

See “true image restore.”

### tpconfig

A Media Manager administration utility for configuring devices which is started from the command line. On UNIX, it has a character-based menu interface that can be run from terminals that do not have X Windows capabilities. tpconfig also has a command line interface.

### transfer rate

The rate at which computer information is transferred between a source and a destination.

### transport

See “robotic arm.”

### true image restore

Restores the contents of a directory to what it was at the time of any scheduled full or incremental backup. Previously deleted files are ignored.

### TS8 - Tape Stacker 8MM

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

### TSA

See “Target Service Agent.”

### TSD - Tape Stacker DLT

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

### TSH - Tape Stacker Half-inch

A Media Manager designation for a category of robot. For the specific vendor types and models in this category, see the VERITAS support web site.

This robot type is supported only by NetBackup DataCenter servers.

### unassigned media

Media that contain no valid images. A piece of unassigned media has an entry in the volumes database but no entries in the images database. Unassigned Media do not have a “time assigned” in the Media section of the GUI.

### user interface

The program used to perform user backups, archives, and restores.

### user operation

A backup, archive, or restore that is started by a person on a client system.

### Vault

Vault is a separately-priced NetBackup option that provides offsite backup management. Vault automatically duplicates specified backup images, and automates the process of offsite media rotation (a critical component of any backup or disaster recovery strategy). Vault manages offsite storage and retrieval of media for original backups, duplicate backups, and catalog backups. Additionally, NetBackup Vault generates reports to track the location and content of each piece of media.

### vault

In the context of the NetBackup Vault, a vault is logical entity associated with a particular robot that acts as a designated holding place for backups that will eventually be sent to a physical offsite vault. The term ‘vault’ is used to refer both to the process, and to the physical storage location of a set of tapes offsite.

### vault process

Vaulting is the process of choosing backup images to duplicate or eject, optionally duplicating backups, ejecting duplicate or original media, storing it at an offsite location, and later returning expired media to your robot. Vaulting is an integral part of the disaster recovery process.

### verbose flag

Configuration file entry that causes a higher level of detail to be written in the logs.

### verify

An operation that compares the list of files that are actually on a volume with what NetBackup has recorded as being on it. The data that is on the media is not verified.

### vmadm

A Media Manager administrator utility for managing volumes. It runs on UNIX and has a character-based, menu interface that can be run from terminals.

### vm.conf

A Media Manager configuration file with entries that include the servers that can manage local devices and default media ID prefixes for media that do not contain barcodes.

### volume

Media Manager volumes are logical units of data storage or cleaning capability on media that have been assigned media IDs and other attributes, which are recorded in the Media Manager volume database.

### volume configuration

Refers to configuration information that is stored in the Media Manager volume database.

### volume database

An internal database where Media Manager keeps information about volumes. All hosts (where Media Manager is installed) have a volume database. However, the database is empty unless the host is designated as a volume database host.

### volume database host

The host (where Media Manager is installed) that contains information about the volumes that Media Manager uses in a device. Because NetBackup BusinesServer supports only a single server, the volume database host is always on the same server.

### volume group

A set of volumes that are configured within Media Manager to reside at the same physical location (for example, in a specific robot).

### volume pool

A set of volumes that are configured within Media Manager to be used by a single application and are protected from access by other applications and users.

### wakeup interval

The time interval at which NetBackup checks for backups that are due.

### wildcard characters

A character that can be used to represent other characters in searches.

### Microsoft Windows

(noun) Describes a line of operating systems developed by Microsoft, Inc.

For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at `http://www.support.veritas.com`.

### Windows

(adjective) Used to describe a specific product or clarify a term. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI.

### Windows servers

A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and 2000.

### Windows clients

A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE.

### Windows Display Console

A NetBackup-Java interface program that runs on Windows 2000, NT, 98, and 95 computers. Users can start this interface on their local system, connect to a UNIX system that has the NetBackup-Java software installed, and then perform any user operations that their permissions allow.

### WORM media

Write-once, read-many media for optical disks. NetBackup BusinesServer does not support WORM media.

### xbp

The X Windows-based backup, archive, and restore program for users on NetBackup UNIX clients.

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