VERITAS NetBackup™ DataCenter 4.5

Media Manager System Administrator's Guide

for UNIX

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VERITAS

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About this Guide

VERITAS Media Manager is used to configure and manage media, drives, and robots for the VERITAS NetBackup DataCenter and VERITAS Storage Migrator products on a UNIX server. See the NetBackup release notes for information on the supported UNIX server platforms.

This guide describes using the NetBackup Administration Console (Java administrative interface) to manage Media Manager software and its components. See “Introduction to Media Manager” on page 1 for a description of the other Media Manager administrative interfaces that are available.

In this guide, VERITAS NetBackup DataCenter is referred to as *NetBackup* and VERITAS Storage Migrator is referred to as *Storage Migrator*.

Audience

This guide is intended primarily for the system administrator, who most likely will want to read every chapter.

An operator should read the chapter “Monitoring Storage Devices” on page 181. A tape user, who has no responsibility for administration, may have an interest in reading the chapter “Tape I/O Commands” on page 213, which describes the user command interface and possibly the Media Manager overview in the chapter “Introduction to Media Manager” on page 1.

In this manual, various roles are defined as follows:

- A *system administrator* is a person with typical UNIX administrator privileges and responsibilities.
- An *operator* may be any user of the system; by default, root user privileges are required to use the operator interface and, to mount volumes, the operator must have physical access to the area where volumes and drives are located.
- A *user* is anyone with access to the commands of the system; by default, root user privileges are required to use tapes. The number of tape drives available to a user at one time is determined by the system administrator.

This guide assumes you are familiar with the operating system of the platform on which Media Manager is installed and UNIX systems in general.

Organization

This guide contains the following chapters:

- "Introduction to Media Manager" on page 1 provides an overview of Media Manager and the administrative interfaces that are available.
- "Configuring Storage Devices" on page 11 explains how to configure Media Manager software to manage the drives and robots at your site.
- "Managing Media" on page 73 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 125 explains how to configure Media Manager to use and manage the media in robots (using robot inventory).
- "Monitoring Storage Devices" on page 181 discusses operator tasks, such as how to assign a drive to a tape request.
- "Managing Daemons" on page 205 explains how to start and stop the device and media management daemons and how these daemons relate to each other.
- "Tape I/O Commands" on page 213 describes the commands for requesting tape mounts, writing files, and other user-related operations.

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

- "Media Manager Man Pages" on page 219 contains the `man` pages for the commands that relate to device and media management. You can also use the UNIX `man` command to view these commands online.
- "Media Manager Reference Topics" on page 297 provides background information on important Media Manager features and concepts.
- "Using tpconfig" on page 349 explains how to use the `tpconfig` utility for configuring robots and devices. `tpconfig` is a character-based menu utility.
- "Using vmadm" on page 361 explains how to use `vmadm` to define and administer media in the volume database. `vmadm` is a character-based menu utility.
- "Robot Drive and Slot Layouts" on page 427 contains diagrams showing the slot layout and drive locations in many of the robots supported by Media Manager.
- "Automated Cartridge System (ACS)" on page 475 explains how Media Manager works with StorageTek (STK) Automated Cartridge System robots.

- "IBM Automated Tape Library (ATL)" on page 497 explains how Media Manager works with the IBM Automated Tape Library to control Tape Library Half-inch (TLH) robots, including the IBM 3494 library.
- "ADIC Distributed AML Server (DAS)" on page 511 explains how Media Manager works with the ADIC Distributed AML Server to control Tape Library Multimedia (TLM) robots, including the Grau AML Library.
- "Fujitsu Library Management Facility (LMF)" on page 523 explains how Media Manager works with robots under control of the Fujitsu Library Management Facility.

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 UNIX*

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

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

  Explains how to configure and manage NetBackup DataCenter on a UNIX system.

- *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 Media Manager Device Configuration Guide for UNIX*

  Explains how to add device drivers and perform other system level configuration for storage devices that are supported by NetBackup DataCenter and NetBackup BusinesServer Media Manager on UNIX hosts.

- *NetBackup for NDMP System Administrator's Guide*

  Explains how to install, configure, and use NetBackup for NDMP to control backups on an NDMP host.

- *NetBackup for EMC Fastrax System Administrator's Guide for Solaris*

  Explains how to install, configure, and use NetBackup for EMC Fastrax. This product allows backup and restore of EMC Symmetrix client data using an EMC Fastrax system functioning as a third-party copy device.

- *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 the NetBackup Shared Storage Option (SSO) 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 UNIX*

  Provides troubleshooting information for UNIX-based NetBackup DataCenter and BusinesServer products, including Media Manager.

- *VERITAS Storage Migrator Release Notes for UNIX*

  Provides information, such as, the platforms and operating systems that are supported and operating notes that may not be in the Storage Migrator manuals.

- *VERITAS Storage Migrator System Administrator's Guide for UNIX*

  Explains how to configure and manage Storage Migrator on a UNIX server.

- *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.

If your configuration includes Windows servers, you may also need the following manuals:

- *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 Troubleshooting Guide for Windows*

  Provides troubleshooting information for Windows-based NetBackup DataCenter and BusinesServer products, including Media Manager.

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. 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. 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. 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. 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 is used by NetBackup and Storage Migrator to provide media and device management capabilities for tape and optical disk drives. These capabilities include the following:

- Media and device management interfaces that allow configuration of storage devices.
- Device monitor interfaces that display the current status of all defined tape devices and pending requests for volumes, allowing the operator to assign tapes or optical disks to the appropriate drives and respond to problems.
- Automatic scanning of devices for loaded media with automatic volume recognition of recorded volume labels.

Note Automatic volume recognition is the only aspect of ANSI labeled tapes that Media Manager supports. Once a tape is assigned to a request, all volumes are treated as unlabeled, and the user or application is responsible for reading or writing labels if applicable.

- Support of numerous robotic tape library and optical disk library devices that can automatically retrieve, mount, assign, unmount, and store removable volumes.
- A volume database containing location and other information about volumes that can be used to identify and retrieve volumes in the robotic devices.
- Allow any user to request and unmount a specific volume. See "Allowing Nonroot Users to Administer NetBackup" in the UNIX NetBackup system administrator's guide.
- Ability to obtain a media inventory of a robotic device and update the associated volume database to provide efficient media tracking.
- The capacity to record media statistics. For example, the first and last time the volume was mounted, the date it was created, an expiration date, and the number of times the volume was mounted.
- Grouping volumes into volume pools for convenience and protection.
- Capability to perform automated drive cleaning, based on the TapeAlert feature or a frequency-based cleaning schedule.

- Capability to automatically share tape drives across multiple hosts that have physical access to shared drives through appropriate hardware. This capability requires the installation of the Shared Storage Option (SSO).

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

Caution Note: If you want to use devices with some other application and these devices are currently being controlled by Media Manger, you must do one of the following to avoid potential loss of data:

A. Use the Media Manager commands, `tpreq` to mount a drive and `tpunmount` to unmount the drive. These commands will safely get control of the device when Media Manager is finished with the device.

B. Down the drive, if the drive is in the Media Manager up state.

Administrator and User Interfaces

Note As of release 4.5, NetBackup does not include or support the `xvmadm` and `xdevadm` Motif interfaces. Attempting to configure NetBackup by using copies of these Motif interfaces from an earlier NetBackup release will corrupt your NetBackup configuration.

The following table shows the Media Manager administrative interface choices that are available. The terminology, general concepts, and results in the databases are the same, regardless of which interface you use.

Media Manager Administrative Interfaces

	Java GUI	Menus		CLI	Wizards
Task	**jnbSA**	**tpconfig**	**vmadm**		
Configure Devices	X	X		X	X
Configure Media	X		X	X	X
Manage Devices	X			X	

See the following sections for more information on these administrative interfaces:

- “Java Administrative GUI” on page 3.

- "Menu-Based Administrative Interfaces" on page 5.
- "Command Line Administrative Interfaces (CLI)" on page 5.
- "The Device Configuration Wizard" on page 6.
- "The Volume Configuration Wizard" on page 6.

Note For ease of use, the wizards are recommended for device and media configuration.

Java Administrative GUI

The NetBackup Administration Console allows you to configure and manage media and devices from one main interface. This interface is supported on certain UNIX platforms.

See the NetBackup release notes for information on platform support, and configuring and using the NetBackup Administration Console on UNIX and the UNIX NetBackup system administrator's guide for an overview of the interface.

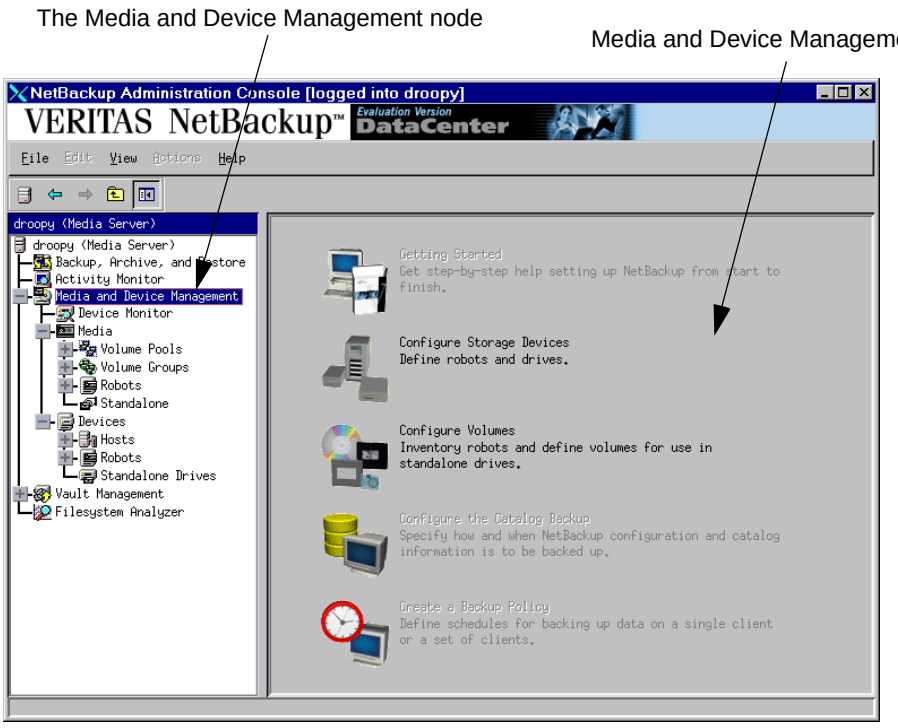
Starting the Administration Interface

To start the NetBackup Administration Console (the Java administrative interface) enter the following:

```
/usr/openv/netbackup/bin/jnbSA
```

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).



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

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

- 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.

Note See the NetBackup system administrator's guide for UNIX servers for details on the other NetBackup administration utilities and menu commands available.

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.

Menu-Based Administrative Interfaces

Media Manager has the following utilities that you can use from terminals that do not support Java capabilities. These utilities have character-based interfaces that let you choose operations from menus and prompt you for necessary information.

`tpconfig`

Used for device configuration. See "Using tpconfig" on page 349 for more information.

`vmadm`

Used for media configuration. See "Using vmadm" on page 361 for more information.

Command Line Administrative Interfaces (CLI)

Media Manager has the following commands that you can use from terminals that do not support Java capabilities:

`vmoprcmd`

Used for device management and to perform operator functions on drives.

Users and administrators that are not using NetBackup or Storage Migrator can use the following commands to request Media Manager to mount and unmount specific volumes. "Tape I/O Commands" on page 213 explains these commands.

`tpreq`

Used to request and mount volumes.

`tpunmount`

Used to unmount volumes.

For more information about these and other commands, see "Media Manager Man Pages" on page 219.

The Device Configuration Wizard

You can use the Device Configuration wizard to configure robots, non-shared drives, and shared drives (drives in an SSO configuration).

This wizard is available from the right pane of the NetBackup Administration Console (click **Configure Storage Devices**).

The Volume Configuration Wizard

You can use the Volume Configuration wizard to configure media (volumes). This wizard is available from the right pane of the NetBackup Administration Console (click **Configure Volumes**).

This wizard configures volumes for all supported standalone drives and robotic libraries.

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 UNIX servers.

1. Physically attach the storage devices to the Media Manager server and perform any configuration steps specified by the device or operating system vendor. Also, see the NetBackup Media Manager device configuration guide.

2. Create the system device files for the drives and robotic control.

   This is usually done during installation. Device files are created automatically on some UNIX servers. Explicit configuration of device files is required on some UNIX servers to make full use of NetBackup features. See the NetBackup Media Manager device configuration guide for information.

3. Use the Device Configuration Wizard to configure your robots, drives, and shared drives (SSO). For more information, see "Using the Device Configuration Wizard to Configure Devices" on page 29.

   To configure unsupported devices, you must use the menus of the **Devices** node. See "Configuring Storage Devices" on page 11.

4. Use the Volume Configuration Wizard to add the media that you will be using in your 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 73 and "Managing Media in Robots" on page 125 for advanced robot inventory options.

Using Media Manager - Overview

When configuration is complete, you enable device management by starting the Media Manager device daemon (`ltid`). This starts the following daemons:

- Media Manager device daemon (`ltid`). This daemon allows Media Manager to mount volumes on the tape or optical storage devices in response to user requests.
- Media Manager volume daemon (`vmd`). This daemon allows Media Manager to track the location of on-line and off-line volumes and remotely manage devices.
- Automatic volume recognition daemon (`avrd`). If a tape or optical volume is labeled and mounted in a drive, `avrd` automatically reads the label. If the label matches information contained in a pending request, Media Manager assigns the drive to that request.
- Robotic daemons. If you defined any robots, `ltid` starts the corresponding robotic daemons.

Once these daemons are started, applications and users can request volumes.

Requesting Volumes

NetBackup and Storage Migrator requests specify the volume's media ID and device density. A request must have a file name to use as a link to the device that is assigned and the external media ID should correspond to the Media Manager media ID. When Media Manager receives a request for a volume, it searches its volume database(s) for the media ID.

If the volume is in a robot, the volume database information includes the specific robot that has the volume and the location of the volume within the robot (if applicable). Media Manager then issues a mount command to the robotic daemon controlling the robot and the volume is mounted. Control is returned to NetBackup or Storage Migrator and the media read or write operation proceeds.

Note For standalone drives, NetBackup attempts to use the media in the drive, if the media meets the selection criteria in the request. For more information, see the standalone drive extensions in the UNIX NetBackup system administrator's guides.

Checking Barcodes

Media Manager checks barcodes to ensure that the robot loads the correct tape, in the event that the volume database is incorrect. If the barcode on the tape does not match the barcode in the mount request, Media Manager logs an error and stops the operation. In the case of a backup or restore, NetBackup also logs an error.

If a requested volume is not in a robot, a pending request message appears 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.

If the volume is labeled (tape or optical platter), `avrd` reads the label and the drive is assigned to the request. If the volume is unlabeled, the operator manually assigns the drive to the request.

Volume Pools

Media Manager also uses a concept called volume pools. A volume pool is a set of media that can be used only by the users that you designate when you configure the pool. You specify volume pools and assign media to them when you configure Media Manager. The Media Manager device daemon validates access to volume pools.

Whenever a new volume is required for a robotic or standalone drive, Media Manager allocates it from the volume pool requested by the application. If there are no volumes available in the requested volume pool and a scratch pool has been configured, Media Manager allocates a volume from the scratch pool.

A pool named NetBackup is created by default and, unless you specify otherwise in the policy 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.

See "Volume Pools and Volume Groups" on page 319 for more information.

Security Issues

See “vmd Security” on page 329 for important information about security.

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.

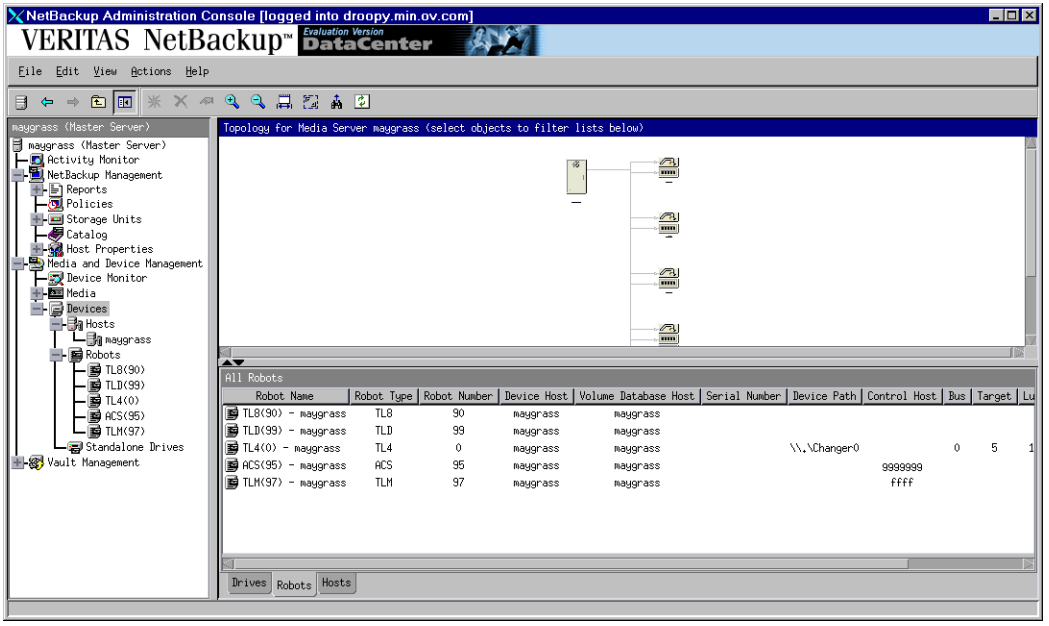
- Starting Device Management
- Using the Device Management Window
- Performing Initial Device Configuration
- Making Device Configuration Changes
- Administering Devices on Other Device Hosts
- Managing the Global Device Database Host
- Using the Device Configuration Wizard to Configure Devices
- Managing Partially-Configured Devices
- Adding Robots
- Adding Shared Drives
- Adding Drives
- Managing Robots and Drives
- 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
- Shortcut Menus and Commands
- 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. **New Window from Here** - Starts another instance of the NetBackup Administration Console node that was active. **Adjust Application Timezone** - Displays a dialog that allows you to manage the timezone. NetBackup Console can execute in a different timezone than the timezone of the server on which it was initiated. See the NetBackup System Administrator's guide for UNIX for more information. **Close Window** - Closes the current window. **Exit** - Closes all open windows.
Edit	**New** - Displays a dialog box to add an item of the type that is currently selected. **Change** - Displays a dialog box for changing the configuration of the selected items. **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 23.

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 28. **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 29). **Drive Cleaning** - Displays a dialog box with choices for performing drive cleaning functions. **Stop/Restart Media Manager Device Daemon** - Controls the Media Manager device daemon. **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. **License Keys** - Provides information about your active and registered license keys. **About NetBackup Administration Console** - Displays program information, version number, and copyright 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**.

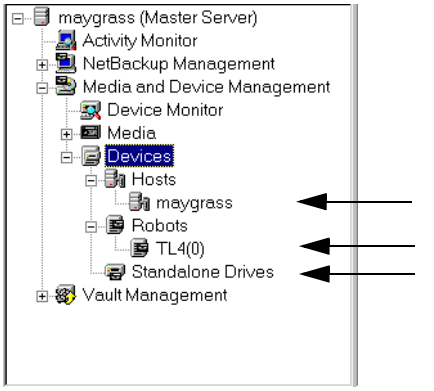
2. Click **View** > **Show ToolBar**.

Also see “Customizing the Window” on page 23.

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.

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.

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. If the drive is configured as a shared drive (SSO), the icon for the drive appears as a shared item. 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. If the drive is partially configured, PCD is shown. See "Managing Partially-Configured Devices" on page 31 for details.
Robot Type	Specifies the type of robot that contains this drive. For example, TL4. NONE in this column means that the drive is a standalone drive. If the robot is partially configured, PCR is shown. See "Managing Partially-Configured Devices" on page 31 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.
Vendor Drive Name	For TLH robots, this column contains the DAS drive name. For TLH robots, this contains the IBM device name. 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. This column is not applicable for NetBackup BusinesServer.
LSM	Contains the ACS Library Storage Module that has this drive. This column is not applicable for NetBackup BusinesServer.
Panel	Contains the ACS robot panel where this drive is located. This column is not applicable for NetBackup BusinesServer.

Drives List (continued)

Column	Description
Drive	Contains the physical number of the drive (in ACS library software terms). 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. 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).
Cleaning Frequency	Contains the cleaning frequency for the drive, in hours.
Volume Header	This column applies only to optical disk drives on certain UNIX hosts and specifies the volume header device path for the drive. 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.

Drives List (continued)

Column	Description
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). If the robot is partially configured, PCR is shown. For example, PCR(3). See “Managing Partially-Configured Devices” on page 31 for details. 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 297 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.

Robots List (continued)

Column	Description
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 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.

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.

Hosts List (continued)

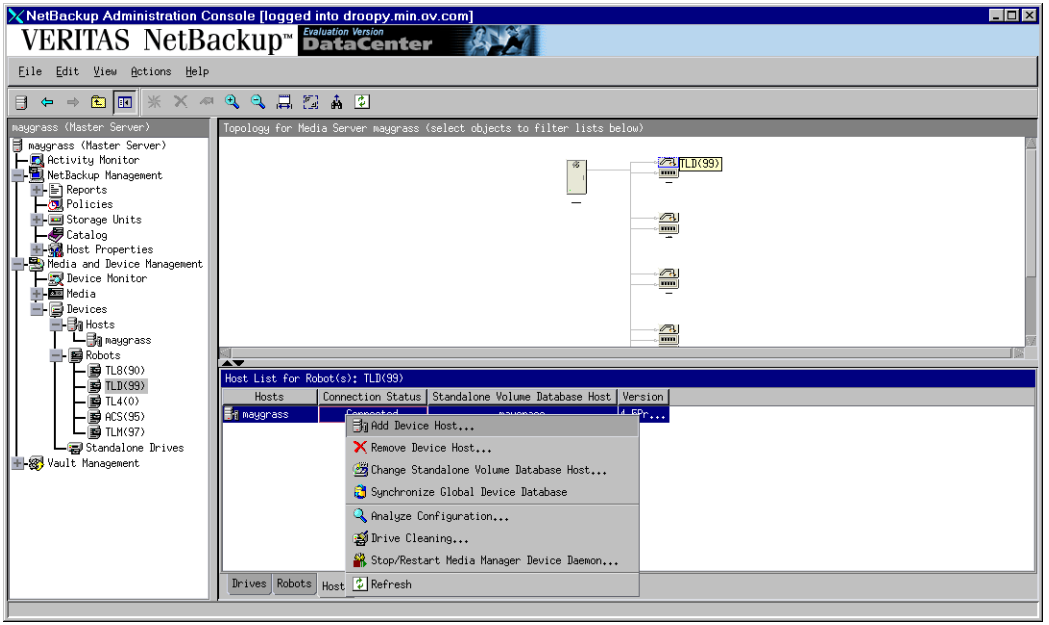
Column	Description
Version	Contains the NetBackup software version.

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



Customizing the Window

Changing the View of the Topology Pane

You can manage the view of the robot diagrams by right-clicking in the topology pane and selecting **Expand All Robots** or **Collapse All Robots**.

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

1. Physically attach the storage devices to the device host and perform any configuration steps specified by the device or operating system vendor.

   Explicit configuration of device files is required on some UNIX servers to make full use of NetBackup features. See the appropriate chapter of the NetBackup Media Manager device configuration guide for your UNIX platform.

2. Create any required system device files for the drives and robotic control. This is usually done during installation. Device files are created automatically on some UNIX platforms.

   See the appropriate chapter of the NetBackup Media Manager device configuration guide for your UNIX platform.

3. Add the storage devices to the Media Manager configuration. If this is the first time you have configured devices:

a. See "Making Device Configuration Changes" on page 24.

If you are adding the device to a remote host, also see "Administering Devices on Other Device Hosts" on page 25.

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

- "Using the Device Configuration Wizard to Configure Devices" on page 29.
- "Adding Robots" on page 32.
- "Adding Shared Drives" on page 41.
- "Adding Drives" on page 41.

Making Device Configuration Changes

The following procedure explains how to make device configuration changes:

1. Make your device configuration changes.

If you use the Device Configuration wizard, the following step is done by the wizard.

2. Stop and restart the Media Manager device daemon (`ltid`) using **Actions** > **Stop/Restart Media Manager Device Daemon**.

Stopping and restarting `ltid` also stops and restarts the robot daemons.

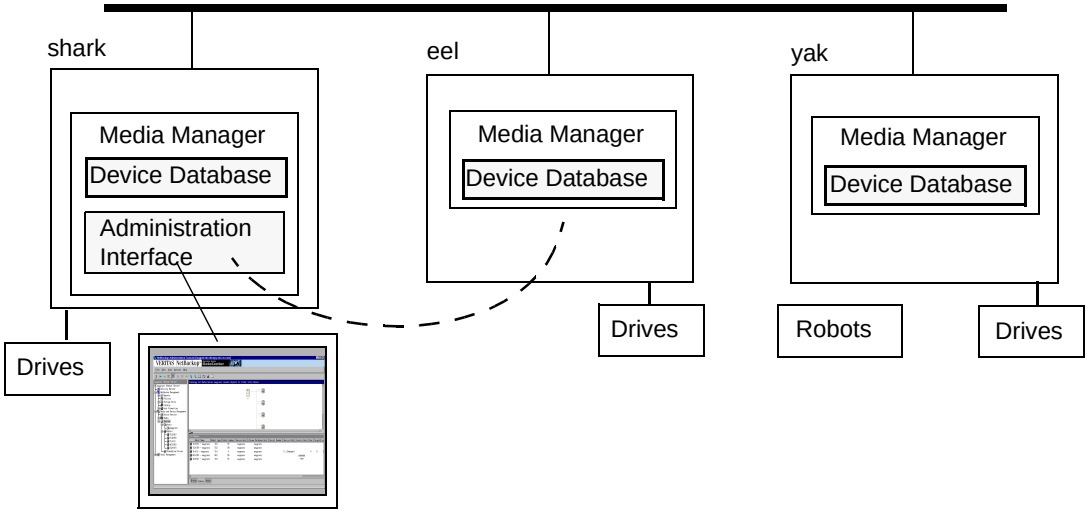
In the dialog box, the **arrow** in the Device Host box allows you to select a device host. This dialog also shows the current status of this host.

Select a host and **Stop/Restart**, and **OK** when ready.

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.

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.



Remote Administration of Other UNIX Hosts

The name of the UNIX host that you specify in the Login box, when starting the NetBackup Administration Console, must be in the NetBackup `bp.conf` file on the remote UNIX host where you want to monitor devices.

Remote Administration Example

For example, you could start the administration interface from the NetBackup UNIX host (named bear) and specify the UNIX host (named shark) in the Login box.

In this example, you

- Started the interface from the host named bear.
- Are managing NetBackup, through Java application server software running on the host named shark.
- Want to manage devices on a third host, named tiger.

The `bp.conf` file on host tiger must include the name of the server that you logged into (shark), not the host where you first started the administration interface (bear).

If you cannot connect to host tiger, add host shark to the bp.conf file on host tiger.

Adding SERVER Entries in the bp.conf File

1. Add a SERVER = *host* entry below any existing server entries in the /usr/openv/netbackup/bp.conf file.

2. Stop and restart the NetBackup database manager (bpdbm) and NetBackup request daemon (bprd).

See the NetBackup system administrator's guide for UNIX for more information.

Also, the Media Manager volume daemon must be running on host tiger or Media Manager will not be able to update its configuration. This daemon is normally started when you start the Media Manager device daemon.

If you suspect that the volume daemon is not running, you should start vmd using /usr/openv/volmgr/vmd.

If you are unable to access the devices, you may need to add a SERVER entry to the vm.conf file on tiger. See "Media Manager Security" on page 26.

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 Media Manager volume daemon. 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 329 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 29 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 28 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, LMF, or TLM robots and drives.
- Robots and drives for use with NetBackup for NDMP.

To configure these devices, see "Adding Robots" on page 32 and "Adding Drives" on page 41.

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 41.

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 31 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 17 and “Using the Robots Tab” on page 20.

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 31).

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 29 for wizard restrictions and more information.

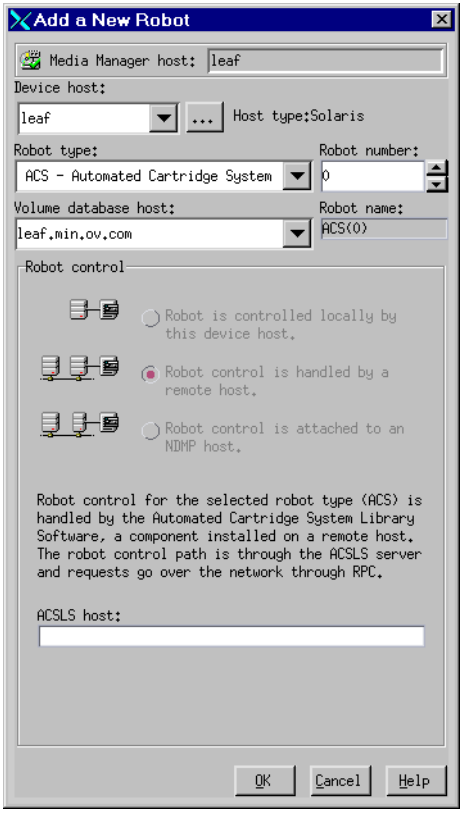
When adding a robotic library and drives, the best method is to add the robotic library first, as explained in this procedure and then add the drives (see "Adding Drives" on page 41).

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 33.

5. Click **OK**.

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 RSM appendix of the NetBackup Media Manager system administrator's guide for Windows.

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 60.

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 60, 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 73.

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.

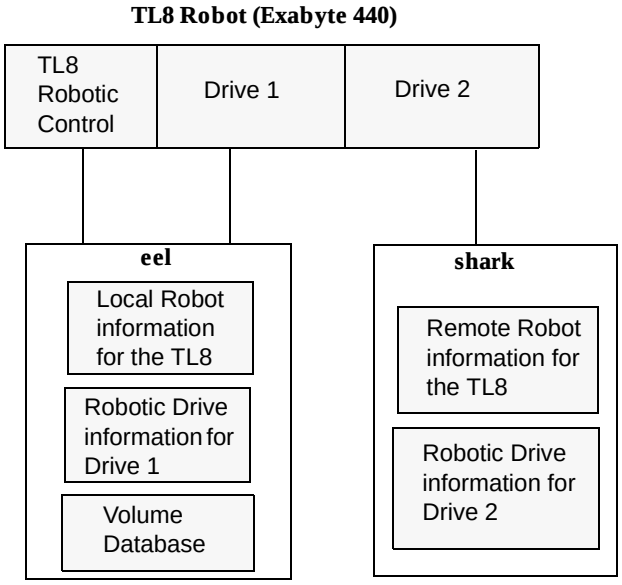
Robot Control Configuration Overview

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 TS8, TSD, TSH	UNIX	Local	Robotic device file
TL4, TL8, TLD 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 UNIX AIX UNIX Solaris UNIX HP/UX	NDMP	NDMP host name 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 **...** to 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 entered in the Robotic device file box.

2. If the browse operation fails to find and display all of the attached robots, click **More** to enter the path of the device file. Your entry will be entered in the Robotic device 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 RSM appendix in the NetBackup Media Manager system administrator's guide for Windows.

1. Click **...** to browse and then select a device from the list that appears in the Devices 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

2. If the browse operation fails to find and display all of the attached robots, click **More** to display a dialog box that allows you to specify the Port, Bus, Target, and LUN numbers, or the device name. Your entry will be set in the Robot device box.

   If the browse operation fails, a dialog box appears allowing you to enter the Port, Bus, Target, and LUN numbers, or the device name. Your entry will be set in the Robot device box.

Note You can find Port, Bus, Target, and LUN numbers in the appropriate Windows applet.

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 where the IBM ATL is controlled from a non-AIX UNIX host, specify the library name that is configured in the `/etc/ibmatl.conf` file on the UNIX host.

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 TLH and LMF robots, see the appendixes “IBM Automated Tape Library (ATL)” on page 497 and “Fujitsu Library Management Facility (LMF)” on page 523.

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 37, you would specify eel as the Robot Control Host when adding a robot to host shark.

For more information on TLH and LMF robots, see the appendixes, “IBM Automated Tape Library (ATL)” on page 497 and “Fujitsu Library Management Facility (LMF)” on page 523.

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 511.

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)
- 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 475.

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 **...** to enter a robot device file 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 29 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 29 for wizard restrictions and more information.

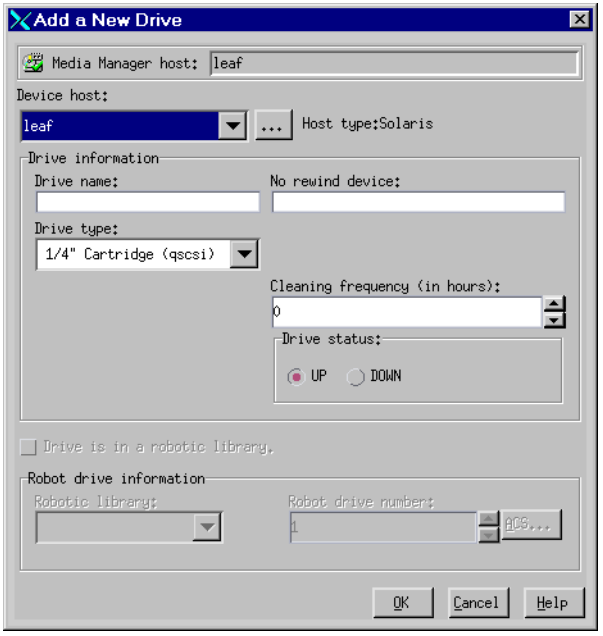
The following procedure explains how to add drives using device management menus:

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 43.

5. Click **OK**.

   The display now shows the new drive information.

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 49.

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 299 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.

The host type is displayed to the right of the Device Host box.

Enter the name of the drive as it is recognized by the Windows server. Enter the name in the box. You can find the name in the registry.

For example, if the registry shows the following display, the device name for the tape is Tape1:

```
Logical Unit Id 1- TapePeripheral (Tape1)
```


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.

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.

Cleaning Frequency

If you want to setup a frequency-based cleaning schedule for the drive you are adding, set the desired number of hours between drive cleanings. When you add a drive, Media Manager starts recording the amount of time that volumes have been mounted in that drive.

If you do not specify a cleaning frequency, you can still utilize automated drive cleaning with the TapeAlert feature, provided the following conditions have been met:

- A cleaning volume has been defined in Media Manager.
- The host platform, robot type, and drive support drive cleaning.

If the drive is in a robotic library that supports drive cleaning and a cleaning cartridge is defined in that robotic library, cleaning occurs when the accumulated mount time exceeds the time you specify for cleaning frequency. The mount time is reset when the drive is cleaned.

See “Drive Cleaning” on page 316 for information on manual cleaning and cleaning tapes.

Drive Status

The default drive status is Up, meaning the drive is available. You can change the drive status using commands found on the **Actions** menu in **Device Monitor**.

When the drive status is up, the default mode is AVR (Automatic Volume Recognition) for all drives except optical drives on an HP9000-800, which are normally in OPR mode.

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 46.
TLH (Tape Library Half-inch). See "TLH" on page 47.
TLM (Tape Library Multimedia). See "TLM" on page 47.

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 313 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 475, 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 497, 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 511, 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
- Cleaning Tape 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 29.

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 33).
6. Click **OK**.

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 43).

   c. Click **OK**.

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.

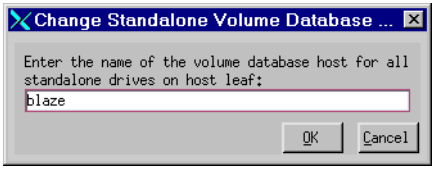
   Follow the wizard prompts.

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.

   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**.

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.

Cleaning Tape Drives

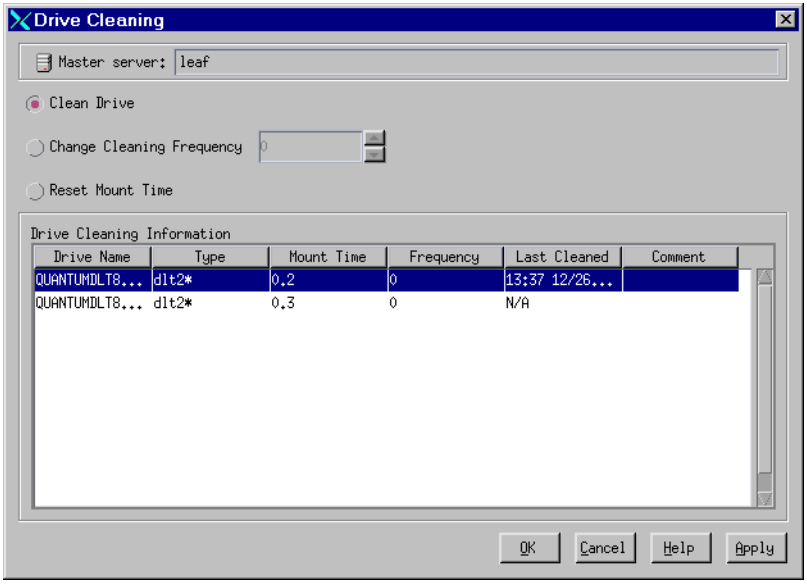
For drives in libraries that are under ACS, LMF, RSM, or TLH robotic control, the library software controls drive cleaning. To manage drive cleaning, use the robot vendor or operating system administrative interfaces for these robots.

See “Drive Cleaning” on page 316 for background information.

To add a cleaning tape, perform “Adding New Volumes” on page 95 and specify a cleaning tape as the media type.

To perform a drive cleaning 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 clean.
4. Select **Actions** > **Drive Cleaning**.



The dialog allows you to perform the following functions:

Select	To
Clean Drive	Start cleaning the selected drive, regardless of the cleaning frequency or accumulated mount time. The drive must contain a cleaning tape.
Change Cleaning Frequency	Change the frequency at which the selected drive will be cleaned. Select the number of hours for the new cleaning frequency.
Reset Mount Time	Reset the mount time for the selected drive to zero. Use this option to reset the time after manually cleaning a drive.

Note Frequency-based cleaning is not supported for shared drives, since there is no single device path where tape mounts can be accurately counted.

5. If you click **Apply,** the selected action is done and the dialog remains open.

   Updated Drive Cleaning Information is then presented.

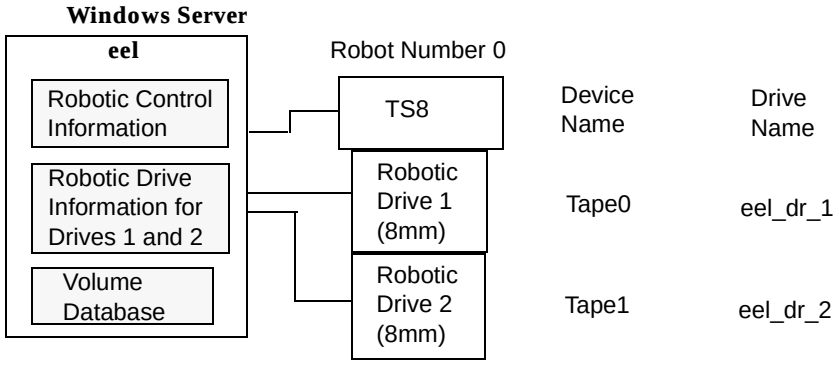
Note The clean drive command is queued internally and may take several minutes to complete, so the Last Cleaned column may not be updated immediately with the current time.

6. If you click **OK,** the selected action is done and the dialog is closed.

   To view the updated Drive Cleaning Information, you must reopen the dialog.

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. 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

If eel was a UNIX host, you would complete the following dialog box entries. Your actual entries needed may vary from these examples.

(UNIX): 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)
Robotic Device File	/dev/sg/c0t4l0

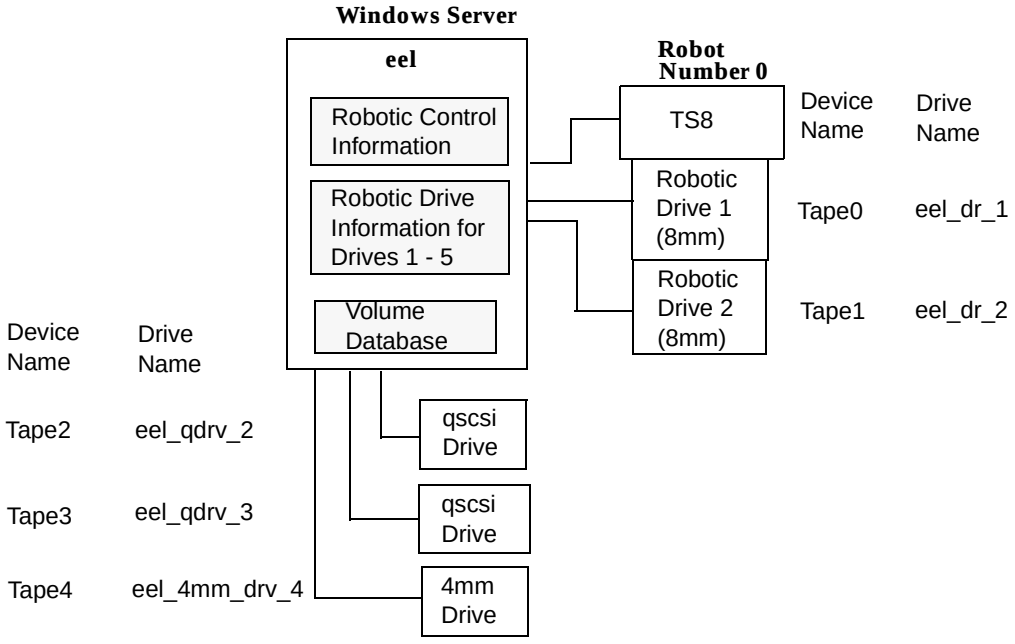
(UNIX): Add Drive Dialog Entries (Tape0)

Device Host	eel
Drive Name	eel_dr_1
Drive Type	8mm Cartridge (8mm)
No Rewind Device	/dev/rmt/5cbn
Cleaning Frequency	25
Drive Status	UP
Drive is in a Robotic Library	Yes
Robotic Library	TS8(0) - eel
Robot Drive Number	1

(UNIX): Add Drive Dialog Entries (Tape1)

Device Host	eel
Drive Name	eel_dr_2
Drive Type	8mm Cartridge (8mm)
No Rewind Device	/dev/rmt/6cbn
Cleaning Frequency	25
Drive Status	UP
Drive is in a Robotic Library	Yes
Robotic Library	TS8(0) - eel
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

If eel was a UNIX host, you would complete the following dialog box entries. Your actual entries may vary from these examples.

(UNIX): Add Drive Dialog Entries (Tape2)

Device Host	eel
Drive Name	eel_qdrv_2
Drive Type	1/4” Cartridge (qscsi)
No Rewind Device	/dev/rmt/2cbn
Drive Status	UP

(UNIX): Add Drive Dialog Entries (Tape2) (continued)

Drive is in a Robotic Library	No

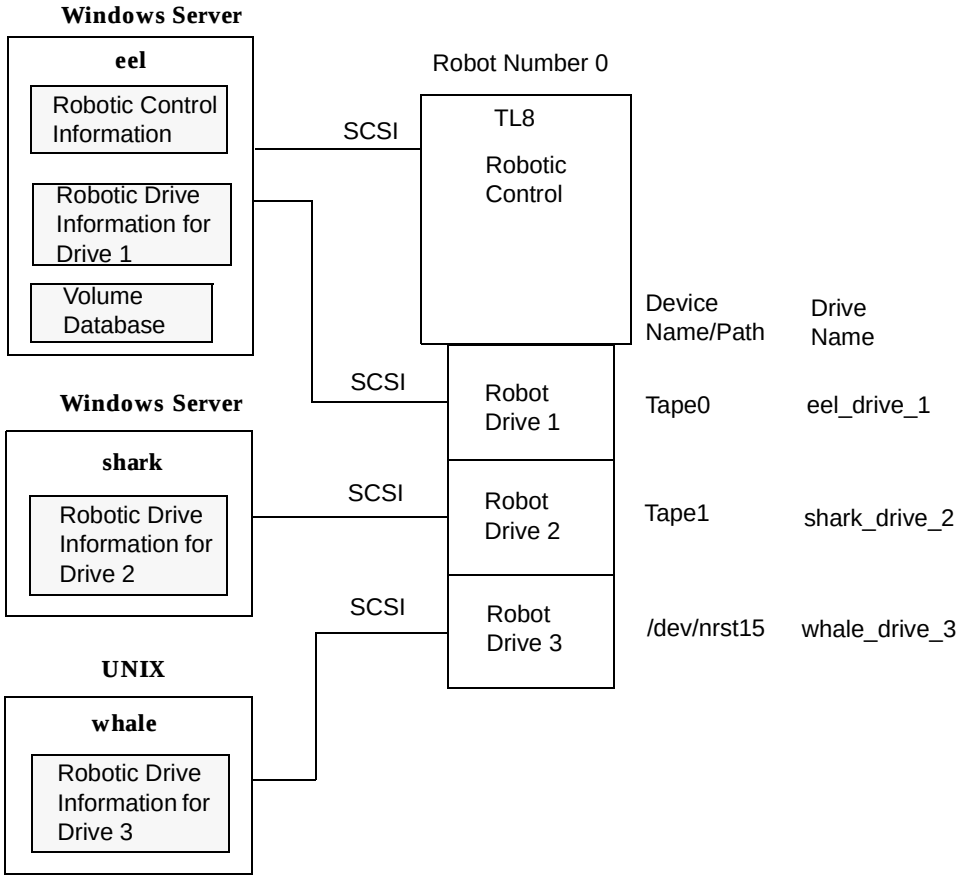
(UNIX): Add Drive Dialog Entries (Tape3)

Device Host	eel
Drive Name	eel_qdrv_3
Drive Type	1/4” Cartridge (qscsi)
No Rewind Device	/dev/rmt/3cbn
Drive Status	UP
Drive is in a Robotic Library	No

(UNIX): Add Drive Dialog Entries (Tape4)

Device Host	eel
Drive Name	eel_4mm_drv_4
Drive Type	4mm Cartridge (4mm)
No Rewind Device	/dev/rmt/4cbn
Cleaning Frequency	25
Drive Status	UP
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. 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:

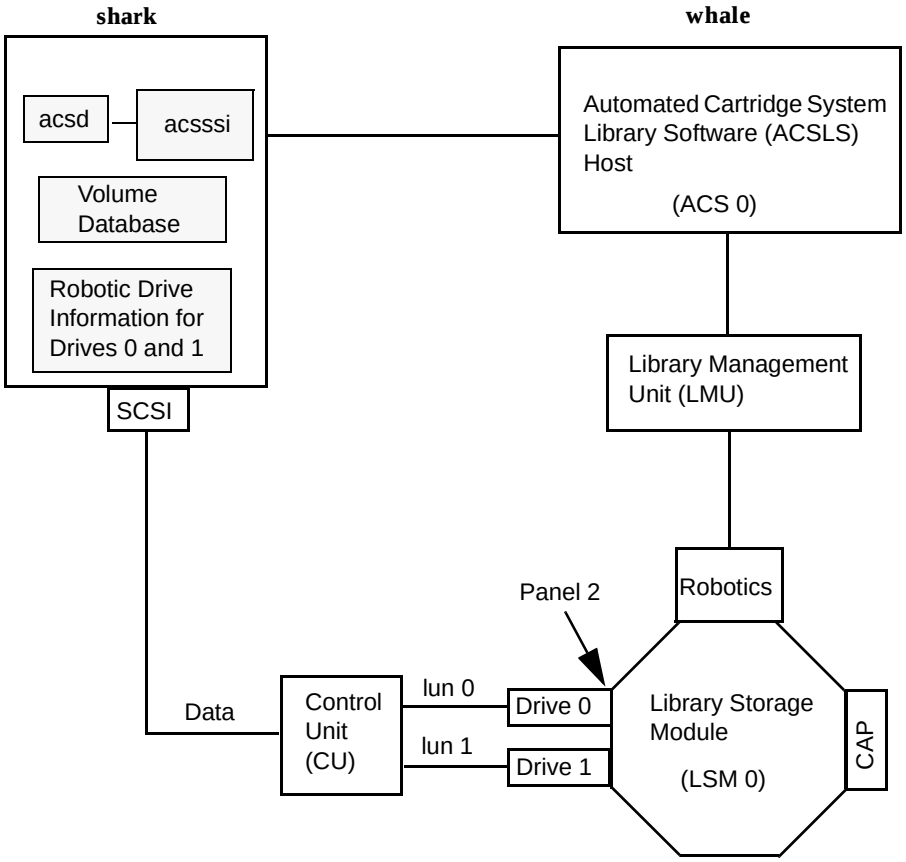
Add Robot Dialog Entries

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: UNIX Host With An ACS Robot



This configuration uses an Automated Cartridge System (ACS) robot for storage. Host shark can be a UNIX 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, PANEL, LSM, and DRIVE numbers are part of the ACS library software configuration and must be obtained from the administrator of that system.

- 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 ACS Server System Interface (`acsssi`).

See the appendix, “Automated Cartridge System (ACS)” on page 475 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
Drive is in a Robotic Library	Yes
Robotic Library	ACS(0) - whale

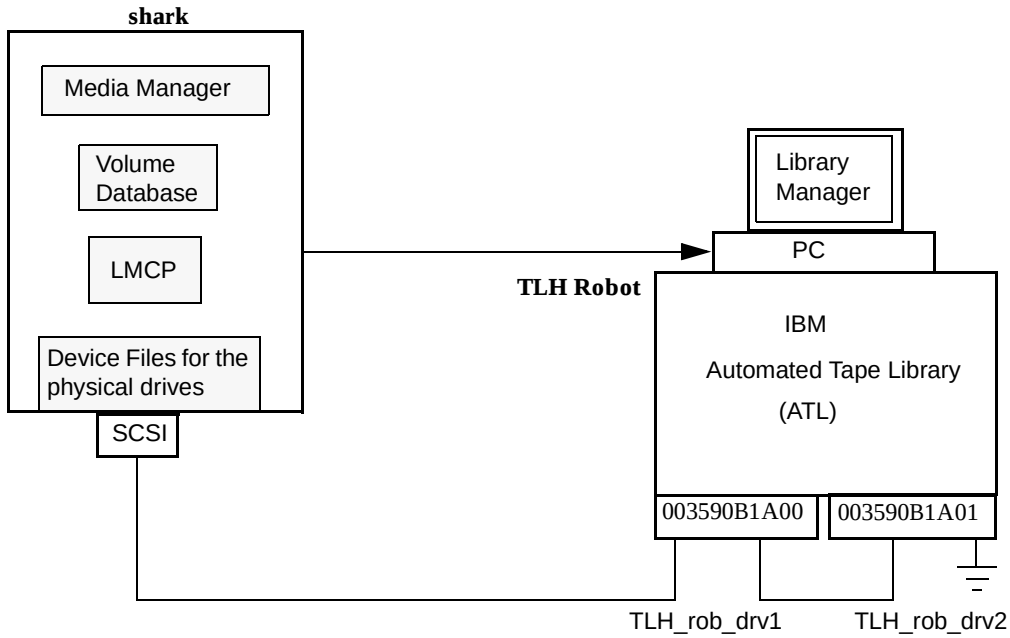
Add Drive Dialog Entries (Drive 0) (continued)

ACS	ACS Number: 0 LSM Number: 2 PANEL Number: 0 DRIVE Number: 0

Add Drive Dialog Entries (Drive 1)

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

Example 5: UNIX Host With A TLH Robot



This configuration uses a TLH robot for storage. Device host shark can be a UNIX AIX, Solaris, HP-UX, IRIX, or Windows server, and can be a NetBackup master server or media server.

The following tables show the Add Drive and Add Robot dialog box entries. Some things to note when examining these tables follow:

- The robot control host is the host, shark. Note that it is also possible to have the robotic control (`tlhcd`) on a different host.
- The main difference between configuring a TLH robot and other robot types is the robotic device file. The robotic device file is the Library Manager Control Point (LMCP) file on AIX systems and is the library name on non-AIX systems.

  In this example, shark is a UNIX AIX host, so the LMCP file is specified for the robotic device file.

  If shark was a UNIX non-AIX or a Windows host, you would specify the library name (for example 3494AH).

  See the appendix, “IBM Automated Tape Library (ATL)” on page 497 for more information.

- The drive configuration uses the IBM device name. A cleaning frequency cannot be assigned using Media Manager.

Add Robot Dialog Entries

Device Host	shark
Robot Type	TLH - Tape Library Half-inch
Volume Database Host	shark
Robot Number	0
Robot is controlled locally by this device host	Set
LMCP Device File	/dev/lmcp0

Add Drive Dialog Entries (Drive 1)

Device Host	shark
Drive Name	TLH_rob_drv1
Drive Type	1/2” Cartridge (hcart)
Drive is in a Robotic Library	Yes
Robotic Library	TLH(0) - shark
Vendor Drive Name	003590B1A00
No Rewind Device	/dev/rmt4.1
Drive Status	Up

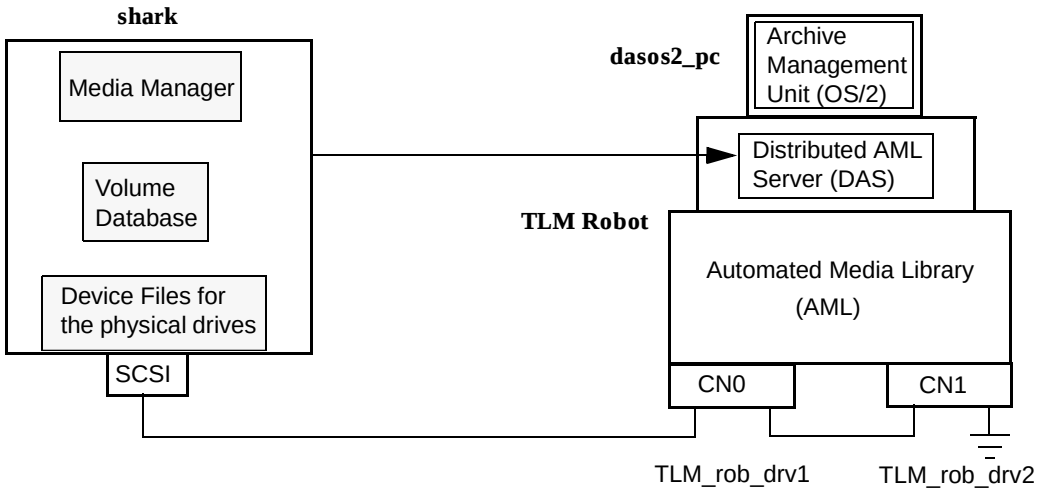
Add Drive Dialog Entries (Drive 2)

Device Host	shark

Add Drive Dialog Entries (Drive 2) (continued)

Drive Name	TLH_rob_drv2
Drive Type	1/2” Cartridge (hcart)
Drive is in a Robotic Library	Yes
Robotic Library	TLH(0) - shark
Vendor Drive Name	003590B1A01
No Rewind Device	/dev/rmt1.1
Drive Status	Up

Example 6: UNIX Host With A TLM Robot



This configuration uses a TLM robot for storage. In Media Manager, the device configuration for this robot is similar to the TS8 explained in “Example 1: Host With One Robot” on page 53.

However, with a TLM robot, you specify the DAS server instead of a robot control host. The DAS server may reside on an IBM OS/2 system, usually in or near the Grau cabinet, or on a Windows server (ADIC SDLC).

In this example, the DAS Server entry is dasos2_pc. It is also necessary to verify that the Distributed AML Server is configured to recognize host shark as a client and that the AML drives are allocated to shark.

See the appendix, “ADIC Distributed AML Server (DAS)” on page 511 for further information.

Add Robot Dialog Entries

Device Host	shark
Robot Type	TLM - Tape Library Multimedia
Volume Database Host	shark
Robot Number	0

Add Robot Dialog Entries

Robot control is handled by a remote host	Set (cannot be changed for this robot type)
DAS Server	dasos2_pc

Add Drive Dialog Entries (Drive 1)

Device Host	shark
Drive Name	TLM_rob_drv1
Drive Type	1/2” Cartridge (hcart)
Drive is in a Robotic Library	Yes
Robotic Library	TLM(0) - shark
Vendor Drive Name	CN0
No Rewind Device	/dev/rmt/rmt0h
Cleaning Frequency	25
Drive Status	Up

Add Drive Dialog Entries (Drive 2)

Device Host	shark
Drive Name	TLM_rob_drv2
Drive Type	1/2” Cartridge (hcart)
Drive is in a Robotic Library	Yes
Robotic Library	TLM(0) - shark
Vendor Drive Name	CN1

Add Drive Dialog Entries (Drive 2)

No Rewind Device	/dev/rmt/rmt1h
Cleaning Frequency	25
Drive Status	Up

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 125 explains how to manage media in robots.

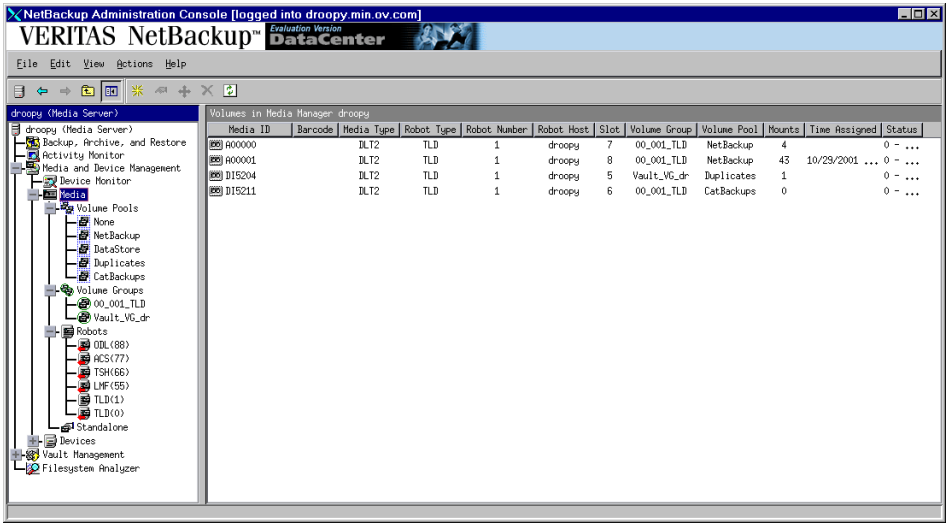
If you have Backup Exec volumes to manage, see the Backup Exec tape reader option appendix of the NetBackup system administrator’s guide for Windows for more information.

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
- Shortcut Menus and Commands
- 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. **New Window from Here** - Starts another instance of the NetBackup Administration Console node that was active. **Adjust Application Timezone** - Displays a dialog that allows you to manage the timezone. NetBackup Console can execute in a different timezone than the timezone of the server on which it was initiated. See the NetBackup System Administrator's guide for UNIX for more information. **Close Window** - Closes the current window. **Exit** - Closes all open windows.
Edit	**New** - Displays a dialog box to add an item of the type that is currently selected. **Change** - Displays a dialog box for changing the configuration of the selected items. **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 84.
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. **Start/Restart Media Manager Device Daemon** - Controls the Media Manager device daemon. **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.

Media Management Menus and Commands (continued)

Menu	Commands
Help	**Help Topics** - Provides online help information about the NetBackup Console. **License Keys** - Provides information about your active and registered license keys. **About NetBackup Administration Console** - Displays program information, version number, and copyright 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** > **Show ToolBar**.

Also see "Customizing the Window" on page 84.

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.

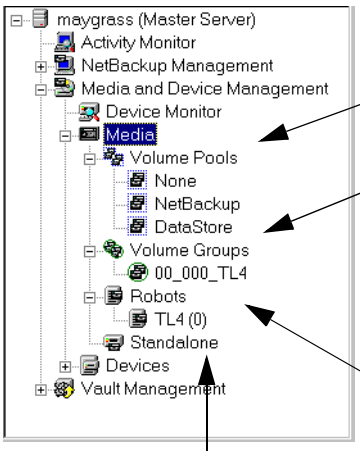
Before adding volumes on the selected server, check the volume database host setting for the robot or standalone drive to verify that the volume will be added to the correct volume database. See "Administering Media on Other Hosts" on page 85.

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 85 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

You can view any hidden columns in the volumes pane by right-clicking in the pane and selecting **Show All Columns**.

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. None is the default pool for users of applications, other than NetBackup and Storage Migrator. NetBackup is the default pool name for NetBackup. DataStore is the default pool name for DataStore. 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: 0 is the None (default) pool. 1 is the NetBackup pool. 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. 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. 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 is blank.
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 is blank.
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. This column is not applicable for NetBackup BusinesServer and is blank.
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 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.

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. 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. 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 299 for a list of the supported media types.
Robot Type	Type of robot that contains this volume. See "Media Manager Robot Types" on page 297 for a list of supported robot types. 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 is blank.
Robot Control Host	Name of the host that controls the robot that contains this volume. This host is providing the robotic control. If this column contains NONE, there is no specific robot control host (the robot is controlled from multiple hosts). If this column is blank, the volume is for a standalone drive.
Slot	Slot in the robot that contains the volume. 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.

Volumes List (continued)

Column	Description
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. None is the default pool name for users of applications, other than NetBackup, DataStore, and Storage Migrator. NetBackup is the default pool name for NetBackup. DataStore is the default pool name for DataStore. 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.
Status	Applies only to volumes that are assigned to NetBackup, Storage Migrator, or Storage Migrator for Microsoft Exchange. There is also a date in the Time Assigned column for assigned volumes. - 0 - NetBackup The volume is assigned to NetBackup regular backups. - 1 - Catalog The volume is assigned to NetBackup catalog (database) backups. - 2 - Storage Migrator The volume is assigned to Storage Migrator for UNIX. - 3 - Storage Migrator The volume is assigned to Storage Migrator for Microsoft Exchange or Storage Migrator for Windows 2000.
Side / Face	Location of the volume. If the media type is an optical disk, this column shows A or B, representing the platter side on which the volume is located. If the media type is an 8mm tape and the robot type is TL8, this column shows the xy coordinates for the slot number. For any other media type, this column is blank.

Volumes List (continued)

Column	Description
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 is blank. You define this value as Partner ID when you add the volume. For NetBackup BusinesServer, this column is blank, 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.
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.

Volumes List (continued)

Column	Description
Session ID	Used for the NetBackup Vault option. Contains the ID of the vault session that ejected this volume.

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.

Customizing the Window

Showing or Hiding Columns

You can view all of the columns in the volumes pane by right-clicking in the pane and enabling **Show All Columns**.

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 is shown in the line directly above the volumes pane, for example Volumes in Media Manager 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.

You cannot change from a NetBackup BusinesServer server to a NetBackup DataCenter 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**.

3. In the dialog box that appears, do one of the following to specify the host:

   - Enter the name of the host.
   - Click the **arrow** and select a host. The hosts in the list have a master server and media server relationship in the global device database.

   Click **OK**.

4. The name of the new host appears above the volumes pane and the volumes pane shows the volume information for the new server.

The name of the UNIX host that you specify in the Login box, when starting the NetBackup Administration interface, must be in the `bp.conf` file on the remote UNIX host where you want to manage media or monitor devices.

If you encounter problems or for more information on remote administration, see the following topics:

- "Remote Administration of Other UNIX Hosts" on page 25.
- "Media Manager Security" on page 26.

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 78):

- Media Manager creates a pool, named NetBackup, for NetBackup use.
- NetBackup creates a pool, named DataStore, for DataStore use.
- On UNIX hosts, a pool is also created for VERITAS Storage Migrator volumes.

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 319 and “Scratch Volume Pools” on page 322

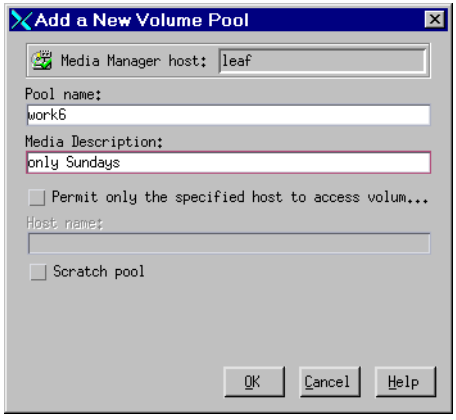
The following topics explain volume pool configuration:

- 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 88.



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 84.
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. 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.

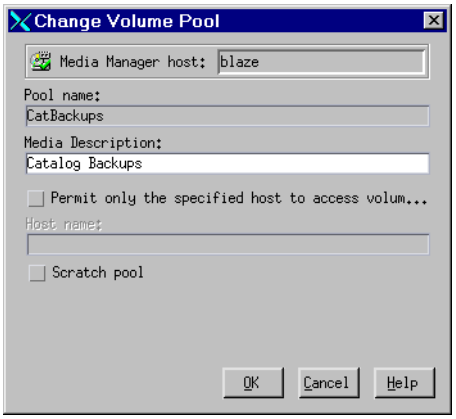
   Follow the steps for adding other volumes to pools (see "Adding New Volumes" on page 95). In this case, select the pool name of the scratch pool you created as the volume pool.

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 90.

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. 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 95). 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:

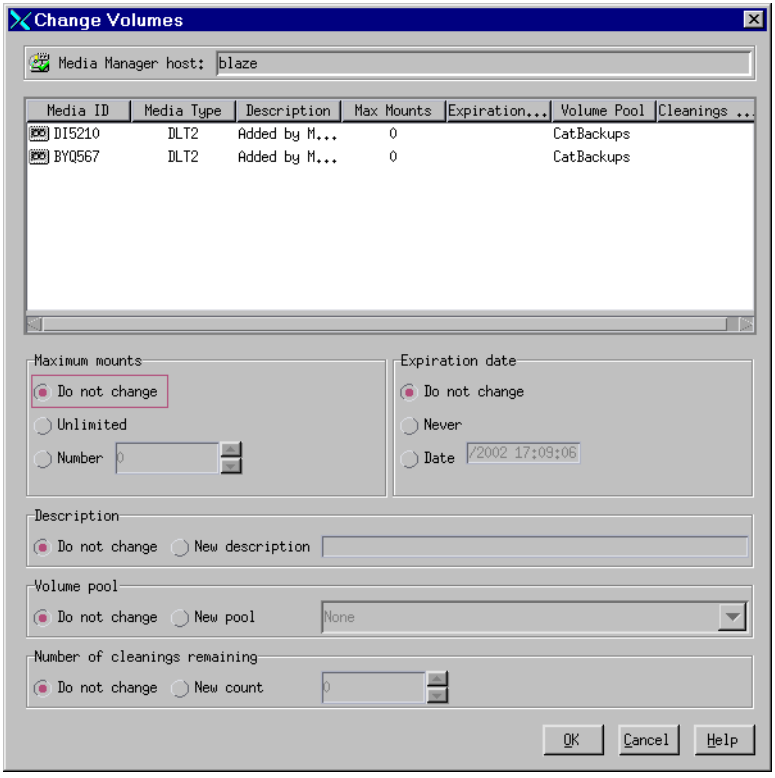
1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.

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 114).

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 94.

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 98 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 94).

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 106 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 94.

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 135 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 a single selected volume using the robot's media access port.

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 94).

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.

See "Moving Volumes" on page 106 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 94.

You cannot eject volumes that reside in multiple robots.

For the robot types shown in the 4th column of the following table, 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 113 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 Volume	Eject Single or Multiple Volumes
New Volumes	LMF, RSM, TL8, TLD, TSH	NA	NA
Move Volumes	LMF, TL8, TLD, TSH	LMF, TL8, TLD, TSH	NA
Robot Inventory	TL8, TLD, TLM	NA	NA
Eject Volumes	NA	NA	ACS, TL8, TLD, TLH, TLM

Note For RSM robot types, the robot must be attached to a Windows 2000 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 104 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 104 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 97.
- To add volumes using the menu, see "Adding Volumes - Using the Actions Menu" on page 98.

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 104 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 UNIX 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 98.

  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 98.

Notes on Labeling NetBackup Volumes

Labeling volumes is controlled by the application. Refer to the NetBackup DataCenter system administrator’s guide for UNIX 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 175).
- An optical disk platter must be formatted, have an external media ID, and a volume label before you can use it with Media Manager. Use `vmadm` or `vmadm` with the `tpformat` command to add an optical disk volume. When using `vmadm`, you can choose the label option, thus making it unnecessary to use `tpformat` from the command line. See “Label Optical Media” on page 104, “Using vmadm” on page 361, or the `tpformat(1M)` man page for more information.

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. On the **Robot Inventory** tab, select **Perform volume configuration update**.

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.

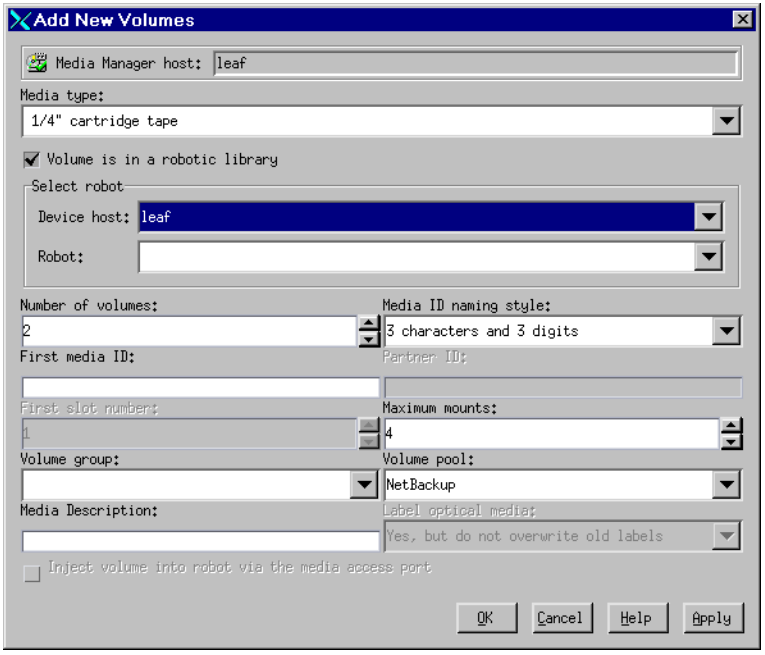
  See “Updating the Volume Configuration for a Robot” on page 135 for more information on robot inventory and media ID generation rules.

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 85.
4. Click **Actions** > **New** > **Volumes**.



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

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.

Volume Is In a Robotic Library

When you select **Volume is in a Robotic Library**, the Select Robot section (containing **Device Host** and **Robot**) of the dialog box is available.

Device Host

Specifies the name of the device host where the robot is defined.

To select a robot on another host device host, click the **arrow** and select from the list.

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.

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**.

If you are adding optical volumes, specify the number of platters.

If you are adding

- One platter, you also must specify **Media ID** and **Partner ID.**
- More than one platter, you also must specify **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.

If you are adding optical volumes, there are choices for naming platters.

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.

Partner ID

Note This property does not apply to NetBackup BusinesServer.

If you are adding one optical volume, you can specify a 1 to 6-character ID for the partner ID. This ID is the media ID of the volume on the other side of the optical platter.

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 427 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 316 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. 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 319 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 86.

Label Optical Media

Note This property does not apply to NetBackup BusinesServer.

Before using optical volumes, they must be formatted and labeled. Click the **arrow** to select from the list of choices. The default choice does not overwrite any old labels.

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 92 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.

- Optical robots and optical standalone drives.

To configure volumes for these unsupported devices, see “Adding Volumes - Using the Robot Inventory Update Option” on page 97 or “Adding Volumes - Using the Actions Menu” on page 98.

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 - Inventory the volumes in a robotic library. - Create new volumes for use in standalone drives.

Wizard Screen	What to Expect
Select Device	You select one of the following: - The robotic library that you want to inventory. - The type of standalone drive where you want to configure volumes. Robots that have more than one type of drive are not supported.
Robot Inventory (*Only if a robot was selected*)	You start the inventory which updates the Media Manager volume database.
Robot Inventory (*Only if a robot was selected*)	You can view the results of the inventory.
Identify Cleaning Media (*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 (*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 324.

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.

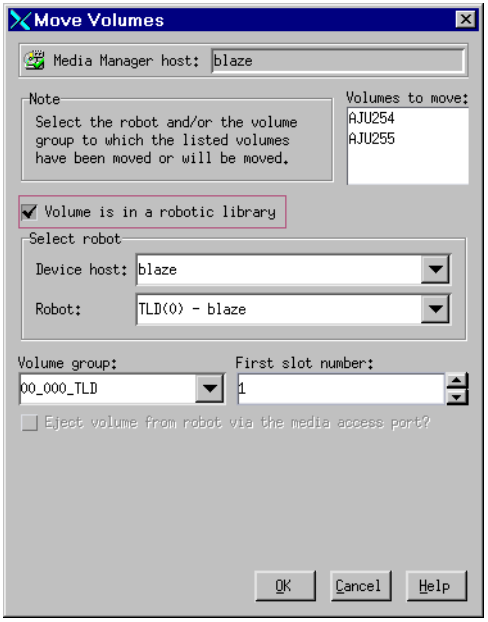
   See “Updating the Volume Configuration for a Robot” on page 135 for more information.

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.
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**.



5. Specify the properties for the move as explained in “Dialog Box Entries for Move Volumes” on page 108.

Note If you are moving a single volume, the dialog box entries are set to show the current location of the volume.

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 113 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.

Volume Is In a Robotic Library

Select V**olume is in a robotic library** to indicate the robotic library where you are moving the volumes. When you select **Volume is in a robotic library**, the **Device Host** and **Robot** boxes are available.

Note If you are moving a single volume, the Select Robot section initially shows the current location of the volume.

Select **Volume is in a robotic library** in either of the following cases and specify the robotic library and the slot number for the volume.

- You are injecting a volume into a robotic library.
- The volume has already been injected into the robotic library and you are updating the volume database for this volume.

Clear **Volume is in a robotic library**, in either of the following cases:

- You are ejecting a volume from a robot.
- The volume has already been ejected from the robot and you are updating the volume database for this volume.

Device Host

Click the **arrow** and select from the list to specify the name of the device host where the robot is defined.

Robot

Click the **arrow** and select from the list to specify the robot to which you are moving the volumes.

The list shows robots on the selected device that can contain volumes of the selected media type.

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 427 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 a single selected volume using the robot's media access port.

See "Methods for Ejecting Volumes From a Robot" on page 94 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 92 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 114.

See "Deassigning Volumes" on page 114.

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 114).

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.

   The Time Assigned column is hidden by default. To display this column, see "Customizing the Window" on page 84.

   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 114). 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 94 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**.

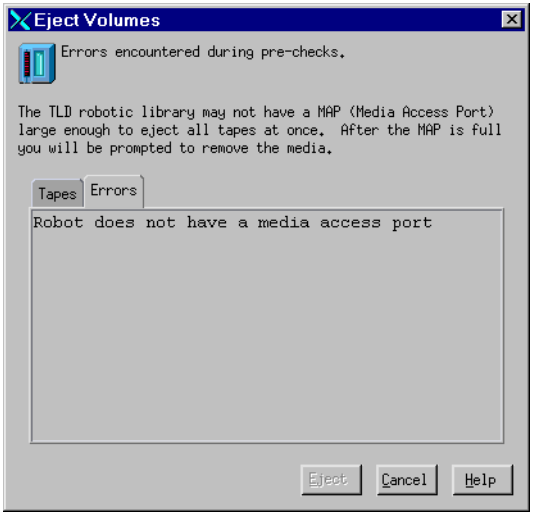
2. In the volumes pane, select one or more volumes that you want to eject.

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

4. In normal cases, the **Tapes** 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.



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

6. 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.

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 77).

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 `/usr/openv/netbackup/bin/admincmd` directory and has the following format:

`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:

```
/usr/openv/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 UNIX). Then the media is available to be reassigned or deleted; or its volume pool can be changed.

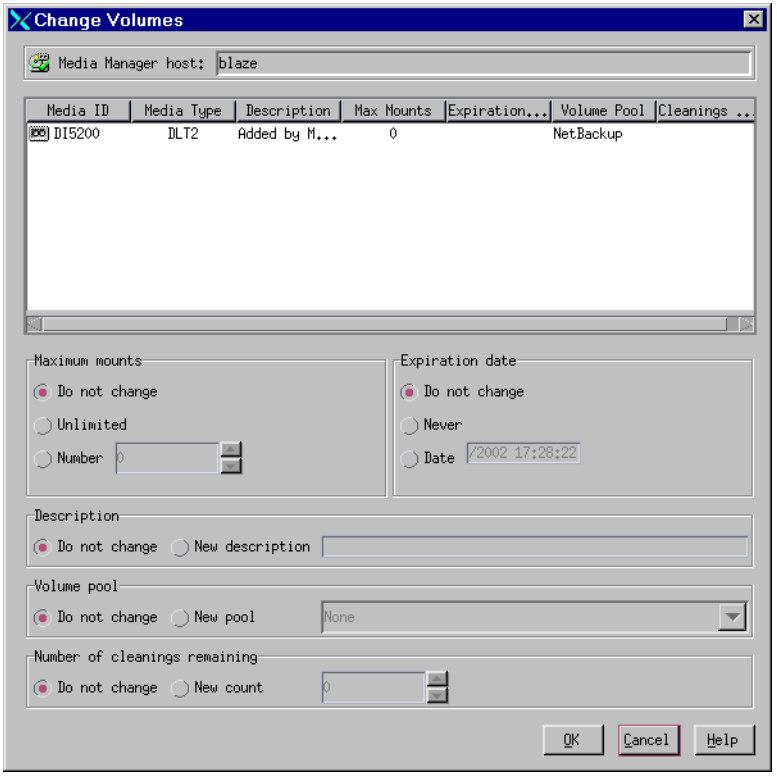
Deassigning Storage Migrator Volumes

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 117.

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

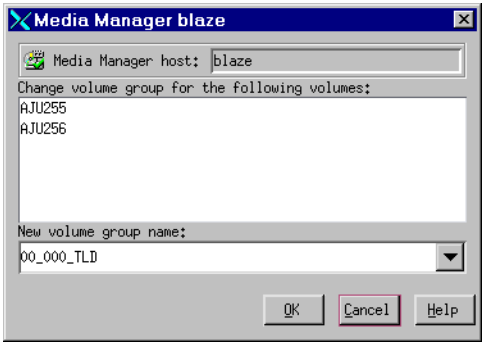
Note Applies to cleaning tapes only.

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.

Moving A Volume Group

In addition to moving individual volumes, you can move an entire volume group. This move can be one of the following:

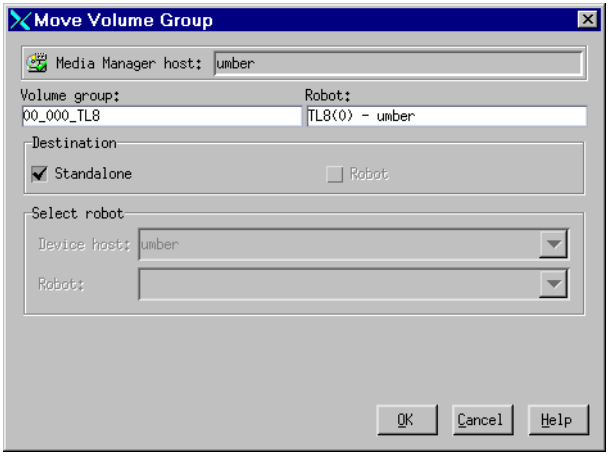
- From a robotic library to standalone
- From standalone to a robotic library

1. In NetBackup Administration Console, click **Media and Device Management** > **Media**.
2. In the tree pane, select the volume group that you want to move.

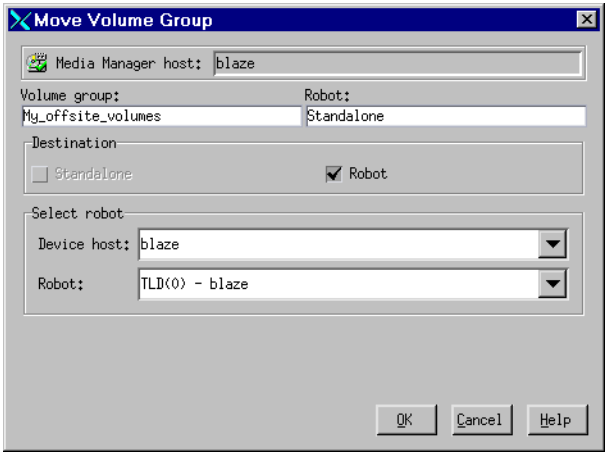
3. Click **Actions** > **Move**.

   In the dialog box that appears, the current attributes of the volume group you selected are displayed. These fields cannot be changed.

4. If you are moving the volume group from a robotic library to standalone, **Standalone** is selected as the destination. For this type of move, fields that are not used cannot be selected.



5. If you are moving the volume group from standalone to a robotic library, **Robot** is selected as the destination.



a. Select the device host that controls the robotic library, by clicking the **arrow** and selecting from the list.

b. Select the destination robotic library, by clicking the **arrow** and selecting from the list.

6. Click **OK**.

7. Move the volumes physically to their new location.

   Moving a volume group in Media Manager changes only their residence information in the volume database. They must also be moved physically.

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 106).

   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 95.

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 111.

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 95.

4. Set a new Expiration Date for this volume. See "Changing the Attributes for a Volume" on page 116.

5. Reset the number of mounts. Otherwise, the number continues to be incremented from the value accumulated for the old volume. You can reset the number of mounts using the following command:

   `/usr/openv/volmgr/bin/vmchange -m` *media_id* `-n` *number_of_mounts*

   Where:

   - *media_id* is the media ID for which you are changing the number of mounts.
   - *number_of_mounts* is the new number that you want for this media ID.

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 114.

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 106.
3. Record the number of mounts and expiration date for the volume.
4. Delete the volume entry. See “When to Delete Volumes” on page 111.
5. Add the new volume entry, and physically add the volume to the storage device. See “Adding New Volumes” on page 95.
6. Set the number of mounts to the value you recorded in step 3 by using the following command:

   `/usr/openv/volmgr/bin/vmchange -m` *media_id* `-n` *number_of_mounts*

   Where:

   - *media_id* is the media ID for which you are changing the number of mounts.
   - *number_of_mounts* is the new number that you want in the volume database for this media ID.
7. Set the expiration date to the value you recorded in step 3.

Managing Media in Robots 4

See “Starting Media Management” on page 73 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 inventory operations are performed using the following tabs of the Robot Inventory dialog:

- **Robot Inventory** tab

This tab contains the following choices:

- **Show contents of robot**

  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 127.

- **Compare robot contents with the 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 131.

- **Preview volume configuration update**

  Inventories the selected robotic library and compares the results with the contents of the volume database. If there are differences, the results section shows a list of recommended changes. For example, a preview allows you to ensure that all new media have barcodes before they are added to the Media Manager volume database.

  You can also specify **Empty media access port prior to update** to inject volumes into the robot.

  After checking the results of a preview, you can perform a volume configuration update operation to update the volume database to agree with the contents of the robot.

  For detailed instructions on performing a preview, see "To Update the Volume Configuration for a Robot" on page 137.

- **Perform volume configuration update**

  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.

  You can also specify **Empty media access port prior to update** to inject volumes into the robot.

  For detailed instructions, see "Updating the Volume Configuration for a Robot" on page 135.

- **Update Options** tab

If you select **Preview volume configuration update** or **Perform volume configuration update**, you can specify options for the update.

For detailed instructions, see “Changing the Update Options” on page 141.

- B**arcode Rules** tab

  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 robot.

  For detailed instructions, see “Configuring Barcode Rules” on page 169.

- **Media Type Mappings** tab

  If you select **Preview volume configuration update** or **Perform volume configuration update**, you can assign media-type mappings if the robot type supports these mappings.

  For detailed instructions, see “Changing the Update Options” on page 141.

- **Media ID Generation** tab

  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 175.

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 179.

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.

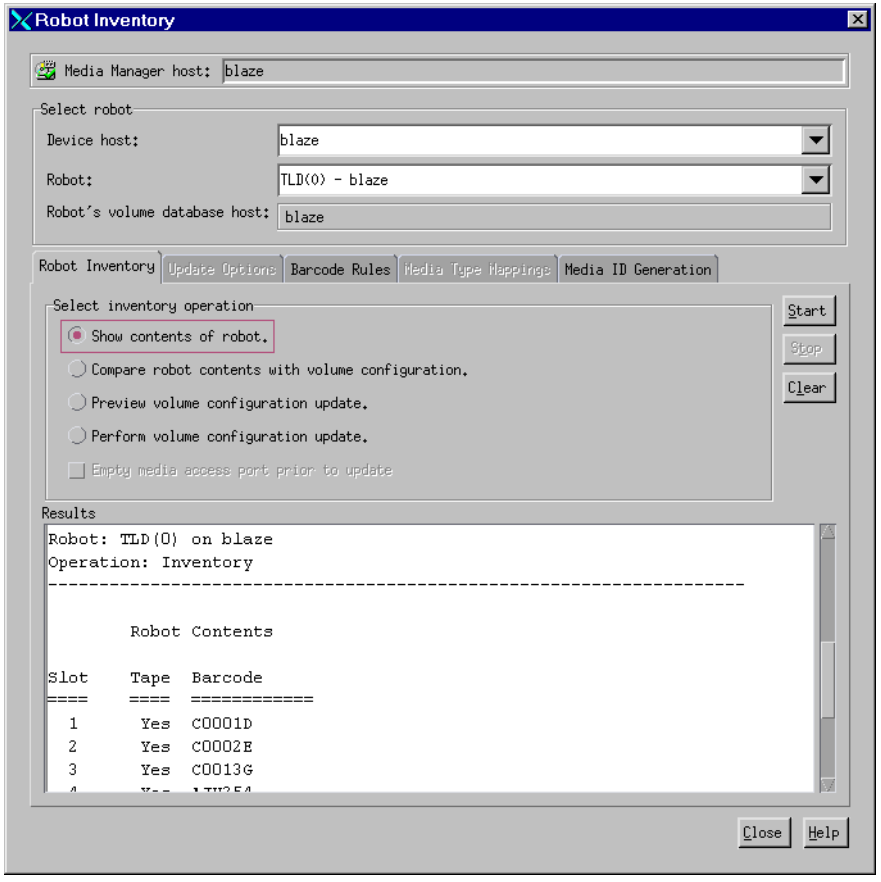
2. On the **Robot Inventory** tab, select **Show contents of robot**.

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



Note If a volume happens to be in a drive, the inventory report shows it in the slot that it came from.

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 300 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.

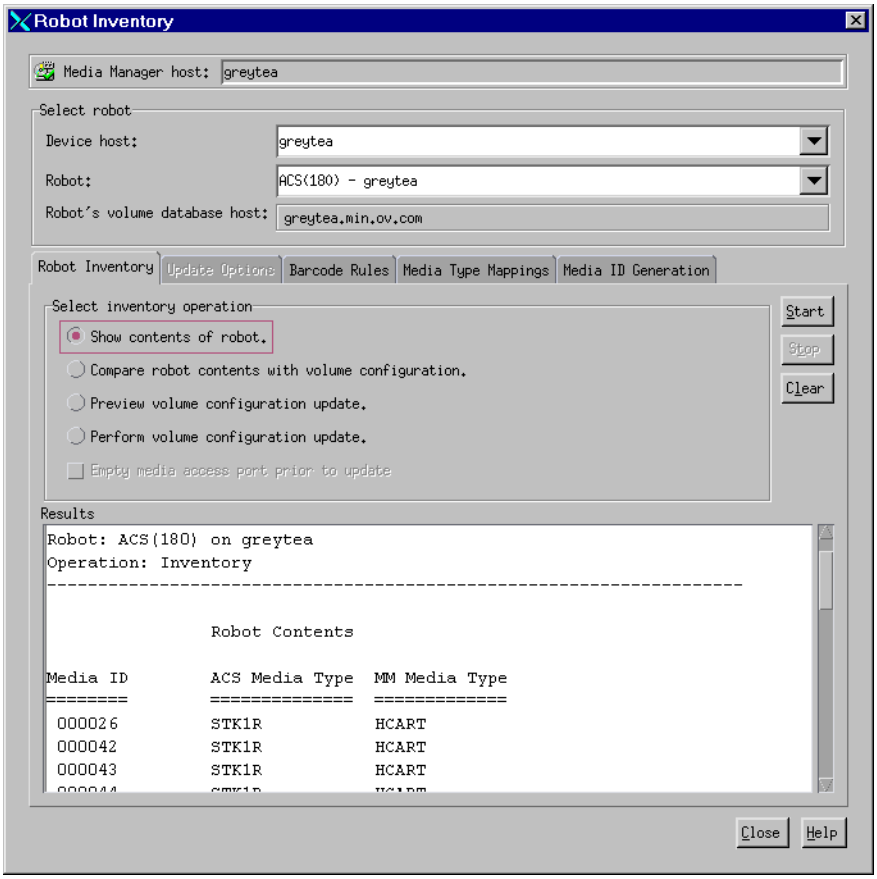
ACS Robots

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 483 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 497 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 511 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, "Fujitsu Library Management Facility (LMF)" on page 523 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.

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. On the **Robot Inventory** tab, select **Compare robot contents with volume configuration**.

   To clear any previous display in the Results section, click **Clear**.

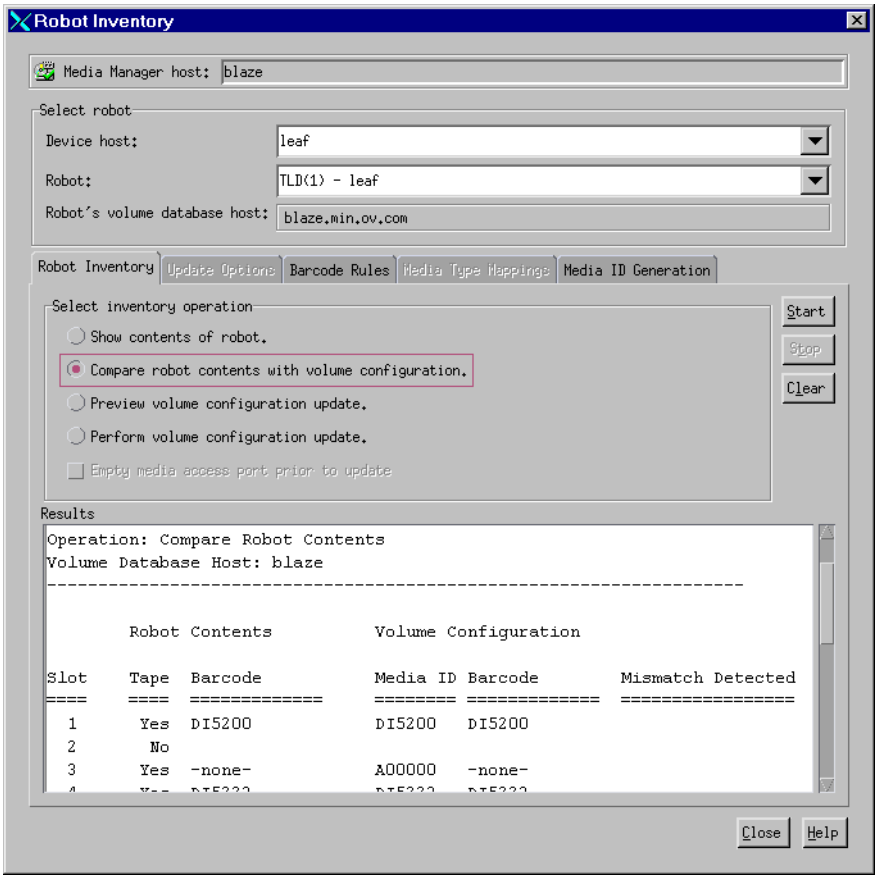
3. Click **Start** to start the compare.

   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 300), 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)

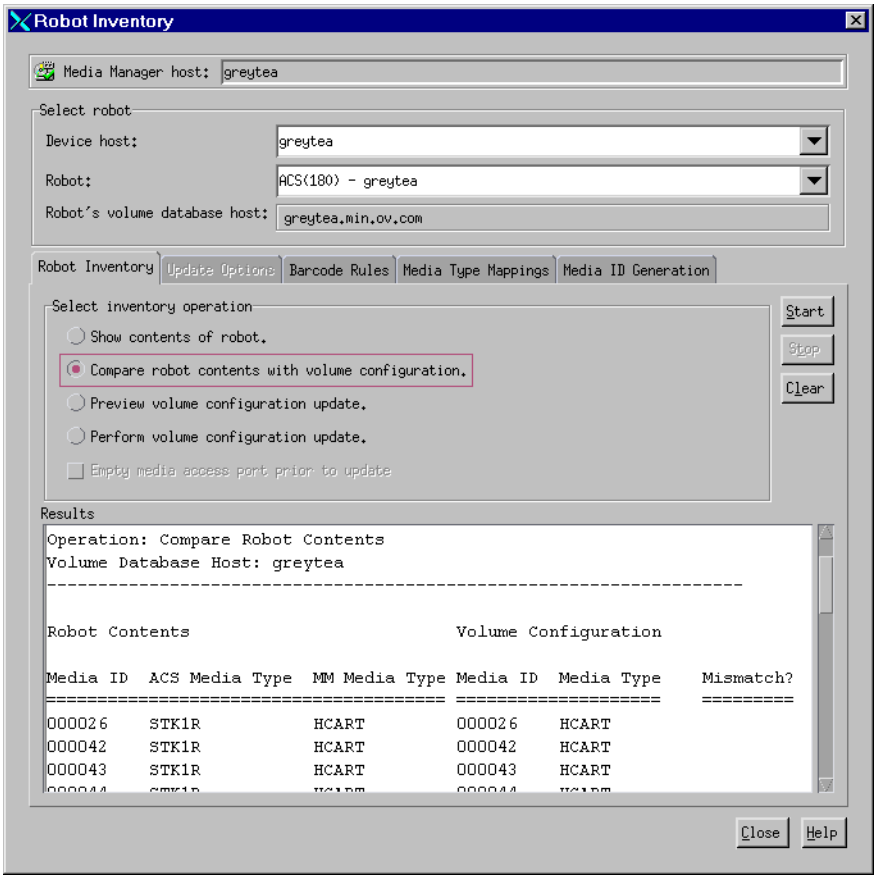


- The following figure shows an example report for an ACS robot. For ACS robots, Media Manager determines whether the media ID and media type in the Media Manager volume database matches the ACS library software database.

  Reports for the other API robots are similar to an ACS robot report.

  See “Robot Inventory Operations” on page 483 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 135.

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 169.

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 175).

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 95.

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 166.

  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 167.

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 131.

   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 151 for instructions.

For ACS robots, media-type mappings are explained in the appendix, "Automated Cartridge System (ACS)" on page 475.

For TLH robots, media-type mappings are explained in the appendix, "IBM Automated Tape Library (ATL)" on page 497.

For TLM robots, media-type mappings are explained in the appendix, "ADIC Distributed AML Server (DAS)" on page 511.

For LMF robots, media-type mappings are explained in the appendix, "Fujitsu Library Management Facility (LMF)" on page 523.

For RSM robots, media-type mappings are explained in the appendix of the NetBackup Media Manager system administrator's guide for Windows.

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 169 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 175 for more information.

6. On the **Robot Inventory** tab, select **Perform volume configuration update**.

Note To preview the update without making any changes, select **Preview volume configuration update**.

   To clear any previous display in the Results section, click **Clear**.

7. 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 92 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.

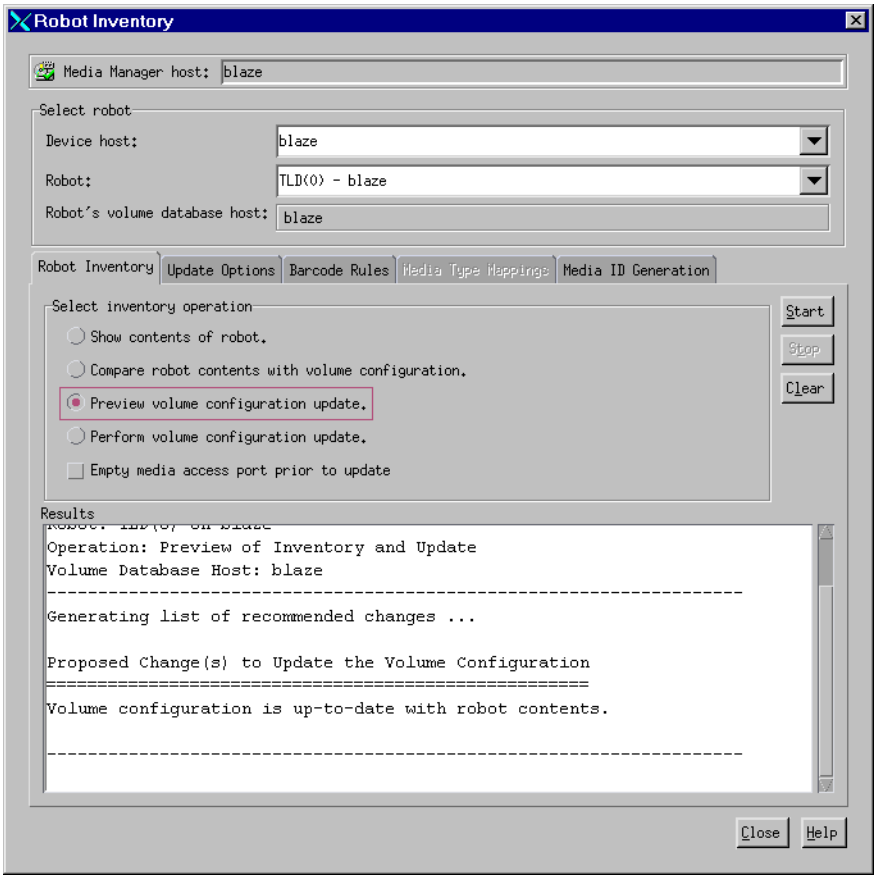
8. To view or change the settings for the update (or preview), click the **Update Options** tab. See “Changing the Update Options” on page 141 for instructions.

9. Click **Start** to start the update (or the preview).

   The following figure shows example results for a robotic library that is not an API robot.

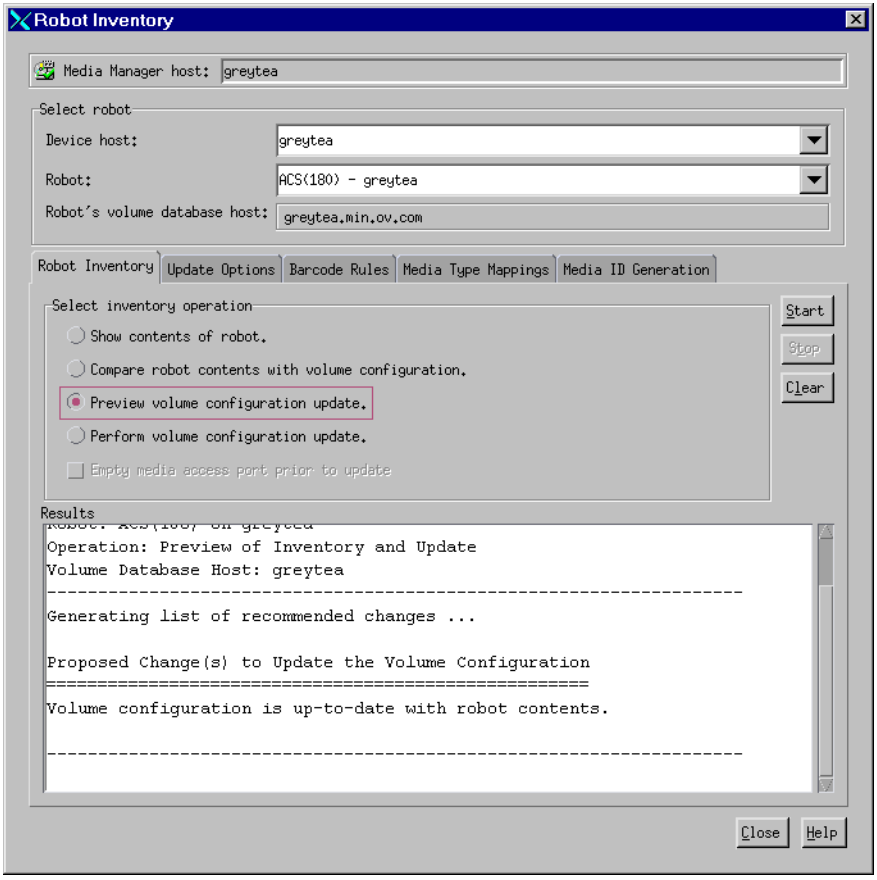
Note For NetBackup BusinesServer the dialog is similar, but you cannot change the device host.

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)

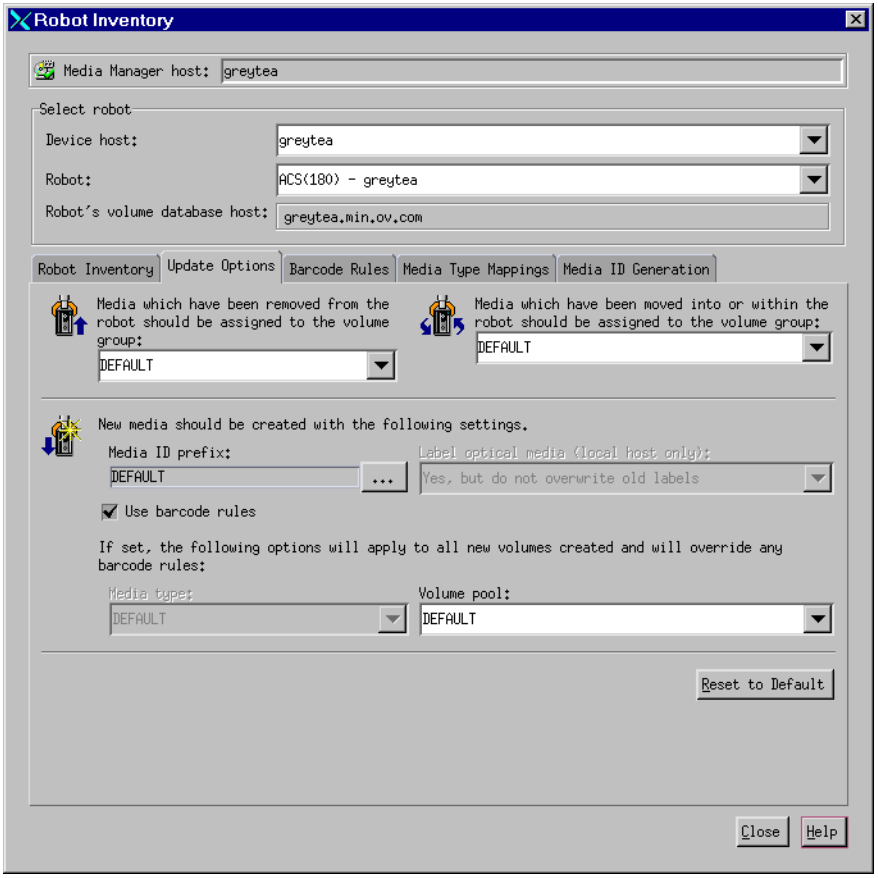


Changing the Update Options

1. In the Robot Inventory dialog box, click **Perform volume configuration update** or **Preview volume configuration update** to enable the **Update Options** tab.

2. Click the **Update Options** tab.

   See “To Update the Volume Configuration for a Robot” on page 137 for the complete procedure.



3. Specify update options properties, as explained in "Update Options" on page 143.

   To reset all settings on this tab to their defaults, click **Reset to Default**.

4. When you are satisfied with your settings on this tab, click the **Robot Inventory** tab to return.

5. Click **Start** to initiate the update.

Update Options

Media which have been removed from the robot should be assigned to the volume group

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 146).

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 147).
Not DEFAULT	The specified media type.

Media which have been moved into or within the robot should be assigned to the volume group

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 146).

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 147).
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 175.

Click **...** if you want media IDs for media generated based on a specific prefix. You can then specify a media ID prefix by entering a prefix or by choosing a prefix from a list as follows.

Click **Specify the media ID prefix for the current session only**.

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.

Click **Choose from the media ID prefix list (stored in vm.conf file)**.

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
```

See "Media Manager Configuration File (vm.conf)" on page 337 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.

You can also add or remove media ID prefixes. Add a prefix by entering it in the text box.

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 151 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 147.
Using barcode rules	"Media Type When Using Barcode Rules" on page 148.

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**. If *all* of the drives in the robotic library (configured on this robot host) are - 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. - *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. Selecting from the list is required in either of the following cases: - The robotic library supports multiple media types and you do not want the default media type. - 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 Also supports 8MM cartridge tape 2 and 8MM cartridge tape 3.
Tape Library DLT (TLD)	DLT cartridge tape 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 Also supports 8MM cartridge tape 2 and 8MM cartridge tape 3.
Tape Stacker DLT (TSD)	DLT cartridge tape Also supports DLT cartridge tape 2 and DLT cartridge tape 3.
Tape Stacker Half-inch (TSH)	1/2-inch cartridge 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 165.

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.

Label Media (local host only)

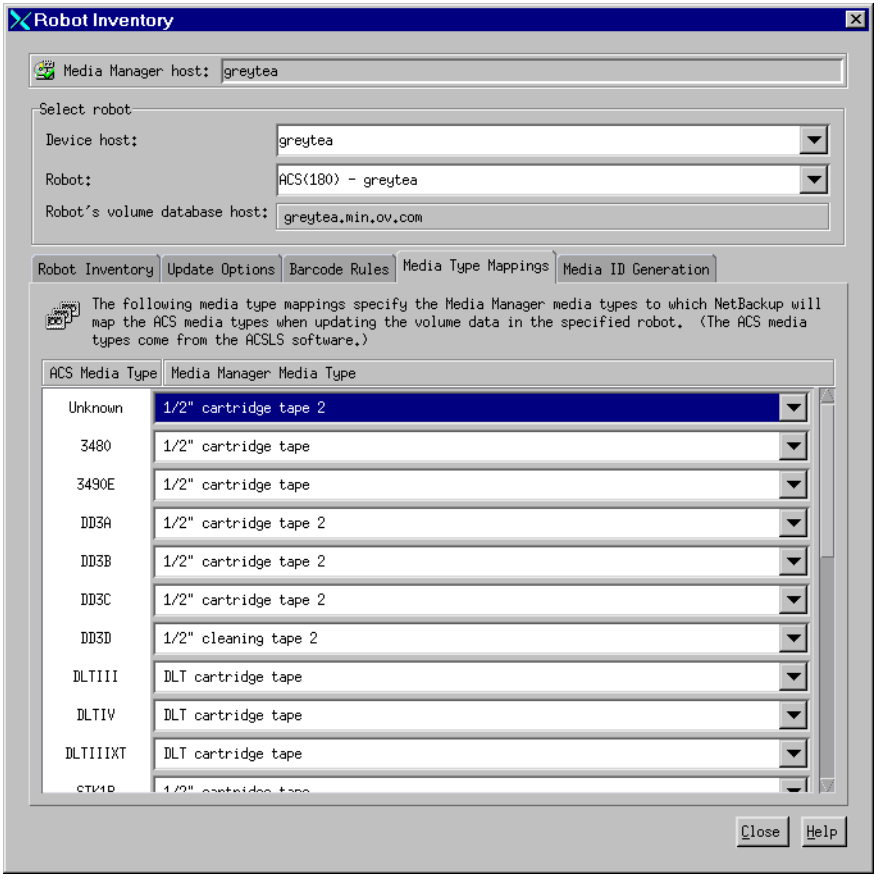
Note This option does not apply to NetBackup BusinesServer.

This option is enabled if you selected an optical robot. The media labeling will only be done if the optical robot is attached to the local host specified during the NetBackup Java login.

Note The media is labeled and is not formatted.

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 on the **Media Type Mappings** tab to set the media type for new volumes. This tab 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 ACS robots, adding media mapping entries is explained in "vm.conf Map Entries for ACS Robots" on page 485.

For TLH robots, adding media mapping entries is explained in "vm.conf Map Entries For TLH Robots" on page 510.

For TLM robots, adding media mapping entries is explained in “vm.conf Map Entries For TLM Robots” on page 521.

For LMF robots, adding media mapping entries is explained in “vm.conf Map Entries for LMF Robots” on page 535.

For information on adding RSM media mapping entries to the vm.conf file, see the Windows NetBackup Media Manager system administrator’s guides.

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)

Default Media Types for ACS Robots (continued)

ACS Media Type	Default Media Manager Media Type
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)
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)
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) 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)

Default Media Types for TLM Robots (continued)

TLM Media Type	Default Media Manager Media Type
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)
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 166.

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
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 136 and “Example 7: Adding existing volumes when barcodes are not used” on page 167).

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 167.

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.

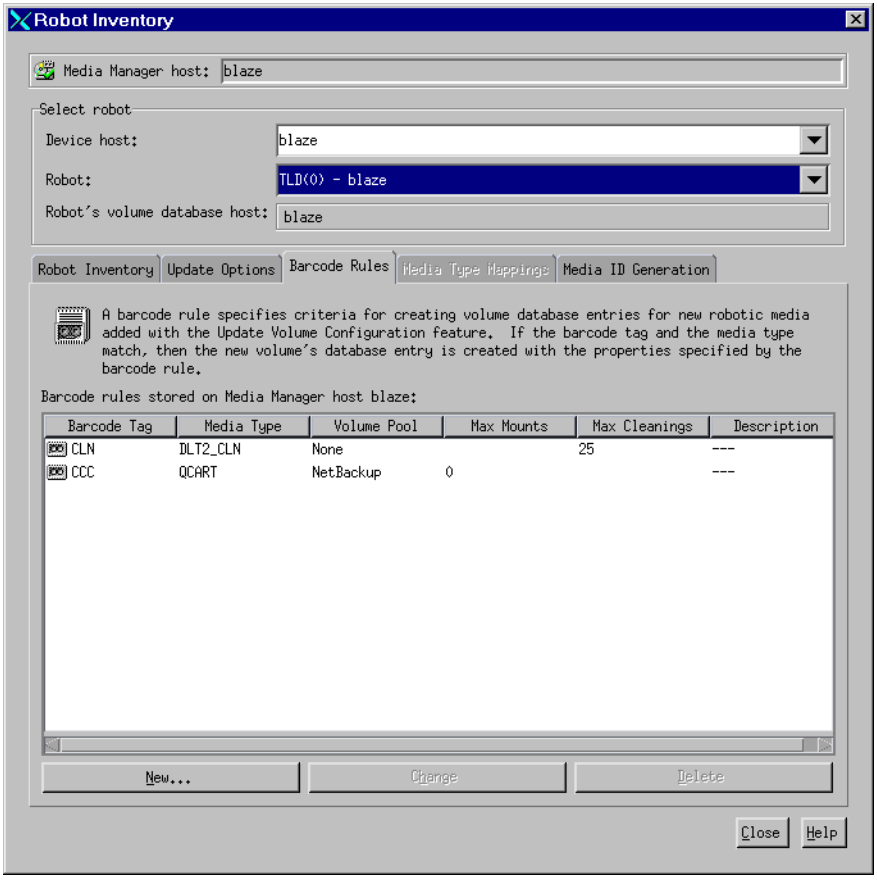
For background information, see “Barcode Rules” on page 326.

The following topics explain how to use barcode rules:

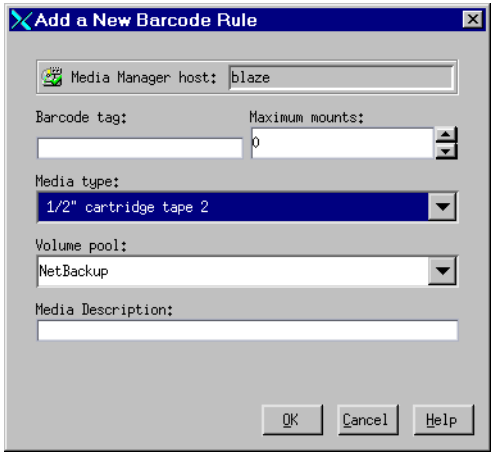
- Adding a New Barcode Rule
- Dialog Box Entries for Adding and Changing Barcode Rules
- Changing a Barcode Rule
- Deleting a Barcode Rule

Adding a New Barcode Rule

1. In the Robot Inventory dialog box, click the **Barcode Rules** tab.



2. 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 on the **Update Options** tab are compatible.

Use Update Options to set up the criteria for a robot update (see "Updating the Volume Configuration for a Robot" on page 135).

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. 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 146).
Only when you select that specific media type or DEFAULT in Update Options	A specific media type from the list. 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

Update Media Type	Barcode Rule Media Type	Rule Used	Media Type Added To Volume Configuration
DLT	,4MM	No	DLT
DEFAULT	DEFAULT	Yes	DLT
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 135.

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 151 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.
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 the **Barcode Rules** tab.
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 171 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 the **Barcode Rules** tab.
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 328.

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

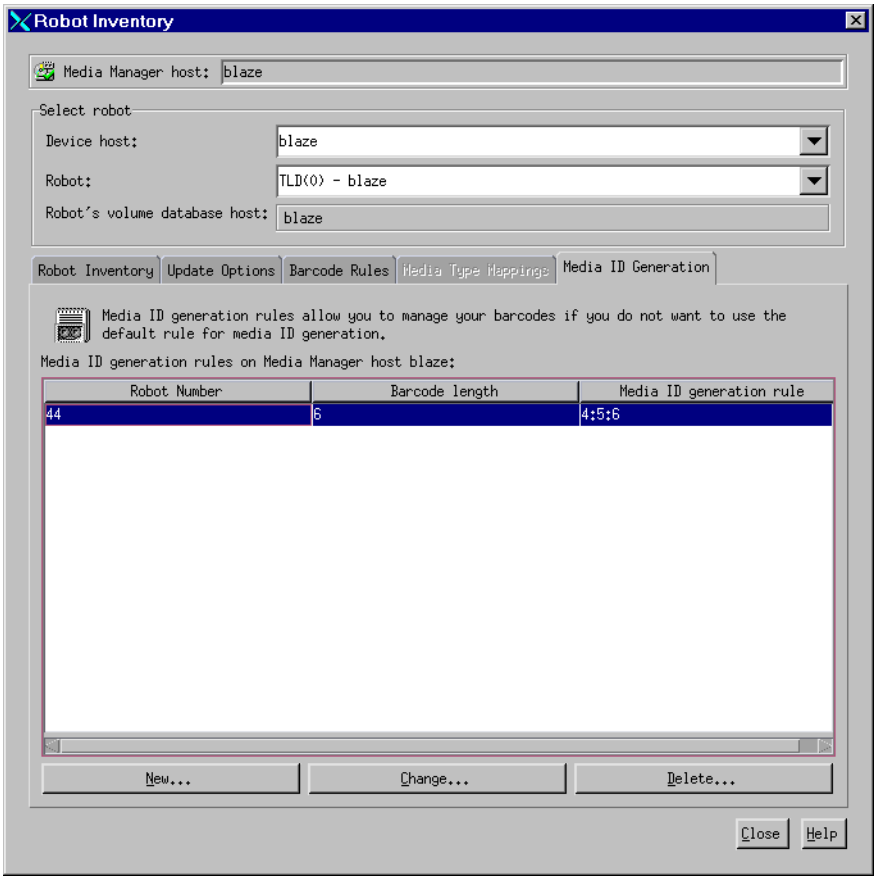
Adding a New Media ID Generation Rule

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

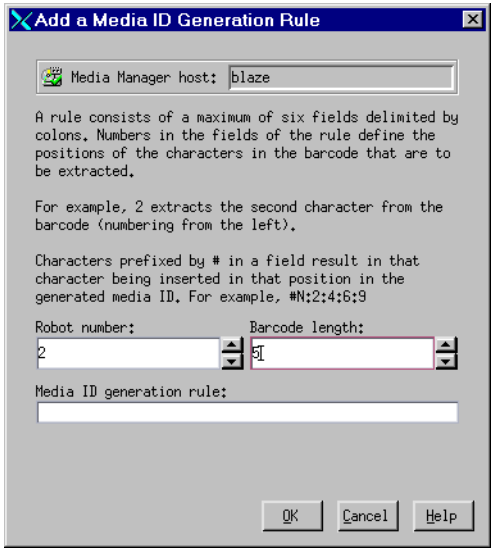
2. Select the robotic library that has the volume database where you want to change a media ID generation rule.

3. Click **Actions** > **Inventory Robot**.

4. In the Robot Inventory dialog box, click the **Media ID Generation** tab.



5. Click **New**.



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 178 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 the **Media ID Generation** tab.

   Select a rule or rules from the list of rules.

5. Click **Change**.

6. 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 178 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 the **Media ID Generation** tab.

   Select a rule or rules from the list of rules.
5. 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 300 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 135.
- 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 131 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 listing the volumes you selected for the rescan operation. Select **OK** to continue or **Cancel**. If you select **OK**, the results of the update are displayed in the output section of the dialog.

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:

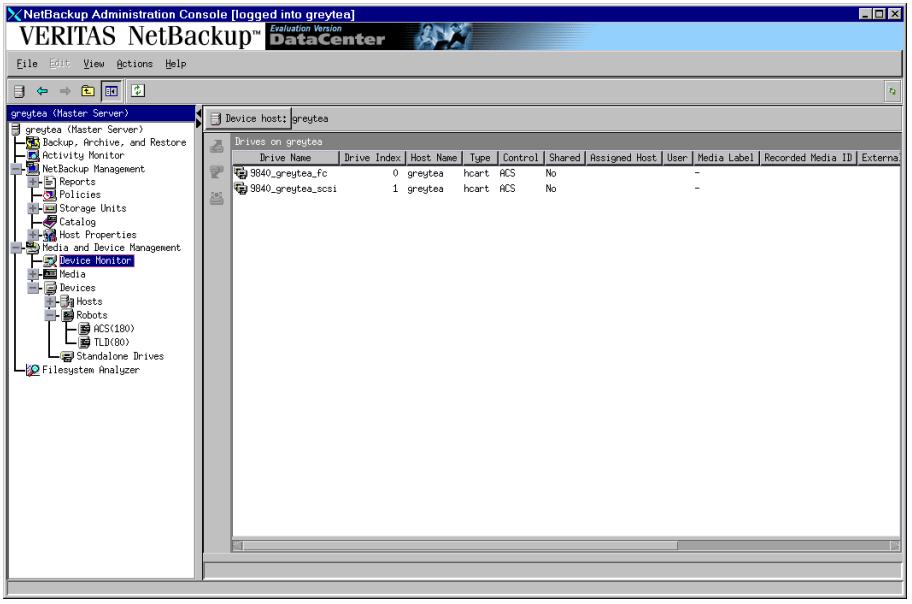
- Starting Device Monitor
- Using the Device Monitor Window
- Controlling the Media Manager Device Daemon
- Administering Devices on Other Hosts
- Changing the Operating Mode of a Drive
- Resetting a Drive
- Adding or Changing a Drive Comment
- Handling Pending Requests and Pending Actions
- Assigning a Drive to a Pending Request
- Resolving Pending Actions
- Resubmitting Requests
- Denying Requests
- Shared Storage Option Summary Reports

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, a pane showing drive information is displayed on the right when you start the Device Monitor:

In addition, a pane for pending requests (or pending actions) is displayed on the right 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
- Drives Status Pane
- Pending Requests Pane
- Status Bar
- Shortcut Menus and Commands
- 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 drive status or pending requests panes. For example if a drive is selected in the drive status 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. **New Window from Here** - Starts another instance of the NetBackup Administration Console node that was active. **Adjust Application Timezone** - Displays a dialog that allows you to manage the timezone. NetBackup Console can execute in a different timezone than the timezone of the server on which it was initiated. See the NetBackup System Administrator's guide for UNIX for more information. **Close Window** - Closes the current window. **Exit** - Closes all open windows.
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 191.

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 194. **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. 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. For standalone drives using unlabeled volumes, you assign tape drives to requests using **Actions** > **Assign Request**. **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. 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**. **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. **Reset Drive** - Resets the specified drive, terminating the drive assignment and taking control away from the assigned user. For NetBackup Datacenter SSO configurations, the drive is only reset on the device host being managed. For more information, see "Resetting a Drive" on page 195.

Device Monitor Menus and Commands (continued)

Menu	Commands
Actions	**Change Drive Comment** - Displays a dialog box for changing the comment for the selected drive. For NetBackup Datacenter SSO configurations, the drive comment is changed only on the device host being managed. **Drive Details** - Displays a dialog with information about the selected drive, including drive properties, drive status, and robotic library information. **Up the Drive on Every Host** - For NetBackup Datacenter SSO configurations only. Displays a dialog that allows you to up the drive on all hosts that share this drive. **Down the Drive on Every Host** - For NetBackup Datacenter SSO configurations only. Displays a dialog that allows you to down the drive on all hosts that share this drive. **Assign Request** - Assigns a drive to a pending request. **Deny Request** - Denies a pending request. **Resubmit Request** - Resubmits a pending request. This command is not applicable for NetBackup BusinesServer. **Display Pending Action** - Displays information about the pending action. **Stop/Restart Media Manager Device Daemon** - Controls the Media Manager device daemon. **Analyze Device Configuration** - Starts the configuration analyzer wizard. The analyzer verifies that the settings in your device configuration are consistent and checks for potential problems. **View Status of Shared Drives** - Displays a dialog box that allows you to display device allocation information about NetBackup Datacenter SSO configurations.
Help	**Help Topics** - Provides online help information about the NetBackup Console. **License Keys** - Provides information about your active and registered license keys. **About NetBackup Administration Console** - Displays program information, version number, and copyright 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** > **Show ToolBar**.

Also see “Customizing the Window” on page 191.

Drives Status Pane

This pane shows the status of the drives that Media Manager controls on this server. The following table describes the columns displayed in this pane.

Drives Status Pane

Column	Description
Drive Name	Drive name assigned to the drive during configuration.
Drive Index	Drive index assigned to the drive during configuration.
Host Name	The name of the device host that has the drive.
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: 4mm: 4mm cartridge 8mm: 8mm cartridge 8mm2: 8mm cartridge 2 8mm3: 8mm cartridge 3 dlt: DLT cartridge dlt2: DLT cartridge tape 2 dlt3: DLT cartridge tape 3 dtf: DTF cartridge hcart: 1/2-inch cartridge hcart2: 1/2-inch cartridge tape 2 hcart3: 1/2-inch cartridge tape 3 odiskwm: Optical disk-write many odiskwo: Optical disk-write once qscsi: 1/4-inch cartridge

Drives Status Pane

Column	Description
Control	Control mode for the drive. Control mode can be any of the following: - *robot_designation.* For drives in a robot. For example, TLD. - DOWN-*robot_designation.* For drives in a robot. For example, DOWN-TLD. - DOWN. For standalone drives only. In this mode, the drive is not available to Media Manager. A drive can be in a DOWN mode because of problems or because it was set to that mode using **Actions** > **Down Drive**. - PEND-*robot_designation*. For drives in a robot. For example, PEND-TLD. - PEND. For standalone drives only. 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. 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. - AVR (up in Automatic Volume Recognition mode). For standalone drives only. This is the normal operating mode. - OPR (up in operator control mode). For standalone drives only. 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. 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.
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.

Drives Status Pane

Column	Description
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. 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.
Request ID	If this drive is assigned to a request, this column contains the ID of the request.
Last Cleaned	The date that the drive was last cleaned. If the selected drive has not been cleaned, this column is blank.
Comment	Comments that the administrator has added about this drive. See "Adding or Changing a Drive Comment" on page 196.

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 196 for more information.

The following table describes the columns that are displayed in this pane for a pending request or action.

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. NOTE: A pending action is indicated by a media icon with a hand, located 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. 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. 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.
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.

Pending Requests Pane

Column	Description
Density	Density of the volume required by the user. You must mount the volume on a drive that supports the required density. Densities correspond to the following drive types (to find a drive of the correct type, check the drive status list.): 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 hcart: 1/2-inch cartridge tape hcart2: 1/2-inch cartridge tape 2 hcart3: 1/2-inch cartridge tape 3 odiskwm: Optical disk-write many odiskwo: Optical disk-write once qscsi: 1/4-inch cartridge tape
Mode	Specifies whether the volume should be write-enabled. Write in this column means you must write-enable the volume. Read 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.
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 Device Monitor window. The status bar contains any error messages.

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.

Customizing the Window

Changing the Screen Display Refresh Rate

The refresh rate specifies how often the Device Monitor will query the device host for new display data. Initially, screen refresh is enabled and the default rate is 60 seconds.

To change the refresh rate:

1. Click **View** > **Options**.
2. Select **Refresh display every**.
3. Set the desired refresh rate.

To disable screen refresh, unselect **Refresh display every**.

It may be necessary to scroll the Device Monitor window to see any newly arrived jobs after a refresh.

The Device Monitor saves the setting of **Refresh display every** when you exit.

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 Media Manager Device Daemon

The Media Manager device daemon must be running on the host being monitored or the displays in the Device Monitor panes will be blank.

If the daemon is not running when you start the Device Monitor, NetBackup prompts you so you can start it at that time. The device daemon can be managed as described in the following procedure.

Note If the device host you want to monitor is a Windows host, this procedure also controls the NetBackup Device Manager service on that Windows host.

1. In NetBackup Administration Console, click **Media and Device Management** > **Device Monitor**.
2. Click **Action** > **Stop/Restart Media Manager Device Daemon**.
3. In the dialog box that appears, enter a host name or click the **arrow** to select a different device host.

   If the device host is known to NetBackup to be a Backup Exec server, the server does not appear in the list.

   The current status field shows the status of this daemon. The dialog allows you to start, stop, or stop / restart the daemon.
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 is shown in the line directly above the drive status pane, for example **Device host:** 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.

You cannot change from a NetBackup BusinesServer server to a NetBackup DataCenter 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 the **Device host:** icon shown directly above the drive status pane.

   You can also click **File** > **Change Server**, but if the media server you want to monitor is a Backup Exec server (and not operating in the Backup Exec tape reader mode) most NetBackup commands are not valid. In this case, using the icon is recommended.

3. In the dialog box that appears, do one of the following to specify the host to monitor:

   - Enter the name of the host.
   - Click the **arrow** and select a host. The hosts in the list have a master server and media server relationship in the global device database.

   Click **OK**.

4. The name of the new host appears in the **Device host:** line and the lists in the panes show device information for the new device host.

   The Media Manager device daemon 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 daemon. Click **Yes** in this box.

   If you encounter problems, see “Remote Administration of UNIX Hosts” on page 194.

Remote Administration of UNIX Hosts

The name of the UNIX host that you specify in the Login box, when starting the NetBackup Administration interface, must be in the NetBackup `bp.conf` file on the remote UNIX host where you want to monitor devices.

For more information on remote administration, see the following topics:

- "Remote Administration of Other UNIX Hosts" on page 25
- "Media Manager Security" on page 26

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.

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), you can also use the **Up the Drive on Every Host** or **Down the Drive on Every Host** commands to up or down a shared drive on all host sharing the drive.

   See the **Actions** menu in "Menus and Commands" on page 183 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).
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 188 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 197.

- 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 a media icon (the icon has hand on it depicting a manual action is required), located to the left of the Request ID column.

In these cases, the problem must be resolved before proceeding. See "Resolving Pending Actions" on page 200.

Assigning a Drive to a Pending Request

Use the following procedure to assign a drive to a pending request.

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 186 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.

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 186 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 a media icon (the icon has hand on it depicting a manual action is required), located 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** (or double-click on the 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 201
   - Click **Actions** > **Deny Request** to deny the request.

     See “Denying Requests” on page 202.

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 135 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.

Shared Storage Option Summary Reports

These two reports contain Media Manager information about your SSO configuration and include the following information about the drives and hosts.

This Report	Contains the Following SSO Information
Shared Drive Summary	Drive name, device allocation host, the number of registered hosts, drive reservation status, hosts reserving this drive, and the current scan host.
Device Allocation Host Summary	The device allocation host, host name of the registered host, the number of registered and reserved drives, availability status, the scan ability factor, and scanning status.

Viewing SSO Summary Reports

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

2. Click **Actions** > **View Status of Shared Drives** to display a dialog box that allows you to display these reports.

3. Select a device allocation host (or hosts) from the list and use **Add >>** to move it to the list of hosts that will be scanned.

4. Click **OK**.

   The Shared Drive Summary and Device Allocation Host Summary appear in the two lower panes.

For More Information About Shared Drives (SSO)

See the *VERITAS NetBackup SAN Shared Storage Option Sytem Administrator's Guide* for background, installation, configuration, and verification information on shared drives.

Managing Daemons 6

This chapter includes the following Media Manager daemon topics:

- Overview of Media Manager Daemons
- Media Manager Device Daemon (ltid)
- Automatic Volume Recognition Daemon (avrd)
- Media Manager Volume Daemon (vmd)
- Robotic Daemons
- Displaying Process Status using the vmps Script
- Logging

Overview of Media Manager Daemons

The following daemons manage the assignment and scanning of devices:

- `ltid` - The Media Manager device daemon.
- `avrd` - The automatic volume recognition daemon.
- `vmd` - The Media Manager volume daemon enables remote device management and controls the volume database. This daemon informs `ltid` of the location of requested volumes, and tracks the number of mounts and last mount time for each volume.

Robotic Daemons and Robotic Control Daemons

A Media Manager robotic daemon (and possibly a robotic control daemon) exists for each robot that you configure on a host where Media Manager is installed.

Every host that has a drive in a robot, has a robotic daemon for that robot. The robotic daemon receives requests from the Media Manager device daemon and sends necessary information directly to the robotics or to a robotic control daemon.

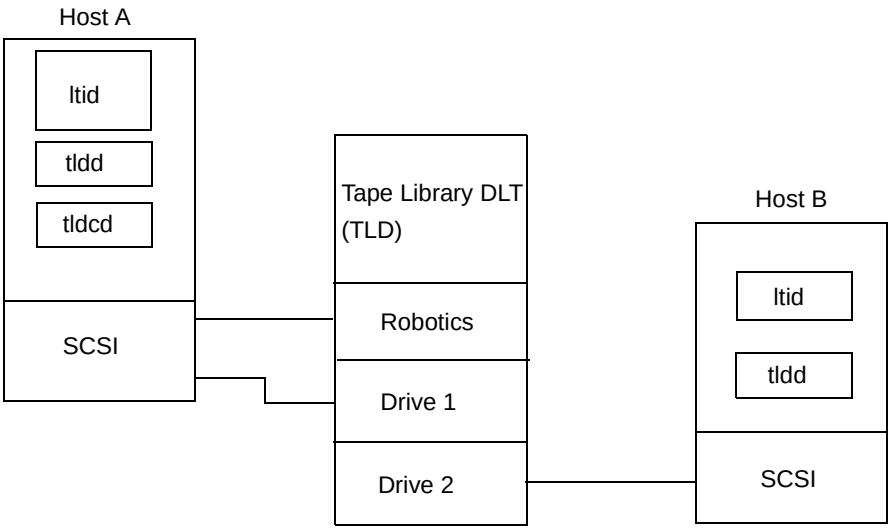
Robotic control daemons also exist for robot types where drives can optionally attach to hosts other than the host with direct robotic control. For example, each drive in a Tape Library DLT (TLD) robot can be attached to a different host and each host would have a `tldd` daemon. The robotics are controlled by a single host and only that host has the robotic control daemon, `tldcd`. When it is necessary to mount a tape, the robotic daemon on the host with the drive, sends control information to the robotic control daemon on the host controlling the robotics.

The following figure shows the daemons for a Tape Library DLT robot. In this figure note the following:

- Each host connects to one drive and has a robotic daemon, `tldd`.
- The robotic control and therefore the robotic control daemon, `tldcd`, is on Host A.

The Media Manager device daemons on host A and B start `tldd`. The `tldd` daemon 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.

Example TLD Configuration



Media Manager Device Daemon (ltid)

`ltid` is the interface between Media Manager commands and device control. `ltid` controls the reservation and assignment of volumes and optical disks. When a tape request is issued, `ltid` requests `vmd` to find the volume and then requests the appropriate robot to mount the volume. If necessary, `ltid` notifies the operator that the volume must be mounted manually.

Starting the Device Daemon

Starting `ltid` also starts `avrd`, `vmd`, and the daemons for any robots with defined drives.

From a Command Line

Enter the following command.

```
/usr/openv/volmgr/bin/ltid
```

To start `ltid` and the robotic daemons in verbose mode and log debug information through `syslogd`, use the `-v` option. This option should only be used when needed for debugging, since it can use large amounts of disk space to save extra information.

From the Java Administrative Interface

1. Use **Actions** > **Stop/Restart Media Manager Device Daemon**.
2. In the dialog box, the button 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.
3. Select a host and the Start action, and OK when ready. This also starts the daemons for any robots that are configured.

Stopping the Device Daemon

Stopping `ltid` stops robotic daemons. `vmd` continues to run.

The ACS robotic processes (`acsssi` and `acssel`) also continue to run, since they are used by the ACS test facility and do not normally need to be stopped.

From the Java administrative interface, stop the device daemon before making any changes to the device configuration as follows:

1. Notify users and operators that the system will be unavailable.
2. Check the Pending Requests list to ensure that no tapes are currently assigned. If any tapes are assigned, you cannot stop the daemons.
3. Use **Actions** > **Stop/Restart Media Manager Device Daemon**.
4. In the dialog box, the button 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.
5. Select a host and the **Stop** action, and **OK** when ready.

Automatic Volume Recognition Daemon (avrd)

This daemon handles automatic volume recognition and label scanning. This allows Media Manager to read labeled tape and optical disk volumes and assign the associated removable media requests to drives.

`avrd` is started when you start `ltid` and stops when you stop `ltid`. You do not have to start and stop it at any other times.

Media Manager Volume Daemon (vmd)

When `vmd` receives information from `ltid` about a requested volume, it searches the volume database and returns the robotic location of the volume to `ltid`. Because `vmd` may be running on or servicing requests from another system, and because it is used for remote device configuration and device management, `vmd` continues to run even after `ltid` and the other daemons have been stopped.

`vmd` must be active to change the volume configuration.

An additional function that `vmd` can provide is to be the device allocator (`DA`) for shared drives. In this case, `vmd` is known as `vmd/DA`.

You can do either of the following when starting this daemon:

- Start `ltid`. This also starts `vmd`.
- Start only `vmd`, by using the following command:

  ```
  /usr/openv/volmgr/bin/vmd
  ```

To stop this daemon use the following command:

```
/usr/openv/volmgr/bin/vmctrldbm -t
```

Robotic Daemons

The following table lists the robotic daemons and robotic control daemons (if applicable) for each robot type. For more information about these daemons, see the appendix, “Media Manager Man Pages” on page 219.

Robotic and Robotic Control Daemons

Robot	Daemon	Description
Automated Cartridge System (ACS)	`acsd`	This daemon runs on a Media Manager server and communicates mount, unmount, and robot inventory requests to the ACS server system interface process. This process communicates with the ACS library software server that controls the ACS robotics.
Library Management Facility (LMF)	`lmfd` lmfcd	(UNIX hosts only) The robotic daemon (`lmfd`) resides on a Media Manager server and passes mount and dismount requests to the LMF robotic control daemon (`lmfcd`). `lmfcd` receives mount or dismount requests from `lmfd` or robot inventory requests through an external socket interface. This daemon must reside on a host that is running the LMF Server or the LMF Client.
Optical Disk Library (ODL)	`odld`	(UNIX hosts only) This daemon runs on a Media Manager server that has an Optical Disk Library. `odld` receives requests to mount and unmount volumes, or for robot inventory, and communicates these requests to the robotics through a SCSI interface.
Tape Library DLT (TLD)	`tldd` tldcd	The robotic daemon (`tldd`) runs on each Media Manager server that has a drive in a Tape Library DLT. This daemon receives requests to mount and unmount volumes and sends these requests to the robotic control daemon (`tldcd`). `tldcd` runs on the Media Manager server that has the robotic control, accepts mount, dismount, and robot inventory requests and communicates with the Tape Library DLT robotics through a SCSI interface. Drives in the same robot may be configured on different hosts.
Tape Library 4MM (TL4)	`tl4d`	This daemon runs on a host that has a Tape Library 4MM. `tl4d` receives requests to mount and unmount volumes, or for robot inventory, and communicates these requests to the robotics through a SCSI interface.

Robotic and Robotic Control Daemons (continued)

Robot	Daemon	Description
Tape Library 8MM (TL8)	`tl8d` `tl8cd`	The robotic daemon (`tl8d`) runs on each Media Manager server that has a drive in a Tape Library 8MM. This daemon receives requests to mount and unmount volumes and sends these requests to the robotic control daemon (`tl8cd`). `tl8cd` runs on the Media Manager server that has the robotic control, accepts mount, dismount, and robot inventory requests and communicates with the Tape Library 8MM robotics through a SCSI interface. Drives in the same robot may be configured on different hosts.
Tape Library Half-inch (TLH)	`tlhd` `tlhcd`	(UNIX hosts only) The robotic daemon (`tlhd`) runs on each Media Manager server that has a drive in a Tape Library Half-inch. This daemon receives requests to mount and unmount volumes and sends these requests to the robotic control daemon (`tlhcd`). `tlhcd` runs only on the Media Manager server that has the robotic control, receives mount or dismount requests from `tlhd`, and communicates with the IBM Automated Tape Library Software, which controls a library, such as an IBM 3494.
Tape Library Multimedia (TLM)	`tlmd`	(UNIX hosts only) This daemon runs on a Media Manager server and communicates mount, unmount, and robot inventory requests to the ADIC Distributed AML Server (DAS), which controls the robotics, such as a Grau Automated Media Library (AML).
Tape Stacker 8MM (TS8)	`ts8d`	This daemon runs on a Media Manager server that has a Tape Stacker 8MM. `ts8d` receives requests to mount and unmount volumes, or for robot inventory, and communicates these requests to the robotics through a SCSI interface.
Tape Stacker DLT (TSD)	`tsdd`	This daemon runs on a Media Manager server that has a Tape Stacker DLT. This daemon receives requests to mount and unmount volumes, or for robot inventory, and communicates these requests to the robotics through a SCSI interface.
Tape Stacker Half-inch (TSH)	`tshd`	(UNIX hosts only) This daemon runs on a Media Manager server that has a Tape Library Half-inch. `tshd` receives requests to mount and unmount volumes, or for robot inventory, and communicates these requests to the robotics through a SCSI interface.

Starting and Stopping Robotic Daemons

Starting `ltid` also starts the robotic daemons for all configured robots. Stopping `ltid` also stops robotic daemons.

The ACS robotic processes (`acsssi` and `acssel`) continue to run, since they are used by the ACS test facility and do not normally need to be stopped.

You can start and stop robotic daemons independently of `ltid` as follows. To run the daemons in verbose mode and log debug information through syslog, use the `-v` option on the command for the daemon, or start `ltid` with the `-v` option. This option should only be used when needed for debugging, since it can use large amounts of disk space to save the extra information.

- To start a robotic daemon use the following command:

  `/usr/openv/volmgr/bin/`*daemon_name* `[-v] &`

  For example:

  ```
  /usr/openv/volmgr/bin/tldd -v &
  ```

- To stop a robotic daemon without stopping `ltid`, determine the process ID for the daemon using the `vmps` script and then use the `kill` command as follows.

  See “Displaying Process Status using the vmps Script” on page 212” for information on using this script.

  `/usr/openv/volmgr/bin/vmps | grep` *daemon_name*

  `kill` *daemon pid#*

  For example:

  ```
  /usr/openv/volmgr/bin/vmps | grep tldd
  kill 23145
  ```

- To stop robotic control daemons use the following commands:

  ```
  /usr/openv/volmgr/bin/lmfcd -t
  /usr/openv/volmgr/bin/tl8cd -t
  /usr/openv/volmgr/bin/tldcd -t
  /usr/openv/volmgr/bin/tlhcd -t
  ```

  You can also stop these control daemons with the `kill` command as described earlier.

Once started, a robotic daemon can be in an UP or DOWN state. When a connection is made to the appropriate robot, the corresponding daemon is in the UP state and can mount or unmount tapes (or platters). If the connection cannot be made or if errors exist,

the daemon moves to the DOWN state. Even in the DOWN state, the daemon is still running and automatically returns to the UP state when the connection is made or problems no longer exist.

Displaying Process Status using the vmps Script

The `vmps` script shows the Media Manager daemon processes that are active. You can execute this script using the following command:

```
/usr/openv/volmgr/bin/vmps
```

In the following sample display, the second column contains the process IDs for the processes.

```
root       303  0.0  0.2  136  264 ?  S    Feb 11  4:32 ltid -v
root       305  0.0  0.0  156    0 ?  IW   Feb 11  0:54 vmd -v
root       306  0.0  0.0  104    0 ?  IW   Feb 11  0:15 tl8d -v
root       307  0.0  0.0   68   56 ?  S    Feb 11 12:16 avrd
root       310  0.0  0.0  116    0 ?  IW   Feb 11  0:07 tl8cd -v
```

Logging

Robotic errors and network errors are logged using `syslogd`. See the NetBackup troubleshooting guide for UNIX for more information.

Tape I/O Commands 7

If you are not using NetBackup or Storage Migrator, or want to troubleshoot or test Media Manager; you can manually request Media Manager to mount and unmount specific volumes by using the commands found in this chapter.

Requesting Tapes

The `tpreq` command allows you to request a tape of a particular density and specify various options, such as the access mode. This command implicitly reserves a single drive and creates a file in the current working directory (unless a full path is specified). The file acts as a symbolic link to the tape and all subsequent access to the tape is through this file name. Users do not have to be concerned with the full path to a specific device file.

The information you supply on the `tpreq` command is registered for use by the Media Manager device daemon and used to validate all access requests to the tape file.

For all types of tapes, the tape is actually mounted and assigned when you enter the `tpreq` command.

By default, the drive assigned is one which supports DLT cartridge tapes, using the density dlt. You can use the density option on `tpreq` to request a drive that supports another density. See the Density field in the table in “Pending Requests Pane” on page 188 for a list of supported densities and drive types.

The density for the physical write is not selected automatically on drives. It is requested, so an operator can satisfy the correct drive. Density is determined by the `/dev` device name that was used when the drive was added to the Media Manager configuration or by the buttons selected on the drive itself.

A `tpreq` command must include a media ID and a file name. If the tape volume is associated with a volume pool (configured using Media Manager), the name of the volume pool must also be specified using the `-p` parameter.

The following example `tpreq` command reserves a tape drive and creates a symbolic tape file:

```
/usr/openv/volmgr/bin/tpreq -f tape1 -m jlr01 -a w -d qscsi
```


This example creates a file named tape1 in the user's current working directory and links the file to the drive containing the tape volume having the media ID of JLR01. The access mode for the tape file is set to write and a 1/4-inch cartridge drive is assigned.

See the tpreq(1) man page in the appendix for more information.

Note When a tpreq command is executed, a call is made to the script drive_mount_notify immediately after the media has been successfully placed in a pre-selected drive. This script is located in the /volmgr/bin directory and usage information is documented within the script. This script is only called from the tpreq command for drives that are in robots and is not valid for standalone drives.

Reading and Writing Tape Files

Reading or writing tape files involves copying the file from tape to disk or from disk to tape. To perform read or write operations, use one of the UNIX commands that performs input/output operations, for example tar or mt.

Positioning Tape Files

The mt command positions tape files by skipping forward or backward according to tape marks. The following table shows the operations available on the mt command for positioning tapes and how they affect tape files.

mt Command Operations

Command	Description
eof, weof	Writes end-of-file tapemarks at the current position on the tape according to the count option on mt.
fsf, bsf	Spaces forward or backward the number of tapemarks on the count option.
fsr, bsr	Spaces forward and backward the number of records according to the count option on mt. bsr is only supported for the undefined record type.

The following example uses mt to skip forward three files on a tape:

```
mt -f tape1 fsf 3
```

Rewinding Tape Files

When a file is rewound, it is positioned to the beginning of information. To rewind a tape file, you can use the `mt` command.

The following command causes rewinding of tape file `tape1`. `tape1` is positioned to the beginning of the tape volume associated with the file.

```
mt -f tape1 rewind
```

The count option is not used for the rewind operation. If a count is specified, it is ignored.

Removing Tape Files

When you have completed reading or writing tape files, use the `/usr/openv/volmgr/bin/tpunmount` command to end the assignment of the tape file. This command removes from the directory the tape file you created using `tpreq` and causes the tape volume to be removed from the tape drive. `tpunmount` is required for each file created by a `tpreq` command.

See the `tpunmount(1)` man page for more information.

Note When a `tpunmount` command is executed, call is made to the script `drive_mount_notify`. This script is located in the `/volmgr/bin` directory and usage information is documented within the script.

Using an Optical Disk

An optical disk cannot be used in the same ways that a tape can. It does have many similarities and takes advantage of the automation provided by Media Manager: it allows automatic volume recognition, and can be mounted and moved by a robot.

Optical disks work well with VERITAS storage management applications. These applications use databases to handle location information (offsets, capacity, and so forth) that would otherwise have to be done by the user. A user who is willing to keep track of such information can access an optical disk using the tape commands described in this topic.

In the following example, a user performs two `tar` operations to an optical disk, then lists the second `tar` image.

1. A rewritable optical disk is requested.

   ```
   tpreq tape -m XXX01A -d odiskwm -p NetBackup
   ```


2. The first tar is performed, starting at the beginning of the disk.

```
tar -cvf - /home/arh | dd of=tape ibs=10240 obs=10240
0+473 records in
189+0 records out
```

3. The second `tar` is performed, starting at the end of the previous data. The records out information is used for the `oseek` parameter.

```
tar -cvf - /home/arh/.cshrc|dd of=tape ibs=10240 obs=10240
   oseek=189
```

4. The disk is unmounted.

```
tpunmount tape
```

5. The optical disk is requested again.

```
tpreq tape -m XXX01A -d odiskwm
```

6. The second `tar` image is listed. To access the data, the user must know where it is located for the `iseek` parameter.

```
dd if=tape ibs=10240 obs=10240 iseek=189 | tar -tvf -
rw-r--r--357/110   2386 Jul  9 14:01 1992
/home/arh/.cshrc
```

7. The disk is unmounted.

```
tpunmount tape
```

External Access to Media Manager Controlled Devices

The device daemon (`ltid`) restricts access to Media Manager controlled drives that are in an UP state by changing the permissions of the device files for those drives. The permissions are changed to 0600 when `ltid` starts and back to their original settings when `ltid` is terminated (or when a drive's state is changed to DOWN).

Do not modify the permissions of these device files when `ltid` is active. To ensure reliable operation, only users that use the `tpreq` and `tpunmount` commands explained in this chapter can have access to an UP drive under `ltid` control.

The following example uses `tpreq`:

```
tpreq tape -m xxx -d 4mm -f /tmp/tape
```

```
/bin/tar -cvf /tmp/tape files

tpunmount /tmp/tape
```

Users that do not use `tpreq` and `tpunmount` to access drives that are in the UP state may encounter both access and data reliability problems. These problems occur because the Media Manager `avrd` daemon periodically attempts to rewind and read data from media in UP drives that are not currently assigned.

A user that is unable to use `tpreq` and `tpunmount` must do one of the following before attempting to access the drive:

- Down the drive prior to accessing it.
- Terminate `ltid` by executing `stopltid` and then restart `ltid` after accessing the drive.

User Messages

See the Device Management Status Codes section of the NetBackup troubleshooting guide for errors returned from user tape commands.

Media Manager Man Pages A

This appendix describes Media Manager commands and Media Manager processes. These commands can be executed from the command line.

The remaining commands in this appendix are for device management and are started or stopped by the Media Manager device daemon (`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`, `tpformat` (NetBackup DataCenter only), and vmoprcmd are administrative commands for device management.
- `vmadd`, `vmadm`, `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(1M)

NAME

acsd - Automated Cartridge System (ACS) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/acsd [-v]
```

DESCRIPTION

`acsd` interfaces with Media Manager to automatically mount and unmount tapes that are under Automated Cartridge System (ACS) control. It is initiated by `ltid` (the Media Manager device daemon), if the Media Manager device configuration shows drives in an ACS robot.

Stopping `ltid` stops `acsd`. You can start or stop `acsd` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify `acsd`'s process id and then entering the following commands:

`kill` *acsd_pid*

`/usr/openv/volmgr/bin/acsd [-v] &`

`acsd` performs its tasks by sending requests to the ACS Server System Interface process (`acsssi`) 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(1M)` command for cleaning operations on drives under ACS robotic control.

The Internet service number for `acsd` must be in `/etc/services`. If you are using NIS (Network Information Service), you should place the entry in this host's `/etc/services` file in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/acsd` with a single line containing the service number for `acsd`. The default service number is 13702.

OPTIONS

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `acsd` also starts with `-v`.

ERRORS

`acsd` returns an error message if there is a copy of `acsd` running.

Media Manager logs ACS and network errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

`acsssi` logs to a log file in the directory `/usr/openv/volmgr/debug/acsssi`.

SEE ALSO

`ltid(1M), syslogd(8), tpconfig(1M), vmadm(1M)`

lmfd(1M)

NAME

lmfd, lmfcd - Library Management Facility (LMF) daemon and control daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/lmfd [-v]

/usr/openv/volmgr/bin/lmfcd [-v] [-t]
```

DESCRIPTION

`lmfd` and `lmfcd` interface with Media Manager to mount and unmount tape volumes in an LMF robot.

Note `lmfd` and `lmfcd` only run on Solaris platforms.

`lmfd` directly interfaces with `ltid` (the Media Manager device daemon). `lmfd` runs on each host with a drive connection and sends mount and unmount requests to the control daemon, `lmfcd`.

`lmfcd` communicates with the Fujitsu LMF Server, which processes all requests and control functions for the robotic library. `lmfcd` can be running on a different host than `lmfd`, depending on where the Fujitsu library control is configured (see EXAMPLES). When communication with the library is established, `lmfd` puts the LMF robot in the UP state and can request volume mounts and unmounts. If the library or control daemon is inaccessible, `lmfd` changes the robot to the DOWN state. In this state, `lmfd` is still running and returns the robot to the UP state if `lmfcd` 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 hosts and the robot number must be the same on all hosts.

`lmfd` and `lmfcd` are automatically started when `ltid` is started and stopped when `ltid` is stopped. You can stop and start `lmfd` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify the `lmfd` process id and then entering the following commands:

`kill` *lmfd_pid*

```
/usr/openv/volmgr/bin/lmfd [-v] &
```

lmfcd is on the host that has the robotic control and is automatically started by lmfd on that host. lmfcd is terminated when you stop ltid. The media ID for any volumes to be used in the library must be defined in the volume database before any volumes can be accessed using ltid, lmfd, and lmfcd. Both the initial volume database population and future updates can be accomplished using the Media Manager robotic inventory options.

Drives are numbered 1 through *n*, based on information obtained from the Fujitsu library. To map Fujitsu library drive names to the appropriate Media Manager robot drive numbers, you can use the robotic test utility, lmftest (or robtest if the robot is configured). You can also use this utility along with the Fujitsu lmdisplay command-line interface to verify library communications, status, and functionality.

Drive cleaning for LMF robotic drives must be configured through a Fujitsu administrative interface, since these operations are not made available to applications that are using the Fujitsu library. For this reason, cleaning volumes cannot be defined using Media Manager. In addition, you cannot use the tpclean(1M) command for cleaning operations on drives under LMF robotic control.

The Internet service number for lmfcd must be in /etc/services. If you are using NIS (Network Information Service), the entry found in this host's /etc/services file should be placed in the master NIS server database for services. To override the services file, create the file /usr/openv/volmgr/database/ports/lmfcd with a single line containing the service number for lmfcd. The default service number is 13718.

OPTIONS

-v	Logs debug information using syslogd. If you start ltid with -v, lmfd and lmfcd are also started with -v.
-t	Terminates lmfcd.

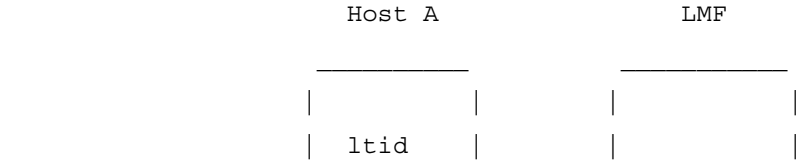
ERRORS

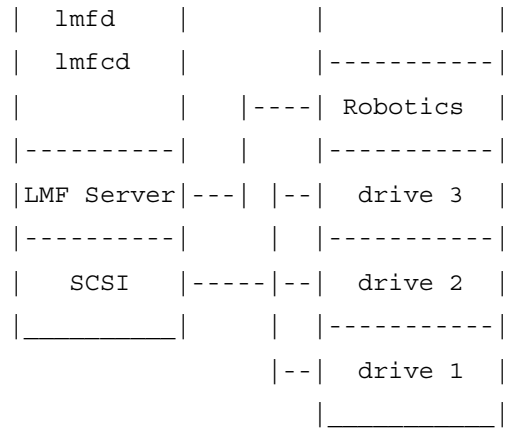
lmfd and lmfcd log an error message if there is a copy of the daemon running.

Media Manager logs any LMF robotic errors to syslogd. Log entries are also made when the state changes between UP and DOWN.

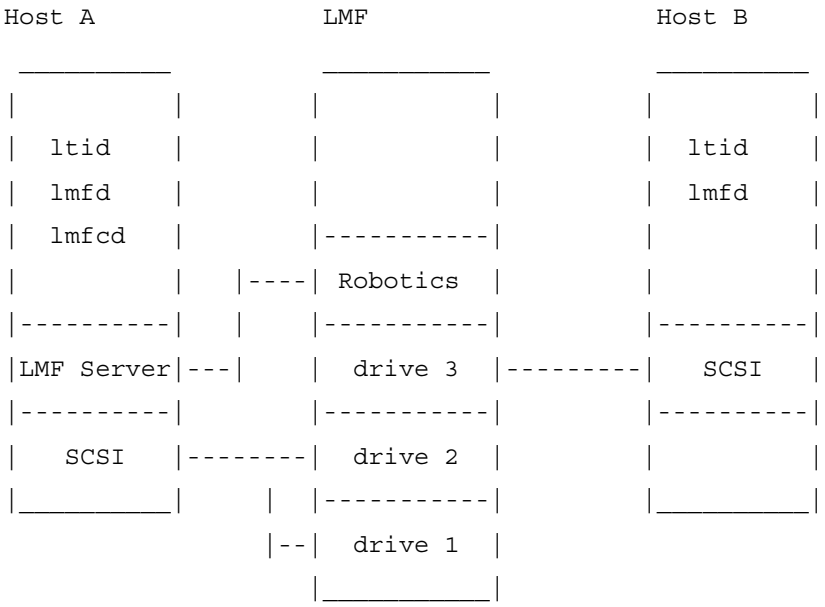
EXAMPLES

In the following diagram, the drives are attached to and the robotics are controlled from a single host. ltid initiates lmfd, which initiates lmfcd. The Fujitsu LMF Server daemon must be running on Host A.





In the following diagram, drives are attached to Host A and Host B. The robotics are controlled from Host A. `ltid` on each machine initiates `lmfd`. The `lmfd` on Host A also initiates `lmfcd`, since that is where the robotic control is defined. Requests to mount tapes from Host B go to `lmfd` on Host B, which sends the robotic command to `lmfcd` on Host A.



SEE ALSO

`ltid(1M)`, `syslog(8)`, `tpclean(1M)`, `tpconfig(1M)`, `vmadm(1M)`

ltid(1M)

NAME

ltid, stopltid - start and stop the Media Manager device daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/ltid [-v] [-nsu] [-logmounts [minutes]]
        [-noverify]

/usr/openv/volmgr/bin/stopltid
```

DESCRIPTION

The `ltid` command starts the Media Manager device daemon (`ltid`) and Automatic Volume Recognition daemon (`avrd`). These daemons manage Media Manager devices. With both daemons started, an operator can initiate the operator display, observe the drive status, and control the assignment of requests to standalone drives. `ltid` can be placed in a system initialization script.

The Media Manager volume daemon, `vmd`, is also started by the `ltid` command. `ltid` also starts the appropriate robotic daemons, if robotic devices were defined in Media Manager.

The `stopltid` command stops `ltid`, `avrd`, and the robotic daemons.

OPTIONS

`-v`

Logs debug information using `syslogd`. This is most informative when robotic devices are in use. This option starts robotic daemons and `vmd` in verbose mode.

`-nsu`

If this option is specified, tapes in standalone drives are not ejected when `tpunmount` is issued (though they are ejected if end of media is reached during a NetBackup backup or archive). You can override this option by specifying the `-force` option on `tpunmount`.

This option can be used in a NetBackup environment where it is desirable to keep the standalone drives ready after successful backups are performed.

Specifying this option is equivalent to specifying `DO_NOT_EJECT_STANDALONE` in the `vm.conf` file.

`-logmounts` *minutes*

If this option is specified, `ltid` logs mount requests using `syslogd`. The mount requests are still posted to Media Manager displays. The mount requests are only logged after a delay of the specified number of minutes.

If `-logmounts` is specified, the default number of minutes is 3. If `-logmounts 0` is specified, `ltid` logs the mount request through `syslogd` immediately. If *minutes* is not zero and the mount request is satisfied before the number of minutes are up, the request is not logged through `syslogd`.

`-noverify`

If this option is specified, `ltid` does not verify drive names. Normally, `ltid` verifies that the no rewind on close drive name 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.

ERRORS

`stopltid` does not stop the daemons if any drives are assigned to users. Ensure that all users have unmounted assigned tapes before attempting to stop the daemons.

Error messages are logged using `syslogd`.

SEE ALSO

`rc(8), syslogd(8), tpconfig(1M), vmadm(1M), tpunmount(1)`

odld(1M)

NAME

odld - Optical Disk Library (ODL) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/odld [-v]
```

DESCRIPTION

`odld` interfaces with Media Manager to mount and unmount optical platters in an Optical Disk Library. It is initiated by `ltid` (the Media Manager device daemon), if drives have been defined to be in an Optical Disk Library.

`odld` performs its tasks by communicating directly with the robotics using a SCSI interface. When the connection is established (that is, the path for robotics can be opened), `odld` puts the robot in the UP state and can mount and unmount platters. If the robotics are inaccessible, `odld` changes the robot to the DOWN state. In this state, `odld` is still running and it returns the robot to the UP state when it is able to make a connection.

You can stop or start `odld` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or the `ps` command to identify the `odld` process id and then entering the following commands:

`kill` *odld_pid*

`/usr/openv/volmgr/bin/odld [-v] &`

The Media Manager administrator must enter the media ID and slot number information for the platters in the Optical Disk Library into the volume database before users can access any platters using `ltid` and `odld`. Note that each optical platter contains two volumes (external media IDs), one per side. This information can be entered using `vmadm`.

The Internet service number for `odld` must be in `/etc/services`. If you are using NIS (Network Information Service), you should place the entry in this host's `/etc/services` file in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/odld` with a single line containing the service number for `odld`. The default service number is 13706.

OPTION

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `odld` also starts with `-v`.

ERRORS

`odld` returns an error message if there is a copy of `odld` running.

Any ODL and robotic errors are logged using `syslogd`. Log entries are also made when the state changes between UP and DOWN.

SEE ALSO

`ltid(1M), syslogd(8), tpconfig(1M), tpformat(1M), vmadm(1M)`

tl4d(1M)

NAME

tl4d - Tape Library 4MM (TL4) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tl4d [-v]
```

DESCRIPTION

`tl4d` interfaces with Media Manager to mount and unmount tapes in a Tape Library 4MM (TL4) robot. It is started by `ltid` (the Media Manager device daemon), if the Media Manager device configuration shows drives in the robot.

Stopping `ltid` stops `tl4d`. You can stop `tl4d` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify the `tl4d` process ID and entering the following commands:

`kill` *tl4d_pid*

`/usr/openv/volmgr/bin/tl4d[-v] &`

`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 `ltid` and `tl4d`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean(1M)` for information on setting the frequency for automatic drive cleaning.

The Internet service number for `tl4d` must be in `/etc/services`. If you are using NIS (Network Information Service), you should place the entry in this host's `/etc/services` file in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/tl4d` with a single line containing the service number for `tl4d`. The default service number is 13713.

OPTION

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `tl4d` also starts with `-v`.

ERRORS

`tl4d` returns an error message if there is a copy of `tl4d` running.

Media Manager logs any Tape Library 4MM and robotic errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

SEE ALSO

`ltid(1M), syslogd(8), tpclean(1M), tpconfig(1M), vmadm(1M)`

tl8d(1M)

NAME

tl8d, tl8cd - Tape Library 8MM (TL8) daemon and control daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tl8d [-v]

/usr/openv/volmgr/bin/tl8cd [-v] [-t] [-n]
```

DESCRIPTION

`tl8d` and `tl8cd` interface with Media Manager to mount and unmount volumes in a Tape Library 8MM robot.

`tl8d` directly interfaces with the Media Manager device daemon (`ltid`). A `tl8d` daemon runs on each host with a drive connection and sends mount and unmount requests to the control daemon (`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 automatically started when `ltid` is started and stopped when `ltid` is stopped. You can stop or start `tl8d` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify the `tl8d` process id and then entering the following commands:

`kill` *tl8d_pid*

`/usr/openv/volmgr/bin/tl8d [-v] &`

The control daemon, `tl8cd`, is on the host that has the robotic control and is started by `tl8d` on that host (see EXAMPLES).

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 `ltid`, `tl8d`, and `tl8cd`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean(1M)` 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 `/etc/services`. If you are using NIS (Network Information Service), the entry found in this host's `/etc/services` file should be placed in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/tl8cd` file with a single line containing the service number for `tl8cd`. The default service number is 13705.

OPTIONS

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `tl8d` and `tl8cd` are also started with `-v`.

`-t` Terminates `tl8cd`.

`-n` Causes `tl8cd` to run with barcode checking disabled. This option is useful, if all or most of the volumes in the library do not contain barcodes, because it takes the robot a lot less time to scan volumes.

Note that if the volumes contain barcodes and the `-n` option is selected, the barcodes are ignored.

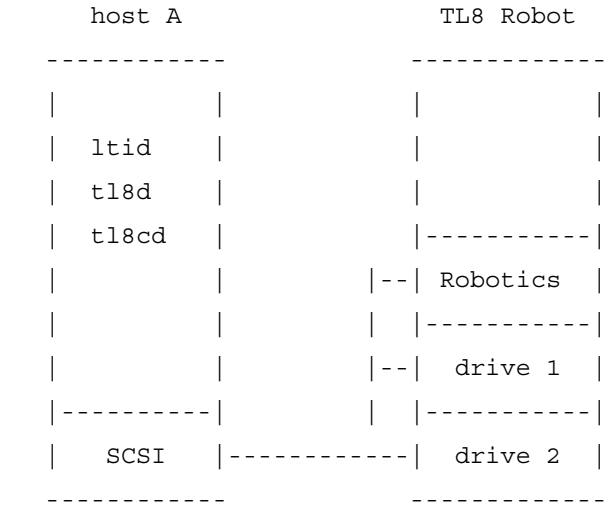
ERRORS

`tl8d` and `tl8cd` log error messages if there is a copy of the daemon running.

Media Manager logs any Tape Library 8MM and robotic errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

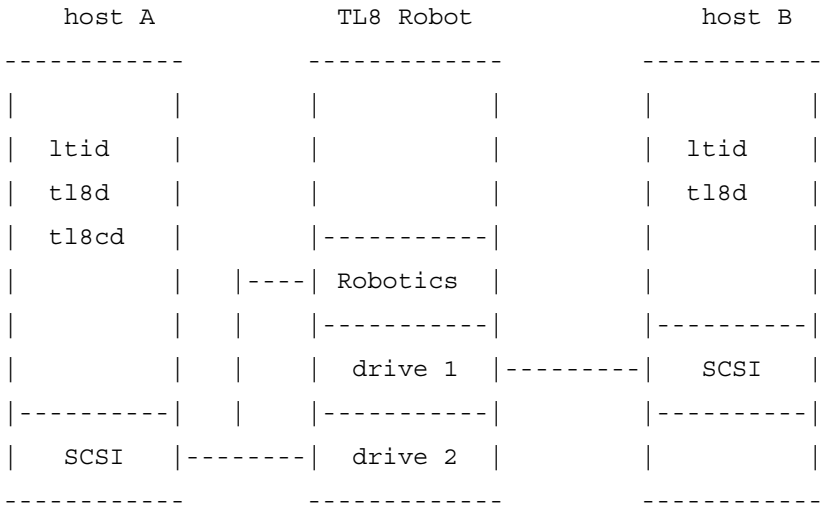
EXAMPLES

In the following diagram, the drives and the robotics are connected to a single host. `ltid` initiates `tl8d`, which in turn initiates `tl8cd`.



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.



SEE ALSO

ltid(1M), syslogd(8), tpclean(1M), tpconfig(1M), vmadm(1M)

tldd(1M)

NAME

tldd, tldcd - Tape Library DLT (TLD) daemon and control daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tldd [-v]

/usr/openv/volmgr/bin/tldcd [-v] [-t]
```

DESCRIPTION

`tldd` and `tldcd` interface with Media Manager to mount and unmount volumes in a Tape Library DLT (TLD) robot.

`tldd` directly interfaces with `ltid` (the Media Manager device daemon). `tldd` runs on each host with a drive connection and sends mount and unmount requests to the control daemon (`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 `ltid` is stopped. You can stop or start `tldd` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify the `tldd` process ID and then entering the following commands:

`kill` *tldd_pid*

```
/usr/openv/volmgr/bin/tldd [-v] &
```

`tldcd` is on the host that has the robotic control and is automatically started by `tldd` on that host (see EXAMPLES).

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 `ltid`, `tldd`, and `tldcd`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean(1M)` 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 `/etc/services`. If you are using NIS (Network Information Service), the entry found in this host's `/etc/services` file should be placed in the master NIS server database for services. To override the services file, create the `/usr/openv/volmgr/database/ports/tldcd` file with a single line containing the service number for `tldcd`. The default service number is 13711.

OPTIONS

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `tldd` and `tldcd` are also started with `-v`.

`-t` Terminates `tldcd`.

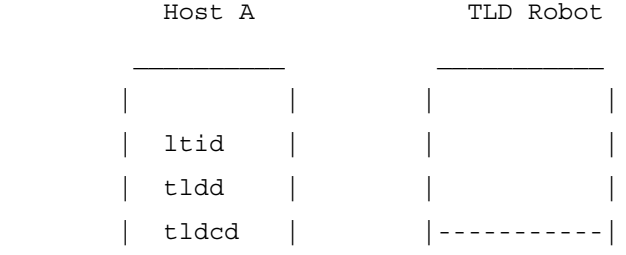
ERRORS

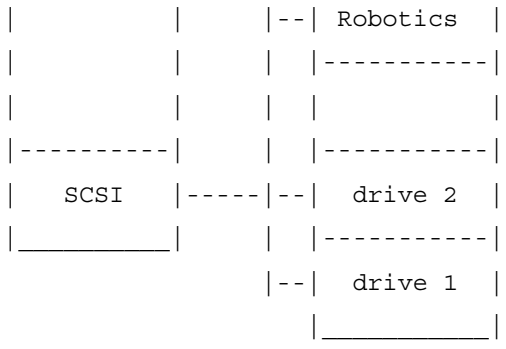
`tldd` and `tldcd` log an error message if there is another copy of the daemon running.

Media Manager logs any Tape Library DLT and robotic errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

EXAMPLES

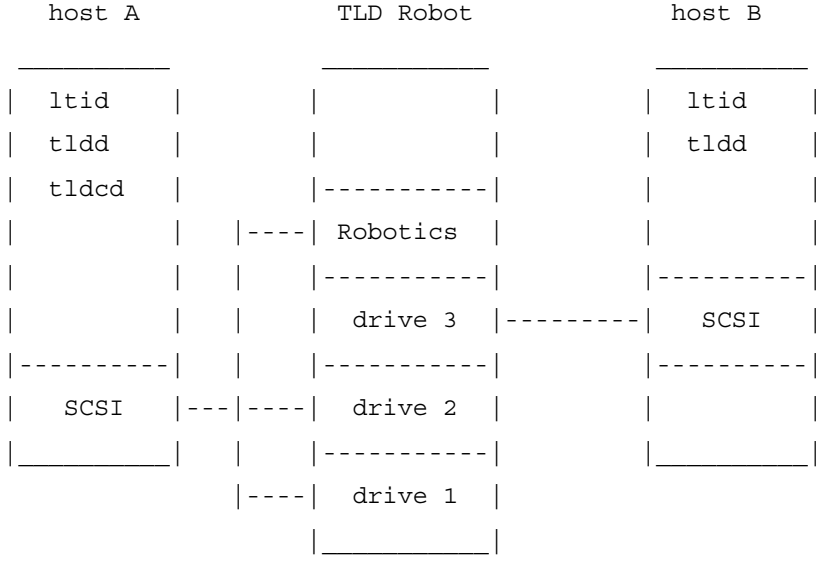
In the following diagram, the two drives and the robotics connect to Host A. `ltid` initiates `tldd`, which in turn initiates `tldcd`.





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.



SEE ALSO

`ltid(1M), syslog(8), tpclean(1M), tpconfig(1M), vmadm(1M)`

tlhd(1M)

NAME

tlhd, tlhcd - Tape Library Half-inch (TLH) daemon and control daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tlhd [-v]

/usr/openv/volmgr/bin/tlhcd [-v] [-t]
```

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 `ltid` (the Media Manager device daemon). `tlhd` runs on each host with a drive connection and sends mount and unmount requests to the control daemon, `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 daemon 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 `ltid` is started and stopped when `ltid` is stopped. You can stop and start `tlhd` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify the `tlhd` process id and then entering the following commands:

`kill` *tlhd_pid*

```
/usr/openv/volmgr/bin/tlhd [-v] &
```

`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 `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 `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.

The Internet service number for `tlhcd` must be in `/etc/services`. If you are using NIS (Network Information Service), the entry found in this host's `/etc/services` file should be placed in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/tlhcd` with a single line containing the service number for `tlhcd`. The default service number is 13717.

OPTIONS

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `tlhd` and `tlhcd` are also started with `-v`.

`-t` Terminates `tlhcd`.

ERRORS

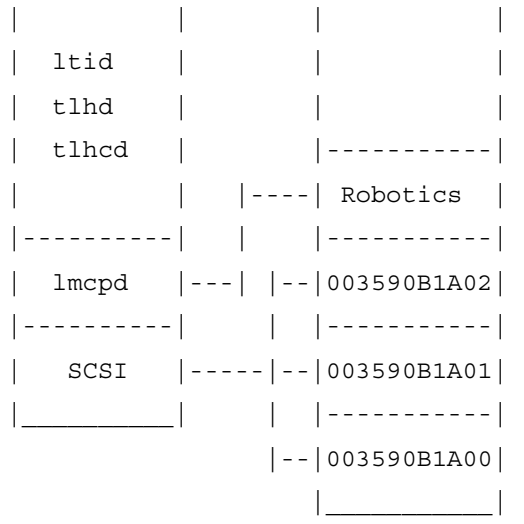
`tlhd` and `tlhcd` log an error message if there is a copy of the daemon running.

Media Manager logs any Tape Library Half-inch and robotic errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

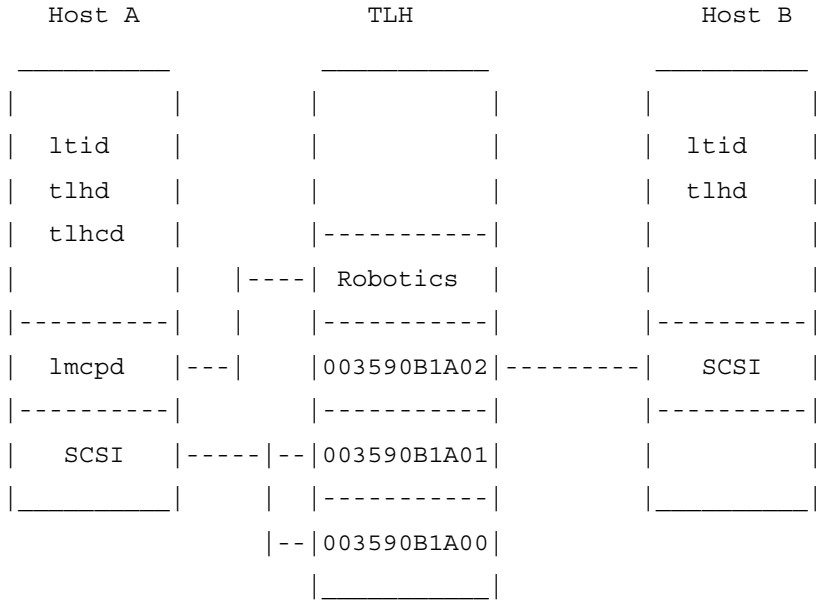
EXAMPLES

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 library manager control-point daemon (`lmcpd`) must be running on Host A.



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.



SEE ALSO

`ltid(1M)`, `syslog(8)`, `tpclean(1M)`, `tpconfig(1M)`, `vmadm(1M)`

tlmd(1M)

NAME

tlmd - Tape Library Multimedia (TLM) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tlmd [-v]
```

DESCRIPTION

`tlmd` interfaces with Media Manager to mount and unmount tapes in a Tape Library Multimedia (TLM) robot. It is initiated by `ltid` (the Media Manager device daemon), if drives have been defined in Media Manager to be in a Tape Library Multimedia robot.

`tlmd` communicates with the ADIC Distributed AML Server (DAS), which is a client/server software product designed to provide shared access to the family of ADIC Automated Media Libraries (AML). When the connection is established, `tlmd` puts the TLM robot in the UP state and can request inventories as well as media mounts and dismounts. If the connection cannot be established or DAS errors occur, `tlmd` changes the robot to the DOWN state but keeps running. In this state, `tlmd` keeps running and returns the robot to the UP state when the problem no longer exists.

For each TLM robot defined, `tlmd` connects to the DAS server that is defined by the DAS server attribute in the TLM robot entry in the Media Manager device configuration. From the perspective of DAS, `tlmd` is connecting as a DAS client. The host running `tlmd` establishes communication as the DAS client that is specified by the `DAS_CLIENT` entry in the Media Manager configuration file, `/usr/openv/volmgr/vm.conf`. If no `DAS_CLIENT` entry exists, the DAS client name will be the standard host name for the host that is running `tlmd`.

You can stop and start `tlmd` independently of `ltid` using `/usr/openv/volmgr/bin/vmps` or your server's `ps` command to identify `tlmd`'s process id and then entering the following commands:

`kill` *tlmd_pid*

```
/usr/openv/volmgr/bin/tlmd [-v] &
```

The drives are configured using DAS drive names, based on information obtained from the DAS server. The robotic test utility, `tlmtest` (or `robtest` if the robot is configured), can be used to determine the drive names associated with the robot. You can also use ADIC's `DASADMIN` to verify library communications, status, and functionality.

The Internet service number for tlmd must be in /etc/services. If you are using NIS (Network Information Service), you should place the entry in this the host's /etc/services file in the master NIS server database for services. To override the services file, create the file /usr/openv/volmgr/database/ports/tlmd with a single line containing the service number for tlmd. The default service number is 13716.

OPTION

-v Logs debug information using syslogd. If you start ltid with -v, tlmd also starts with -v.

ERRORS

tlmd returns an error message if there is a copy of tlmd running.

Tape Library Multimedia robot and network errors are logged using syslogd. Log entries are also made when the state changes between UP and DOWN.

SEE ALSO

ltid(1M), syslogd(8), tpconfig(1M), vmadm(1M)

tpautoconf(1M)

NAME

tpautoconf - Manage the global device database host

SYNOPSIS

```
/usr/openv/volmgr/bin/tpautoconf -get_gdbhost
/usr/openv/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(1M)`

tpclean(1M)

NAME

tpclean - manages tape drive cleaning

SYNOPSIS

```
/usr/openv/volmgr/bin/tpclean -L
/usr/openv/volmgr/bin/tpclean -C drive_name
/usr/openv/volmgr/bin/tpclean -M drive_name
/usr/openv/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, `ltid` must be running. You must also have root 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 to `stdout`.

`-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.

SEE ALSO

`ltid(1M), tpconfig(1M), vmadm(1M)`

tpconfig(1M)

NAME

tpconfig - tape configuration utility

SYNOPSIS

```
/usr/openv/volmgr/bin/tpconfig [-noverify]

/usr/openv/volmgr/bin/tpconfig -d

/usr/openv/volmgr/bin/tpconfig -dl

/usr/openv/volmgr/bin/tpconfig -l

/usr/openv/volmgr/bin/tpconfig -lsavdbhost

/usr/openv/volmgr/bin/tpconfig -add -drive -type drvtype -path
        drivepath [-vhname opticalvolhdrdrvname] [-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]

/usr/openv/volmgr/bin/tpconfig -update -drive drvindex [-type
        drvtype] [-path drivepath] [-vhname opticalvolhdrdrvname]
        [-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]

/usr/openv/volmgr/bin/tpconfig -delete -drive drvindex

/usr/openv/volmgr/bin/tpconfig -multiple_delete -drive
        drvindex1:drvindex2: ... drvindexN

/usr/openv/volmgr/bin/tpconfig -add -robot robnum -robtype
        robtype -robpath robpath [-vdbhost volume_database_host]

/usr/openv/volmgr/bin/tpconfig -add -robot robnum -robtype
        robtype -cntlhost cntlhost [-vdbhost volume_database_host]

/usr/openv/volmgr/bin/tpconfig -update -robot robnum [-robtype
        robtype] [-robpath robpath] [-cntlhost cntlhost] [-vdbhost
        volume_database_host]

/usr/openv/volmgr/bin/tpconfig -delete -robot robnum
```


```
/usr/openv/volmgr/bin/tpconfig -multiple_delete -robot
        robnum1:robnum2: ... robnumN

/usr/openv/volmgr/bin/tpconfig -savdbhost
        standalone_volume_database_host
```

DESCRIPTION

`tpconfig` can be used as a command line interface or menu interface to configure robots and drives for use with NetBackup.

`/usr/openv/volmgr/bin/tpconfig [-noverify]` starts the Media Manager Device Configuration Utility. This menu-based utility creates and modifies databases in the `/usr/openv/volmgr/database` directory. These databases identify the robotics and drives that are under control of `ltid` (the Media Manager device daemon). `ltid` uses these files to correlate drives in the operator's drive status display to the device files in the `/dev` directory.

For example, assume that you want to configure a drive recognized by the system as an 8-mm type drive. Look in the `/dev` directory and locate the no rewind on close device path for an 8-mm type drive and then specify this device path for the drive. `tpconfig` then records the device path in the appropriate device database.

After using `tpconfig` to change your device configuration, use the `stopltid` command to stop the `ltid` and `avrd` (automatic volume recognition) daemons (if they are running). Then use the `ltid` command to start the daemons again. See `ltid(1M)` for more information.

You must be the root user to execute this utility.

OPTIONS

`-l`
: Lists the current device configuration (to `stdout`), without volume database host names.

`-d`
: Lists the current configuration information (to `stdout`), 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 Media Manager volume daemon maintains the volume configuration for standalone drives.

`-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 that relate 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.

`-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 only applicable for NetBackup DataCenter.

`-savdbhost` *standalone_volume_database_host*
: Sets the volume database host for standalone drives that attach to this specified 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.

  Drive type 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, `dtf` for DTF tape drive, `qscsi` for QIC tape drive, `hcart` for Half-inch cartridge drive, `hcart2` for Half-inch cartridge drive 2, `hcart3` for Half-inch cartridge drive 3, `odiskwm` for optical disk-write many drive, `odiskwo` for optical disk-write once drive.

  Drive type 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 QIC tape drive.

`-path` *drivepath*
Specifies the system name for the drive. For example, `/dev/rmt/0cbn`.

`-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.

Frequency-based cleaning is not needed if TapeAlert is used.

`-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.

Robot numbers must be unique for all robots, regardless of the robot type or the host that controls them.

`-robtype` *robtype*
Specifies the type of robot that you are configuring and can be any of the types supported by NetBackup. Check the VERITAS support web site to determine the robot type to specify for a particular model of robotic library.

Robot type can be any of the following for NetBackup DataCenter:

`acs` for Automated Cartridge System, `lmf` for Library Management Facility, `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, `tsh` for Tape Stacker Half-inch, `odl` for Optical Disk Library.

Robot type can be any of the following for NetBackup BusinesServer:

`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.

`-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.

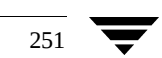
drivenum specifies the number of this drive.

`-VendorDrvName` *venddrvname*

Specifies the IBM device name for a TLH robotic drive or the DAS drive name for a TLM robotic drive.

`-vhname` *opticalvolhdrdrvname*

Specifies the volume header path for an optical drive.



Note The following option is not supported in NetBackup BusinesServer.

`-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.

If you are adding or updating shared drives (SSO option) on NetBackup DataCenter, make this name as descriptive as possible.

`-newasciiname` *asciidrivename*
Specifies a new name for the drive.

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 for LMF, TL8, TLD, and TLH, robots that can have the robotic control on another host, and for 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 is a UNIX host or Windows 2000 host with the robotic control, 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.

FILES

`/usr/openv/volmgr/database/ltidevs`

`/usr/openv/volmgr/database/robotic_def`

`/usr/openv/volmgr/help/tpconfig* (Help files)`

SEE ALSO

`ltid(1M)`

tpformat(1M)

NAME

tpformat - formats optical disks for use by Media Manager

SYNOPSIS

```
/usr/openv/volmgr/bin/tpformat -m media_id [-d odiskwm |
          odiskwo] [-f] [-o] [-r robot_number]
```

DESCRIPTION

The `tpformat` command writes a volume label (including a media ID) on an optical disk platter. When used with the `-f` option, this command also formats the platter.

The volume label, a partition table required by disk drivers on most operating system platforms, contains the media ID. The recorded media ID is also kept in the volume database as the media ID. When a platter is mounted, Media Manager compares the recorded media ID to the media ID that was requested to verify that the correct platter is mounted.

You specify a media ID to be written on the disk. An external media ID is an identifier that is written on the outside of the volume so the operator can find the volume. The recorded media ID and external media ID must always be the same or the wrong volume will be mounted.

Whether it is necessary to label an optical disk with `tpformat` depends on the platform that has the optical disk drive as follows:

- On Sun Solaris and SGI IRIX platforms, you must use `tpformat` to write a system-specific volume label (that is, a partition table) and media ID on each side of a platter before you can use it with Media Manager. This action is required regardless of whether the platter has been formatted. However, if the platter is preformatted you do not have to reformat it.
- On HP HP-UX and IBM AIX systems, volume labels do not apply and it is not mandatory to use `tpformat`, unless you must use it to format the volume. However, labeling is still recommended so the volume will have an media ID that Media Manager can use to verify that the correct volume is mounted.

All optical disk platters must be formatted before Media Manager can use them. You can purchase preformatted platters (recommended) or format them manually with the `-f` option.

You must be a root user to execute tpformat and you can use it only on the server that has the optical drive. For example, you cannot use tpformat on a NetBackup master server to format media that is mounted in a drive on a NetBackup media server. In addition, the drive must be under control of Media Manager, with the device daemon (ltid) running.

This command causes a mount request to appear in the operator displays; or if the volume is in a robot and the media ID that you specify exists in the volume database, the volume is automatically mounted.

When using one of the available media management interfaces to add media to Media Manager, you can choose the label option, making it unnecessary to use tpformat.

OPTIONS

-m *media_id*
: Writes a media ID on an optical platter. You can specify up to six alpha-numeric characters for the ID. This media ID is also referred to as the recorded media ID when it is read from the platter.

-d odiskwm | odiskwo
: The density (media type) that is being formatted. The default is odiskwm.

odiskwm specifies rewritable (write many) media.

odiskwo specifies write once (WORM) media.

Note WORM media can be formatted only once by tpformat.

-f
: Formats the selected disk surface. Since it takes approximately 25 minutes per surface to format, use this option only for disks not formatted at the factory.

-o
: You must specify this option (overwrite) to use tpformat on a platter that has an recorded media ID (that is, the platter contains a label).

-r *robot_number*
: Verifies that the robot number specified is configured and is a valid robot type that supports the formatting of optical volumes.

EXAMPLES

The following example writes diska as the media ID and a volume header to a rewritable optical disk:

```
tpformat -m diska -d odiskwm
```

In the following example a platter has a recorded media ID. To overwrite the current label and specify a new media ID you must specify the -o option:

```
tpformat -o -m disk1 -d odiskwm
```

SEE ALSO

ltid(1M), tpconfig(1M), tpreq(1), vmadm(1M)

tpreq(1)

NAME

tpreq - request a tape volume for mounting and associate a file name with the assigned drive

SYNOPSIS

`/usr/openv/volmgr/bin/tpreq -m` *media_id* `[-a` *accessmode*`] [-d` *density*`] [-p` *poolname*`] [-f]` *filename* `[-x` *symmetrix_serial_number*`]`

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 `tpunmount` to unmount the volume and remove the file name from the directory in which the file was created.

When a `tpreq` command is executed, a call is made to the script `drive_mount_notify` immediately after the media has been successfully placed in a pre-selected drive. This script is located in the `/volmgr/bin` directory and usage information is documented within the script. This script is only called from the `tpreq` command for drives that are in robots and is not valid for standalone drives.

For NetBackup DataCenter if you request optical disk densities (`odiskwm` or `odiskwo`), `tpreq` acts differently than with sequential tape devices. The logical file name is a link to the data partition of the disk device. By default, it is the character device. Optical platters are labeled by `tpformat` with the volume-header partition being the label and the data partition being the rest of the disk.

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, dtf for DTF cartridge, hcart for 1/2 Inch cartridge, hcart2 for 1/2 Inch cartridge 2, hcart3 for 1/2 Inch cartridge 3, odiskwm for Optical disk-write many, odiskwo for Optical disk-write once, 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 represents a symbolic link to the drive where the volume is mounted.

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.

Specifying -f before *filename* is optional.

`-x` *symmetrix_serial_number*

This option is valid only for Sun Solaris systems. Specifies the 12-digit serial number of an EMC Symmetrix storage system. This option allows the mounting of a Fastrax tape volume in a NetBackup for EMC Fastrax configuration.

SEE ALSO

`tpformat(1M), tpunmount(1), vmadm(1M)`

tpunmount(1)

NAME

tpunmount - removes a tape volume from a drive and tape file from the directory

SYNOPSIS

```
/usr/openv/volmgr/bin/tpunmount [-f] filename [-force]
```

DESCRIPTION

`tpunmount` removes a tape file from the directory and removes the tape volume from the drive (if the media was mounted).

Standalone drives are *not* unloaded (if the `-force` option is *not* specified) in the following cases:

- The `ltid` option, `-nsu` (no standalone unload) was specified.
- The `DO_NOT_EJECT_STANDALONE` option was specified in the `vm.conf` file.

When a `tpunmount` command is executed for drives that are not NDMP or Fastrax drives, a call is made to the script `drive_unmount_notify`. This script is located in the `/volmgr/bin` directory and usage information is documented within the script.

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 the `-nsu` option was specified for `ltid` or `DO_NOT_EJECT_STANDALONE` was specified in the `vm.conf` file, at the time `ltid` was started.

EXAMPLE

The following command unmounts the tape volume associated with file `tape1` and removes the file from the current directory:

```
tpunmount tape1
```

SEE ALSO

`tpreq(1), ltid(1M)`

ts8d(1M)

NAME

ts8d - Tape Stacker 8MM (TS8) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/ts8d [-v]
```

DESCRIPTION

`ts8d` interfaces with Media Manager to mount and unmount tapes in a Tape Stacker 8MM robot. It is initiated by `ltid` (the Media Manager device daemon), if the Media Manager device configuration shows drives in a Tape Stacker 8MM.

Stopping `ltid` stops `ts8d`. You can stop or start `ts8d` independently of `ltid` using the `/usr/openv/volmgr/bin/vmps` command or your server's `ps` command to identify the `ts8d` process id and then entering the following commands:

`kill` *ts8d_pid*

`/usr/openv/volmgr/bin/ts8d [-v] &`

`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 `ltid` and `ts8d`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean(1M)` for information on setting the frequency for automatic drive cleaning.

The Internet service number for `ts8d` must be in `/etc/services`. If you are using NIS (Network Information Service), you should place the entry in this host's `/etc/services` file in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/ts8d` with a single line containing the service number for ts8d. The default service number is 13709.

OPTION

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `ts8d` also starts with `-v`.

ERRORS

`ts8d` returns an error message if there is a copy of `ts8d` running.

Media Manager logs any Tape Stacker 8MM and robotic errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

SEE ALSO

`ltid(1M), syslogd(8), tpclean(1M), tpconfig(1M), vmadm(1M)`

tsdd(1M)

NAME

tsdd - Tape Stacker DLT (TSD) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tsdd [-v]
```

DESCRIPTION

`tsdd` interfaces with Media Manager to mount and unmount tapes in Tape Stacker DLT (TSD) robots. It is initiated by `ltid` (the Media Manager device daemon), if the Media Manager device configuration shows drives in the Tape Stacker DLT (TSD).

Stopping `ltid` stops `tsdd`. You can stop or start `tsdd` independently of `ltid` using the `/usr/openv/volmgr/bin/vmps` command or your server's `ps` command to identify the process id for `tsdd`, and then entering the following commands:

`kill` *tsdd_pid*

```
/usr/openv/volmgr/bin/tsdd [-v] &
```

`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 `ltid` and `tsdd`.

If a cleaning volume is used, it must be defined in the volume configuration. See `tpclean(1M)` for information on setting the frequency for automatic drive cleaning.

The Internet service number for tsdd must be in `/etc/services`. If you are using NIS (Network Information Service), you should place the entry in this host's `/etc/services` file in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/tsdd` with a single line containing the service number for `tsdd`. The default service number is 13714.

OPTION

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `tsdd` also starts with `-v`.

ERRORS

`tsdd` returns an error message if there is a copy of `tsdd` running.

Media Manager logs any Tape Stacker DLT robot and robotic errors to `syslogd`. Log entries are also made when the state changes between UP and DOWN.

SEE ALSO

`ltid(1M), tpclean(1M), tpconfig(1M), vmadm(1M)`

tshd(1M)

NAME

tshd - Tape Stacker Half-inch (TSH) daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/tshd [-v]
```

DESCRIPTION

`tshd` interfaces with Media Manager to mount and unmount tapes in Tape Stacker Half-inch (TSH) robots. It is initiated by `ltid` (the Media Manager device daemon), if drives have been defined in Media Manager to be in a TSH robot.

This daemon communicates directly with the robotics using a SCSI interface. When the connection is established (that is, the path for robotics can be opened), `tshd` puts the TSH robot in the UP state and can mount and unmount tapes. If the robotics are inaccessible, `tshd` changes the robot to the DOWN state. In this state, `tshd` is still running and it returns the robot to the UP state when it is able to make a connection.

You can stop or start `tshd` independently of `ltid` using the `/usr/openv/volmgr/bin/vmps` command or your server's `ps` command to identify `tshd`'s process id and then entering the following commands:

`kill` *tshd_pid*

`/usr/openv/volmgr/bin/tshd [-v] &`

The media ID and slot number information for half-inch tapes in a TSH robot must be defined in the volume database before any tapes can be accessed using `ltid` and `tshd`.

A cleaning volume can also reside in the tape stacker and if so, must be defined. See `tpclean(1M)` for information on setting the frequency for automatic drive cleaning.

The Internet service number for `tshd` must be in `/etc/services`. If you are using NIS (Network Information Service), you should place the entry in this host's `/etc/services` file in the master NIS server database for services. To override the services file, create the file `/usr/openv/volmgr/database/ports/tshd` with a single line containing the service number for `tshd`. The default service number is 13715.

OPTION

`-v` Logs debug information using `syslogd`. If you start `ltid` with `-v`, `tshd` also starts with `-v`.

ERRORS

`tshd` returns an error message if there is another copy of `tshd` running.

Any Tape Stacker Half-inch and robotic errors are logged using `syslogd`. Log entries are also made when the state changes between UP and DOWN.

SEE ALSO

`ltid(1M), tpclean(1M), tpconfig(1M), vmadm(1M)`

vmadd(1M)

NAME

vmadd - Add volumes to the volume database

SYNOPSIS

/usr/openv/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.

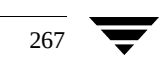
Valid media types for NetBackup DataCenter are: 4mm, 8mm, 8mm2, 8mm3, dlt, dlt2, dlt3, dtf, hcart, hcart2, hcart3, odiskwm, odiskwo, qcart, 4mm_clean, 8mm_clean, 8mm2_clean, 8mm3_clean, dlt_clean, dlt2_clean, dlt3_clean, dtf_clean, hcart_clean, hcart2_clean, hcart3_clean.

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(1M), vmdelete(1M), vmpool(1M), vmquery(1M)`

vmadm(1M)

NAME

vmadm - character-based media management utility

SYNOPSIS

```
/usr/openv/volmgr/bin/vmadm [-l] [-t]
```

DESCRIPTION

vmadm can be used to manage volumes and volume pools, manage barcode rules, and inventory robots controlled by the Media Manager volume daemon (vmd). Any actions performed using this utility are serviced by making requests to vmd. You must be the root user to use this utility.

This utility has a character-based user interface and can be used from any terminal. When this utility is initiated, the administrator is presented with a menu of operations that can be performed.

You can also start the tpconfig utility from vmadm.

OPTIONS

-l

Requests that the Media Manager volume daemon log the current status. If vmd can handle the request; no output is visible, but log messages are written to the debug log (if the log is enabled).

-t

Terminates the Media Manager volume daemon.

ERRORS

If vmd is not running, most vmadm operations fail and the following message appears:

```
unable to validate server: cannot connect to vmd (70)
```

See vmd(1M) to obtain additional debugging information should problems persist.

FILES

/usr/openv/volmgr/help/vmadm* (these are help files)

/usr/openv/volmgr/database/volDB

SEE ALSO

ltid(1M), tpconfig(1M), vmd(1M)

vmchange(1M)

NAME

vmchange - change media information in the Media Manager volume database

SYNOPSIS

Change volume group residence

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -vg_res
        -rt robot_type -rn robot_number -rh robot_host -v volume_group
```

Change volume residence

```
/usr/openv/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

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -exp
        mm/dd/yy hh:mm:ss -m media_id
```

Change the barcode for a volume

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -barcode
        barcode -m media_id [-rt robot_type]
```

Change the media description for a volume

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -d
        "media_description" -m media_id
```

Associate this volume with a different pool

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -p
        pool_number -m media_id
```

Change a volume's maximum mount count

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host]
        -maxmounts max_mounts -m media_id
```

Change a volume's number of mounts count or cleanings

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -n
        num_mounts/cleanings -m media_id
```

Change a volume's media type

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -new_mt
        media_type -m media_id
```


Change a volume's robot type

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -new_rt
        robot_type -m media_id -rn robot_number
```

Change a volume's group

```
/usr/openv/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

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -vltname
        vault_name -m media_id
```

Change the date the volume was sent to the vault

```
/usr/openv/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

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host]
        -vltreturn mm/dd/yy hh:mm:ss -m media_id
```

Change a volume's vault slot number

```
/usr/openv/volmgr/bin/vmchange [-h volume_database_host] -vltslot
        vault_slot -m media_id
```

Change the volume's vault session id

```
/usr/openv/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

```
/usr/openv/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

```
/usr/openv/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

```
/usr/openv/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

```
/usr/openv/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(1M), vmdelete(1M), vmpool (1M), vmquery(1M)`

vmcheckxxx(1M)

NAME

vmcheckxxx - Report the media contents of a robotic library

SYNOPSIS

```
/usr/openv/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(1M)

vmd(1M)

NAME

vmd - Media Manager volume daemon

SYNOPSIS

```
/usr/openv/volmgr/bin/vmd [-v]
```

DESCRIPTION

vmd manages the volume database, responding to requests to add, change, list, or delete volumes. By maintaining the location of media, vmd allows volumes to be removed and recognized by Media Manager. vmd is used with the Media Manager device daemon (ltid) to determine the location of requested volumes and keep track of the number of mounts and last mount time. vmd is initiated by ltid, but remains running when ltid is terminated using stopltid.

ltid does not require volumes to be defined in the volume database before being used. Automatic mounting of volumes in robotic devices, however, does not take place until volumes are defined and their slot information (for non API robots on NetBackup DataCenter) is entered in the volume database.

A direct interface to the volume database is provided to easily facilitate volume database administrative activities. Graphical, menu-driven, and command line Media Manager utilities are provided.

vmd is also used for remote Media Manager device management and for managing the volume pool, barcode rules, and global device databases.

In addition, for NetBackup DataCenter, vmd is the device allocator (DA) for shared drives. vmd/DA maintains shared drive and host information, such as a list of hosts that are registered to share a drive and which host currently has the drive reserved.

Shared drive information is modified only by requests from ltid. When ltid initializes on a device host, it calls vmd/DA with a list of shared drives. vmd/DA adds these drives and the host name to its configuration, if necessary. Since ltid passes a complete list of drives each time, vmd/DA deletes references to drives for that host when a change in configuration removes them from that host's shared drive list. This deletion occurs when ltid shuts down gracefully or after it is restarted.

The Internet service number for vmd must be in /etc/services. If you are using NIS (Network Information Service), the entry found in this host's /etc/services file should be placed in the master NIS server database for services. To override the services file, create the file /usr/openv/volmgr/database/ports/vmd with a single line containing the service number for vmd. The default service number is 13701.

OPTION

-v Logs detailed debug information if you create the debug/daemon directory (see ERRORS). Specify this option only if problems occur or if requested by VERITAS support.

ERRORS

vmd logs an error message using syslogd, if there is a copy of vmd running.

vmd logs an error message using syslogd, if the port that it binds to is in use. If this occurs, it may be necessary to override the services file using the mechanism described under DESCRIPTION.

To run vmd in debug mode do the following:

1. Before starting vmd, create the following directory:

   /usr/openv/volmgr/debug/daemon

   If vmd is running, stop and restart it after creating the directory.

2. Start vmd in verbose mode as follows or put a VERBOSE entry in vm.conf.

   /usr/openv/volmgr/bin/vmd -v

3. Check the log in /usr/openv/volmgr/debug/daemon.

If problems persist, you can obtain more debug information on the requestor by creating the following directory: /usr/openv/volmgr/debug/reqlib.

One log per day is created in each debug directory. These logs continue to build until the debug directory is moved or removed, unless you specify a DAYS_TO_KEEP_LOGS entry in vm.conf. Do not remove the debug directory while vmd is running. Running vmd in debug mode should be done only when necessary.

FILES

/usr/openv/volmgr/database/volDB

/usr/openv/volmgr/database/poolDB

/usr/openv/volmgr/database/ruleDB

/usr/openv/volmgr/database/globDB

/usr/openv/volmgr/debug/daemon/*

/usr/openv/volmgr/debug/reqlib/*

SEE ALSO

ltid(1M), vmadm(1M), vmadd (1M), vmchange (1M), vmdelete (1M), vmquery (1M)

vmdelete(1M)

NAME

vmdelete - Delete volumes from the volume database

SYNOPSIS

`/usr/openv/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(1M), vmchange(1M), vmquery(1M)`

vmoprcmd(1M)

NAME

vmoprcmd - perform operator functions on drives

SYNOPSIS

```
/usr/openv/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 daemon 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(1M)

NAME

vmpool - Manage volume pools

SYNOPSIS

`/usr/openv/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

Specifies the user id of the user that is permitted to request and use volumes in the volume pool. Enter a specific user id to permit only processes running at that user id, to access the volume pool.

Enter the default value, -1 (ANY), to permit any user id to access the pool.

For a NetBackup or Storage Migrator (NetBackup Datacenter only) volume pool, always enter the user id for root.

If you specify a specific user id and a different user id requests the pool, then Media Manager verifies the group id (see *gid*).

gid

Enter the group id of the group that is permitted to request and use volumes in this volume pool.

Enter a specific group id to permit only processes running as that group id, to access the volume pool.

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(1M)

NAME

vmquery - Query the volume database, or assign and unassign volumes

SYNOPSIS

/usr/openv/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(1M), vmchange(1M), vmdelete(1M), vmpool(1M)`

vmrule(1M)

NAME

vmrule - Manage barcode rules

SYNOPSIS

`/usr/openv/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(1M)`

vmupdate(1M)

NAME

vmupdate - Inventory the media contents of a robotic library and update the volume database

SYNOPSIS

```
/usr/openv/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(1M)`

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 DLT2 DLT3 HCART HCART2 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 475.
Robot Examples	STK 97*xx* STK L180 STK L700 STK Powderhorn Silo

ACS Robot Attributes (continued)

Attribute	Comment
Host Supported	Windows (requires STK LibAttach software). 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 HCART2 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, “Fujitsu Library Management Facility (LMF)” on page 523.
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 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 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 8MM 8MM2 8MM3 DLT DLT2 DLT3 HCART HCART2 HCART3 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 in the NetBackup Media Manager system administrator's guide for Windows.
Robot Examples	Exabyte 210 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 HP DAT Autoloader
Host Supported	Windows 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 8MM2 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 Qualstar 46120 Exabyte X200
Host Supported	Windows 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 DLT2 DLT3 DTF 8MM 8MM2 8MM3 HCART HCART2 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 ATL 7100 Breece Hill Q210 HP SureStore DLT Library IBM 3575 Spectra Logic 9000 STK 97*xx*
Host Supported	Windows 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 HCART2 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 497.
Robot Examples	IBM 3494
Host Supported	Windows 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 8MM 8MM2 8MM3 DLT DLT2 DLT3 DTF HCART HCART2 HCART3 REWR_OPT (HP9000-800 only) 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 511.
Robot Examples	ADIC AML/J ADIC AML/S ADIC Scalar 10000

TLM Robot Attributes (continued)

Attribute	Comment
Host Supported	Windows 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 8MM2 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* Exabyte 210
Host Supported	Windows 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 DLT2 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 Quantum DLTStor
Host Supported	Windows 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 HCART2 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 31 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 /usr/openv/volmgr/bin/robtest 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.

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 300).
- 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 or the Drive Cleaning dialog (see “Cleaning Tape Drives” on page 51).

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 or the Drive Cleaning dialog box.

You can then use the `tpclean` command or the Drive Cleaning dialog (see “Cleaning Tape Drives” on page 51) 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 316 and “TapeAlert and Frequency-based Cleaning” on page 318).

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 users, groups, or applications. You can create volume pools for user groups 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 322).

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.

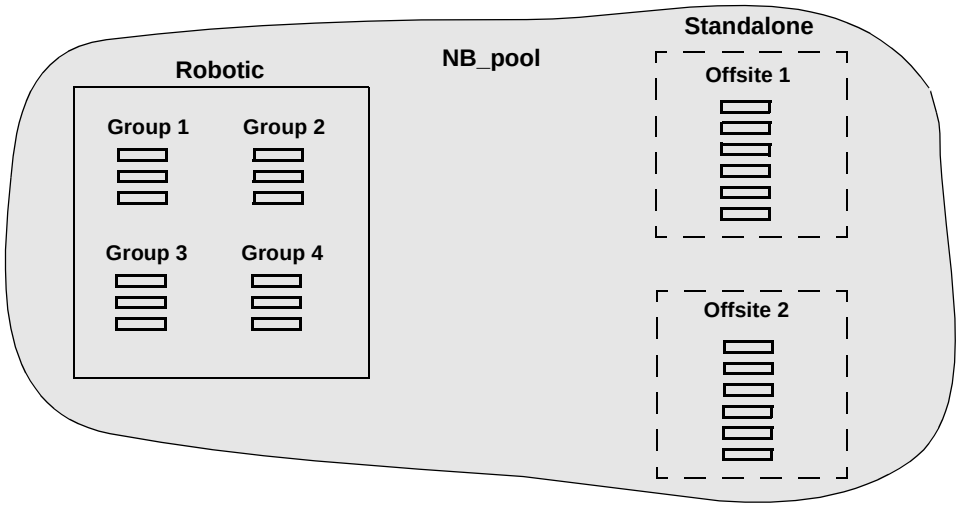
Do not confuse volume pools with volume groups. Remember that

- 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.

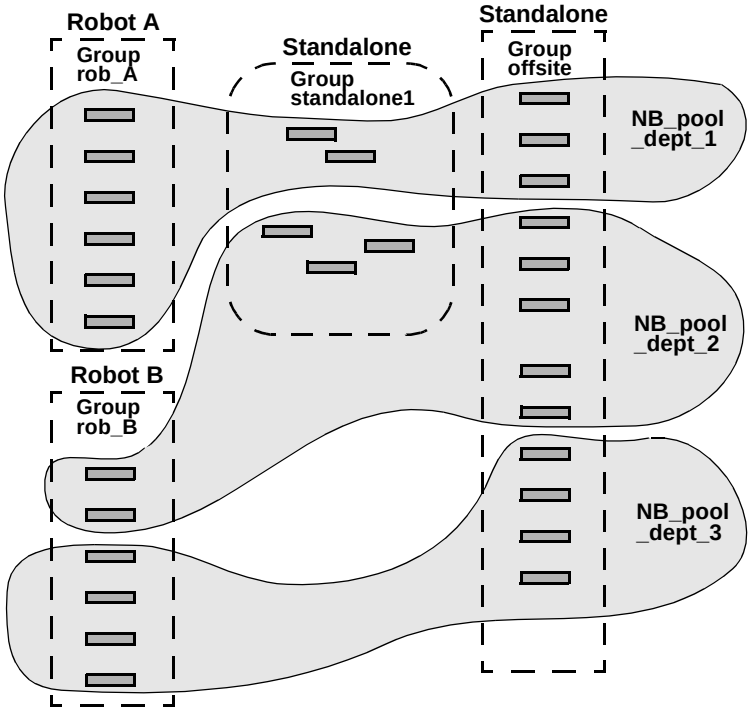
Volume Pool With Multiple Volume Groups



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 322).

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 87 for configuration information.

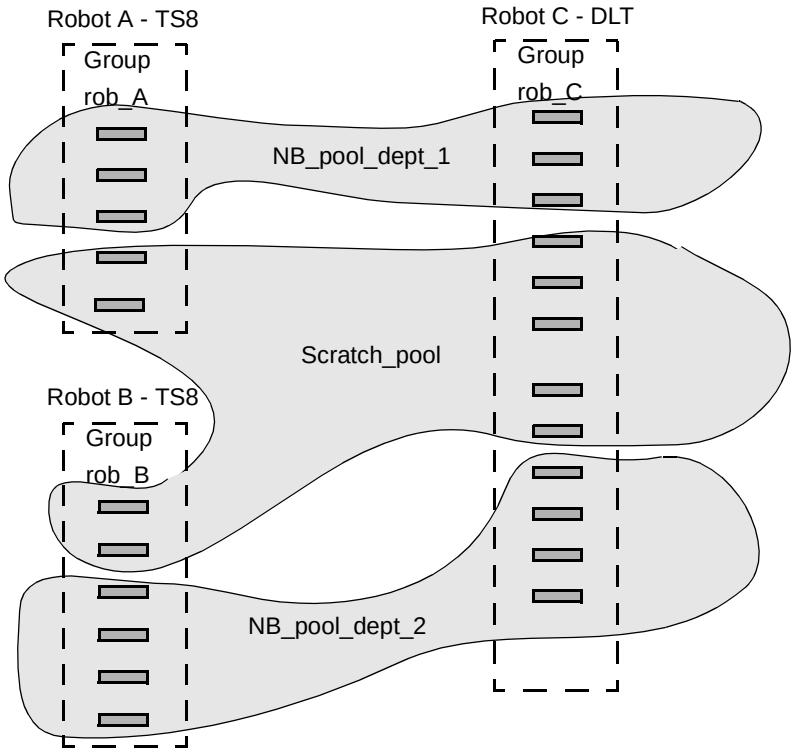
For example in the following figure, the scratch pool is named Scratch_pool and the three robots contain volumes from that pool in addition to those from other pools. Assume the following

- 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.

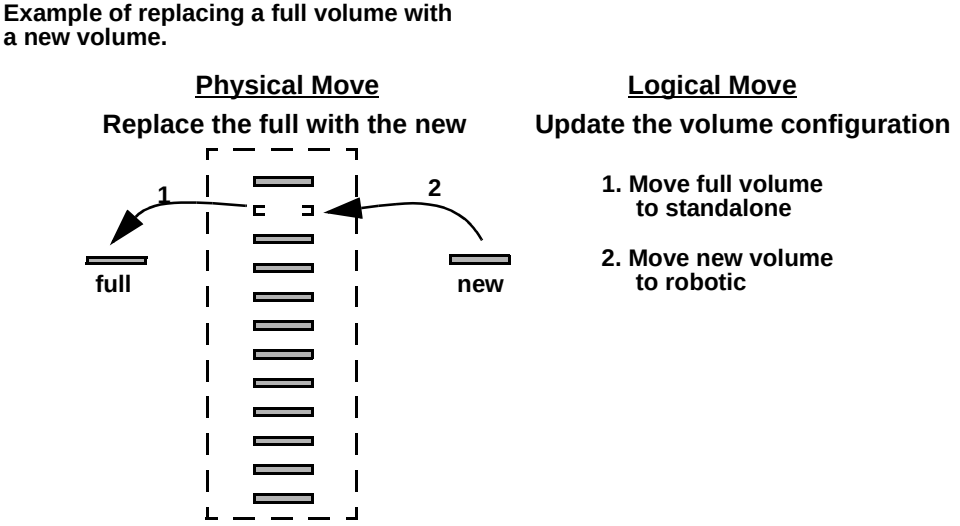
- To have Media Manager manage the allocation of your volumes to your volume pools, do one of the following:
  - Create volume pools as required, but do not add any volumes to the pools.
  - Create a scratch pool and add all of your volumes to it. Media Manager will move volumes to the other pools as 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 328). 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 Media Manager volume daemon).

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 331.
- "Media Manager Server-Based vmd Security" on page 332.
- "Media Manager Enhanced vmd Authorization" on page 333.

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.

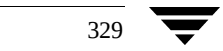
NetBackup Authentication/Authorization

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 331 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 non-root 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 non-root 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 allow nonroot users to administer Media Manager or control user access to administer Media Manager `vmd` commands, use one of the following methods:

- See the Managing NetBackup chapter of the UNIX NetBackup system administrator's guide for instructions on using the `nonroot_admin` script.
- 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 daemon.

- The drive is configured.
- The drive is in the robotic library that contains the media.

- The drive allows the requested media density.

The robotic daemon is managing the drives and requests for locally-attached or shared drives in the robotic library that contains the requested media. The daemon (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 daemon memory. If the daemon 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 Man Pages” on page 219 for detailed information on most of the commands shown in the following table.

The `jnbSA` command is located in the directory `/usr/openv/netbackup/bin`. The other commands listed are located in `/usr/openv/volmgr/bin`.

Commands

Command	Description
	Administrator Utilities

Commands (continued)

Command	Description
jnbSA	Starts the Java media and device management, and device monitor administrative interfaces.
vmadm	Starts the character-based, menu driven media management utility.
tpconfig	Starts the character-based, menu driven device utility for device configuration.
robtest	Starts the robotic test utilities. NOTE: This utility is not officially supported.
	Starting Daemons
acsd	The Automated Cartridge System robotic daemon. This daemon is started by ltid.
avrd	The Automatic Volume Recognition daemon. This daemon is started by ltid.
lmfcd	Starts the Library Management Facility robotic-control daemon. This daemon is started by ltid.
lmfd	The Library Management Facility robotic daemon. This daemon is started by ltid.
ltid	Starts the Media Manager device daemon. Starting ltid also starts the robotic, robotic control, and Media Manager volume and avrd daemons.
odld	The Optical Disk Library robotic daemon. This daemon is started by ltid.
tl4d	The Tape Library 4MM robotic daemon. This daemon is started by ltid.
tl8cd	Starts the Tape Library 8MM robotic-control daemon. This daemon is started by ltid.
tl8d	The Tape Library 8MM robotic daemon. This daemon is started by ltid.
tldcd	Starts the Tape Library DLT robotic-control daemon. This daemon is started by ltid.
tldd	The Tape Library DLT robotic daemon. This daemon is started by ltid.
tlhcd	Starts the Tape Library Half-inch robotic-control daemon. This daemon is started by ltid.

Commands (continued)

Command	Description
`tlhd`	The Tape Library Half-inch robotic daemon. This daemon is started by `ltid`.
`tlmd`	The Tape Library Multimedia daemon. This daemon is started by `ltid`.
`ts8d`	The Tape Stacker 8MM robotic daemon. This daemon is started by `ltid`.
`tsdd`	The Tape Stacker DLT robotic daemon. This daemon is started by `ltid`.
`tshd`	The Tape Stacker Half-inch robotic daemon. This daemon is started by `ltid`.
`vmd`	The Media Manager volume daemon. This daemon is started by `ltid`.
	Stopping Daemons
`kill` *pid*	Stops the process for the daemon with the specified *pid* (process id). This is a system command with a path of `/usr/bin/kill` or `/bin/kill`.
`lmfcd -t`	Stops the Library Management Facility robotic control daemon.
`stopltid`	Stops the device, robotic, and robotic-control daemons.
`tldcd -t`	Stops the Tape Library DLT robotic-control daemon.
`tl8cd -t`	Stops the Tape Library 8MM robotic-control daemon.
`tlhcd -t`	Stops the Tape Library Half-inch robotic-control daemon.
	Monitoring Processes
`vmps`	Lists the active processes.

Log Files

The following table contains descriptions of important Media Manager log files.

Logs

Log File	Description
System Log (syslog)	Contains general Media Manager logging, including errors. All log messages use the daemon facility. For debug logging, use the `-v` option on the command starting the daemon or use VERBOSE in the `vm.conf` file.
`daemon/log.`*`ddmmyy`*	Contains debug information for the volume daemon (`vmd`) and its associated processes (`oprd` and `rdevmi`). The path is `/usr/openv/volmgr/debug/daemon`.
`reqlib/log.`*`ddmmyy`*	Contains debug information on the processes that request `vmd`. The path is `/usr/openv/volmgr/debug/reqlib`.
`tpcommand/log.`*`ddmmyy`*	Contains debug information for device configuration. Includes information for `tpconfig`, `tpautoconf`, and the NetBackup GUIs. The path is `/usr/openv/volmgr/debug/tpcommand`.
`ltid/log.`*`ddmmyy`*	Contains debug information for `ltid`, the Media Manager device daemon. The path is `/usr/openv/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 `/usr/openv/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 may need to create it to add entries.

The entries that this file can contain are as follows. See “Example vm.conf File” on page 347 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 475.

ACSSEL Listening Socket

`ACS_SEL_SOCKET = socket_name`

By default, `acssel` listens on socket name 13740. You can use this entry to change the default.

For more information, see the appendix, "Automated Cartridge System (ACS)" on page 475.

ACSSSI Listening Socket

`ACS_SSI_SOCKET = ACS_ library_software_host socket_name`

By default, `acsssi` listens on unique, consecutive socket names starting with 13741. To specify socket names on a ACS library software host basis, use this entry.

For more information, see the appendix, "Automated Cartridge System (ACS)" on page 475.

ACSSSI Host Name

`ACS_SSI_HOSTNAME = host`

Specifies the host where RPC return packets from ACS library software are routed for ACS network communications. By default, the local host name is used.

See the appendix, "Automated Cartridge System (ACS)" on page 475 for more information.

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.

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 511 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 vmd (the volume daemon) 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.

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.

Enable Automatic Path Remapping

ENABLE_AUTO_PATH_CORRECTION

Enables automatic device path remapping. With this entry when the device daemon (ltid) is started, an attempt is made to discover attached devices and automatically update the device configuration for any device paths that are incorrect in the device configuration.

New devices will not be added. Using this option will increase the amount of time it takes for ltid to restart.

This option is ignored on (Sequent) DYNIX/ptx and (NCR) MP-RAS servers.

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 475, "IBM Automated Tape Library (ATL)" on page 497, or "Fujitsu Library Management Facility (LMF)" on page 523 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.

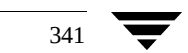
The following are some examples:

```
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
```

LMF Media Mapping

LMF_*mediatype*

Maps Fujitsu LMF media types in LMF robots to Media Manager media types.



See the appendix, “Fujitsu Library Management Facility (LMF)” on page 523 for more information.

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 328.

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 141.

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 in the netgroup using the innetgr() function (refer to the innetgr man page). If a PREFERRED_GROUP entry is not specified or the user is not a member of the netgroup, the local group name is obtained.

The following is an example:

```
PREFERRED_GROUP = nbadmins
```

Note Netgroups are not supported on Sequent servers.

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.

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 87.

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 497 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 511 for more information.

Verbose Message Logging

VERBOSE

Causes most Media Manager daemons 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
```


Using tpconfig C

This appendix explains how to configure drives and robots using the device management configuration utility, `tpconfig`. This menu-driven utility creates and updates the configuration files that define drives and robots to Media Manager.

There are also other Media Manager interfaces available to configure drives and robots (see “Administrator and User Interfaces” on page 2). The terminology, general concepts, and results are the same, regardless of which interface you use.

Terms and Concepts

The following Media Manager terms and concepts are used when configuring drives and robots.

Robot Number

A robot number is the unique, logical identification number of a robot. You assign it when you add a robot to the configuration. `tpconfig` prompts you to enter a number or accept the next available robot number which it displays. This number identifies the robot in displays and listings, and it follows the robotic type in parentheses, such as TL8(2). It is also used when entering the robot's media in the volume database, as described in “Managing Media” on page 73.

If you are configuring robots on multiple systems, robot numbers must be unique. If you are connecting drives from a robot, for example, drives in a Tape Library 8MM (TL8), to multiple systems; you must specify the same robot number for the robot on both systems.

Robotic Control Path

The control path to a robot is through a SCSI connection. For most robots, you or the operating system creates this path in the `/dev` directory when you add a robot to the configuration. When `tpconfig` prompts you, enter the path to the robotic control as found in the `/dev` directory. If the entries do not exist, see the NetBackup Media Manager device configuration guide.

For API robots, see the appendices in this guide for information on configuring robotic control.

The control path to a robot may be on another host. If so, enter the host name of the host instead of a path. When you define a robot that is actually controlled by another host, the robot number must be the same on both hosts.

Host Name

You must specify a host name in the following cases. When you add

- An ACS robot, enter the name of the host where the ACS Library Software resides, instead of a robotic control path.

  See the ACS appendix, "Automated Cartridge System (ACS)" on page 475.

- A TLM robot, enter the DAS server host name instead of a robotic control path.

  See the TLM appendix, "ADIC Distributed AML Server (DAS)" on page 511.

- An LMF, TL8, TLD, or TLH robot that has robotic control on another host, you are prompted for the host name of that host.

  See also "Volume Database Host Name" on page 351.

No Rewind On Close Device Name

This device name applies to all devices, except optical disk drives. This type of device remains at its current position on a close operation.

You specify a no rewind on close device name when you add a drive. Usually the device name is preceded or followed by the letter `n`. If the device name entries do not exist, you must create them as explained in the NetBackup Media Manager device configuration guide.

In `tpconfig` displays and listings, these device names are shown under the heading DrivePath.

Character Device Name

Character device name applies only to optical disk devices. A drive used as a character device uses a complete 512-byte block each time it writes (note that some systems may use 1024 byte blocks). If less than 512 bytes are used, the remaining bytes are padded out. A character device is also referred to as a raw device. NetBackup and Storage Migrator use character mode.

You specify a device name when you add an optical disk to the configuration. When prompted, enter the path name to the device as found in the /dev directory. If the entries do not exist, you must create them as explained in the NetBackup Media Manager device configuration guide.

In tpconfig displays and listings, the character device name appears under the heading DrivePath.

Volume Header Device Name

Note Volume headers do not apply to all systems.

The volume header device name is used internally, but still must be specified when adding an optical drive to a configuration. When prompted, enter the path name to the device as found in the /dev directory. To display the volume header device name, choose the Update or Delete option from the Drive Configuration menu.

On Solaris systems, the MAKEDEV command may have to be run first to create these entries. For more information, see the NetBackup Media Manager device configuration guide and the MAKEDEV(8) man page.

Drive Status

Drive status can be UP or DOWN, and indicates whether Media Manager considers a drive available. You specify the initial drive status when you add a drive to the configuration. You can change the status, using the Update option of the Drive Configuration menu in tpconfig or if ltid has been started, by using a Device Monitor interface or vmoprcmd.

Volume Database Host Name

The volume database host name identifies the host where the volume database is located. A volume database host name is associated with each robot and the entire set of standalone drives on a device host.

You can change or view the volume database host by using the Volume Database Host Configuration menu.

Starting the tpconfig Utility

You can start tpconfig from the vmadm Media Management menu or with the following command from the command line. You must have root user privileges.

```
/usr/openv/volmgr/bin/tpconfig
```


The following menu appears:

```
Device Management Configuration Utility

1) Drive Configuration
2) Robot Configuration
3) Volume Database Host Configuration
4) Print Configuration
5) Help
6) Quit

Enter option:
```

Note If the Media Manager device daemon is running, you should stop it with the `stopltid` command (see "Media Manager Device Daemon (ltid)" on page 207).

- `Drive Configuration` opens a menu for adding, deleting, updating definitions of drives, or listing definitions of drives and robots in the drive and robot databases.
- `Robot Configuration` opens a menu for adding, deleting, updating definitions of robots, or listing definitions of drives and robots in the drive and robot databases.
- `Volume Database Host Configuration` opens a menu for updating or listing the name of the host where the volume database for a specific device resides.
- `Print Configuration` on the main menu and the `List Configuration` commands on subsequent menus allow you to display the current configuration on the screen or write it to a file.

  Specifying just the `-d` option on the `tpconfig` command also writes the current configuration to stdout (the screen) without invoking the menus.

  Other command options are available. Run `tpconfig -help` or see the `tpconfig` man page.
- Online help is available on the main menu and most submenus.
- `Quit` terminates the utility and returns you to the UNIX prompt.

You can return to the main menu from anywhere in the utility by entering Ctrl C or using the Escape key.

Adding Robots

When you configure robots and drives using `tpconfig`, the most efficient process is to first add the robot using the Robot Configuration menu and then add the drives using the Drive Configuration menu.

If you want to reconfigure drives configured as standalone to indicate that they are in a robot, use the `Update` option of the Drive Configuration menu. See “Updating Drive Configurations” on page 356.

The procedure for adding a robot follows:

1. Select the Robot Configuration menu. If any robots exist, they are displayed above this menu.

2. Select the `Add` option.

   From the list of possible robot types displayed, select the one you want to add.

3. Enter a robot number you know is unused or accept the default number.

4. Indicate where the robotic control for the library is located as follows:

   a. If robotic control is on another host, enter that host name.

      For an ACS robot you must enter the name of the ACS library software host. See the appendix, “Automated Cartridge System (ACS)” on page 475.

      For a TLM robot, you must enter the name of the DAS server. See the appendix, “ADIC Distributed AML Server (DAS)” on page 511.

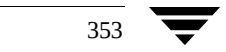
   b. If robotic control is on this host, enter the device file path or library name. The Help option on the Robot Configuration menu has examples of typical path names.

      For an ACS robot you enter the name of the ACS library software host. See the appendix, “Automated Cartridge System (ACS)” on page 475.

      For a TLM robot, you enter the name of the DAS server. See the appendix, “ADIC Distributed AML Server (DAS)” on page 511.

      For a TLH robot, enter the LMCP Device File, if this is an AIX system. Otherwise, enter the Automated Tape Library Name. See the appendix, “IBM Automated Tape Library (ATL)” on page 497.

      For a LMF robot, enter the library name rather than the path name. See the appendix, “Fujitsu Library Management Facility (LMF)” on page 523.



5. If no conflicts are detected with the new configuration, you see a message that the robot has been added.

Adding Drives

1. Select the Drive Configuration menu.

2. Select the Add option.

3. Type a drive name or use the Enter key to use the default drive name that is shown.

   Specify a name, from the ASCII character set, that will be used by Media Manager to identify the drive. If you are using the shared drives option (see step 9), all hosts that are sharing the same physical drive must use the same name for the drive. Descriptive drive names are recommended.

4. From the list of possible drive types displayed, select the one you want to add.

5. Enter the no rewind on close device path as shown in the `/dev` directory.

   If the device is an optical disk, enter the character device and volume header device file paths, from the `/dev` directory (volume headers are not applicable to all systems).

   The `Help` option on the Drive Configuration menu has examples of typical path names.

6. Enter the drive status (Up or Down).

7. If a robot exists that the drive could be added to, indicate whether the drive should be added to the robot or be a standalone drive.

   If there are no robots to which the drive can be added, `tpconfig` automatically adds the drive as a standalone drive.

   If you choose to add a drive to a robot and more than one possible robot exists, enter the robot number that will control the drive.

   Depending on the type of robot, you may also be prompted to add the robot drive number (see “Robot Drive Number” on page 46).

8. For a drive in an ACS robot, you are prompted for four drive identifiers. For more information on ACS robots, see the appendix “Automated Cartridge System (ACS)” on page 475.

For a drive in a TLH robot, you are prompted for an IBM device name. For more information see the appendix “IBM Automated Tape Library (ATL)” on page 497.

For a drive in a TLM robot, you are prompted for a DAS drive name. For more information see the appendix “ADIC Distributed AML Server (DAS)” on page 511.

For a drive in a LMF robot, see the appendix “Fujitsu Library Management Facility (LMF)” on page 523 to determine what to enter for the robot drive.

9. If you have the shared storage option (SSO) enabled, you are asked if this drive will be shared with multiple hosts (`y/n`).

10. When finished, you see a message that the drive has been added, followed by a listing of the drive.

Updating Robot and Drive Configurations

Updating Robot Configurations

You can change the robot number or the robotic control path for a robot as explained in the following steps:

1. On the main menu, choose `Robot Configuration`.

Note If only one robot is configured, step 2 is skipped.

2. On the Robot Configuration menu, choose `Update`. The following prompt is displayed

```
Enter robot number to update:
```

Enter the robot number of the library you want to change.

3. The following prompt is displayed:

```
Enter new robot number or <RETURN> to use existing (n):
```

Enter a new robot number to replace the existing robot number, or press Enter to retain the current robot number.

4. You are prompted to enter robotic control information. The actual prompts depend on the type of robotic library you are updating.

   Enter the appropriate robotic control path or host name associated with the robot.

   When you are done, a message confirming that the robot has been updated is displayed.

Updating Drive Configurations

To change information about a drive (for example, to add it to a robot) perform the following steps:

1. On the main menu, choose `Drive Configuration`.

2. On the Drive Configuration menu, choose `Update`.

3. Enter the name of the drive you want to update, when the following prompt is displayed:

```
Enter name of drive to update:
```

4. The current drive information is displayed, followed by prompts to change each field. Enter a new value or use the Enter key to keep the existing value.

   One of the prompts asks if you want to configure the drive in a robot and, if so, adds the drive immediately or gives you the opportunity to choose from any existing robot of the appropriate type.

5. When you have responded to all prompts, a revised Drive Information display appears, along with the following prompt:

```
Are you sure you want to UPDATE drive name xxxxx? (y/n) n:
```

   Enter `y` to update the drive or `n` to keep the original configuration.

6. A message confirming that the drive has been updated (or not updated) is displayed.

Deleting Drives and Robots

Deleting Drives

1. On the main menu, choose `Drive Configuration`.
2. On the Drive Configuration menu, choose `Delete`.
3. Enter the name of the drive you want to delete, when the following prompt is displayed:

```
Enter name of drive to delete:
```

4. Drive information and a prompt similar to the following are displayed:

```
Are you sure you want to DELETE drive name xxxxx? (y/n) n:
```

5. Enter `y` to delete the drive, or `n` (Enter) to cancel the action.
   a. If you respond with `y`, a message confirming the drive has been deleted is displayed.
   b. If you respond with `n` (or Enter), pressing any key returns you to the Drive Configuration menu and the delete action is canceled.

Deleting Robots

1. On the main menu, choose `Robot Configuration`.
2. On the Robot Configuration menu, choose `Delete`.

Note If only one robot is configured, step 3 is skipped.

3. The following prompt is displayed:

```
Enter robot number to delete:
```


Enter the robot number of the robot you want to delete.

4. A prompt similar to the following is displayed:

```
Deleting robotic definition:
TLD(0) robotic path = /dev/sg/c1t0d0s0, volume database host=vat
Any drives defined on this robot will be changed to standalone drives
Do you want to proceed? (y/n) n:
```

5. Enter `y` to delete the robot, or `n` (or Return) to cancel the action.

   a. If you respond with `y`, a message confirming that the robot has been deleted is displayed.

   b. If you respond with `n`, pressing any key returns you to the Robot Configuration menu and the delete action is canceled.

Specifying the Volume Database Host

A volume database host is associated with each robot and set of standalone drives on a device host. It identifies the host where the volume database for the device is located.

By default, the volume database host name for standalone and robotic drives is the global device database.

You need to change the volume database host name, if volumes are defined on hosts other than the default hosts. This may be necessary, for example in a configuration that has been set up using no single volume database host.

VERITAS recommends that the volumes for the entire configuration be defined in one volume database. Also, shared drive (SSO) configurations require that a common volume database host is used for all hosts where a shared drive is configured.

1. On the main menu, choose `Volume Database Host Configuration`.

   The current volume database hosts for all defined devices are displayed, along with the Volume Database Host Configuration menu and a prompt.

2. Select `Update` to change a host name. The following prompt is displayed:

```
Enter robot number (or 'n' for standalone drives):
```

3. Enter a robot number or `n` to change the host name for all standalone drives. The following prompt is displayed:

```
Enter new Volume Database Host name:
```

4. Enter a new name. The updated list of host names is displayed, along with the menu options and prompt.

Displaying and Printing the Configuration

You can display the current configuration from every menu in `tpconfig` by using the `Print Configuration` option on the main menu, or the `List Configuration` option on the subsequent menus.

You can print the configuration using the `Print Configuration` option on the main menu. When prompted, specify a file where the configuration will be written, or press Enter to display the configuration on the screen.

In addition, you can specify the `-d` option on the `tpconfig` command to write the current configuration to stdout without invoking the menus.

Using vmadm D

This appendix explains how to use the media management utility (vmadm) to add, delete, or change media in the Media Manager volume configuration. This utility has a character-based interface that can be used at most terminals.

There are also other Media Manager interfaces available to configure media (see “Administrator and User Interfaces” on page 2). The terminology, general concepts, and results in the database are the same, regardless of which interface you use.

Starting the vmadm Utility

1. The Media Manager volume daemon, vmd, must be active to make any changes with vmadm. You can start vmd by entering /usr/openv/volmgr/bin/vmd at the UNIX prompt or you can use the Initiate Media Manager Volume Daemon command on the Special Actions menu. You need root privileges to start vmd.

2. To start vmadm, enter the command (requires root privileges):

   /usr/openv/volmgr/bin/vmadm

The main menu appears.

```
Volume Database Host:  shark
Media Management
-----------------
a) Add Volumes
d) Delete Volumes
m) Move Volumes
p) Print Information about Volumes

c) Configure Volume Pools
s) Special Actions

u) Device Configuration Utility

h) Help
q) Quit
ENTER CHOICE:
```

The Volume Database Host shown at the top of the main menu is the host where the volume database is located and the Media Manager volume daemon (vmd) is running.

The following list summarizes each menu command. The remaining topics in this chapter explain how to perform common operations.

a) Add Volumes

Add one or more volumes.

d) Delete Volumes

Delete one or more volumes.

m) Move Volumes

Move one or more volumes.

p) Print Information about Volumes

Print or display information about selected volumes based on criteria you provide.

c) Configure Volume Pools

Add a new volume pool, delete an existing one, change information about a volume pool, or list information about the currently defined volume pools.

s) Special Actions

Opens a menu with special actions.

u) Device Configuration Utility

Start the `tpconfig` device configuration utility.

See the appendix “Using tpconfig” on page 349.

h) `Help`

Provides on line help.

q) `Quit`

Terminates the utility and returns you to the UNIX prompt. You can abort many operations by pressing the ESC key.

Configuring Volume Pools

A volume pool identifies a logical set of volumes that are associated by usage rather than physical location. For example, you can create a volume pool for each storage application you are using. Then, as you add volumes to use with an application, you can associate them with a volume pool. You can also move volumes to a different pool later. Volumes associated with a particular volume pool are grouped together and protected from access by unauthorized users, groups, or applications.

Before adding volumes to a pool, you must add the pool and configure its attributes as explained in the following topics.

Note You do not have to configure a pool for NetBackup or DataStore. Media Manager automatically reserves a pool named NetBackup that you specify when adding NetBackup volumes and a pool named DataStore when adding DataStore volumes.

When you enter c on the main menu, the following menu appears:

```
      Display Mode:  BRIEF
Output Destination:  SCREEN

Configure Volume Pools
----------------------
a)  Add Pool
c)  Change Pool
d)  Delete Pool
l)  List Pools
s)  List Scratch Pools

m)  Mode (brief or full)
o)  Output Destination (screen or file)
h)  Help
q)  Quit Menu

ENTER CHOICE:
```

The following list summarizes the operations you can perform from this menu:

a) Add Pool

Defines a new volume pool. After choosing this option, you are prompted to define the following:

- Volume pool name: Name for the new volume pool. Enter a name of 20 ASCII characters or less. Names are case-sensitive, and no spaces or special characters are allowed.
- Description: Enter the description of the new volume pool (30 ASCII characters or less).
- Pool host name: Name of the host that can request and use volumes in this volume pool.

  Entering a specific host name allows only that host to access the volume pool.

  Using the default, ANYHOST, allows any host to access the volume pool.

Note If you have a single NetBackup server, use ANYHOST or the name of the server (not a client). If you have multiple NetBackup servers (master and media servers), always set this value to ANYHOST (the default).

- Pool user name: Login name of the user that is allowed to request and use volumes in the volume pool.

Entering a specific name allows only the processes running as that user to access the volume pool. If a different user requests the pool, then Media Manager verifies the group name (see Pool group name).

Using the default, ANY, allows any user to access the pool.

For NetBackup or Storage Migrator, enter root for the pool user name.

- Pool group name: Name of the user group that can request and use volumes in this volume pool.

  Entering a specific name allows any processes running as that user group to access the volume pool.

  Using the default, NONE, allows only the user specified by User Name to request or access the volume pool. All other users in any groups are denied access.

- Scratch pool: Yes or No.

c) Change Pool

Changes the description, pool host name, pool user name, pool group name, or changes a pool to become the scratch pool. You are prompted for each of these items.

- Scratch pool: Yes or No.

d) Delete Pool

Deletes the volume pool and its allocated name, description, and access permissions.

l) List Pools

Lists the currently defined volume pools and their associated descriptions and permissions.

m) Mode (brief or full)

Toggles the display mode to BRIEF or FULL.

o) Output destination (screen or file)

Toggles between the output destination between SCREEN and FILE. (SCREEN is the default). If you choose to write to a file, you can define your own file name or you can use the default file, /tmp/vmadm_pool_output.

Adding Volumes for Standalone Drives

Adding a Single Standalone Volume

1. On the main menu, choose a for `Add Volumes`.
2. The following prompt appears:

```
Add Single Volume, Range of Volumes, or Auto-Populate? (s/r/a):
```

Enter `s` to add a single volume.

You are prompted for the media type with a menu similar to the following that displays the possible types:

Enter the number for the type of media you want to add.

```
Adding Volumes
--------------
Media Type
----------
1)   QIC - 1/4" cartridge tape
2)   1/2" cartridge tape
3)   1/2" cartridge tape 2
4)   1/2" cartridge tape 3
5)   4MM cartridge tape
6)   8MM cartridge tape
7)   8MM cartridge tape 2
8)   8MM cartridge tape 3
9)   DLT cartridge tape
10   DLT cartridge tape 2
11)  DLT cartridge tape 3
12)  DTF cartridge tape
13)  Rewritable optical disk
14)  WORM optical disk
15)  1/2" cleaning tape
16)  1/2" cleaning tape 2
17)  1/2" cleaning tape 3
18)  4MM cleaning tape
19)  8MM cleaning tape
20)  8MM cleaning tape 2
21)  8MM cleaning tape 3
22)  DLT cleaning tape
23)  DLT cleaning tape 2
24)  DLT cleaning tape 3
25)  DTF cleaning tape
 Enter Choice [1-25]:
```

3. If you are adding a cleaning tape, you are prompted for the number of cleanings you want available. For any other media type, the next step occurs immediately.

4. You are prompted to enter the media ID. If you selected an optical disk media type, you are prompted to enter a media ID for both side A of the platter and side B of the platter. Enter a 1 to 6 ASCII character name.

5. You are prompted for a description. Enter 1 to 25 characters of text to describe the media being added.

6. If the media is not a cleaning media type you are prompted to enter the volume pool:

```
Volume Pool
----------
1)  None
2)  NetBackup
3)  oldpool
4)  newpool
5)  POOL1
6)  POOL2
Enter Choice:
```

If you enter `1` (`None`) the volume is assigned to a generic volume pool and is available to any user or application. Enter `2` if you want the volume to be available to NetBackup only, or enter another choice to have the volume assigned to one of the volume pools listed.

For all media types, you are prompted to enter the physical location of the volume using a menu of possible locations, similar to the following menu for an 8mm cartridge tape.

```
Physical Location
-----------------
1)  Not in robotic device
2)  RSM - Removable Storage Manager
3)  TL8 - Tape Library 8MM
4)  TLD - Tape Library DLT
5)  TLM - Tape Library Multimedia
6)  TS8 - Tape Stacker 8MM
Enter Choice [1-6]:
```

Enter `1` for a volume for a standalone drive.

7. You are prompted to enter the volume group, by a menu similar to the following:

```
Volume Group
------------
1)  tl8grp1
2)  No Volume Group
3)  Specify New Volume Group Name
4)  Auto-Generate New Volume Group Name
Enter choice:
```

You may

- Choose from any existing standalone volume groups that allow this volume's media type.
- Elect not to associate the volume with any volume group (if the option is offered).
- Enter a new name of your own choice.
- Have a name generated by `vmadm`, if the name of volume group is not important in this case.

8. The action taken next depends on the media type you selected.
   - If you selected a tape media type, the volume is added at this point and you are returned to the main menu.
   - If you selected an optical disk, you are given the option to format the platters using `tpformat`. (Formatting may cause an operator mount request to occur on the host.) Choosing `n` adds the volume immediately and you are returned to the main menu. If you choose `y` and the formatting does not complete, the volumes are still added.

Note All platforms and operating systems do not support 1024 byte-per-sector platters. Most support only 512 byte-per-sector sizes. Before purchasing optical disk platters, check your vendor documentation to determine the sector sizes supported by your platform and operating system. VERITAS urges you to use preformatted platters.

Adding a Range of Standalone Volumes

1. On the main menu, choose `a` for `Add Volumes`.
2. The following prompt appears:

```
Add Single Volume, Range of Volumes, or Auto-Populate? (s/r/a):
```

   Enter `r` to add a range of volumes.

3. You are prompted for the media type with a menu similar to the following that displays the possible types.

Enter the number for the type of media you want to add.

```
Adding Range of Volumes
--------------
Media Type
----------
1)   QIC - 1/4" cartridge tape
2)   1/2" cartridge tape
3)   1/2" cartridge tape 2
4)   1/2" cartridge tape 3
5)   4MM cartridge tape
6)   8MM cartridge tape
7)   8MM cartridge tape 2
8)   8MM cartridge tape 3
9)   DLT cartridge tape
10   DLT cartridge tape 2
11)  DLT cartridge tape 3
12)  DTF cartridge tape
13)  Rewritable optical disk
14)  WORM optical disk
15)  1/2" cleaning tape
16)  1/2" cleaning tape 2
17)  1/2" cleaning tape 3
18)  4MM cleaning tape
19)  8MM cleaning tape
20)  8MM cleaning tape 2
21)  8MM cleaning tape 3
22)  DLT cleaning tape
23)  DLT cleaning tape 2
24)  DLT cleaning tape 3
25)  DTF cleaning tape
 Enter Choice [1-25]:
```

4. If you selected to add a range of cleaning tapes, you are prompted to enter a single number which indicates the number of cleanings you want available on each volume in the range. For any other media type, the next step occurs immediately.

5. You are prompted for a description. Enter 1 to 25 characters of text to describe the media being added. This description applies to all of the volumes in the range.

You are then prompted to enter the volume pool.

```
Volume Pool
----------
1)  None
2)  NetBackup
3)  oldpool
4)  oldpool4
5)  POOL1
6)  POOL2
Enter Choice:
```

For a range of standalone volumes, enter 1. If you enter 1, the volumes are associated with a generic volume pool and are available to any user or application.

Enter 2 if you want the volumes to be available to NetBackup only.

Enter another choice to have the volumes assigned to one of the volume pools listed.

6. You are prompted to enter the physical location of the volumes using a menu of possible locations, similar to the following menu for an 8mm cartridge tape:

```
Physical Location
-----------------
1)  Not in robotic device
2)  RSM - Removable Storage Manager
3)  TL8 - Tape Library 8MM
4)  TLD - Tape Library DLT
5)  TLM - Tape Library Multimedia
6)  TS8 - Tape Stacker 8MM
Enter Choice [1-6]:
```

7. You are prompted to enter the volume group, by a menu similar to the following:

```
Volume Group
------------
1)  tl8grp1
2)  No Volume Group
3)  Specify New Volume Group Name
4)  Auto-Generate New Volume Group Name
Enter choice:
```

You may

- Choose from any existing standalone volume groups that allow this volume's media type.
- Elect not to associate the volume with any volume group (if the option is offered).
- Enter a new name of your own choice.
- Have a name generated by `vmadm`, if the name of volume group is not important in this case.

8. You are prompted to enter the media ID naming mode with a menu displaying the possible modes. If you selected an optical disk media type, the display is as follows:

```
Media ID Naming Mode
--------------------
a)  0 characters and 6 digits
b)  1 character  and 5 digits
c)  2 characters and 4 digits
d)  3 characters and 3 digits
e)  4 characters and 2 digits
f)  0 characters, 5 digits, and 1 character platter-side
g)  1 character,  4 digits, and 1 character platter-side
h)  2 characters, 3 digits, and 1 character platter-side
i)  3 characters, 2 digits, and 1 character platter-side
j)  4 characters, 1 digit,  and 1 character platter-side
Enter Choice:
```

If you selected any device other than an optical disk media type, only options `a` through `e` are displayed.

Enter the desired naming mode. When the volumes are added, the digit field is incremented by one for each volume. (Only numbers are incremented.)

9. You are prompted for the media ID of the first volume:

```
Enter Media ID for first volume -- using naming mode e:
```

If you had selected naming mode `e` and entered the 4-character, 2-digit ID, `tape01`, the media ID of the first volume added would be `TAPE01`, the second `TAPE02`, and so on.

10. You are prompted for the number of volumes to add.

a. If you selected an optical disk media type, the prompt is:

```
Enter Number of Platters (2 Volumes/Platters) in Range:
```

Each side of a platter is considered one volume. Entering the number 4, for example, causes eight volumes (four platters) to be added.

You are then given the option to format the platters being added using `tpformat`. Choosing `n` (no) adds the volumes immediately and you are returned to the main menu.

b. If you selected any media type other than optical disk, the prompt is:

```
Enter Number of Volumes in Range:
```

11. The volumes are added to the database and you are returned to the main menu.

If any volume cannot be added (for example, if the range you specified overlaps with existing volumes), the operation aborts but volumes added before the failure remain in the database.

Adding Volumes to a Robot

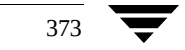
Auto-Populating a Robot

You can use auto-populate for robots that support barcodes and for robots that do not support barcodes with some operational limitations (see “Robot Attributes” on page 300). The easiest way to add new media to a robot is to physically add the media and then use Media Manager’s auto-populate feature to update the volume database to agree with the contents of the robot. The database update includes automatic creation of media IDs.

If the robot *supports* barcodes and the volumes have readable barcode labels, auto-populate 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.

When you use barcode rules, new media that is added through a barcode rule is also assigned a media type, pool name, maximum number of mounts (or cleaning count), and description (see “Configuring Barcode Rules” on page 421).

If the robot *does not* support barcodes or the media does not have readable barcodes, the new media IDs are based on a media ID prefix that you specify.



Using Auto-Populate

The auto-populate operation is the same as an inventory and update operation ("Inventory and Update Robot Volume Configuration" on page 409). The following procedure explains how to auto-populate a robot and refers you to the update procedure at the proper time.

1. Insert the new media into the robot.

2. Check the barcode capabilities of the robot and its media.

   Before starting an auto-populate operation, perform "Inventory and Compare Robot Volume Configuration" on page 406 and check whether the following are true:

   - The robot supports barcodes.
   - The new media that was inserted has readable barcodes.

   If either of the above statements is not true, save the results of the verify for reference, in case you assign a media ID prefix later in this procedure. You do not need a prefix if the robot supports barcodes and the media has a readable barcode.

3. Create barcode rules (optional).

   Refer to "Configuring Barcode Rules" on page 421 and create any additional barcode rules that you want to use for auto-populating the database, for the media you have inserted into the robot.

4. For robot types that are not API robots, create media ID generation rules (optional).

   See "Configuring Media ID Generation Rules" on page 175 for more information.

5. For API robots (ACS, LMF, RSM, TLH, or TLM robot types).

   Create media type mappings for the robot as explained in step 2 under "Changing Update Options" on page 414

   For ACS robots create default ACS to Media Manager media type mappings as explained in "vm.conf Map Entries for ACS Robots" on page 485.

   For LMF robots create default LMF to Media Manager media type mappings as explained in "vm.conf Map Entries for LMF Robots" on page 535.

   For TLH robots create default TLH to Media Manager media type mappings as explained in "vm.conf Map Entries For TLH Robots" on page 510.

   For TLM robots create default TLM to Media Manager media type mappings as explained in "vm.conf Map Entries For TLM Robots" on page 521.

   For RSM robots create default RSM to Media Manager media type mappings as explained in the Windows Media Manager system administrator's guide.

6. Ensure that the appropriate control daemons are active on the robot control host.

7. On the main menu, choose `a` for `Add Volumes`.

8. Respond to the prompt with `a`, to use `auto-populate`.

   This brings up a robot selection prompt for selecting the robot where you added the media.

   The remaining steps are the same as for a robot inventory and update operation. Go to step 7 under "Inventory and Update Robot Volume Configuration" on page 409.

Adding a Single Volume to a Robot (Without Auto-Populate)

The following procedure explains how to add a single volume to a robot using the `s` option, rather than Auto-Populate.

Note The first seven steps of this procedure are the same as adding a standalone volume (see "Adding a Single Standalone Volume" on page 366) and are only summarized here. Refer to that procedure.

1. On the main menu, choose `a` for `Add Volumes`.

2. Respond to the prompt with `s`, to add a single volume.

3. Enter the number for the type of media you want to add.

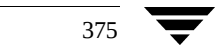
4. If you selected a cleaning tape, enter the number of cleanings you want available.

5. Enter a single media ID for tape or two media IDs for an optical disk. A media ID can contain from 1 to 6 characters.

Note Media IDs for API robots must always match the barcodes. This means that you must get a list of the barcodes prior to adding the volumes to Media Manager. You can obtain this information from the interface that is provided by the robot vendor or operating system, or you can use one of the robotic inventory options on the `Special Actions` menu.

6. Enter a media description (1 to 25 characters).

7. Select a volume pool.



8. Specify that you want the volume added to a robot. You are prompted to enter the physical location of the volume using a menu of possible locations, similar to the following menu for an 8mm cartridge tape:

```
Physical Location
-----------------
1)  Not in robotic device
2)  RSM - Removable Storage Manager
3)  TL8 - Tape Library 8MM
4)  TLD - Tape Library DLT
5)  TLM - Tape Library Multimedia
6)  TS8 - Tape Stacker 8MM
Enter Choice [1-6]:
```

Enter the number of the type of device to which you want to add a volume. If a device of the specified type does not currently exist, step 10 occurs immediately.

9. The devices of the selected type that currently have volumes in the database are displayed, along with the option to specify a new one, similar to the following:

```
Applicable Robot List
---------------------
22)  TL8 - Tape Library 8MM  (bobcat)
n)   New Robot Number
Enter Choice:
```

Enter the number of the robot you want to add to, or `n` to specify a new robot.

10. If you enter `n` or the robot you chose does not exist, you are prompted for a new, unique robot number (which must match the number that will be used when you configure the robot or was used when you configured the robot) and the new robot control host (where the robotics are controlled). Otherwise, the next step occurs. (No host name is requested for an ACS or TLM robot.)

11. You are prompted for specific information about the volume and where it should go. This information varies depending on the type of robot to which the volume is being added.

- If the robot is an API robot, you do not enter slot information. Media Manager does not require slot location for those robot types because this information is tracked by the robot vendor software.
- If the robot is not an API robot, you are prompted to enter the slot number. See the appendix “Robot Drive and Slot Layouts” on page 427.

12. You are prompted to enter the volume group by a menu similar to the following:

```
Volume Group
------------
1)  tl8grp1
2)  Specify New Volume Group Name
3)  Auto-Generate New Volume Group Name
Enter choice:
```

You may choose from any existing volume groups on the device.

13. For some robots, you are asked whether the volume should be injected using the media access port. For an ODL robot, you are asked whether the platters should be formatted.

Note This prompt occurs for robot types that support media access ports. This prompt may appear for some robots that do not have these ports, since the Media Manager robot type for the robot only indicates that media access ports are possible.

14. A reminder to insert the volume in the media access port or into the specified slot of the robot is displayed, and you are then returned to the main menu.

If you do not insert the volume now, it is still added to the database and logically associated with the robot.

If the robot is not an API robot and it has a barcode reader, the barcode is read and added to the database when you add the volume, provided you also physically insert the volume in the proper slot.

If you insert the volume later, then you must use `Update/Validate Barcodes for Volumes` on the `Special` menu at that time (see “Updating Barcodes for Selected Volumes in a Robot” on page 403).

Adding a Range of Volumes to a Robot (Without Auto-Populate)

The following procedure explains how to add a range of volumes to a robot by using the `r` option, rather than Auto-Populate.

Note The first six steps of this procedure are the same as adding a standalone volume (see “Adding a Range of Standalone Volumes” on page 369) and are only summarized here. Refer to that procedure.

1. On the main menu, choose a for `Add Volumes`.

2. Respond to the prompt with `r`, to add a range of volumes.

3. Enter the number for the type of media you want to add.

4. If you selected a range of cleaning tapes, enter a single number that indicates the number of cleanings you want available on each volume in the range.

5. Enter a description (1 to 25 characters) that applies to all media in the range.

6. Select a volume pool.

7. Specify that you want to add the volumes to a robot. You are prompted for the physical location of the volumes using a menu of possible locations, similar to the following menu for an 8 mm cartridge tape:

```
Physical Location
-----------------
1)  Not in robotic device
2)  RSM - Removable Storage Manager
3)  TL8 - Tape Library 8MM
4)  TLD - Tape Library DLT
5)  TLM - Tape Library Multimedia
6)  TS8 - Tape Stacker 8MM
Enter Choice [1-6]:
```

   Enter the number of the type of robot to which you want to add the volumes. (If a device of the specified type does not currently exist, step 8 is skipped and step 9 occurs.)

8. The devices of the selected type that currently exist in the database are displayed, along with the option to specify a new robot, similar to the following:

```
Applicable Robot List
---------------------
22) TL8 - Tape Library 8MM  (bobcat)
n)  New Robot Number
Enter Choice:
```

   Enter the number of the robot you want to add to, or `n` to specify a new robot.

9. If you enter `n` or the robot you chose does not exist, you are prompted for a new, unique robot number and the new control host. Otherwise, the next step occurs. (No host name is requested for an ACS or TLM robot.)

10. You are prompted to enter the volume group, by a menu similar to the following:

```
Volume Group
------------
1)  tl8grp1
2)  Specify New Volume Group Name
3)  Auto-Generate New Volume Group Name
Enter choice:
```

You may choose from any existing volume groups on the device.

11. You are prompted for specific information about the volume and where it should go. This information varies depending on the type of robot to which the volume is being added.

If the robot is an API robot, you do not enter slot information. Media Manager does not require slot location for those robot types, because this information is tracked by the robot vendor software.

If the robot is not an API robot, you are prompted to enter the slot number. See the appendix “Robot Drive and Slot Layouts” on page 427.

12. At this point, the procedure is similar to adding a standalone volume. You are prompted to enter the media ID naming mode with a menu displaying the possible modes.

Note Media IDs for API robots must always match the barcodes. This means that you must get a list of the barcodes prior to adding the volumes to Media Manager. You can obtain this information from the interface that is provided by the robot vendor or operating system, or you can use one of the robotic inventory options on the `Special Actions` menu.

If you selected an optical disk media type, the display appears as follows:

```
Media ID Naming Mode
--------------------
a)  0 characters and 6 digits
b)  1 character  and 5 digits
c)  2 characters and 4 digits
d)  3 characters and 3 digits
e)  4 characters and 2 digits
f)  0 characters, 5 digits, and 1 character platter-side
g)  1 character,  4 digits, and 1 character platter-side
h)  2 characters, 3 digits, and 1 character platter-side
i)  3 characters, 2 digits, and 1 character platter-side
j)  4 characters, 1 digit,  and 1 character platter-side
Enter Choice:
```

If you selected any device other than an optical disk media type, only options `a` through `e` are displayed.

Enter the desired naming mode. When the volumes are added, the digit field is incremented by one for each volume. Only numbers are incremented.

13. For all devices other than an API robot, you are prompted for the media ID of the first volume. The prompt is appropriate for the media type and is similar to one of the following:

```
Enter Media ID for slot xxx, side A -- using naming mode e:
```

(*xxx* is the slot number you entered in step 11.)

or

```
Enter Media ID for slot xxx -- using naming mode a:
```

or

```
Enter 3 Character Prefix for ALL Media IDs:
```

If you had selected naming mode `e` and entered the ID, `tape01`, the media ID of the first volume added would be `TAPE01`, the second `TAPE02`, and so on.

14. You are prompted for the number of volumes to add.

a. If you selected an optical disk media type, the prompt is:

```
Enter Number of Platters (2 Volumes/Platters) in Range [x-y]:
```

Where x and y represent the range of platters available.

For example, entering 4 causes eight volumes (four platters) to be added. You are then given the option to format the platters being added using `tpformat`. Choosing `n` (no) adds the volumes immediately and you are returned to the main menu.

b. If you selected a media type other than optical disk, the prompt is:

```
Enter Number of Volumes in Range [x-y]:
```

Where x and y represent the range of volumes available. A range is not presented, if the robot is an API robot.

15. The volumes are added to the database and you are returned to the main menu.

If any volume cannot be added (for example, if the range you specified overlaps with existing volumes), the operation aborts, but volumes added before the failure remain in the database.

If you do not insert the volume now, it is still added to the database and logically associated with the robot.

If the robot is not an API robot and it has a barcode reader, the barcode is read and added to the database when you add the volume, providing you also physically insert the volume in the proper slot. If you insert the volume later, then you must use `Update/Validate Barcodes for Volumes` on the `Special` menu at that time (see “Updating Barcodes for Selected Volumes in a Robot” on page 403).

Displaying the Volume Configuration

1. On the vmadm menu, choose p for Print Information about Volumes. The current print criteria are displayed along with a menu which allows you to change the criteria, similar to the following example:

```
        Display Filter:  ALL
          Display Mode:  BRIEF
    Output Destination:  SCREEN

    Display Options
    ---------------
    s)  Search
    m)  Mode (brief or full)
    o)  Output Destination (screen or file)
    f)  Filter
    h)  Help
    q)  Quit Menu
    ENTER CHOICE:
```

2. To accept the current settings, select s for Search. With the settings shown in the example, you would receive brief information about all volumes on your screen.

3. To change the print criteria, select one of the following options:

m	Select m to toggle the display mode. FULL mode displays the most extensive information about each selected volume. BRIEF mode displays a subset, one line of information about each selected volume. In this mode, volumes are listed in alphabetical order by media ID. The default mode is BRIEF.
o	Select o to toggle the output destination between the screen and a file of your choice. When you switch from the screen setting to a file, you are prompted for the file name. You must enter an absolute path or the enter key for the default file /tmp/vmadm_output.

`f`	Select `f` to change the display filter that determines which volumes are displayed. The following options are shown: 1) ALL 2) MEDIA ID 3) MEDIA TYPE 4) VOLUME GROUP 5) ROBOT NUMBER 6) ROBOT TYPE 7) VOLUME POOL For entries 2 through 7, you are prompted to enter the appropriate value. Menus of the possibilities are provided for entries 3 through 7. The default is the last value chosen and is shown in parentheses following the prompt. Initially, information about all volumes is shown.

4. After you change a print option, you must select `s` for the information to be printed or displayed. If you choose to copy the information to a file, you receive a message after you select `s` that output is written to the file.

`vmadm` uses the `more` utility to display information on the screen.

The amount of information displayed depends on the mode that you specify. FULL mode displays all available information about the selected volumes in a format similar to the following example for a single volume:

```
media ID:                   MIN028
media type:                 8MM cartridge tape (4)
barcode:                    00000018
media description:          configured by GJK
volume pool:                POOL2 (7)
robot type:                 TL8 - Tape Library 8MM (6)
robot number:               0
robot slot:                 28 (C08)
robot control host:         hare
volume group:               TL8-0
vault name:                 V1
vault sent date:            Wed Dec 02 09:34:01 1993
vault return date:          Tue Feb 17 09:34:01 1994
vault slot:                 546
vault session id:           37
created:                    Mon Nov 29 08:39:09 1993
assigned:                   Tue Nov 30 20:51:28 1993
last mounted:               Sun Dec  5 20:51:49 1993
first mount:                Tue Nov 30 20:54:00 1993
expiration date:            ---
number of mounts:           6
max mounts allowed:         ---
status:                     0x0
```

For a standalone volume, fields that do not apply (for example, robot type, robot number, and so on) are not included in the FULL mode display.

For a cleaning tape, number of mounts is replaced by cleanings left.

The status field is not displayed unless the media is assigned.

BRIEF mode displays a subset of the most pertinent information, showing one line per volume, by default in alphabetical order by media ID, similar to the example below:

```
media   media   robot  robot  robot  side/  optical  # mounts/      last
 ID     type    type     #    slot   face   partner  cleanings   mount time
-------------------------------------------------------------------------------
000001  DLT     TLD      1      1     -       -          17     06/03/1996 00:01
000002  DLT     TLD      1     12     -       -          14     06/03/1996 00:02
000022  DLT     TLD      0      7     -       -           1     04/18/1996 09:25
```

Even when the same kind of information is returned, such as media type and robot type, the FULL display expands the description and is more complete. With an optical disk, for example, BRIEF mode shows a media type of REWR_OPT while FULL mode shows Rewritable optical disk.

Moving Volumes

When you move volumes in or out of a robot, or from one robot to another, you must physically and logically move the volume. The physical part of the move is when you remove or insert the volume. The logical move changes the volume database to show the volume at the new location.

You can perform the following types of logical moves:

- Move single volumes
- Move multiple volumes
- Move volume groups

Common instances where you use the move options are:

- Replacing full volumes in a robot. When a robotic volume is full and there are no more empty slots in the robot, you move the full volume to standalone, and then configure a volume for the empty slot or move a volume into that slot. You could use a similar process to replace a defective volume.
- Moving volumes from a robot to an offsite location or from an offsite location into a robot. When you move tapes to an offsite location you move them to standalone.
- Moving volumes from one robot to another (for example, if a robot is down).

Moving Volumes (With Inventory and Update)

`Inventory a Robot and Update Volume Configuration` on the `Special Actions` menu provides the easiest way to logically move media when the following are true:

- The move involves a robot that supports barcodes, see “Robot Attributes” on page 300.
- The media has readable barcodes.

See “Inventory and Update Robot Volume Configuration” on page 409 for instructions on using this option.

If the robot does not support barcodes or the barcodes are unreadable, use the move procedures explained in the following topics.

Moving a Single Volume (Without Inventory and Update)

1. On the main menu, choose `m` to `Move Volumes`.

2. The following prompt is displayed:

```
Move Single Volume, Multiple Volumes, or Volume Group? (s/m/v):
```

   Enter `s` to move a single volume.

3. You are prompted for the media ID of the volume you want to move:

```
            Changing Volume Residence
            -------------------------
            Enter Media ID:
```

4. The current residence of the volume is displayed, along with the possible locations to which it could be moved, similar to the following example:

```
Current Residence of 000003:
robot type:         TL8 - Tape Library 8MM  (6)
robot number:       10
robot control host: dill
volume group:       Sca1000
robot slot:         4
barcode:            000003

New Residence:

Physical Location
-----------------
1)  Not in robotic device
2)  RSM - Removable Storage Manager
3)  TL8 - Tape Library 8MM
4)  TLD - Tape Library DLT
5)  TLM - Tape Library Multimedia
6)  TS8 - Tape Stacker 8MM
Enter Choice [1-6]: (3)
```

5. Enter the new residence for the volume.

a. If you move a volume out of an ODL, TSH, TLD, or TL8 robot to a standalone location, you are asked whether the volume should be ejected using the media access port. This is the final step in the procedure.

Note This prompt occurs for robot types that support media access ports (and if `vmadm` supports the eject operation for the robot type). This prompt may be shown for some robots that do not have this support, since the robot type for the robot only indicates that media access ports are possible.

b. If you choose to move a volume into a robot, you are prompted with a menu of possible robots, similar to the following:

```
Applicable Robot List
---------------------
10) TL8 - Tape Library 8MM (dill)
20) TL8 - Tape Library 8MM (dill)
n)  New Robot Number
Enter choice:
```

Enter the number of the appropriate robot. If you choose `n`, you are prompted to enter a new robot number and robot control host.

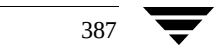
You are prompted for specific information about where the volume should be moved. This information varies depending on the device to which the volumes are being moved.

- If the robot is an API robot, see the next step.
- If the robot is not an API robot, you are prompted for the tape slot where the volume should be moved. See the appendix “Robot Drive and Slot Layouts” on page 427.

6. You are prompted to enter the volume group, by a menu similar to the following:

```
Volume Group
------------
1)  tl8grp1
2)  No Volume Group
3)  Specify New Volume Group Name
4)  Auto-Generate New Volume Group Name
Enter choice:
```

You may do one of the following:



- Choose from any volume groups in the list.
- Elect not to associate the volume with any volume group (if the option is offered).
- Enter a new name of your own choice.
- Have a name generated by `vmadm`, if the name of volume group is not important in this case.

7. If you move a volume from or to robots that support media access ports (and `vmadm` supports that robot with eject or inject), you are asked whether the volume should be ejected and then injected using the media access port.

Moving a volume in `vmadm` changes only its logical residence in the volume database. It must also be moved physically, unless it is injected or ejected using the media access port.

When you move a volume to a non-API robot that has a barcode reader, Media Manager performs a Validate and Update Barcode operation on that volume.

Moving Multiple Volumes

Moving multiple volumes is similar to moving single volumes, except that once you choose where you want the volumes to be moved, you are prompted to continue entering media IDs of volumes to move. You also do not have the option to eject and inject volumes using the media access port.

1. On the main menu, choose `m` to `Move Volumes`.

2. The following prompt is displayed:

```
Move Single Volume, Multiple Volumes, or Volume Group? (s/m/v):
```

   Enter `m` to move multiple volumes.

3. You are prompted for the media ID of the first volume you want to move:

```
Moving Volumes
--------------
Enter First Media ID:
```

4. If you are moving a volume on an optical disk, you are reminded that moving the volume on one side of the platter also moves the volume on the other side.

The current residence of the volume is displayed, along with the possible locations to which it could be moved, similar to the following menu:

```
Current Residence for all volumes in list:
robot type:         TL8 - Tape Library 8MM  (6)
robot number:       10
robot control host: dill
volume group:       Sca1000
robot slot:         3
barcode:            000002

New Residence for all volumes in list:

Physical Location
-----------------
1)  Not in robotic device
2)  RSM - Removable Storage Manager
3)  TL8 - Tape Library 8MM
4)  TLD - Tape Library DLT
5)  TLM - Tape Library Multimedia
6)  TS8 - Tape Stacker 8MM
Enter Choice [1-6]: (3)
```

5. Enter the new residence for the volumes, which you will specify next.

6. If you move the volumes into a robot, you are prompted with a menu of possible libraries, similar to the following:

```
Applicable Robot List
---------------------
10) TL8 - Tape Library 8MM (dill)
20) TL8 - Tape Library 8MM (dill)
n)  New Robot Number
Enter choice:
```

Enter the number of the appropriate robot. If you choose `n`, you are prompted to enter a new robot number and a new robot control host.

7. You are prompted to enter the volume group, by a menu similar to the following:

```
Volume Group
------------
1)  tl8grp1
2)  No Volume Group
3)  Specify New Volume Group Name
4)  Auto-Generate New Volume Group Name
Enter choice:
```

You may

- Choose from any volume groups in the list.
- Elect not to associate the volume with any volume group (if the option is offered).
- Enter a new name of your own choice.
- Have a name generated by vmadm, if the name of volume group is not important in this case.

8. Depending on the device, you are prompted for a media ID or to specify location information for each volume.

Note You do not enter slot information for media added to an API robot. Media Manager does not require slot location for these robot types, since this information is tracked by the operating system or the robot vendor software.

9. At this point, the volumes are moved, messages confirming the moves are displayed, and you are returned to the main menu.

Moving volumes in vmadm changes only their logical residence in the volume database. They must also be moved physically. When you move volumes to a non-API robot that has a barcode reader, Media Manager performs a Validate / Update Barcode operation on those volumes.

Moving a Volume Group

A volume group can be moved to a new robot or made standalone. All volumes must have their new slot numbers identified, as the move operation leaves slot numbers unmodified.

See “Volume Pools and Volume Groups” on page 319, for a definition of a volume group.

Note If a volume group is moved back into a robot, every volume must be returned to its original slot.

1. On the main menu, choose `m` for `Move Volumes`.

2. The following prompt is displayed:

```
Move Single Volume, Multiple Volumes, or Volume Group? (s/m/v):
```

   Enter `v` to move a volume group.

3. A menu of possible groups is displayed, similar to the following menu:

```
            Volume Group
            ------------
            1)  00_025_TL8
            2)  10i-1
            3)  10i-2
            4)  axc
            Enter choice:
```

   Enter the number of the volume group you want to move.

4. The current residence of the volume group is displayed, along with a prompt to choose the new location, similar to the following menu:

```
Current Residence for Volume Group 00_025_TL8:
----------------------------------------------
robot type:          TL8 - Tape Library 8MM  (3)
robot number:        25
robot control host: bobcat

New Residence:

Physical Location
-----------------
1)  Not in robotic device
Enter Choice [1-1]: (1)
```


You can move a volume group only between a robotic location and standalone. To move a group from one robot to another, you must move the group to standalone, as an intermediate step, and then to the new robot.

If you selected a standalone volume group to move, the physical locations listed would not offer option (1), but would show the robot type to which the volumes could be moved, as in the following sample menu:

```
New Residence:
Physical Location
-----------------
1)  RSM - Removable Storage Manager
2)  TL8 - Tape Library 8MM
3)  TLD - Tape Library DLT
4)  TLM - Tape Library Multimedia
5)  TS8 - Tape Stacker 8MM
Enter Choice [1-5]:
```

Enter the new residence for the volume group. The volumes are logically moved and you are returned to the main menu.

Moving volumes in `vmadm` changes only their logical residence in the volume database. They must also be moved physically.

Deleting a Single Volume

Note You cannot delete volumes that are assigned, until they are unassigned. Only NetBackup and Storage Migrator use the assigned state. See “Deassigning Volumes” on page 114 for more information..

1. On the main menu, choose `d` for `Delete Volumes`.
2. The following prompt appears:

```
Delete Single Volume, Multiple Volumes, or Volume Group? (s/m/v):
```

Enter `s` to delete a single volume.

3. You are then prompted for the media ID of the volume you want to delete:

```
Deleting Volume
---------------
Enter Media ID:
```

If you are deleting an optical disk volume, you get the following additional warning and prompt:

```
Deleting volume xxxxxA will also delete xxxxxB
are you sure you want to delete both volumes? (y/n):
```

(*xxxxx*A and *xxxxx*B represent the media IDs of sides A and B of the volume's platter.)

Entering `n` cancels the operation. Entering `y` continues the operation.

4. The deletion is confirmed with a message, and you are returned to the main menu.

The volume is deleted from the database, not physically from the device.

Deleting Multiple Volumes

Note You cannot delete volumes that are assigned, until they are unassigned. Only NetBackup and Storage Migrator use the assigned state. See "Deassigning Volumes" on page 114 for more information..

1. On the main menu, choose `d` for `Delete Volumes`.

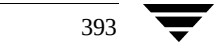
2. The following prompt appears:

```
Delete Single Volume, Multiple Volumes, or Volume Group? (s/m/v):
```

Enter `m` to delete multiple volumes.

3. You are then prompted for the media ID of the volume you want to delete:

```
Deleting Volumes
---------------
Enter Media ID:
```

If you are deleting an optical disk volume, you get the following additional warning:

```
Deleting volume xxxxxA will also delete xxxxxB
```

(*xxxxx*A and *xxxxx*B represent the media IDs of sides A and B of the volume's platter.)

Pressing the Escape key cancels the operation. Continuing causes the volume to be deleted, when all the desired volumes have been entered. You continue to be prompted for media IDs until you press only the Enter key.

4. The volumes are deleted, messages confirm each deletion, and you are returned to the main menu.

   The volumes are deleted from the database, not physically from the device.

Deleting a Volume Group

Note You cannot delete volumes that are assigned, until they are unassigned. Only NetBackup and Storage Migrator use the assigned state. See "Deassigning Volumes" on page 114 for more information..

1. On the main menu, choose `d` for `Delete Volumes`.

2. The following prompt appears:

```
Delete Single Volume, Multiple Volumes, or Volume Group? (s/m/v):
```

   Enter `v` to delete a volume group.

3. A menu of the possible volume groups is displayed, similar to the following:

```
Volume Group
------------
1)  00_025_TL8
2)  10i-1
3)  10i-2
4)  cc
Enter choice:
```

   Enter the number of the volume group you want to delete.

4. The volumes in the specified group are deleted and you are returned to the main menu.

   The volumes are deleted from the database, not physically from the device.

Changing a Volume's Description

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `d` for `Change Media Description for Volume`.
3. The following prompt appears:

```
Changing Media Description for Volume
-------------------------------------
Enter Media ID:
```

   Enter the media ID of the volume whose description you want to change.

4. The current media description and a prompt for the new description is displayed, similar to the following:

```
Current Media Description for 000000: test
Enter Media Description (25 char max):
```

   Enter the new description and press Enter. You are returned to the `Special Actions` menu.

Changing a Volume's Volume Pool

Volumes are in a specific volume pool or are associated with a generic volume pool. The volume pool row in the `Print Information about Volumes` FULL display mode, shows the name of the volume pool to which the volumes belong (if any).

Once associated with a pool, volumes are assigned or unassigned. Only the NetBackup and Storage Migrator applications use the assigned state. A NetBackup or Storage Migrator volume becomes assigned when it is requested by a user or an application. The time of the assignment appears in the assigned row in the `Print Information about Volumes` FULL display mode.

A volume must be in an unassigned state before you can change its volume pool. Attempting to change its volume pool while the volume is assigned results in an error.

1. Deassign the volume if it is assigned to NetBackup (See "Deassigning Volumes" on page 114 for more information).

2. On the main menu, choose `s` for `Special Actions`.

3. Choose `p` for `Change Volume Pool for Volumes`.

4. The list of defined volume pools appears:

```
Changing Volume Pool for Volumes
--------------------------------
Volume Pool
----------
1)  None
2)  NetBackup
3)  oldplatters
4)  newplatters
5)  POOL1
6)  DataStore
Enter Choice:
```

   Enter `1`, if you want the volume associated with the generic volume pool; the volume will be available to any user or application. Enter `2` if you want the volume to be available to NetBackup only; or enter another choice to have the volume associated with one of the volume pools listed.

5. You are prompted for the media ID of the volume to change. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID.

Changing the volume pool for an optical disk volume also changes the volume pool for its partner volume.

Changing the Expiration Date for Volumes

The administrator can change the expiration date for any volume in the volume database. The expiration date refers to the age of the media (not the data on the media) and is the time at which the media is considered too old to be reliable.

When its expiration date has passed a volume can still be read, but it will not be mounted for a write access. Requesting write access to a volume whose expiration date has passed results in an error; requesting read access results in a warning being logged to the system console log.

You can set or change an expiration date for a single volume or for multiple volumes.

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `e` for `Change Expiration Date for Volumes`.

   At the prompt, enter 0 for no expiration date or enter a date in one of the following formats:

   - mm/dd/yy hh/mm/ss
   - mm/dd/yyyy hh/mm/ss
   - mm/dd/yy
   - mm/dd/yyyy
   - mm/dd
3. You are then prompted to enter the media ID of the volume to associate with this expiration date. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID.

Changing the Volume Group for Volumes

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `g` for `Change Volume Group for Volumes`.

   The following prompt appears:

```
Changing Volume Group for Volumes
---------------------------------
Enter Media ID:
```

3. Enter the media ID of the first volume you want to change and press Enter. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID.

   As you enter the media IDs, Media Manager validates them to ensure they have common media types and residences.

4. When you exit from this prompt, a list similar to the following appears:

```
Volume Group
--------------
     1) 00_000_TL8
     2) Specify New Volume Group Name
     3) Auto-Generate New Volume Group Name
Enter Choice:
```

The list will include existing volume groups that are valid for the media you specified in step 3, (`00_000_TL8` in this example), and also have options for specifying a new volume group name or having `vmadm` generate a new name.

If you choose to specify a new volume group name, a prompt appears allowing you to enter the name.

Change Vault Name for Volumes

You can set, clear, or change the vault name that contains the volume. This field is used by NetBackup Vault to determine what offsite location the volume is located in while offsite. You can change the vault name for a single volume or for multiple volumes, as follows:

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `a` for `Change Vault Parameters for Volumes`.
3. Choose `n` for `Change Vault Name for Volumes`.

   The following prompt appears:

```
Changing Vault Name for Volumes
--------------------------------
(enter '-' to clear vault name)
Enter Vault Name(25 chars max):
```

Enter the new vault name. Entering a hyphen means that the name will be cleared.

4. You are prompted for the media IDs for which you want this vault name applied. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID. If you enter the ESC key, your changes will not be applied.

Change Date Volumes are Sent to Vault

You can set, clear, or change the date a volume is sent to the vault. This field is used by NetBackup Vault to record when a volume was sent to an offsite vault.

You can change this date for a single volume or for multiple volumes, as follows:

1. On the main menu, choose s for `Special Actions`.
2. Choose a for `Change Vault Parameters for Volumes`.
3. Choose s for `Change Date Volumes are sent to Vault`.

   The following prompt appears:

```
Changing Date Volume(s) Sent to Vault
---------------------------------
(vault sent date of 0 means clear entry)
Enter date volumes(s) sent to vault:
```

   Enter the new date the volume is sent offsite. Entering 0 means that the date will be cleared.

4. You are then prompted for the media IDs for which you want this date applied. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID. If you enter the ESC key, your changes will not be applied.

Change Date Volumes Return from Vault

You can set, clear, or change the date a volume returns from the vault. This field is used by NetBackup Vault to record when a volume is requested to be returned from the vault. You can change this date for a single volume or for multiple volumes, as follows:

1. On the main menu, choose s for `Special Actions`.
2. Choose a for `Change Vault Parameters for Volumes`.
3. Choose r for `Change Date Volumes return from Vault`.

The following prompt appears:

```
Changing Date Volume(s) return from Vault
---------------------------------
(vault return date of 0 means clear entry)
Enter date volume(s) return from vault):
```

Enter the new date. Entering 0 means that the date will be cleared.

4. You are then prompted for the media IDs for which you want this date applied. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID. If you enter the ESC key, your changes will not be applied.

Change Vault Slot for Volumes

You can set, clear, or change the slot that the volume is contained in at the vault. This field is used by NetBackup Vault to determine what slot the volume is located in while in the vault. You can change the slot for a single volume or for multiple volumes, as follows:

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `a` for `Change Vault Parameters for Volumes`.
3. Choose `s` for `Change Vault Slot for Volumes`.

   The following prompt appears:

```
Setting Vault Slot for Volumes
---------------------------------
Enter Vault Slot: (0)
```

Enter the new vault slot. Entering 0 means that the slot will be cleared.

4. You are then prompted for the media IDs for which you want this slot applied. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID. If you enter the ESC key, your changes will not be applied.

Change Vault Session ID for Volumes

You can set, clear, or change the vault session ID that a volume was processed in. This field is used by NetBackup Vault to determine what session was used for a volume when it was vaulted. You can change the session ID for a single volume or for multiple volumes, as follows:

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `a` for `Change Vault Parameters for Volumes`.
3. Choose `i` for `Change Vault Session ID for Volumes`.

   The following prompt appears:

```
Setting Vault Session ID for Volumes
--------------------------------
Enter Vault Session ID: (0)
```

   Enter the new session ID. Entering 0 means that the session ID will be cleared.

4. You are then prompted for the media IDs for which you want this session ID applied. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID. If you enter the ESC key, your changes will not be applied.

Setting the Maximum Mounts for Volumes

You can set or change the maximum number of times a volume can be mounted. Once this number is reached, any further requests to mount the volume for a write operation result in an error. Specifying a maximum allowed mount count of 0, means there is no limit on the number of times a volume can be mounted.

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

You can set the maximum allowed mounts for a single volume or for multiple volumes, as follows:

Note You cannot set the maximum number of mounts for a cleaning cartridge.

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `s` for `Set Maximum Allowed Mounts for Volumes`.

A prompt is displayed for specifying a maximum mount count. Entering `0` means there is no limit to the number of times the volume can be mounted.

3. You are then prompted for the media IDs for which you want this maximum allowed mounts applied. You will continue to be prompted for media IDs until you press the Enter key without typing a media ID.

Changing the Cleanings Allowed for a Cleaning Tape

When you added cleaning tapes, you specified a cleaning count. If you need to adjust that count, use the following procedure:

1. On the main menu, choose `s` for `Special Actions`.
2. Choose `m` for `Modify Number of Cleanings on Cleaning Cartridge`.
3. The following prompt appears:

```
Changing Cleaning Count for Volume
----------------------------------
Enter Media ID:
```

Enter the media ID of the cleaning tape for which you want to change the cleaning count.

4. The current number of cleanings and a prompt to enter a new number for the cleaning count is displayed, similar to the following:

```
Current Number of Cleanings for TEST:26
Enter New Number of Cleanings:
```

5. Enter a new number. The cleaning count is changed to the new number and you are returned to the `Special Actions` menu.

For more information about cleaning tapes, see the `tpclean(1M)` man page.

Starting and Stopping the Media Manager Volume Daemon

The Media Manager volume daemon, `vmd`, must be active to perform the operations in `vmadm`, even though you can start the utility without `vmd` running.

You can start vmd by entering the following command:

```
/usr/openv/volmgr/bin/vmd
```

You can also control vmd from vmadm, as follows:

To Start the Volume Daemon

1. On the main menu, choose s for Special Actions.
2. Choose i for Initiate Media Manager Volume Daemon. This starts vmd and you are returned to the Special Actions menu.

To Stop the Volume Daemon

1. On the main menu, choose s for Special Actions.
2. Choose t for Terminate Media Manager Volume Daemon. This stops the daemon and returns you to the Special Actions menu.

Updating Barcodes for Selected Volumes in a Robot

Use Update/Validate Barcode for Volumes on the Special Actions menu to check the barcodes of selected volumes in robots (that can read barcodes) and update the volume database if necessary. “Robot Attributes” on page 300 lists the robots that support barcodes.

Use this option only to fill in barcodes that are missing from the database. For example, if you logically add a new volume but do not physically insert it into the robot, the database will not include the barcode. In this case, you can use the Update/Validate Barcode option to fill in the missing barcode.

Do not use this option to correct a database entry that shows an incorrect media ID in a slot. Here, you must update the database by using a move option (see “Moving Volumes” on page 385) or the inventory and update option (see “Inventory and Update Robot Volume Configuration” on page 409).

Note You cannot use the Update / Validate Barcodes option for API robots since Media Manager does not manage location information for media in these robot types.

1. Ensure that the appropriate robotic daemons are active on the robot control host. To start the daemons, see “Robotic Daemons” on page 209.

2. On the main menu, choose s for `Special Actions`.

3. Choose u for `Update/Validate Barcode for Volumes`.

   The following prompt appears:

```
Validating/Updating Barcodes for Volumes
----------------------------------------
Enter Media ID:
```

4. Enter the media ID of the first volume you want to update and press the Enter key. You will continue to be prompted for media IDs until you press the Enter key without entering a media ID.

   When you press the Enter key to exit from the Enter Media ID prompt, the barcodes are updated and you are returned to the `Special Actions` menu.

Inventory and Report Robot Volume Configuration

Use `Inventory a Robot and Report Contents` from the `Special Actions` menu, to inventory a selected robot and obtain a report that shows which media ID is in each slot. If the robot can read barcodes (see “Robot Attributes” on page 300) then barcode information is included in the report.

Note If a volume happens to be in a drive, the report shows it in the slot it came from.

This option does not check or change the database, but is useful for listing the contents of a robot.

1. Ensure that the appropriate control daemon is active on the host that controls the robot you are going to inventory. See “Robotic Daemons” on page 209.

2. On the main menu, choose s for `Special Actions`.

3. Choose c for `Inventory a Robot and Report Contents`.

If the volume database has entries for robotic volumes, `vmadm` lists the robot number, robot type, and robot control host for those robot types (except ACS and TLM robots). For example:

```
Robot from Volume Configuration
-------------------------------
1)  TLD 2 -- breaker
2)  TL4 3 -- breaker
3)  TL8 0 -- whale
4)  none of the above
Enter choice:
```

a. If the desired robot is not in the list, choose `none of the above` and go to step 4.

b. If the desired robot is in the list, enter the number corresponding to the robot (for example, enter 3 for TL8 0 on whale) and go to step 5.

c. If the desired robot is an ACS type, the menu shows a robot control host of NONE. If you choose an ACS robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the ACS daemon (`acsd`) is running. This can be the ACS library software host or it can be another host.

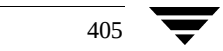
d. If the desired robot is a TLM type, the menu shows a robot control host of NONE. If you choose a TLM robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the TLM daemon (`tlmd`) is running. This can be the TLM library software host or it can be another host.

e. If the desired robot is a RSM type, the menu shows a robot control host of NONE. If you choose a RSM robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the RSM daemon (`rsmd`) is running.

f. If the volume database has no entries for robotic volumes, you are prompted to specify a robot control host on which to search the device configuration for robots.

```
Enter Robot Control Host:   (whale)
```

Respond to this prompt as explained in step 4.



4. If the device configuration has no robots or you have chosen an ACS or TLM robot or `none of the above` in step 3, you are prompted to select a robot control host on which to search the device configuration for robots:

```
Enter Robot Control Host:   (whale)
```

   a. Enter a host name and then the Enter key, or press Enter without typing a name to select the default host shown in the parentheses. Media Manager searches for robots in the device configuration on the selected host.

Note If Media Manager does not find any robots in the device configuration, `vmadm` displays a "robot not obtained" message.

   b. If Media Manager finds robots in the device configuration, it lists their robot number, robot type, and robot host. For example:

```
Robot from Device Configuration
-------------------------------
1)  TLD 0 -- shark
2)  TLD 1 -- shark
3)  none of the above
Enter choice:
```

   To report the contents of a robot in the list, enter the number corresponding to the robot (for example, `1` for TLD 0 on shark) and go to step 5.

   If a list appears but the desired robot is not shown, choose `none of the above`. In this case, `vmadm` shows a "robot not obtained" message and you must configure the robot before you can perform the inventory and report.

5. When you have selected a robot, `vmadm` displays a report that shows the contents of the robot.

   For robots with a barcode reader, Media Manager obtains the barcode and includes it in the report. If the robot does not support barcodes or the media does not have a readable barcode, <none> appears in place of the barcode.

Inventory and Compare Robot Volume Configuration

Use the `Inventory a Robot and Compare with Volume Configuration` on the `Special Actions` menu to physically inventory a robot, compare the results with the contents of the volume database, and obtain a list of recommended changes.

The report shows discrepancies between the contents of the robot and the contents of the volume database. If the robot can read barcodes, then barcode information is included in the report.

This option does not change the database, but is useful for verifying whether the volume database is correct after tapes have been physically moved in the robot. If the report shows that the media in a slot does not match what is in the database, you can physically move the media or change the database using a move option (see "Moving Volumes" on page 385) or the inventory and update option (see "Inventory and Update Robot Volume Configuration" on page 409).

1. Ensure that the appropriate control daemon is active on the host that controls the robot you are going to inventory. See "Robotic Daemons" on page 209.

2. On the main menu, choose `s` for `Special Actions`.

3. Choose `v` for `Inventory a Robot and Compare with Volume Configuration`.

   If the volume database has entries for robotic volumes, `vmadm` lists the robot number, robot type, and robot host for those robots (except ACS and TLM robots). For example:

```
Robot from Volume Configuration
-------------------------------
1)  TLD 2 -- breaker
2)  TL4 3 -- breaker
3)  TL8 0 -- whale
4)  none of the above
Enter choice:
```

   a. If the desired robot is not in the list, choose `none of the above` and go to step 4.

   b. If the desired robot is an ACS type, the menu shows a robot control host of NONE. If you choose an ACS robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the ACS daemon (`acsd`) is running. This can be the ACS library software host or it can be another host.

   c. If the desired robot is a TLM type, the menu shows a robot control host of NONE. If you choose a TLM robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the TLM daemon (`tlmd`) is running. This can be the TLM library software host or it can be another host.

d. If the desired robot is a RSM type, the menu shows a robot control host of NONE. If you choose a RSM robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the RSM daemon (`rsmd`) is running.

e. If the desired robot is in the list, enter the number corresponding to the robot (for example, enter `3` for TL8 0 on whale) and go to step 5.

f. If the volume database has no entries for robotic volumes, you are prompted to specify a robot control host on which to search the device configuration for robots.

```
Enter Robot Control Host:   (whale)
```

Respond to this prompt as explained in step 4.

Note A robot does not appear in the list, if it does not have any volume entries in the volume database you are using for the compare.

4. If the volume database has no robotic volumes or you have chosen `none of the above` in step 3, you are prompted to select a robot control host on which to search the device configuration for robots:

```
Enter Robot Control Host:   (whale)
```

a. Enter a host name and then the Enter key, or press Enter without typing a name to select the default host shown in the parentheses. Media Manager searches for robots in the device configuration on the selected host.

Note If Media Manager does not find any robots in the device configuration, `vmadm` shows a "robot not obtained" message.

b. If Media Manager finds robots in the device configuration, it lists their robot number, robot type, and robot host. For example:

```
Robot from Device Configuration
-------------------------------
1)  TLD 0 -- shark
2)  TLD 1 -- shark
3)  none of the above
Enter choice:
```

To inventory and compare the volume database entries for a robot in the list, enter the number corresponding to the robot (for example, `1` for TLD 0 on shark) and go to the next step.

If a list appears but the desired robot is not shown, choose `none of the above`. In this case, `vmadm` displays a "robot not obtained" message and you must configure the robot and insert media before you can perform the inventory and update.

5. When you have selected a robot, `vmadm` displays a report comparing the contents of the robot with the contents of the volume database.

   See "Comparing Robot Contents with the Volume Configuration" on page 131 for example reports.

   For API robots (ACS, LMF, RSM, TLH, or TLM), Media Manager determines whether the media ID and media type that is stored in its own database matches the database for the robot-vendor software.

   For robots that are not API robots that have a barcode reader, Media Manager determines whether the barcodes in the robot match those in the volume database. When the report shows <none>, it means that the media does not have a barcode.

   For robots that cannot read barcodes, `vmadm` verifies only whether the volume database correctly shows whether a slot contains media.

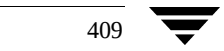
Inventory and Update Robot Volume Configuration

Use `Inventory a Robot and Update Volume Configuration` on the `Special Actions` menu to inventory a robot and compare the results with the contents of the volume database.

You can then optionally update the volume database to agree with what is in the robot. When you insert new media, the database update includes automatic creation of media IDs (based on barcodes or a prefix that you specify). If you use barcode rules, new media that is added through a barcode rule can also be assigned a media type, volume pool, maximum number of mounts (or number of cleanings), and description (see "Configuring Barcode Rules" on page 421).

Note *insert* means the media is placed physically in the robot without using an add or move option to update the database. *remove* means to take media out of a robot without using a move option.

See "Updating the Volume Configuration for a Robot" on page 135 for instructions on when to use and when not to use the Inventory and Update option.



To Inventory and Update Robot Volume Configuration

1. Check the barcode capabilities of the robot and its media (optional).

   Before doing an inventory and update, perform "Inventory and Compare Robot Volume Configuration" on page 406 and check whether the following are true:

   - The robot supports barcodes.
   - The new media that was inserted has readable barcodes.

   If the robot does not support barcodes or the media does not have readable barcodes, save the results of the verify for reference, in case you assign a media ID prefix later in this procedure.

2. For API robot types, assign media mappings as explained in the following appendices:

   - For ACS robots, see "Robot Inventory Operations" on page 483.
   - For TLH robots, see "Robot Inventory Operations" on page 508.
   - For TLM robots, see "Robot Inventory Operations" on page 518.
   - For LMF robots, see "Robot Inventory Operations" on page 533.
   - For RSM robots, see the Windows Media Manager system administrator guide.

3. For robot types that are not API robots, create media ID generation rules (optional).

   See "Configuring Media ID Generation Rules" on page 175 for more information.

4. Create barcode rules (optional).

   Refer to "Configuring Barcode Rules" on page 421 and create any barcode rules that you want to use for updating the database for media that has been inserted into the robot.

5. Ensure that the appropriate control daemons are active on the robot control host.

   To start the daemons, see "Robotic Daemons" on page 209.

6. On the main menu, choose `s` for `Special Actions`.

7. Choose `r` for `Inventory a Robot and Update Volume Configuration`.

If the volume database has entries for robotic volumes, vmadm lists the robot number, robot type, and robot host for those robots (except ACS and TLM robot types). For example:

```
Robot from Volume Configuration
-------------------------------
     1)  TLD 2 -- breaker
     2)  TL4 3 -- breaker
     3)  TL8 0 -- whale
     4)  none of the above
Enter choice:
```

a. If the robot you want to inventory and update is in the list, enter the number corresponding to the robot (for example, enter 3 for TL8 0 on whale) and go to step 9.

b. If the desired robot is not in the list, choose `none of the above` and go to step 8.

c. If the desired robot is an ACS type, the menu shows a robot control host of NONE. If you choose an ACS robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the ACS daemon (`acsd`) is running. This can be the ACS library software host or it can be another host.

d. If the desired robot is a TLM type, the menu shows a robot control host of NONE. If you choose a TLM robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the TLM daemon (`tlmd`) is running. This can be the TLM library software host or it can be another host.

e. If the desired robot is a RSM type, the menu shows a robot control host of NONE. If you choose a RSM robot, you are prompted for the Robot Control Host. At this prompt, enter the host on which the RSM daemon (`rsmd`) is running.

f. If the volume database has no entries for robotic volumes, you are prompted to specify a robot control host on which to search the device configuration for robots.

```
Enter Robot Control Host:   (whale)
```

Respond to this prompt as explained in step 8.

Note A robot does not appear in the list if it does not have any volume entries in the volume database you are updating. This will be the case, if you configure a new robot and are adding media to it using the inventory and update option.

8. If the volume database has no robotic volumes or you have chosen `none of the above` in step 7, you are prompted to select a robot control host on which to search the device configuration for robots:

```
Enter Robot Control Host:   (whale)
```

a. Enter a host name and then the Enter key, or press Enter without typing a name to select the default host shown in the parentheses. Media Manager searches for robots in the device configuration on the selected host.

Note If Media Manager does not find any robots in the device configuration, `vmadm` shows a "robot not obtained" message.

b. If Media Manager finds robots in the device configuration, it lists their robot number, robot type, and robot host. For example:

```
Robot from Device Configuration
-------------------------------
     1)  TLD 0 -- shark
     2)  TLD 1 -- shark
     3)  none of the above
Enter choice:
```

To inventory and update the volume database entries for a robot in the list, enter the number corresponding to the robot (for example, 0 for TLD 1 on shark) and go to step 9.

If a list appears but the desired robot is not shown, choose `none of the above`. In this case, `vmadm` shows a "robot not obtained" message and you must configure the robot and insert media before you can perform the inventory and update.

9. When you have selected a robot, the `Inventory and Update Robot` menu appears. For example:

```
Inventory and Update Robot:  TLD (10) - whale

Update Mode:  INTERACTIVE

Inventory and Update
--------------------
u)  Inventory Robot and Update Volume Configuration

m)  Change Update Mode
o)  Change Update Options

h)  Help
q)  Quit Menu

ENTER CHOICE:
```

Inventory a robot and update its volume database entries as follows:

a. Use the `m` option to toggle the update mode.

- INTERACTIVE causes `vmadm` to display a list of recommended changes after the inventory, and prompts you to confirm whether to proceed with updating the database.
- NOT INTERACTIVE causes `vmadm` to make the recommended database changes without prompting for a confirmation.

  You may want to use the NOT INTERACTIVE mode after you become familiar with performing robot inventories

b. To view the current inventory and update settings or change them, choose `o` and refer to “Changing Update Options” on page 414”.

c. When the update options are as you want them, choose the `u` option to start the inventory and update operation.

See “Updating the Volume Configuration for a Robot” on page 135 for example reports.

Changing Update Options

When you choose o from the Inventory and Update Robot menu, the Update Options menu appears. The example below shows the defaults for a new installation.

These are also the defaults each time you enter the options menu, with the possible exception of the Media ID Prefix. The Media ID prefix default will be the last entry in the vm.conf file, if one exists (see step 6 below).

For most configurations, the default update options work well. You should only change the defaults if your configuration has special hardware or usage requirements.

```
Update Robot:  TL8 (10) - whale

OPTION FOR REMOVED MEDIA
------------------------
        Volume Group:  DEFAULT
OPTIONS FOR ADDED OR MOVED MEDIA
--------------------------------
        Volume Group:  DEFAULT
   Use Barcode Rules:  YES
          Media Type:  DEFAULT
     Media ID Prefix:  DEFAULT
         Volume Pool:  DEFAULT

                 Update Options
                 --------------
 b)  Use Barcode Rules   r)  Volume Group for REMOVED media
 m)  Media Type          a)  Volume Group for ADDED or MOVED media
 i)  Media ID Prefix     p)  Volume Pool

 h)  Help
 q)  Quit Menu

 ENTER CHOICE:
```

1. Choose whether to use barcode rules when adding new media, by using the b option to toggle Use Barcode Rules between YES and NO.

Note Media Manager attempts to use barcode rules only for barcodes that are not already in the volume database.

- YES causes Media Manager to search existing barcode rules and apply them to new media that has been inserted into a robot.
- NO causes Media Manager to ignore the barcode rules.

See “Configuring Barcode Rules” on page 421 for more information on barcode rules and how to define them.

2. If you are updating an API robot, check the Media Type Mappings.

   To change the mapping choose `c` from the `Update Options` menu and make your changes on the menu. The `c` option appears only for these robot types.

   The default mapping originates from the `vm.conf` file on the host where you are running `vmadm`. If this file does not exist or contain a mapping for the media, Media Manager uses the defaults for these robot types (see the tables in “Changing the Update Options” on page 141).

3. Choose `m` to open a menu that shows the media types that are valid for this robot. The menu will be similar to the following.

```
Media Type
----------
  1)  DEFAULT
  2)  DLT cartridge tape
  3)  1/2" cartridge tape
  4)  DLT cartridge tape 2
  5)  1/2" cartridge tape 2
  6)  DLT cleaning tape
  7)  1/2" cleaning tape
  8)  DLT cleaning tape 2
  9)  1/2" cleaning tape 2
Enter Choice [1-9]:  (1)
```

   a. If you are *not* using barcode rules:

      - To use the default media type, select DEFAULT.

        If the robot is an API robot, Media Manager uses the Media Type Mappings that are displayed.

        If a robot is not an API robot, Media Manager uses the default media type for the robot (see the table “Default Media Types for Robots (Not API robots)” on page 148) as follows:

        If all of the drives in the robotic library (configured on this robot host) are 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.

        If all of the drives in the robotic library (configured on this robot host) are not the same type, then Media Manager uses the default media type for the robotic library.

- To use a media type other than the default, choose one from the menu.

  Selecting from the menu is required in either of the following cases:

  The robotic library supports multiple media types and you do not want the default media type.

  Drives are not configured on the robot control host and the drives are not the default media type for the robot.

b. If you *are* using barcode rules:

- Choose DEFAULT to let the barcode rule determine the media type that is assigned.

  For example, assume you want to add both DLT and half-inch cartridges to a TLD robot with a single update operation. To accomplish this, first create separate rules for DLT and half-inch cartridges and select the specific media type in the barcode rules. Then, select DEFAULT from the `Update Options` menu. Media Manager will now use the media type in the barcode rules when it does the inventory and update.

Note If you also choose DEFAULT for the barcode rule, Media Manager assigns the default media type for the robot (see the table "Default Media Types for Robots (Not API robots)" on page 148).

- To use a media type other than the default, choose a specific type from the menu.

  For example, to use the same rule to add DLT or half-inch cartridges to a TLD, choose specific media from the `Update Options` menu and DEFAULT for 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 on the `Update Options` menu, the media type for the rule must be the same type or DEFAULT in order to obtain a match (except for cleaning media as explained below).

  The following list shows what happens for various combinations of update and barcode rule media types.

Update Options Media Type	Barcode Rule Media Type	Rule Used	Media Type in Volume Database
DLT	DEFAULT	Yes	DLT
1/2" CART	DEFAULT	Yes	1/2" CART
DLT	DLT	Yes	DLT
DLT	DLT CLEAN	Yes	DLT CLEAN

```
 DLT CLEAN       DLT               No          DLT CLEAN
 DLT CLEAN       DLT CLEAN         Yes         DLT CLEAN
 DLT CLEAN       DEFAULT           Yes         DLT CLEAN
 DLT             (8MM, 4MM ...)    No          DLT
 DEFAULT         DEFAULT           Yes         DLT
 DEFAULT         DLT               Yes         DLT
 DEFAULT         DLT CLEAN         Yes         DLT CLEAN
 DEFAULT         1/2" CART         Yes         1/2" CART
DEFAULT        (4MM ...)        No         Robot-type dependent
```

- The fourth barcode rule in the list shows Media Manager's ability to automatically add cleaning cartridges with regular media, when you execute an update for a robot.

  If the media you insert includes a cleaning tape, then Media Manager automatically adds the tape correctly, if the following are true:

  - The update media type is for the regular media (DLT in this example).
  - The barcode on the tape matches a barcode tag and the barcode rule media type is the cleaning media (DLT CLEAN in this example).

  Also see "Example 5: Add cleaning tapes to a robot" on page 165.

- The sixth and seventh rules in the list illustrate how to add only cleaning media.

  In the sixth rule, you specify the cleaning media type on both the `Update Options` menu and in the barcode rule. In the seventh rule, you specify the cleaning media on the `Update Options` menu and choose default in the barcode rule.

4. Choose `a` to open a menu for selecting the volume group that Media Manager will assign to media that you have inserted into the robot (or moved to a new location within the robot).

The menu will be similar to the following:

```
Volume Group
------------
1)  00_000_TL8
2)  Specify New Volume Group Name
3)  Auto-Generate New Volume Group Name
Enter choice:
```

The menu always has choices for:

- Specifying a new volume group name.

- Auto generating a new volume group (default). You can also auto generate a new volume group name by entering DEFAULT for the new volume group name.

Other choices that are available depend on the selected media type.

- If Media Type is DEFAULT, the menu shows existing volume groups that are valid for the robot's default Media Type.
- If Media Type is other than DEFAULT, the menu shows the existing volume groups that are valid for the media type.

5. Choose `r` to open a menu for selecting the volume group that Media Manager will assign to media that you have removed from the robot.

The menu will be similar to the following:

```
Volume Group
------------
1)  00_000_NON
2)  No Volume Group
3)  Specify New Volume Group Name
4)  Auto-Generate New Volume Group Name
Enter choice:
```

The menu always has choices for:

- Specifying no volume group name.
- Specifying a new volume group name.
- Auto generating a new volume group (default). You can also auto generate a new volume group name, by entering DEFAULT for the new volume group name.

Other choices that are available depend on the selected media type.

- If Media Type is DEFAULT, the menu shows existing volume groups that are valid for the robot's default Media Type.
- If Media Type is other than DEFAULT, the menu shows the existing volume groups that are valid for the media type.

6. Specify a value for Media ID prefix if either of the following conditions are true (see step 1 under "Inventory and Update Robot Volume Configuration" on page 409):

- The robot does not support barcodes
- The media that was inserted does not have readable barcodes.

If *neither* of the above conditions are true, a prefix is not required since Media Manager assigns the last six characters of the barcode or the specific characters that you specify if you are using Media ID generation rules as the media ID for media added to the robot. This applies whether or not a barcode rule is used.

To select a value for Media ID prefix, choose `i` from the `Update Options` menu to display a selection list that is similar to the following:

```
Media ID Prefix
-------------
  1)  NV
  2)  NETB
  3)  ADD
  4)  Default Media ID Prefix
  5)  Use No Media ID Prefix
  6)  Specify New Media ID Prefix
Enter choice:
```

Choose one of the following from the list:

- If there are existing media ID prefixes, you can choose one of them from the list. The existing prefixes come from `MEDIA_ID_PREFIX` entries that you added to the `vm.conf` file on the host where you are running `vmadm`. For example, entries for the list above would be:

  ```
  MEDIA_ID_PREFIX = NV

  MEDIA_ID_PREFIX = NETB

  MEDIA_ID_PREFIX = ADD
  ```

- Default Media ID Prefix

  In this case, Media Manager first checks the `vm.conf` file for `MEDIA_ID_PREFIX` entries.

  - If `vm.conf` has `MEDIA_ID_PREFIX` entries, then Media Manager assigns the last one as the default prefix.
  - If `vm.conf` does not have any prefix entries, Media Manager assigns the letter `A` as the default prefix.

- Use No Media ID Prefix

  This operation will succeed only if the robot supports barcodes and the media has readable barcodes. Otherwise, Media Manager is unable to assign new media IDs and the operation fails (with an accompanying error message).

  This choice may be useful if you are using media with barcodes and want updates to fail when unreadable or missing barcodes are encountered.

- Specify New Media ID Prefix

  You can specify a new media ID 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.

  For optical disk media, the final character reflects the platter side, unless you choose NO for `Use Platter Side in Optical ID` (see step 7).

Note A new media ID prefix is used only for the current operation. It is not added to `vm.conf` and does not appear in the Media ID prefix list the next time you use the `Update Options` menu.

7. If the robot is an ODL robot, choose the `s` option to toggle `Use Platter Side in Media ID` to YES or NO, depending on whether you want designate the platter-side in media IDs for optical disk media.

Note `Use Platter Side in Media ID` appears on the `Update Options` menu only if you are doing the inventory and update on an ODL robot and are using a Media ID Prefix.

The two sides of an optical disk platter are referred to as media ID partners.

- If you set `Use Platter Side in Media ID` to YES, one side will have a media ID of *xxxxx*A and the other side *xxxxx*B, where *xxxxx* is the media ID prefix and is an auto-generated number.
- If you set `Use Platter Side in Media ID` to NO, the platter side is not included in the media ID.

8. Choose `p` to change the volume pool from the default. A menu similar to the following appears:

```
Volume Pool
----------
  1)  None
  2)  NetBackup
  3)  a_pool
  4)  DataStore
  5)  Default Volume Pool
Enter choice:
```

If you are using barcode rules:

- Choose `Default Volume Pool` to let the barcode rule determine the volume pool that is assigned.

- To use a volume pool other than the default, choose one from the menu.

  The Update Options volume pool always overrides the rule.

If you are not using barcode rules:

- Choose `Default Volume Pool` to use the NetBackup volume pool for data volumes and no volume pool for cleaning tapes (the same as choosing `None`).
- To use a volume pool other than the default, choose one from the menu.

9. When you are satisfied with the settings, choose `q` to return to the `Inventory and Update Robot` menu.

Configuring Barcode Rules

A barcode rule specifies criteria for creating volume database entries for new robotic volumes that you are adding through an auto-populate or inventory and update operation (see "Auto-Populating a Robot" on page 373 and "Inventory and Update Robot Volume Configuration" on page 409). You select whether to use barcode rules when you set up the auto-populate, or inventory and update.

The following are some example barcode rules.

```
Barcode     Media      Volume     Max Mounts/
Tag         Type       Pool       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          8mm cleaning
TS8         8MM        t_pool       0          8mm backup
TS          8MM        None         0          8mm no pool
<NONE>      DEFAULT    None         0          no barcode
<DEFAULT>   DEFAULT    NetBackup    0          other barcodes
```

Barcode Rule Sorting

Rules are sorted, first according to the number of characters in the barcode tag (see example list above) and then in the order you add them. The two exceptions are the <NONE> and <DEFAULT> rules which are always at the end of the list.

When an inventory and update, or auto-populate operation uses 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 barcode tag matches, the media type for the rule is checked to ensure that it is compatible with what you

specified for the inventory and update. If the media type also matches, Media Manager uses the rule's media type, volume pool, max mounts (or number of cleanings), and description to create a volume database entry for the media ID.

Note Media Manager attempts to use barcode rules only for barcodes that are not already in the volume database.

Barcode Rule Examples

For example, assume that during an inventory and update for a TS8 robot, you select the following update options for a new 8 mm tape (see "Inventory and Update Robot Volume Configuration" on page 409):

```
Media Type: 8MM

Volume Group: 00_000_TS8

Use Barcode Rules: YES

Volume Pool: DEFAULT
```

If a new tape in this robot has a barcode of TS800001 and there are no media generation rules defined, Media Manager uses the rule with the barcode tag named TS8 and includes the following values in the volume database entry 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 and there are no media generation rules defined, the rule named TS is used and volume database entry for the tape will contain:

```
Media ID:     000001 (last six characters of barcode)

Volume Group: 00_000_TS8

Volume Pool:  None

Max Mounts:   0 (infinite)
```

Barcode Rule Menu

To configure barcode rules, choose `Configure Barcode Rules` from the `Special Actions` menu. The following menu appears:

```
        Display Mode:  BRIEF
 Output Destination:  SCREEN

Configure Barcode Rules
-----------------------
a)  Add Rule
c)  Change Rule
d)  Delete Rule
l)  List Rules

m)  Mode (brief or full)
o)  Output Destination (screen or file)
h)  Help
q)  Quit Menu

ENTER CHOICE:
```

Adding a Barcode Rule

To add a new barcode rule, choose a from the `Configure Barcode Rules` menu and enter the following information at the prompts:

Barcode Tag

Enter a barcode tag for the rule. The tag can have from 1 to 16 characters and no spaces.

The only rules where you can use special characters in the barcode tags areas follows:

<NONE >

Matches when rules are used and the media has an unreadable barcode, or the robot does not support barcodes.

<DEFAULT>

For media 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 on the `Update Options` menu are compatible. The `Update Options` menu is where you set up the criteria for an inventory and update operation (see “Inventory and Update Robot Volume Configuration” on page 409).

Description

Enter a 1 to 25 character description of the rule that will be assigned to new volumes when the rule is used.

Media Type

A rule is disregarded if the media type in the rule is not compatible with the media type for the update. See "Inventory and Update Robot Volume Configuration" on page 409.

Select the media type for this rule, as follows:

- Select DEFAULT to have the rule match *any* media type that you select on the `Update Options` menu. If you also select DEFAULT for the update, Media Manager uses the default media type for the robot. See "Changing the Update Options" on page 141.
- Select a specific media type to have the rule match *only* when you select that specific media type or DEFAULT on the `Update Options` menu. If you choose DEFAULT for the update, Media Manager assigns the rule's media type.

The following example shows the results with various combinations of update selections and barcode rule media types for a TLD robot. This type of robot is the most complex case because it can have DLT or half-inch cartridge media.

Update Options Media Type	Barcode Rule Media Type	Rule Used	Media Type in Volume Database
dlt	default	Yes	dlt
1/2" cart	default	Yes	1/2" cart
dlt	dlt	Yes	dlt
dlt	dlt clean	Yes	dlt clean
dlt clean	dlt	No	dlt clean
dlt clean	dlt clean	Yes	dlt clean
dlt	(8mm, 4mm ...)	No	dlt
default	default	Yes	dlt
default	dlt	Yes	dlt
default	dlt clean	Yes	dlt clean
default	1/2" cart	Yes	1/2" cart
default	(4mm ...)	No	Robot-type dependent

Maximum Allowed Mounts or Number of Cleanings

When a barcode rule is used, Media Manager adds the number you specify to the volume database for the media ID.

For

- Media other than cleaning tapes, enter the maximum number of mounts to allow for this media ID (also see "Setting the Maximum Mounts for Volumes" on page 401).

- Cleaning tapes, enter the number of cleanings to allow (also see “Changing the Cleanings Allowed for a Cleaning Tape” on page 402).

Volume Pool

Specify 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` menu shows

- DEFAULT for the volume pool, then the volume is assigned to the pool specified in the barcode rule.
- A specific volume pool, then that selection overrides the pool specified in the barcode rule.

Changing a Barcode Rule

To change a barcode rule, choose `c` from the `Configure Barcode Rules` menu and select the desired rule from the resulting list. You are then prompted to change the description, Media Type, Maximum Allowed Mounts (or Number of Cleanings), and Volume Pool.

For Media Type, Maximum Allowed Mounts, and Number of Cleanings, the current value appears in parentheses (pressing the Enter key without typing a new value leaves the value unchanged).

Note You cannot use `Change Barcode Rule` to change the barcode tag. To change a barcode tag, delete the rule and then add a rule with the new tag.

Deleting a Barcode Rule

To delete a barcode rule, choose `d` from the `Configure Barcode Rules` menu and select the desired rule from the list.

Listing Barcode Rules

To list existing barcode rules, set the `Display Mode` and `Output Destination` options and then choose `l` (List Rules) from the `Configure Barcode Rules` menu.

Formatting Optical Disks

Before an optical disk platter can be used with Media Manager, a media ID (this should match the external media ID) and a volume label must be written to it. There are two ways to write this information:

- Format the platter when you add the optical disk volume using `vmadm`.
- Use the `tpformat` command.

When you use `vmadm`, the media ID becomes the recorded media ID. The process for using `vmadm` is described here. See the `tpformat` man page for a description of how to use that command.

Note All platforms and operating systems do not support 1024 byte-per-sector platters. Most support only 512 byte-per-sector sizes. Before purchasing optical disk platters, check your vendor documentation to determine the sector sizes supported by your platform and operating system. Also see the VERITAS support web site for information on what is supported. VERITAS urges you to use preformatted platters.

1. Perform the same steps for adding a volume, described in the preceding sections on adding single volumes or ranges of volumes.

2. The last step is a prompt similar to the following:

```
Do you want to tpformat xxxxxA and xxxxxB? (y/n)
```

   (*xxxxx*A and *xxxxx*B represent sides A and B of the volume's platter.)

   Enter `y` to proceed or `n` to cancel the operation.

   The `tpformat` request is sent to the host on which `vmadm` is running. This action may cause a mount request that requires manual assignment by the operator. If labels already exist on the tape, you are asked if they should be overwritten.

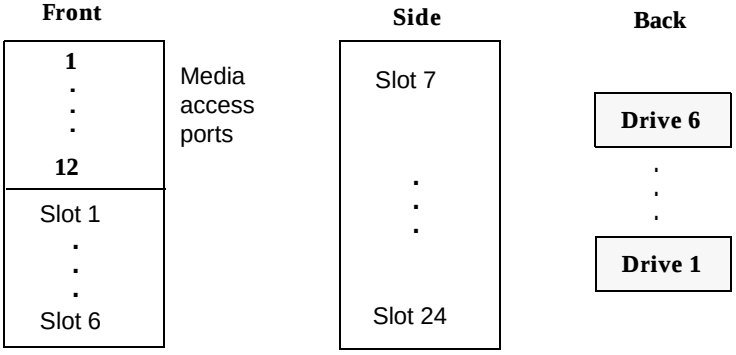
   Even if the formatting cannot be completed for some reason, the volume or volumes are still added.

Robot Drive and Slot Layouts E

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.

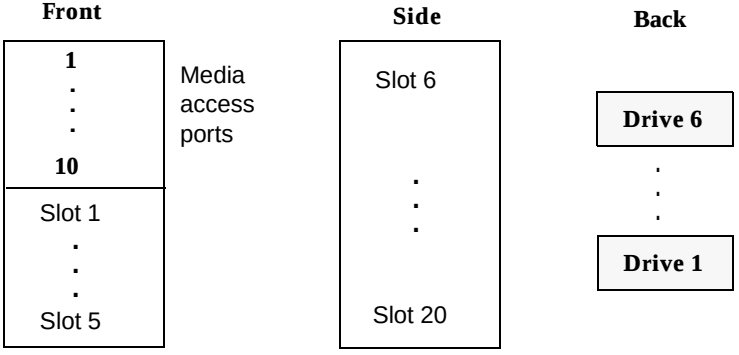
ADIC Scalar 100 LTO
DELL PV-136T
IBM 3583 (TLD)

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.



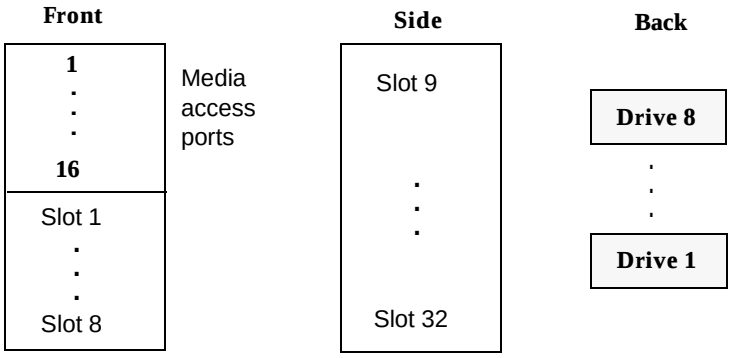
ADIC Scalar 100 DLT
ADIC Scalar 100 SDLT
IBM 7337 (TLD)

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.

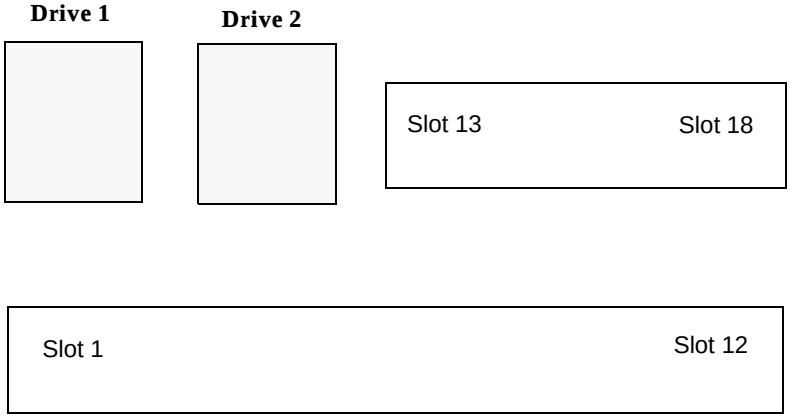


ADIC Scalar 100 AIT (TL8)

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.

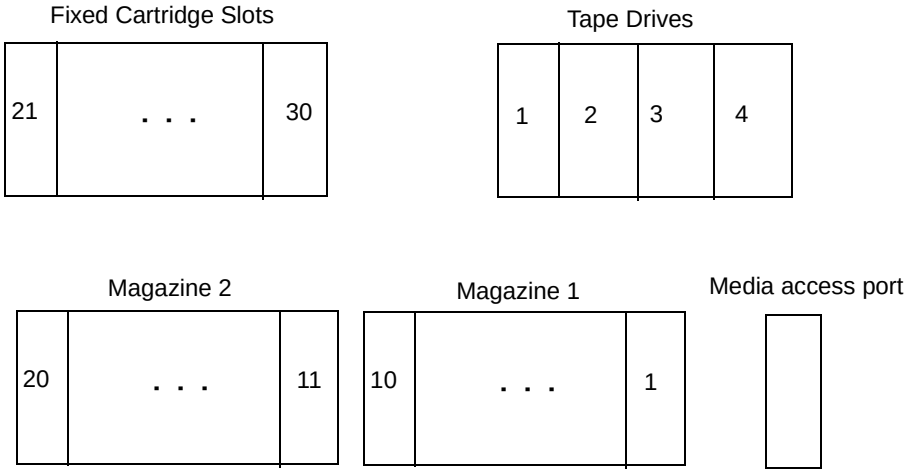


ADIC Scalar 218 (TLD)

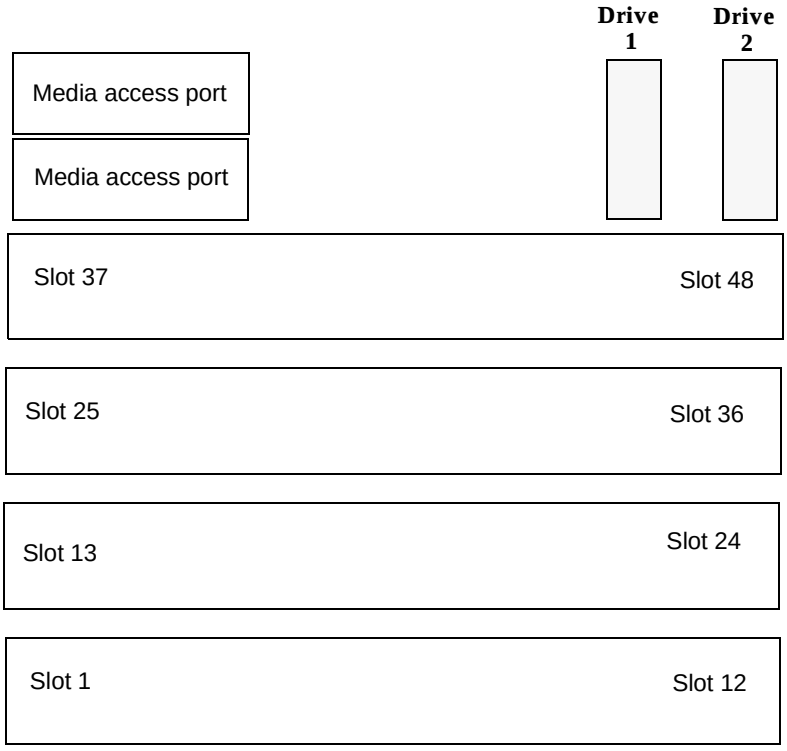


Note With a barcode reader installed, the slot physically labeled as slot 1 is disabled, and physical slots 2 through 18 become known in Media Manager as slots 1 through 17. With a virtual media access port configured, physical slot 12 becomes the port and physical slots 2-11 and 13-18 become known in Media Manager as slots 1-16.

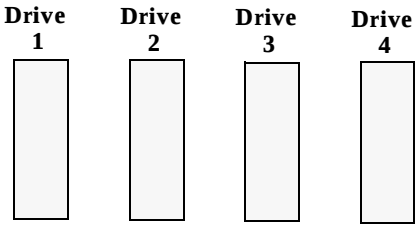
Exabyte 430
Sony LIB-304 (TL8)



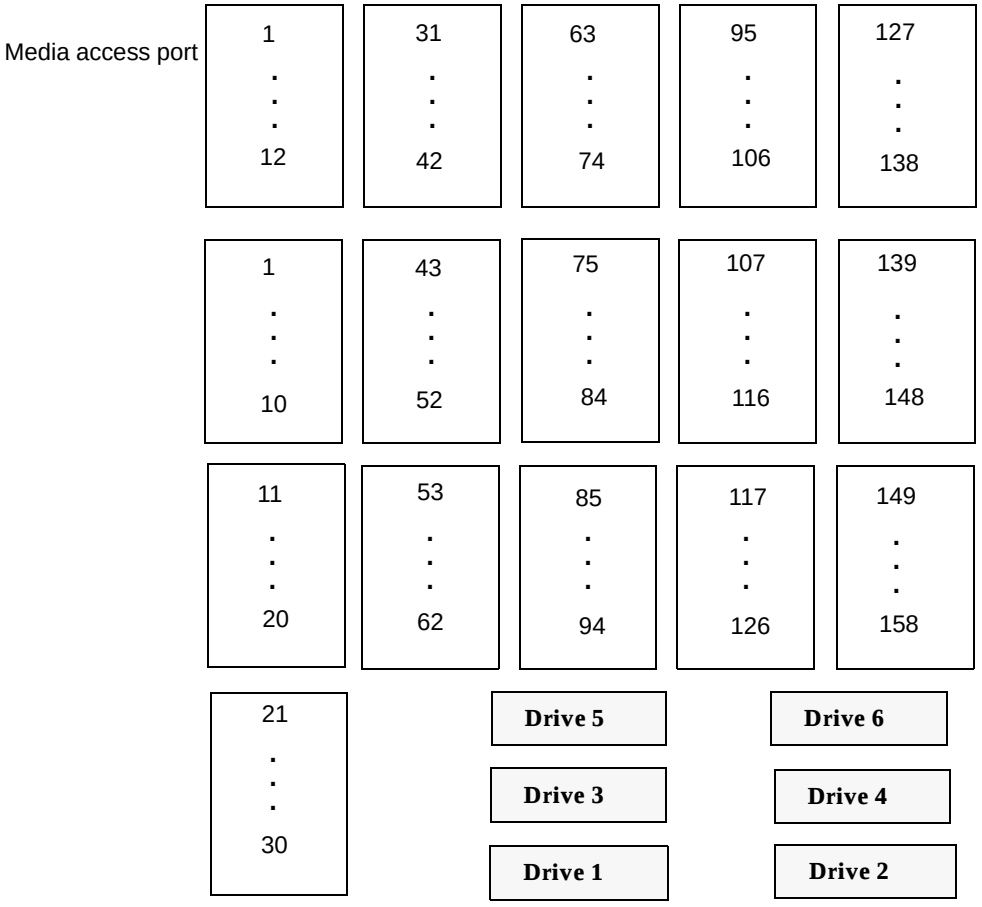
ADIC Scalar 448/458 (TLD)



Drives are installed right to left, but are numbered left to right. With a four drive configuration, the drive numbering is as follows:



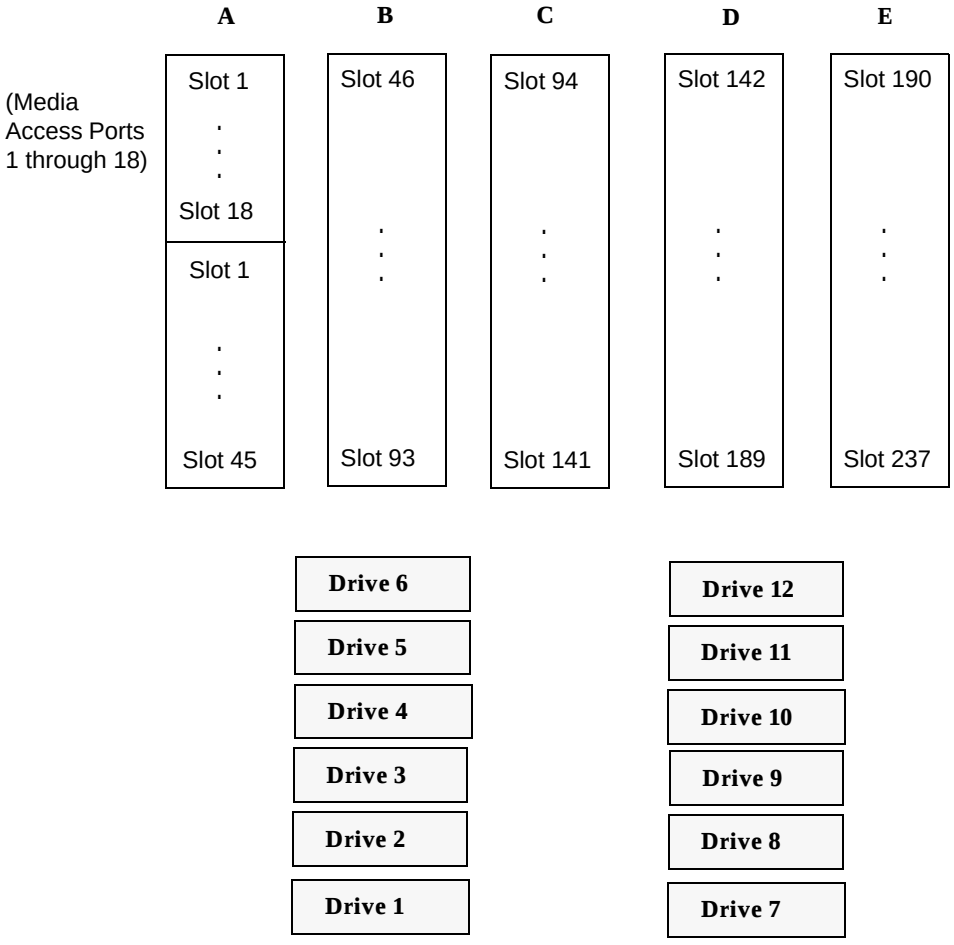
ADIC Scalar 1000 - DLT version (TLD)



ADIC Scalar 1000 - AIT/AIT2 (TL8)

The slot mapping shown below is for a 12 drive, 237 slot model. Other robot models may vary.

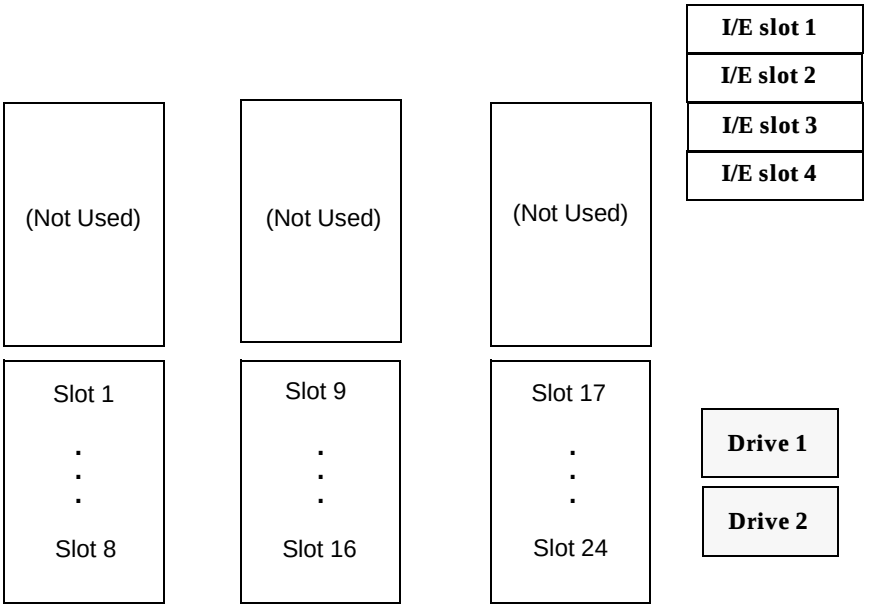
Note This view of the media access ports is looking through the glass door from the front.



ADIC VLS DLT (TSD)

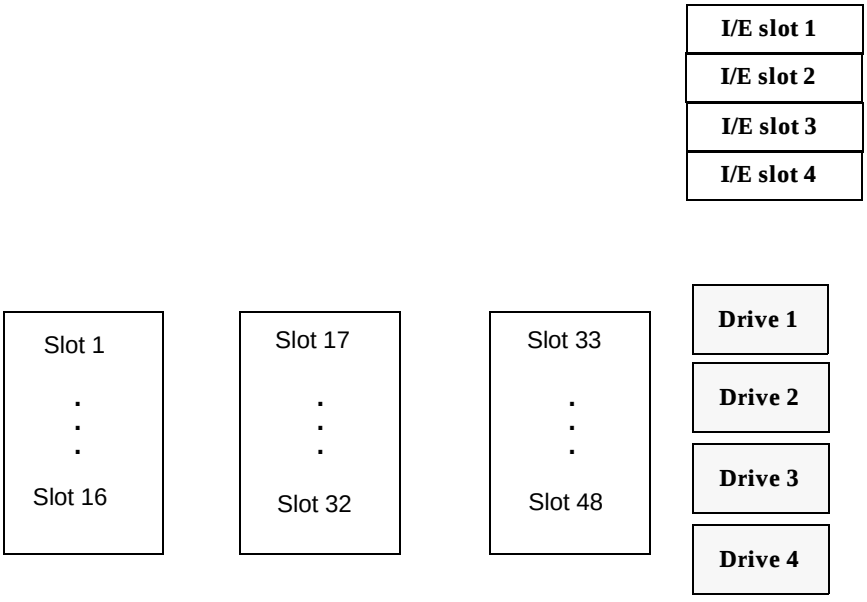
Drive 1 (the only drive)

ATL 2/28 DLT Library (TLD)

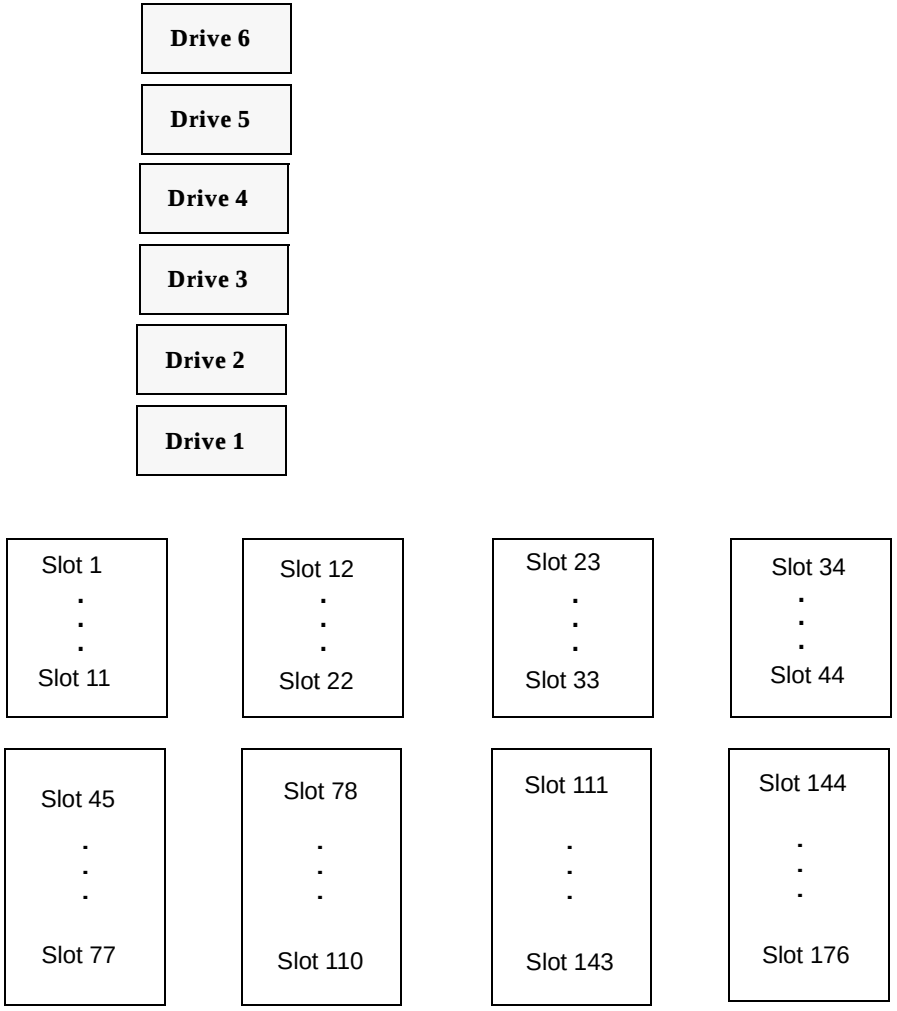


ATL 4/52 DLT Library
ATL 2/52 DLT Library
Compaq TL810
Compaq TL812
Compaq TL894
Sun StorEdge L1800 (TLD)

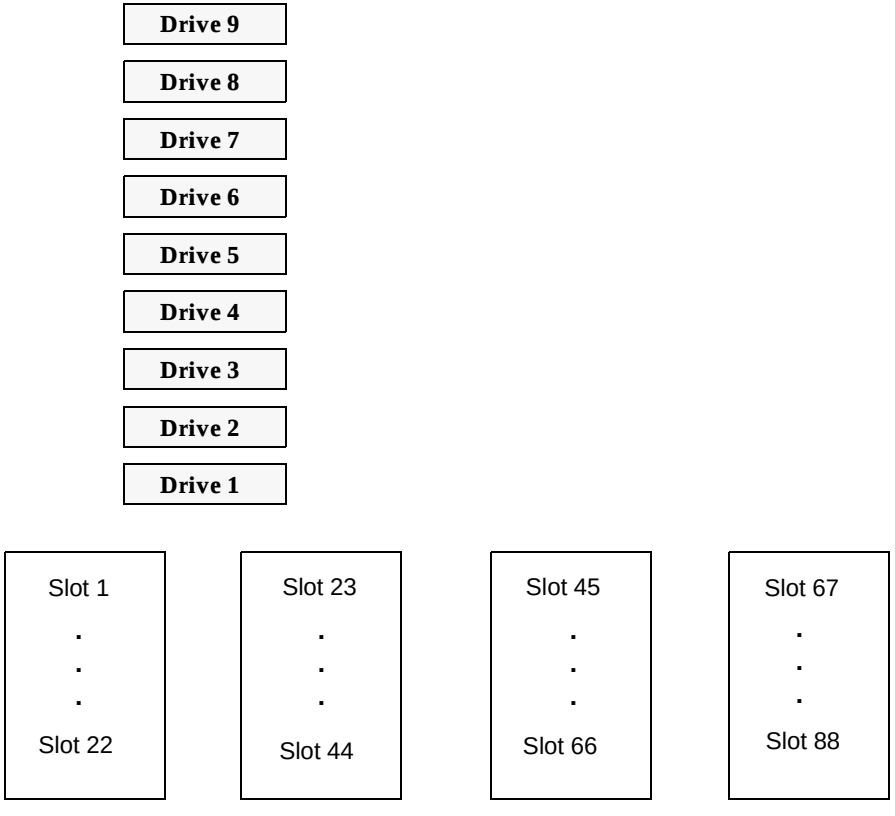
The slot mapping shown below represents the ATL 4/52. The ATL 2/52 is similar with only two drives.



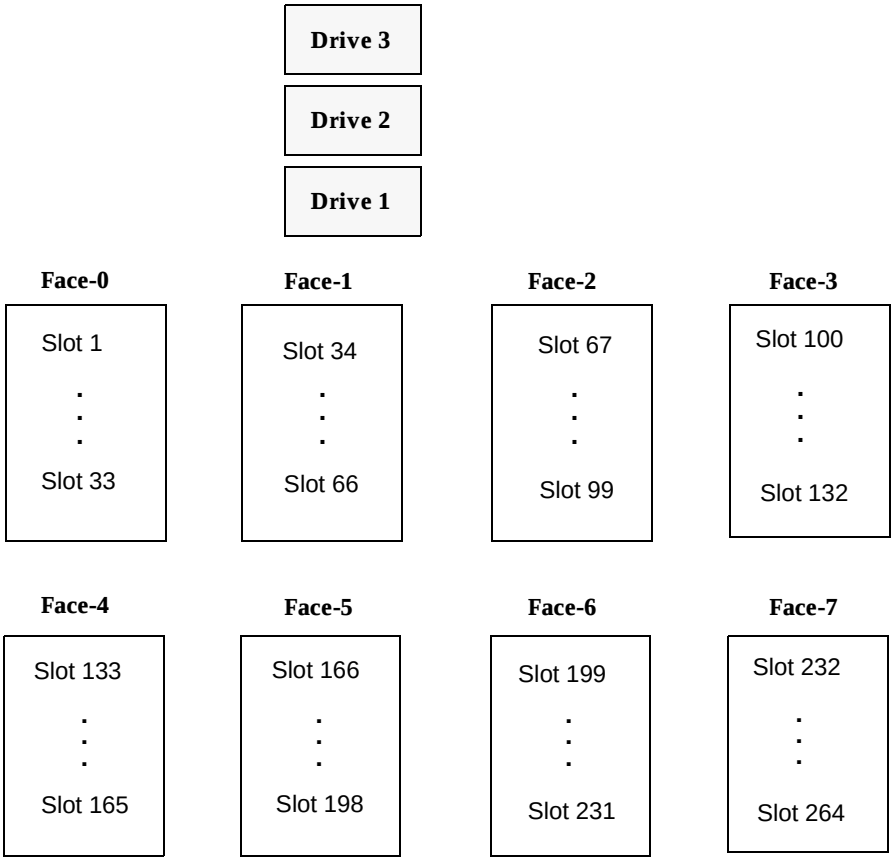
ATL 6/176 DLT Library
Compaq TL826
Compaq TL896 (TLD)



ATL 9/88 DLT Library (TLD)

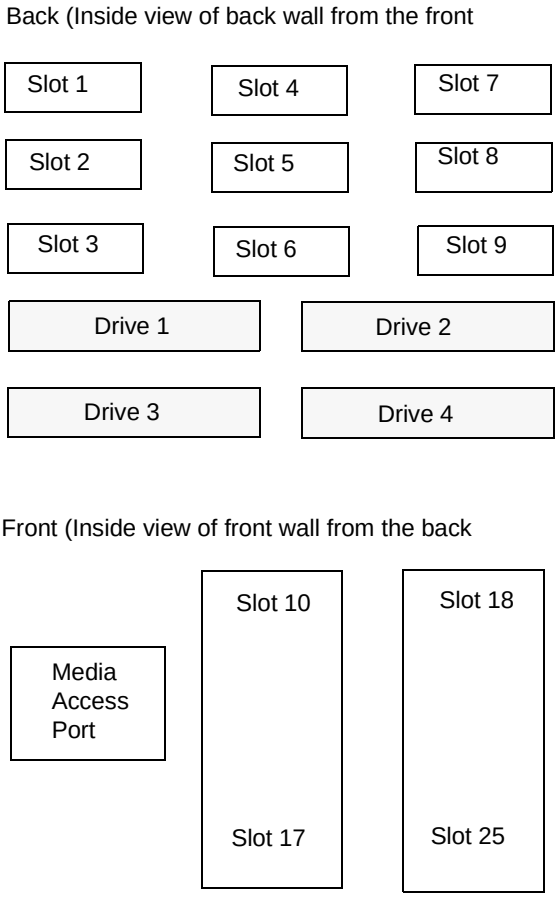


ATL 3/264 (2640) DLT Library
Compaq TL820
Compaq TL822
Compaq TL893 (TLD)



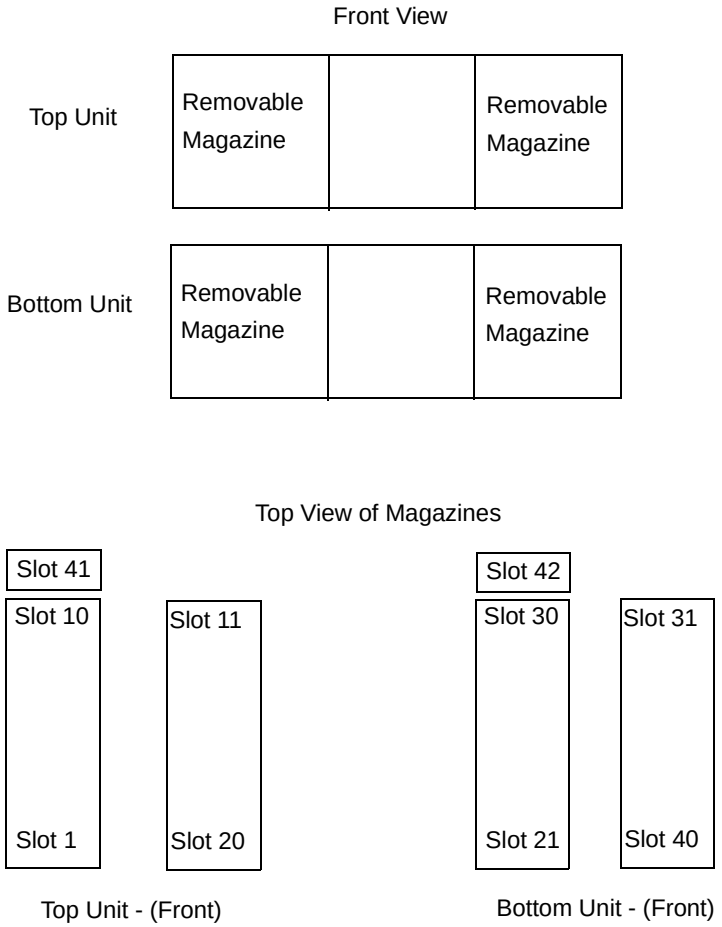
ATL P1000
Sun StorEdge L1000 (TLD)

The slot mapping shown below apply to libraries that are configured with 25 slots. Other configurations may vary.



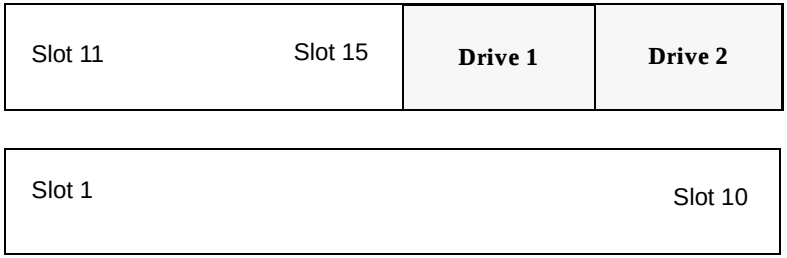
ATL M1500
M4 Data M1500 (TLD)

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.



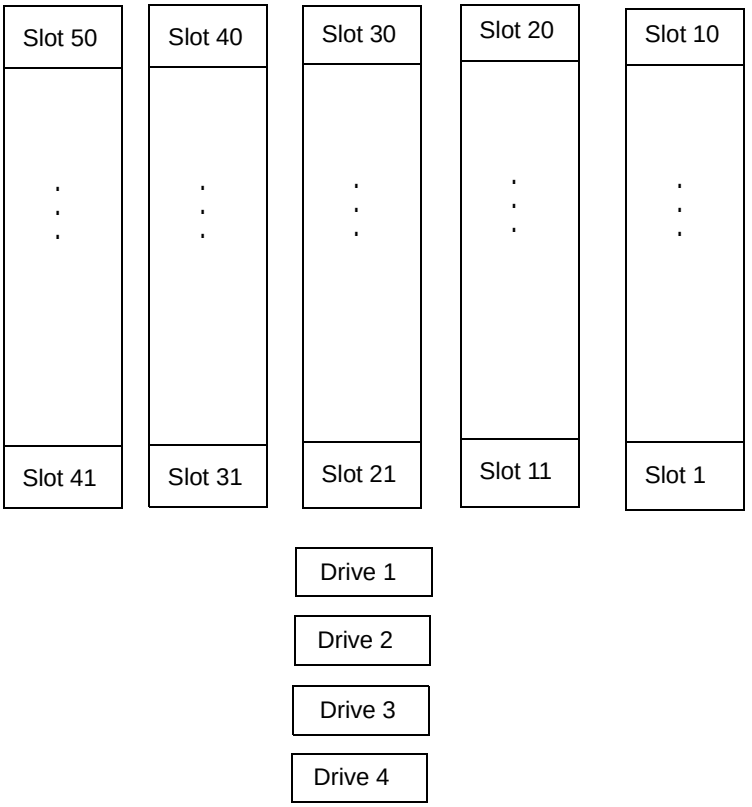
Breece Hill Q2.15
IBM 7337-305
IBM 3447-105 (TLD)

(Top View)

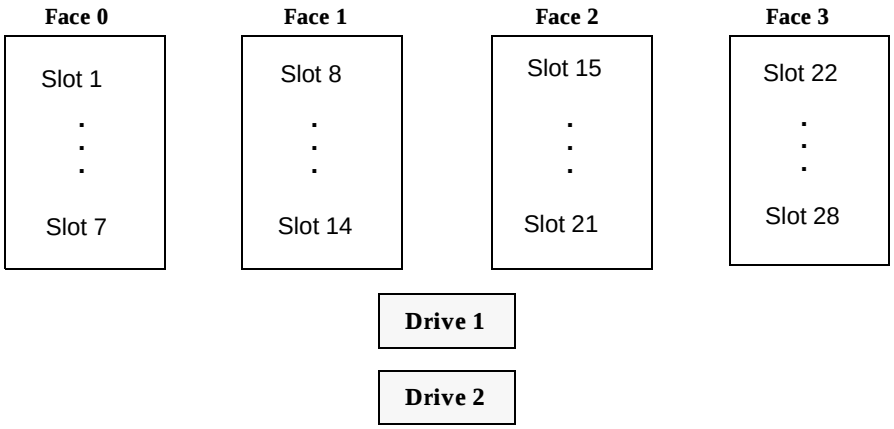


Breece Hill Q4.50 (TLD)

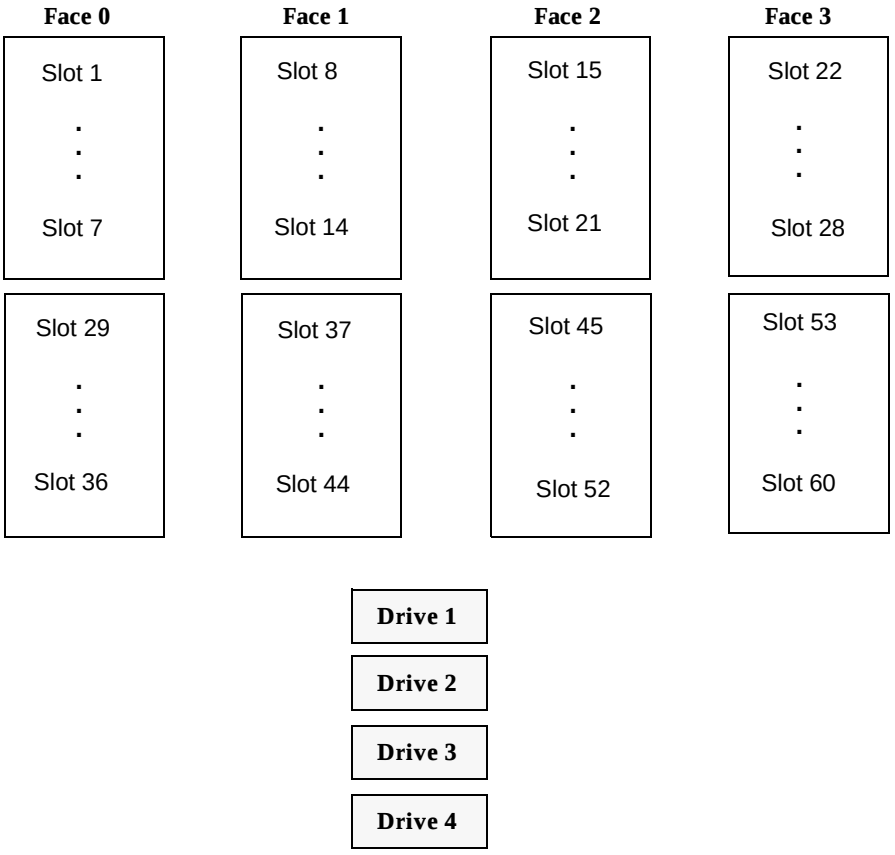
The following is a front view.



Breece Hill Q7 (TLD)

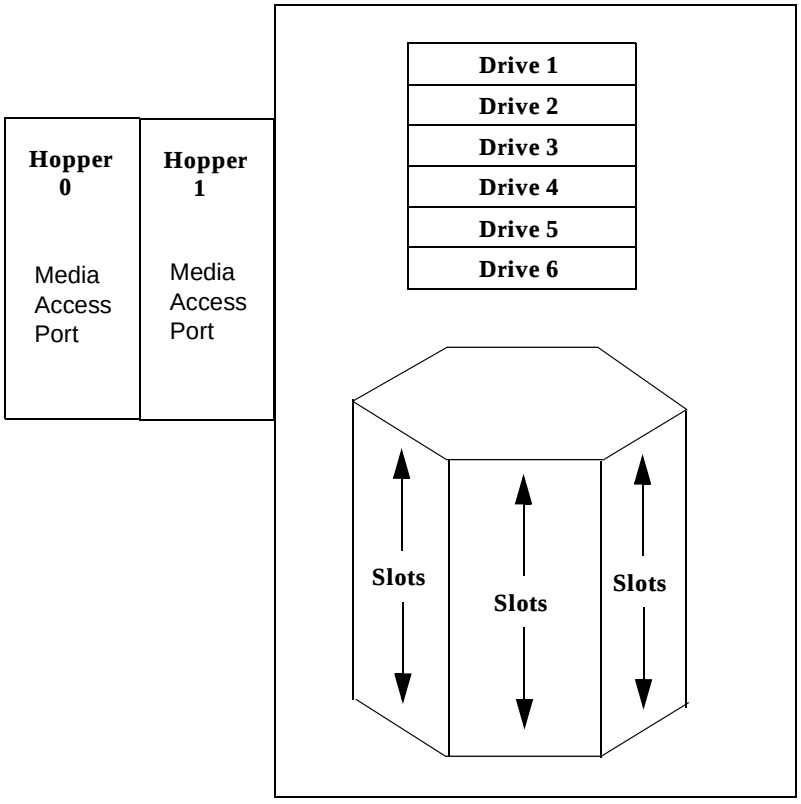


Breece Hill Q47 (TLD)

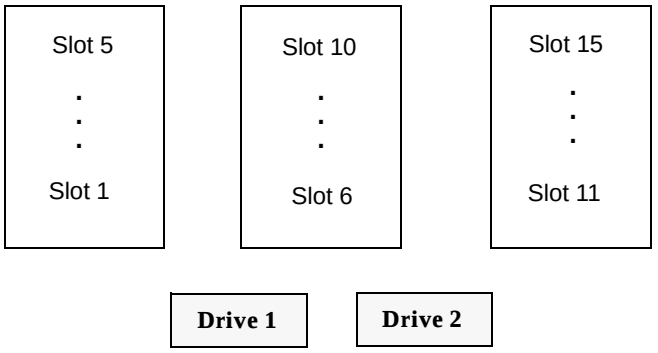


Breece Hill Q70
Breece Hill Q210
Breece Hill Q140 (TLD)

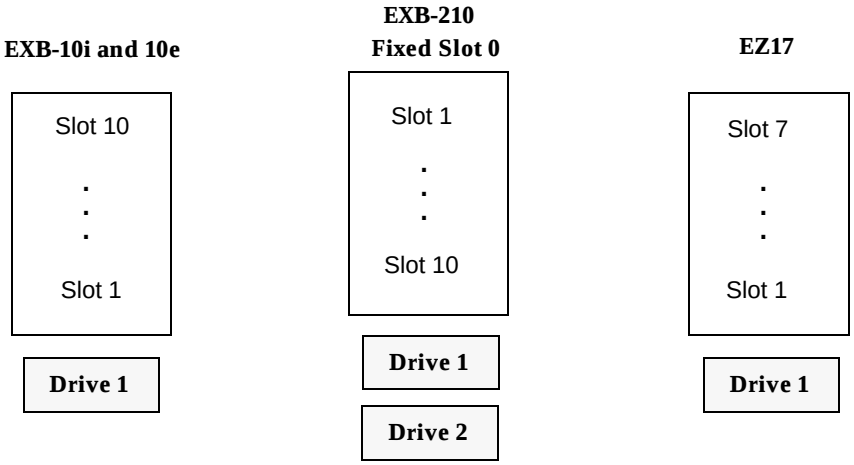
The slot figure shown below represents the Breece Hill Q210.



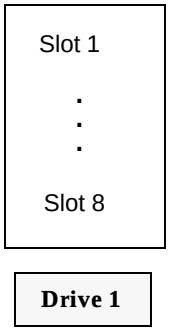
Compaq 35/70 (TLD)



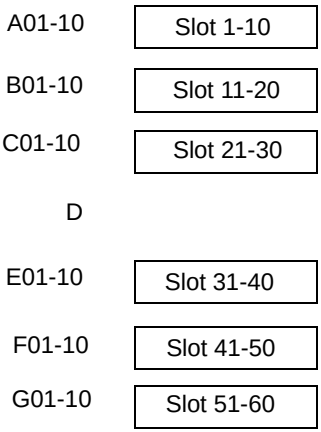
Exabyte 10i, 10e, 10h
Exabyte 210
Exabyte EZ17 (TS8)



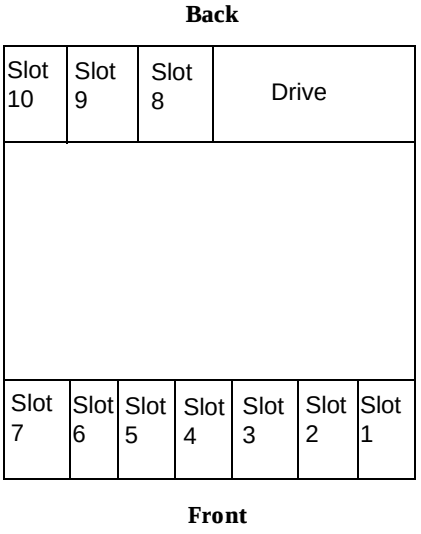
Exabyte 18D (TLD)



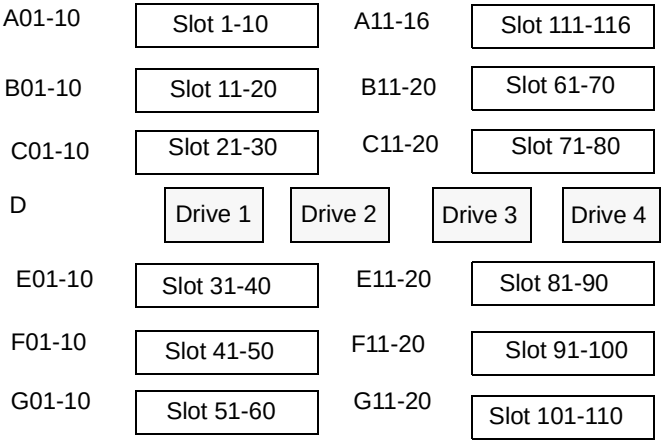
Exabyte 60 (TL8)



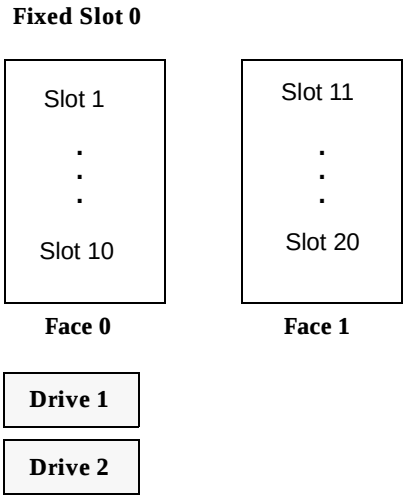
Exabyte 110L (TLD)



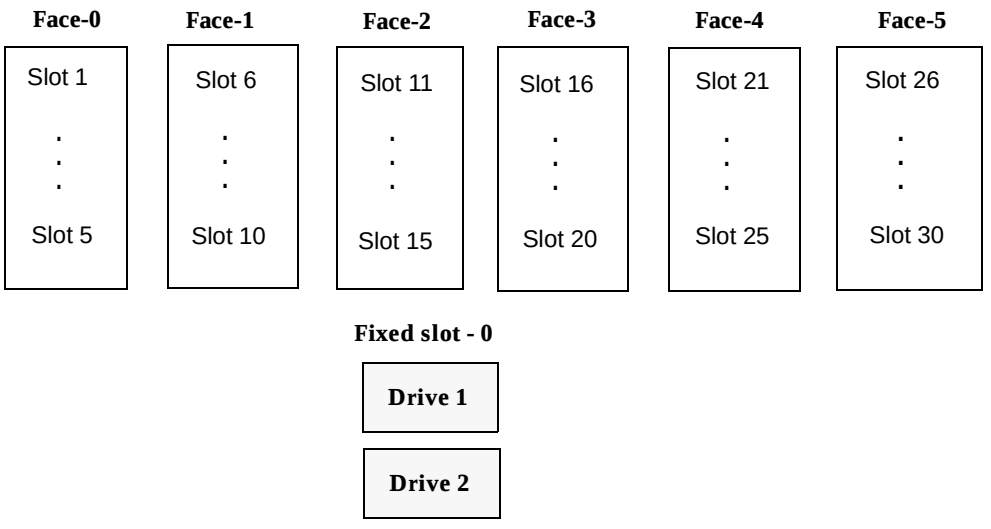
Exabyte 120 (TL8)



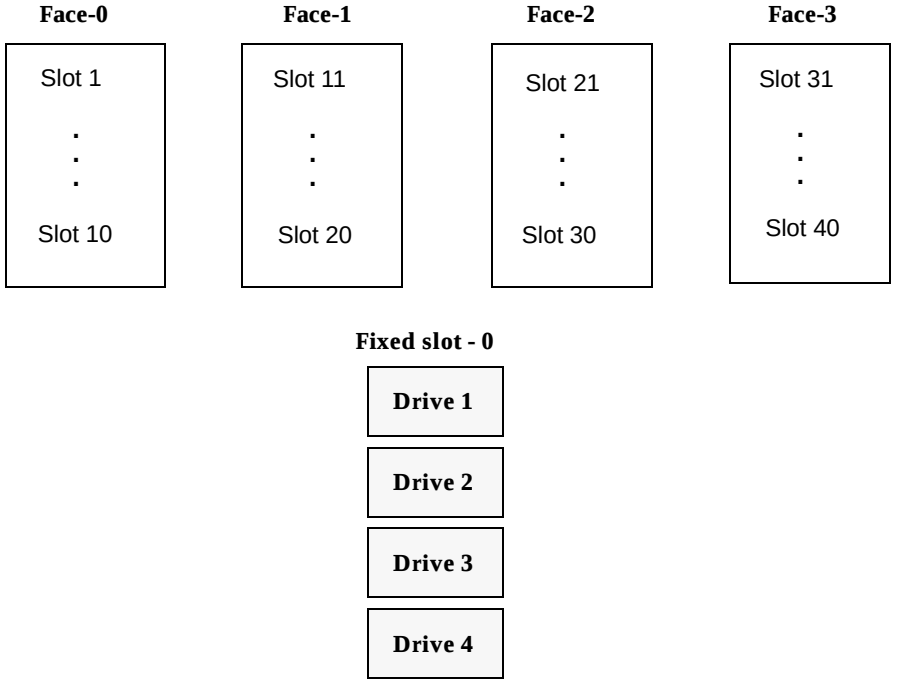
Exabyte 220
ADIC Scalar AIT 220
Sun StorEdge L400 (TL8)



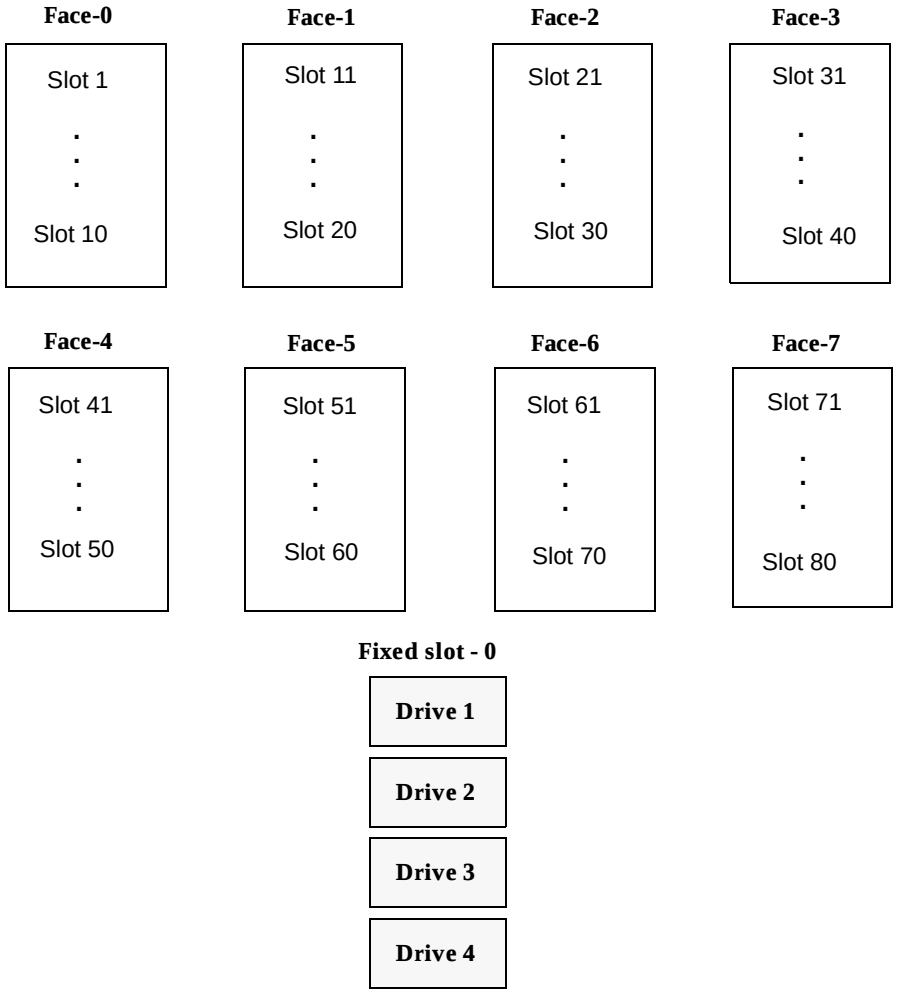
Exabyte 230D (TLD)



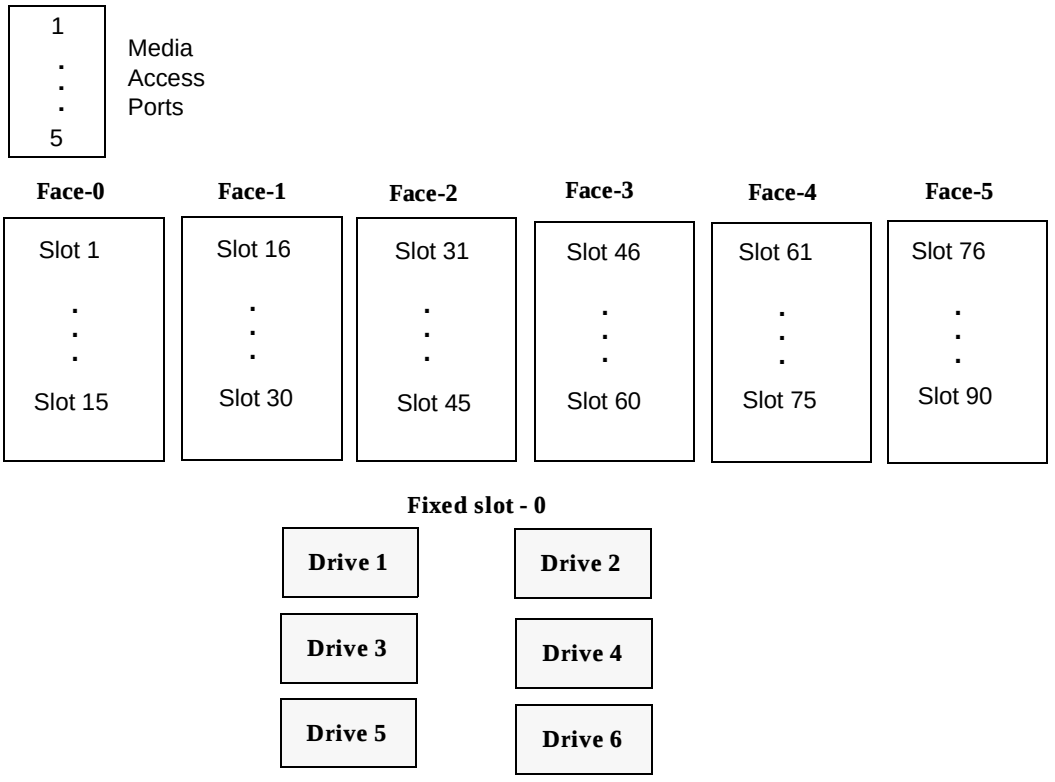
Exabyte 440 (TL8)



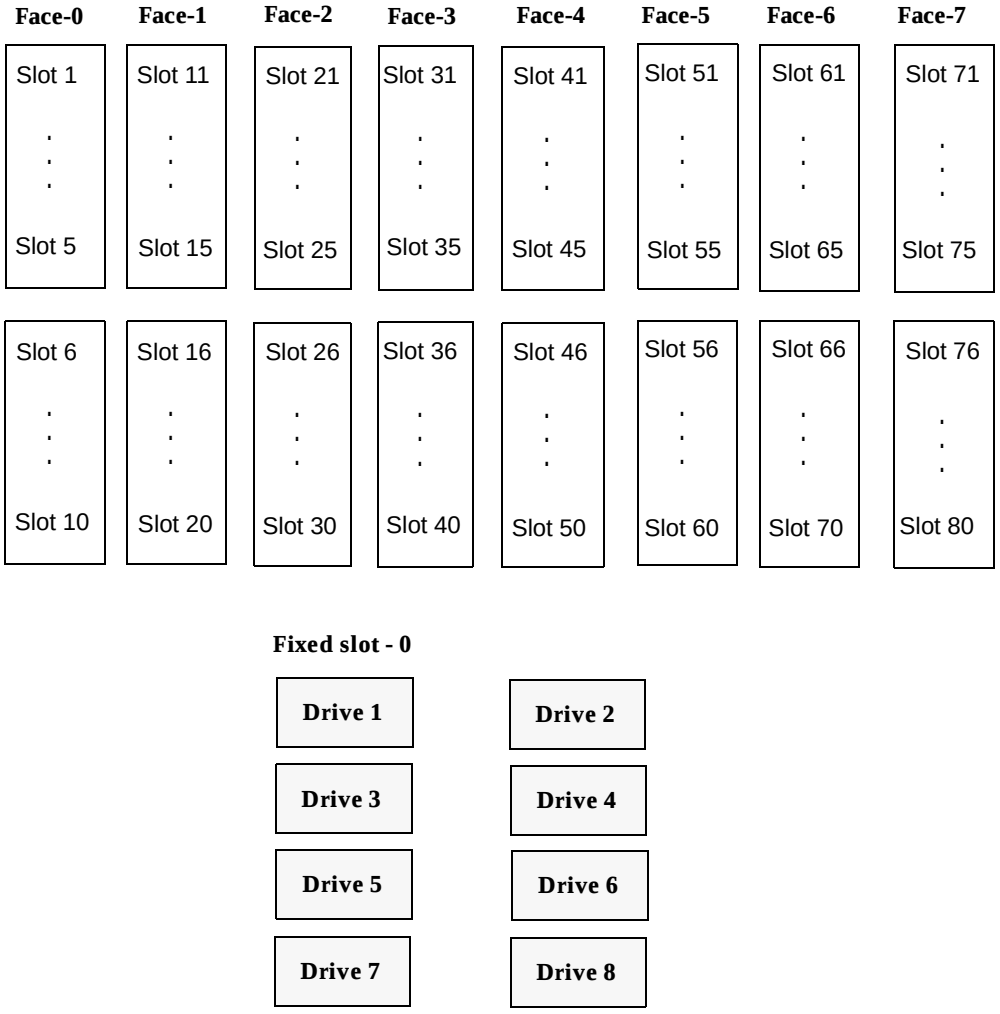
Exabyte 480
ADIC Scalar AIT 480 (TL8)



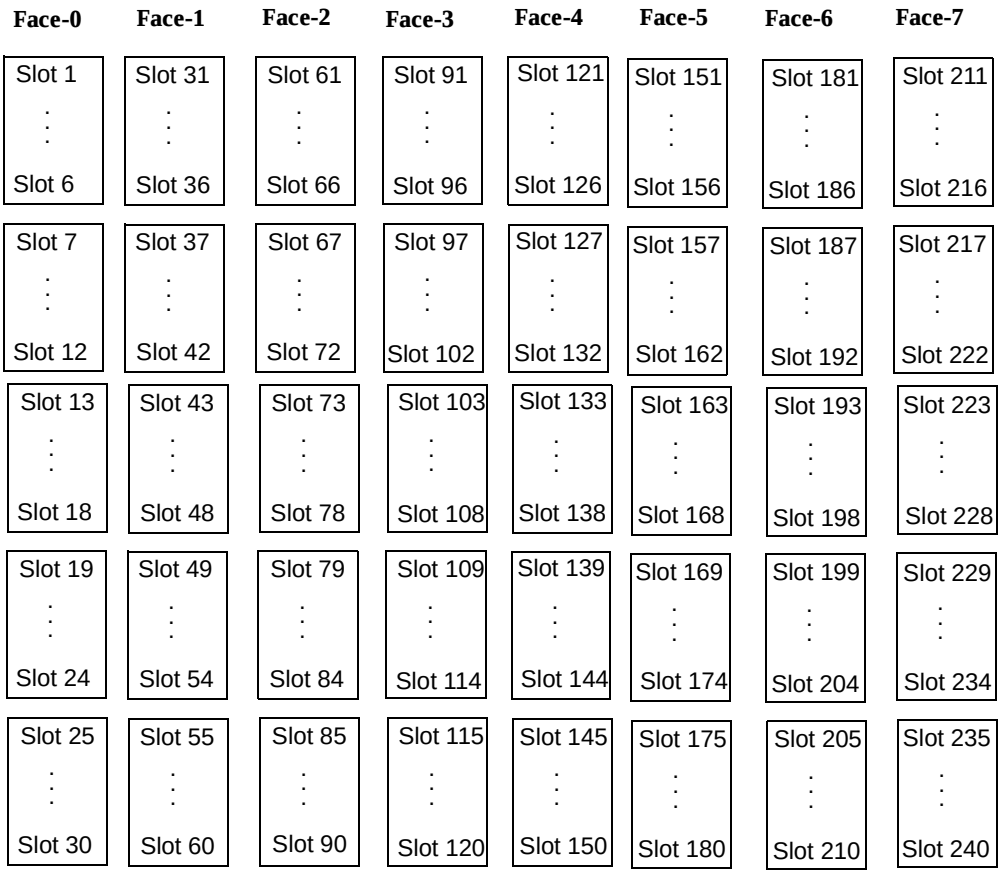
Exabyte 690D (TLD)

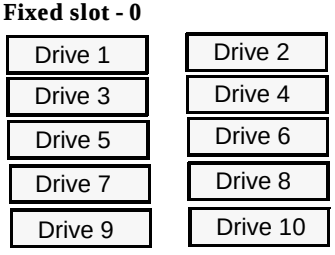


Exabyte X80 (TL8)



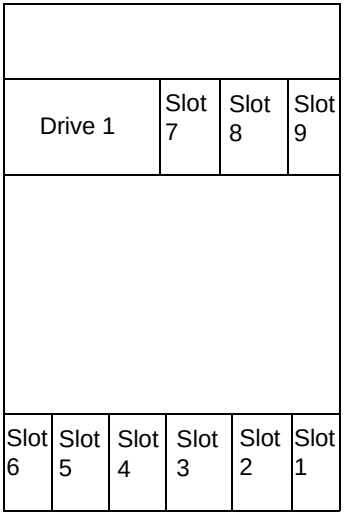
Exabyte X200 (TL8)



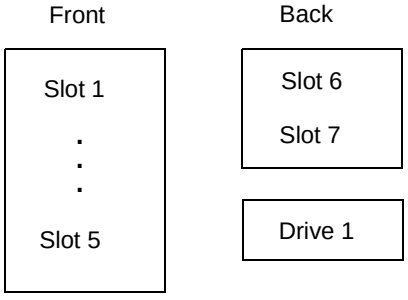


HP SureStore 1/9 Sun StorEdge L9 (TLD)

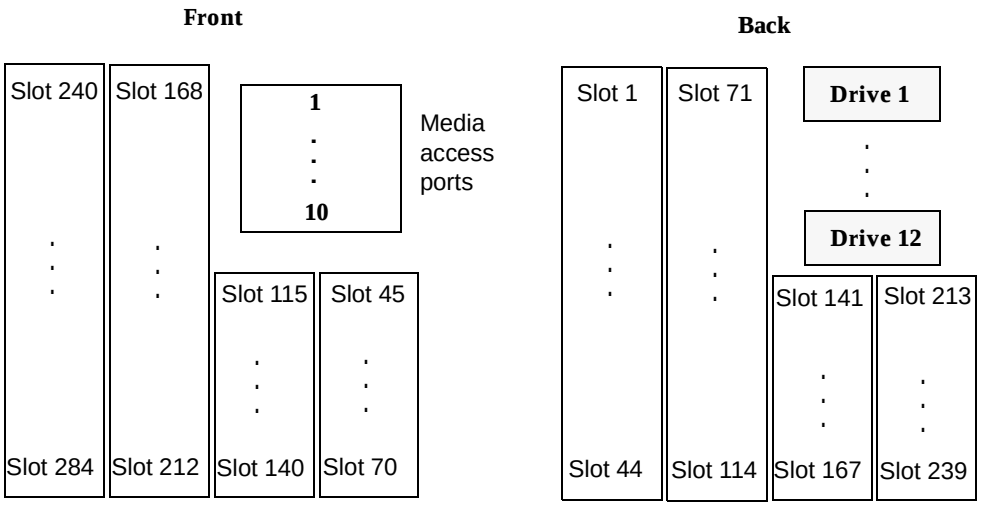
This is a top view of the robot.



IBM 3581 ADIC Fastor (TLD)

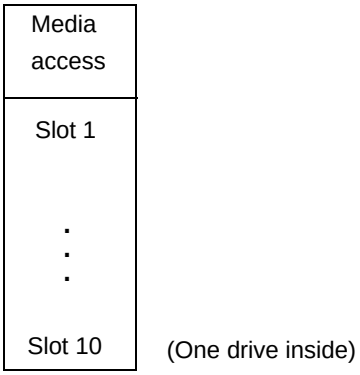


IBM 3584 (TLD)


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

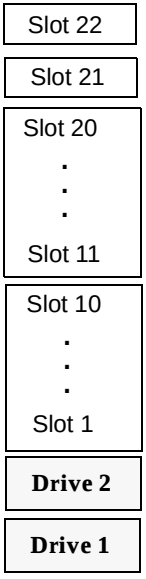
IBM 3590 B11
IBM 3590 E11 (TSH)

Note Supported only on UNIX device hosts.



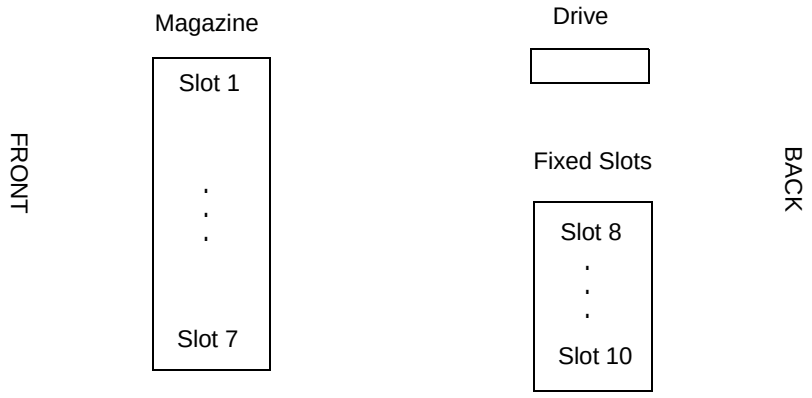
IBM 7331 (TL8)

Note Supported only on UNIX device hosts.

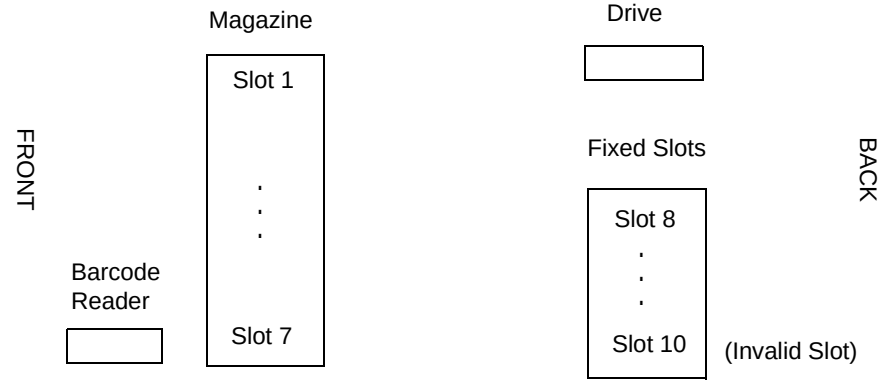


NEC Autoloader DLT (TLD)

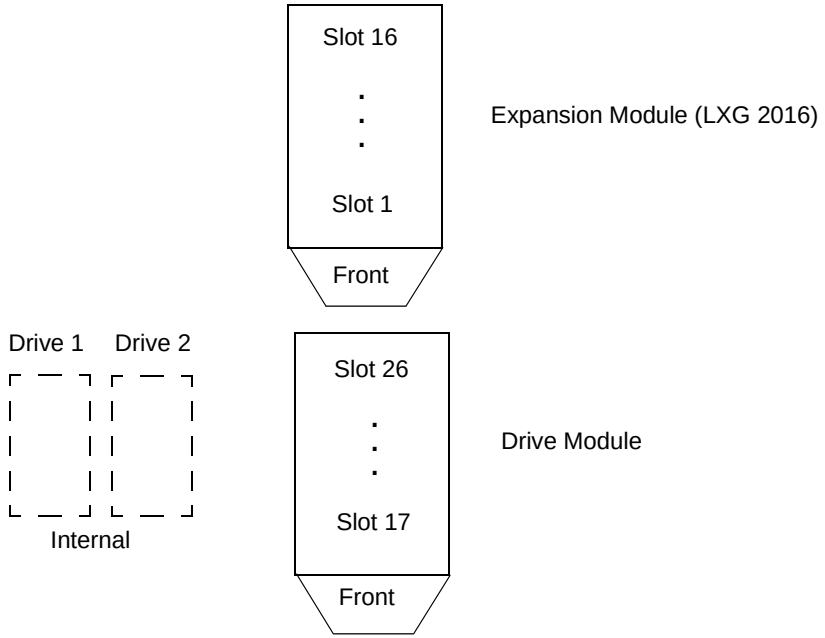
The following diagram shows a standard model.



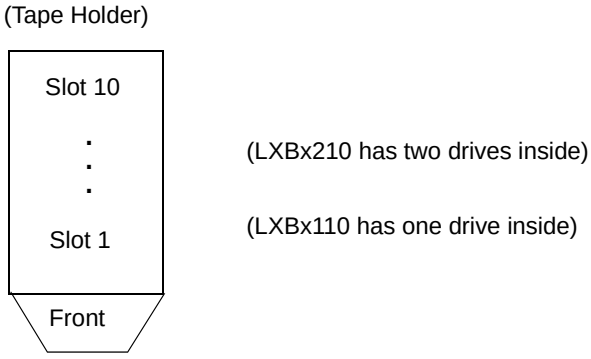
The following diagram shows a model with a barcode reader.



Overland Data DLT Library Xpress Compaq StorageWorks DLT Mini-Library (TLD)

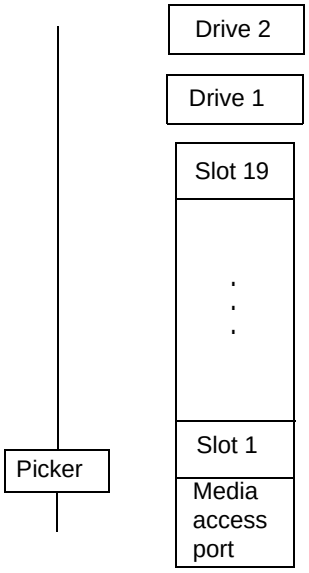


Overland Data LXBx110
Overland Data LXBx210
Compaq TL891
Compaq TL892 (TLD)



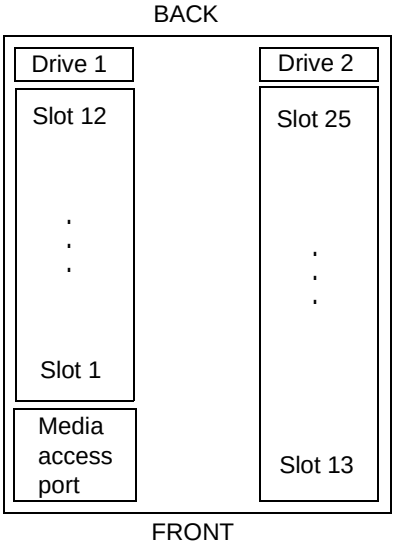
Overland Data Library Pro (TL8)

The following is the top view.

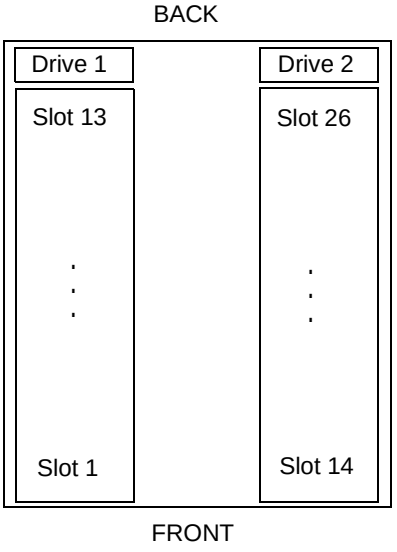


Overland Data NEO
Overland Data LxL1u11 (TLD)

The following diagram shows a robot with the media access port enabled.

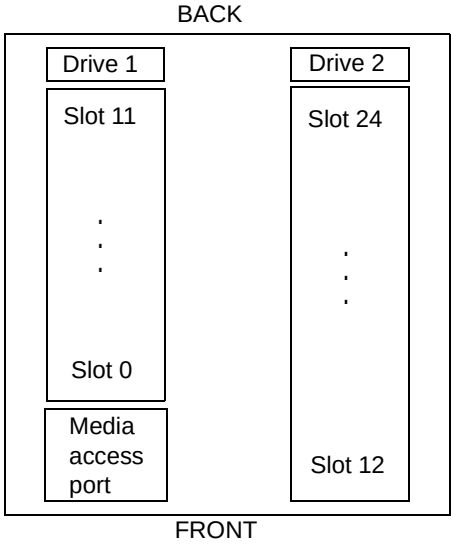


The following diagram shows a robot with the media access port disabled and is also similar to the LxL1u11 model which only supports one drive and 11 slots.

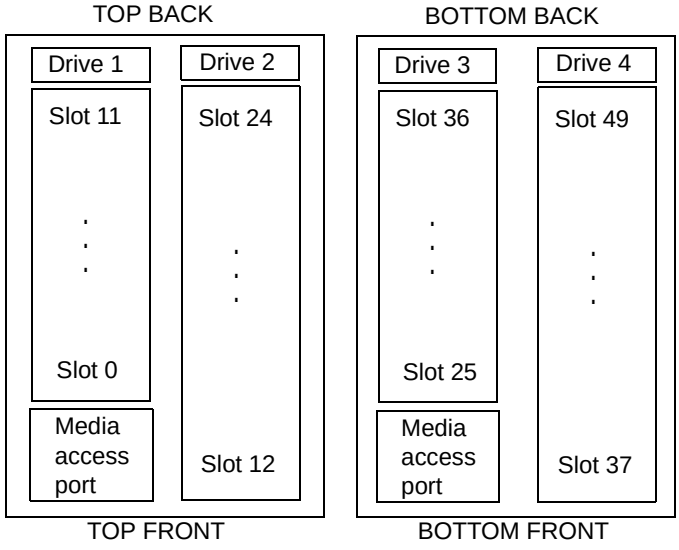


Compaq Storage Works MSL 5026
Compaq Storage Works MSL 5052 (TLD)

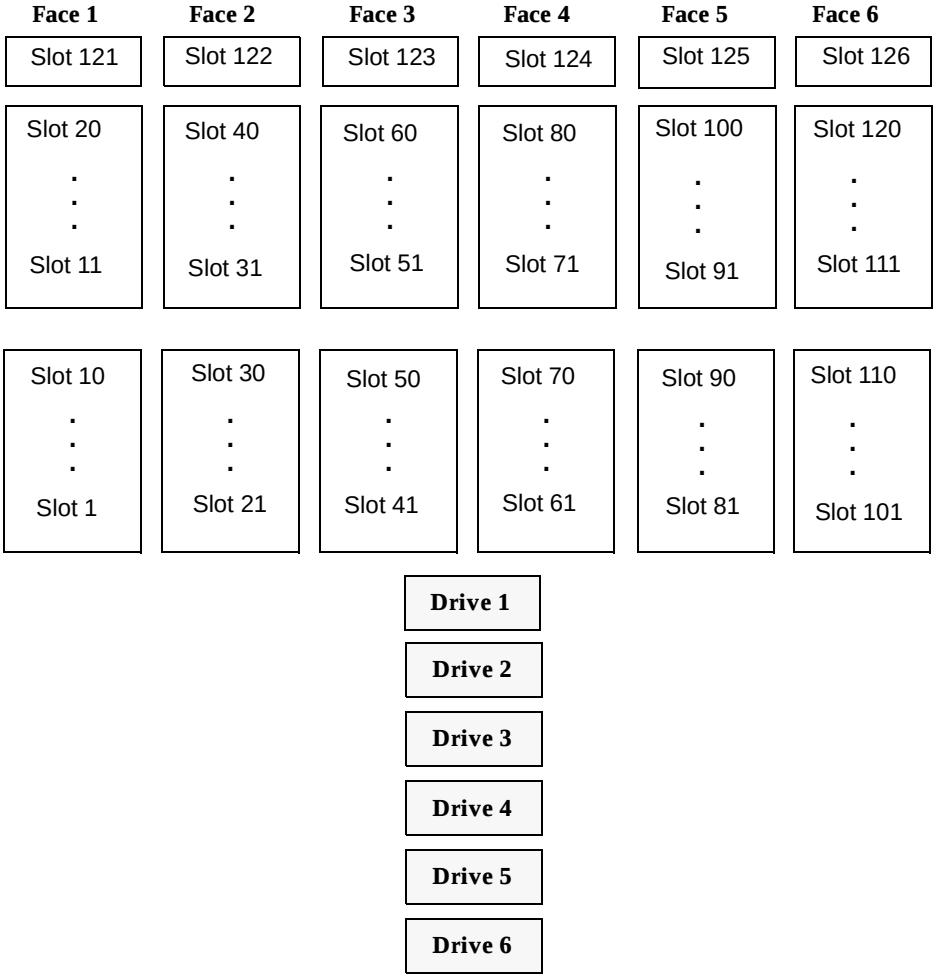
The following diagram shows a 5026 robot model.



The following diagram shows a 5052 robot model.

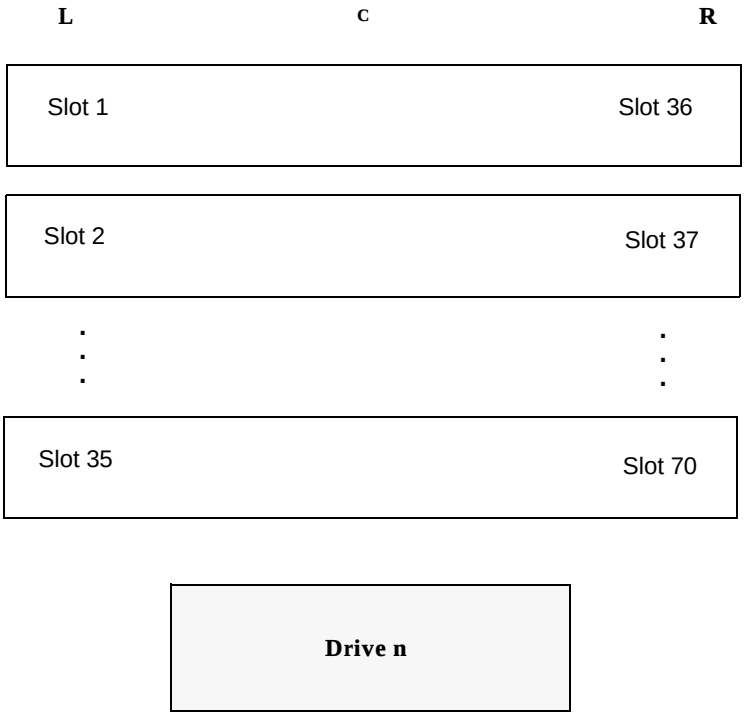


Qualstar 46120 (TL8)



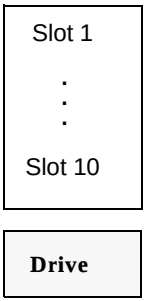
Sony DMS (TLD)

This slot diagram is for the Sony DMS-B35 with one drive configured. Other models differ.



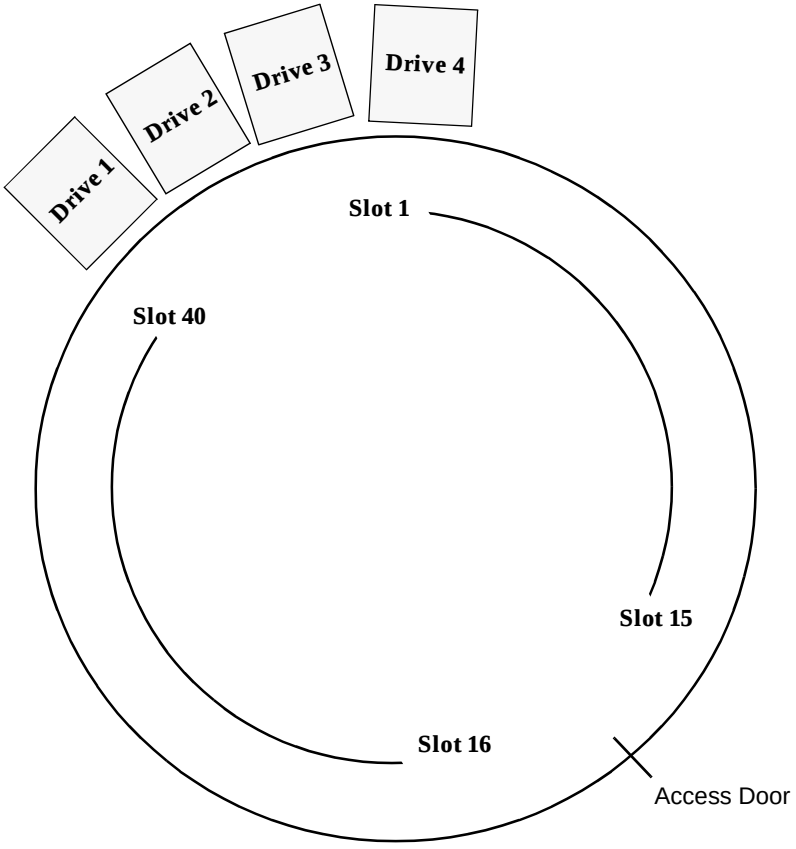
Note Some cassettes requires two slots. For example, if a large cassette is in slot 1, slot 36 is unusable.

Sony DMS-B9 (TLD)



Spectra Logic 9000/20
Spectra Logic 9000/40 (TL8)

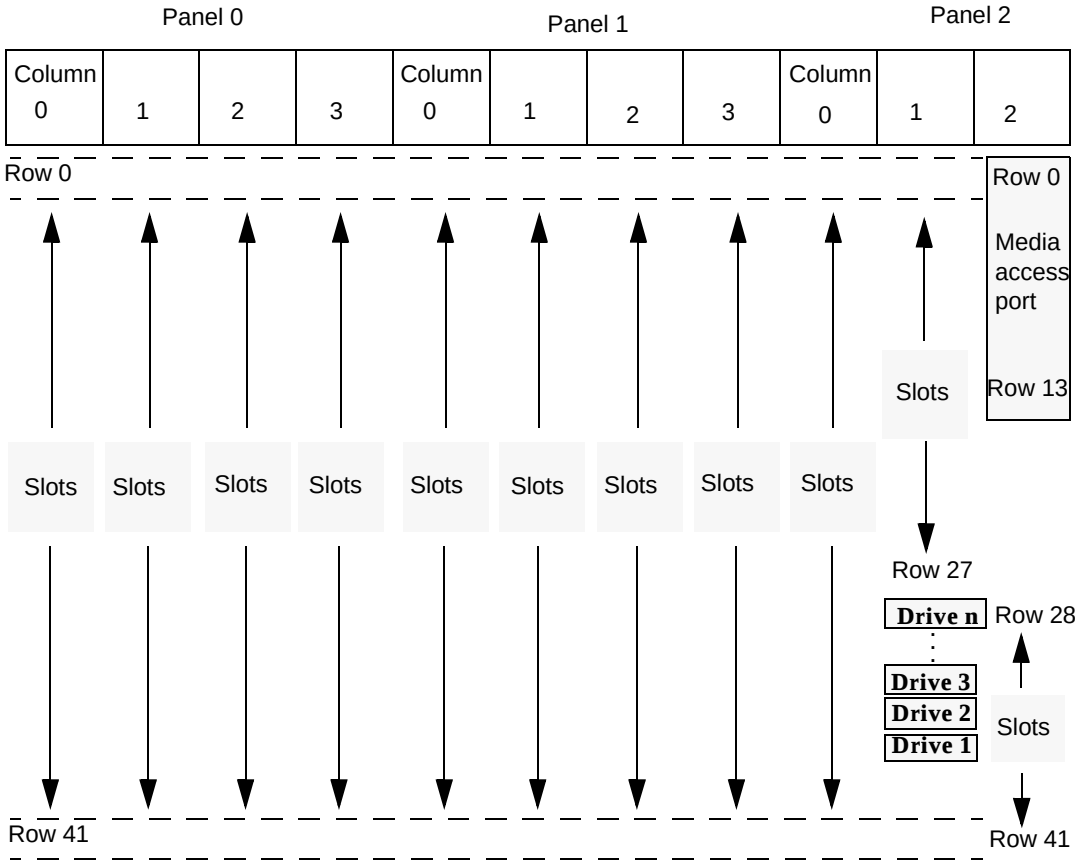
The slot figure shown below represents the 9000 / 40. The 9000 / 20 is similar with fewer slots.



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.

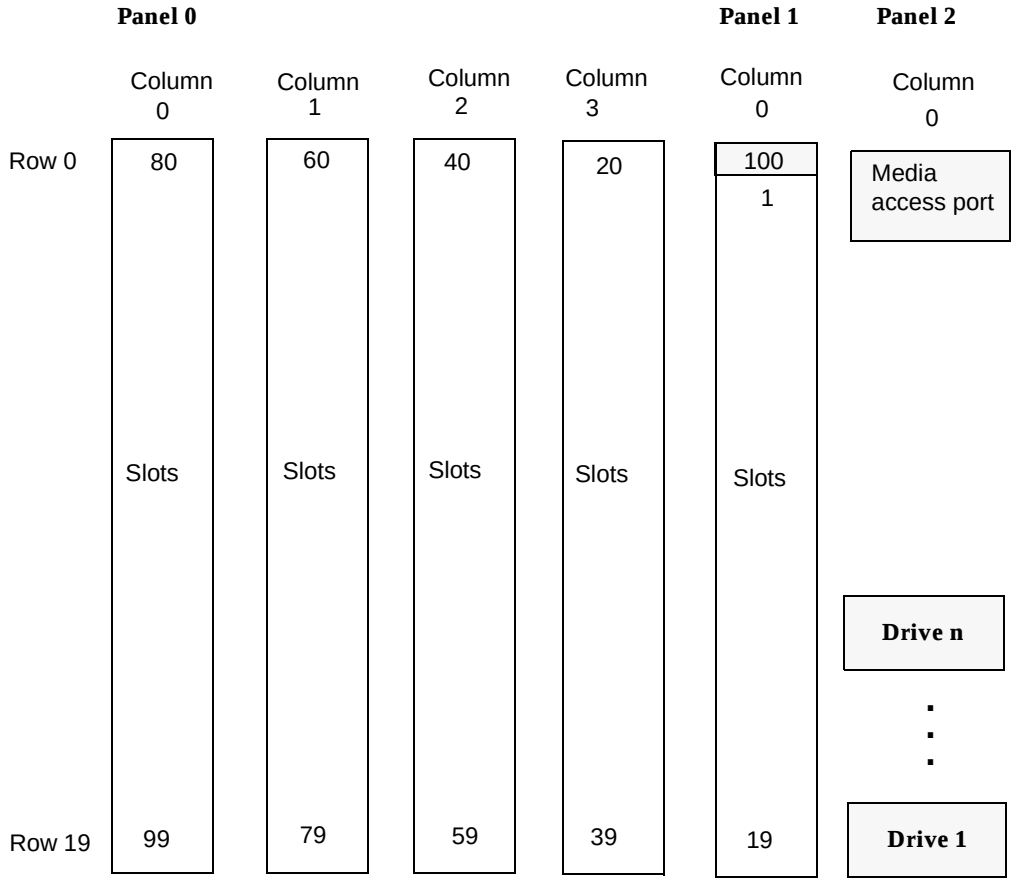


TLD slot numbering is different than STK Cell Element numbering. To obtain the TLD slot number, add 1 to the STK Cell Element. For example, STK Cell Element 224 corresponds to TLD slot 225. Cell elements are labeled on the inside walls of the robot. See your STK documentation for more information on 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.

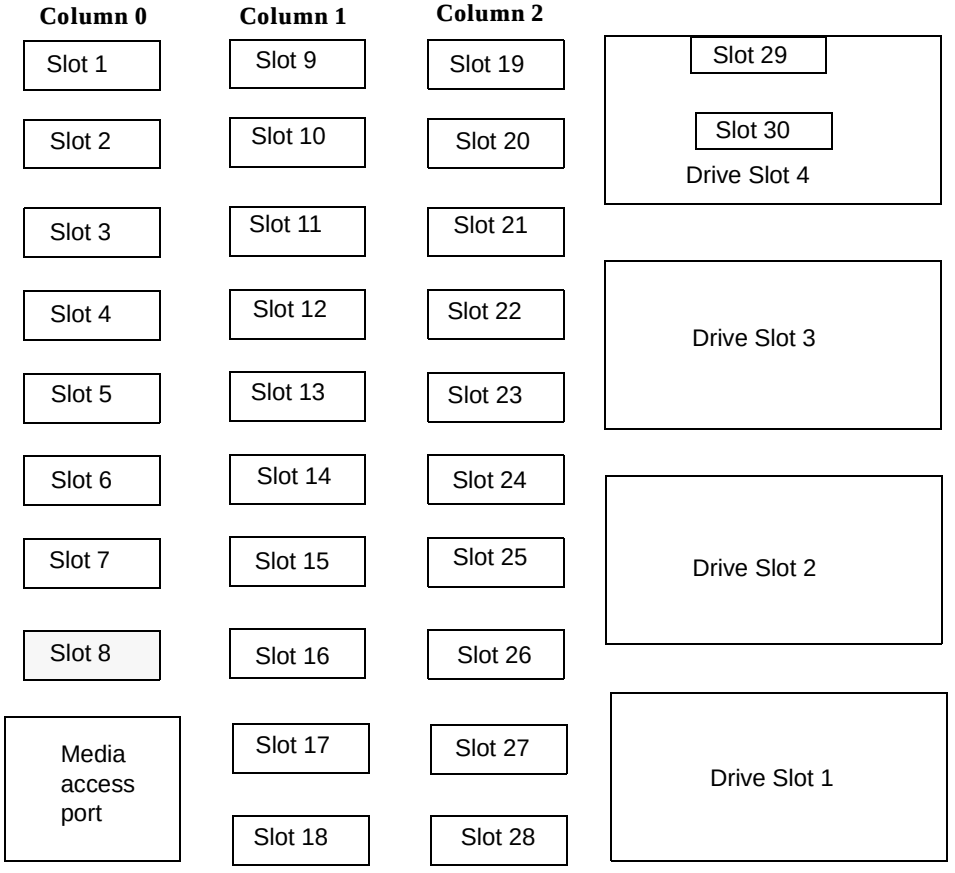
STK 9714
HP SureStore E 6/100 (A4846A) (TLD)



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.

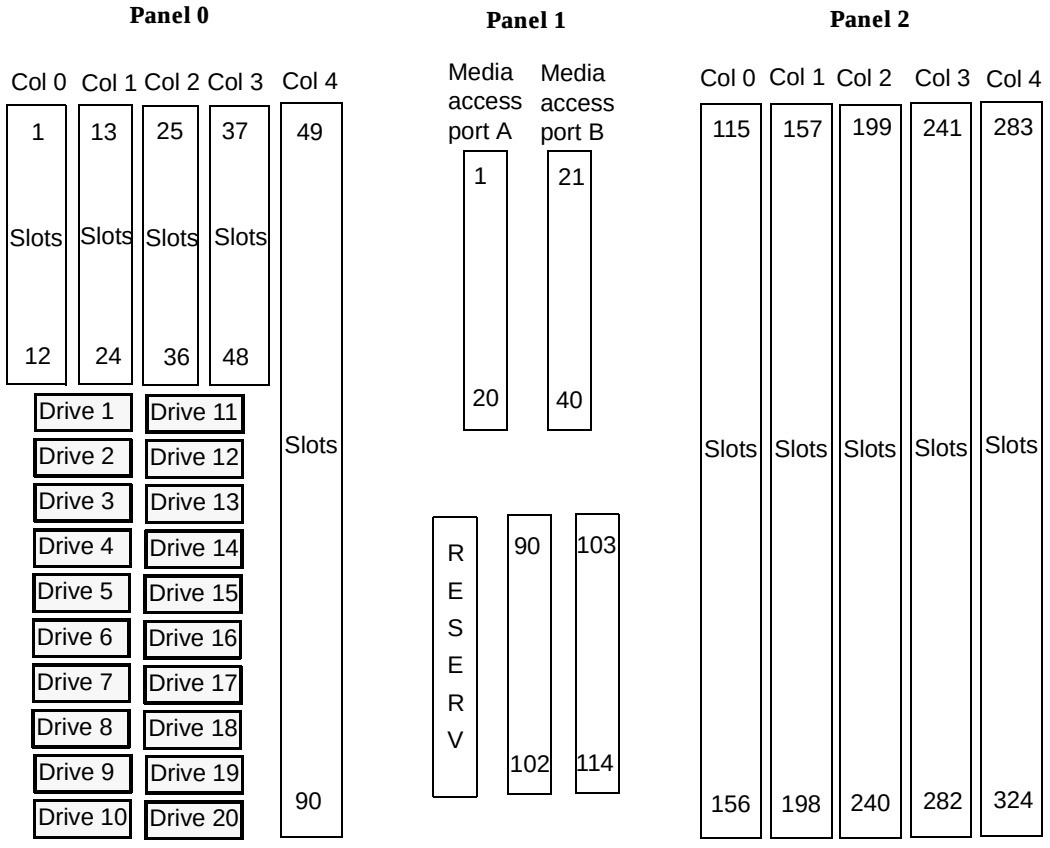


Drives	Cartridges	MAP
1-4	28 or 30	1

Represents a cleaning cartridge cell if auto clean is enabled

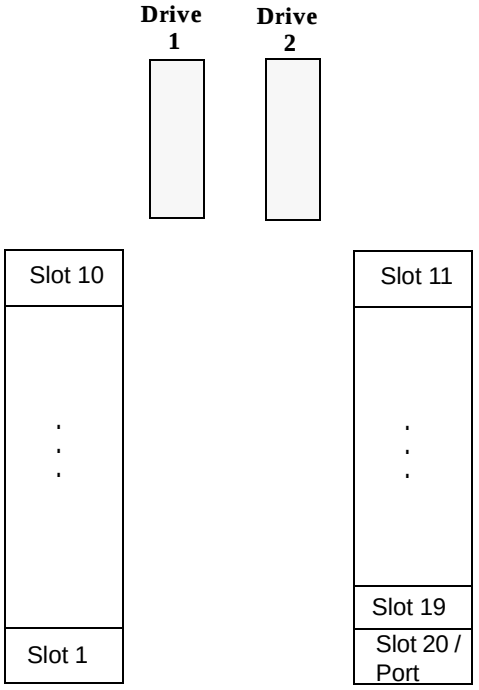
Note: If a drive is not installed in slot 3, additional storage cells can be

STK L700
Sun StorEdge L700
HP SureStore E 20/700 (A5597A) (TLD)

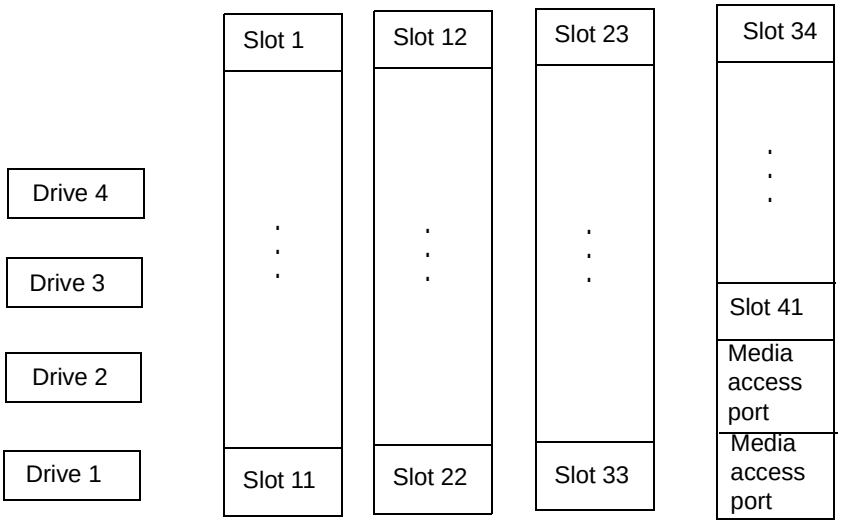


STK L20
NCR 6461 (TLD)

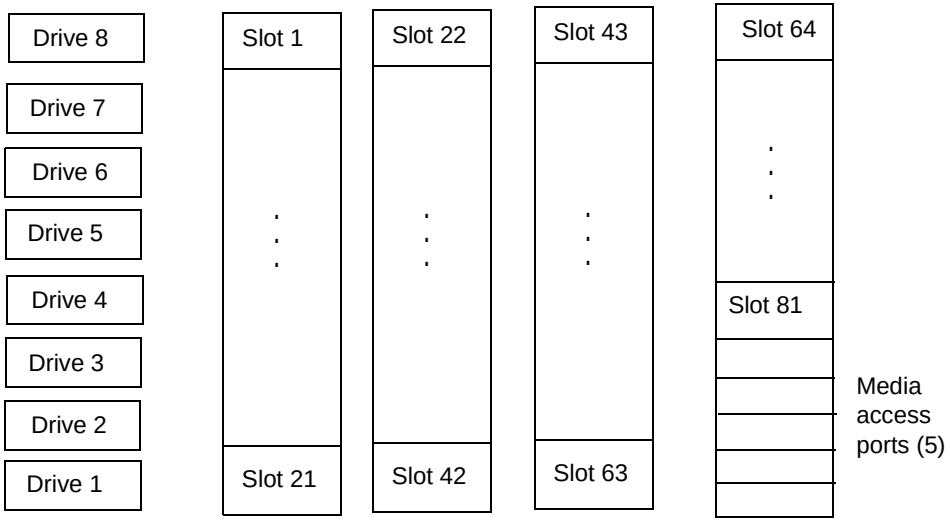
If the media access port is turned on in the configuration, slot 20 becomes the media access port and is unusable for storage.



STK L40 (TLD)



STK L80 (TLD)



Automated Cartridge System (ACS) F

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 476).

- 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:

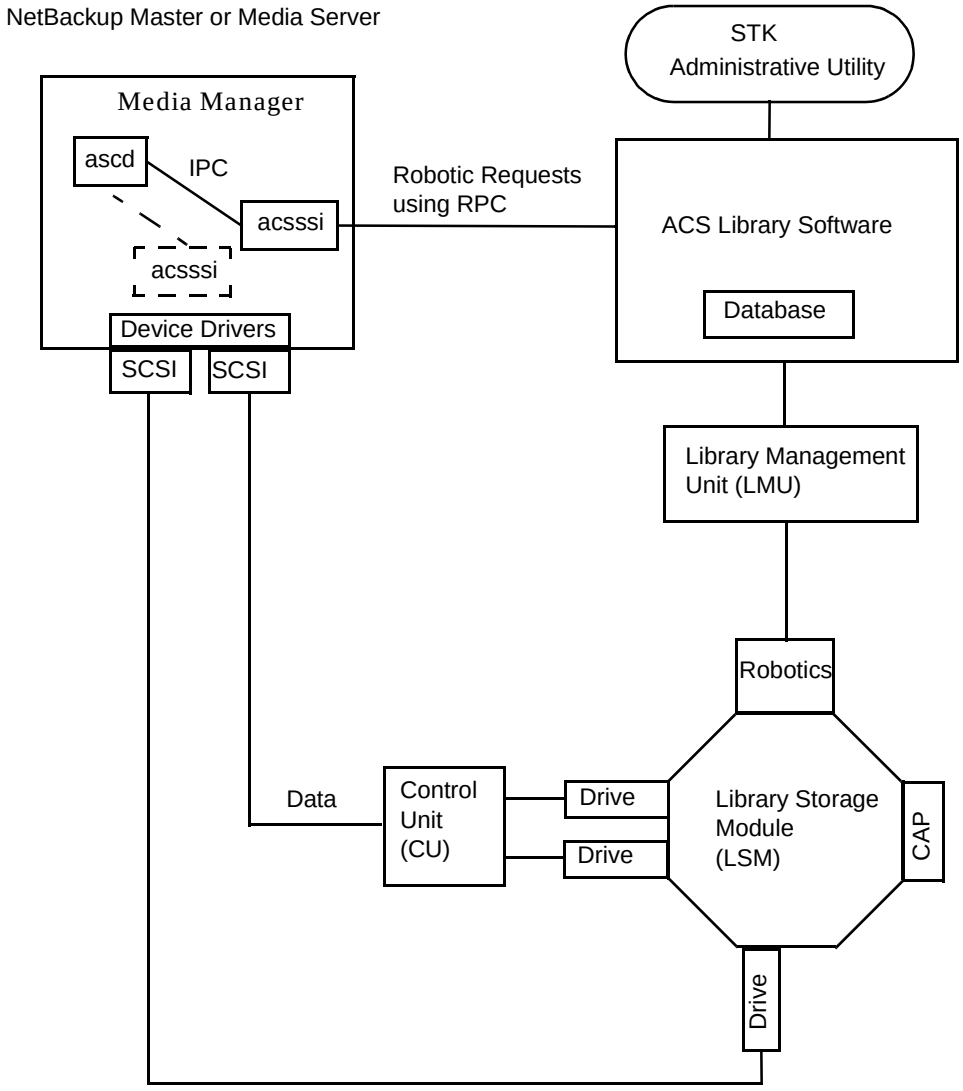
- A type of Media Manager robotic control.
- The StorageTek (STK) system for robotic control.
- The highest-level component under STK's ACS library software, which refers to a specific standalone robotic library or to multiple libraries connected with a media passthru mechanism.

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 477, 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. The ACS robotic daemon (`acsd`) formulates requests for mounts, unmounts, and inventories. An API then routes these requests to the ACS Server System Interface (`acsssi`) using IPC communications. The requests are converted into RPC-based communications and sent to the ACS library software.
ACS library software (can be any of the following) - Automated Cartridge System Library Software (ACSLS) - STK Library Station - 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. 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. 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 Media Manager device daemon, `ltid`, receives the request for a specific tape volume and drive density, and queries the Media Manager volume daemon, `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 daemon, `acsd`.

`acsd` formulates the request and uses Internal Process Communications (IPC) to send it to the ACS Server System Interface (`acsssi`). The request is then converted into RPC-based communications and sent to the ACS library software.

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 `acsssi` (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 11 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 485).

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.

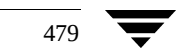
Use the same methods to create or identify device files for these drives as for other drives. If the drives are SCSI and connect to the robot through a control unit, you must specify the logical unit number (lun) for each drive, as they share the same SCSI ID. Refer to the system documentation for your platform and operating system for details on configuring drives and logical unit numbers. The NetBackup Media Manager device configuration guide also has information on configuring device files.

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:

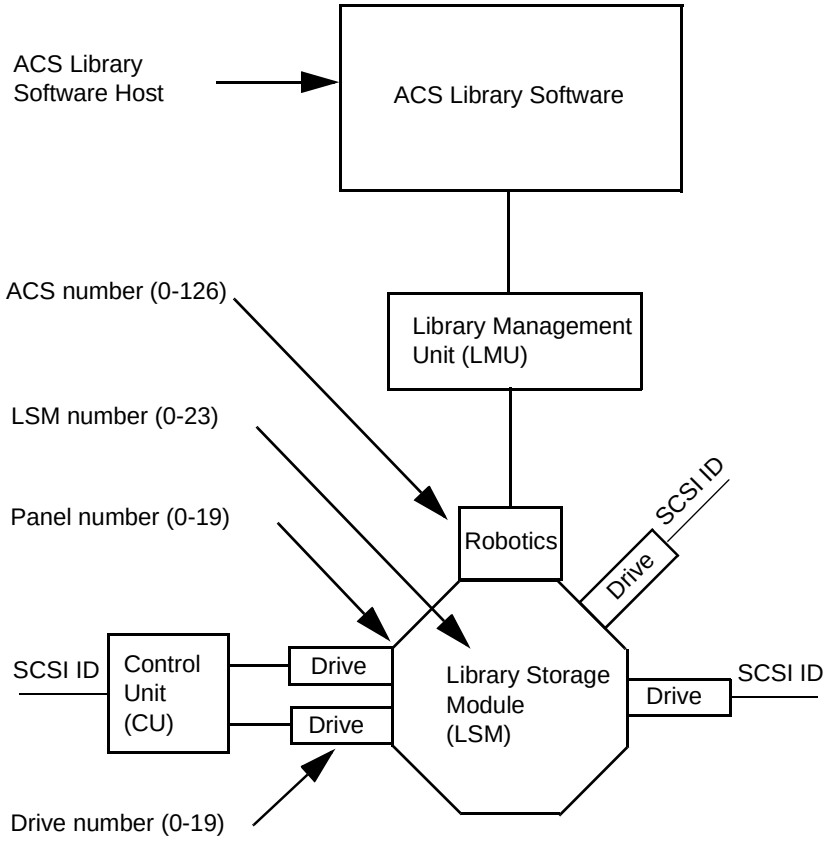
- ACS number - The index, in ACS library software terms, that identifies the robot that has this drive.
- LSM number - The Library Storage Module that has this drive.
- Panel number - The panel where the drive is located.
- Drive number - The physical number of the drive in ACS library software terms.

Also see “Configuring Storage Devices” on page 11 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 daemon 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 135.
   - Add new volumes as explained in "Adding New Volumes" on page 95.

   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 476), 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 135.
- Move volumes, as explained in "Moving Volumes" on page 106.

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 Man page appendix).
- Use the NetBackup Administration Console (see "Methods for Ejecting Volumes From a Robot" on page 94).

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 153). "Show Contents Reports for API Robots" on page 129 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 in the **Media Type Mappings** tab. See "Changing the Update Options" on page 141.

   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 485).

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 485).

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 137.

vm.conf Map Entries for ACS Robots

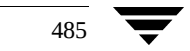
See "Media Manager Configuration File (vm.conf)" on page 337 for an overview of the `vm.conf` file.

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
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



Default and Allowable ACS Media Types (continued)

ACS Media Type	Default Media Manager Media Type	Allowable Media Types through Mappings
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
UNKNOWN (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 `/usr/openv/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 Daemon (acsd)
- ACS Server System Interface (acsssi)
- ACS SSI Event Logger (acssel)
- ACS Robotic Test Utility (acstest)
- Making ACS Robotic Configuration Changes
- Multiple ACS Robots with One ACS Library Software Host
- Multiple ACS Robots and ACS Library Software Hosts
- Robotic Inventory Filtering

ACS Daemon (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 ltid. You can also start acsd manually, if ltid is already running.

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.

When acsd is started, it starts acsssi and acssel. When starting acsssi, acsd passes the ACS library software host name to acsssi. One copy of acsssi is started for each ACS library software host that appears in the Media Manager device configuration for the media server. If you have multiple media servers sharing drives in an ACS robot, acsssi must be active on each media server.

See "ACS Server System Interface (acsssi)" on page 488 and "ACS SSI Event Logger (acssel)" on page 490 for information about these processes.

ACS Server System Interface (acsssi)

acsssi is the server system interface (SSI) for a particular ACS library software host. All RPC communications from acsd or the ACS robotic test utility intended for ACS library software are handled by acsssi.

One copy of acsssi must be running for each unique ACS library software host that is configured on a Media Manager server(s). acsd tries to start copies of acsssi for each host, but these acsssi processes fail during initialization if an acsssi process for a particular ACS library software host is already running.

In normal operations, acsssi should be started to run in the background. Log messages for acsssi are sent to acssel. acssel should be started before acsssi. See "ACS SSI Event Logger (acssel)" on page 490 for more information.

The socket name (IP port) used by acsssi can be specified in any of the following ways:

- On the command line, when starting acsssi.
- Using an environment variable (ACS_SSI_SOCKET).
- Through the default value.

Note If you configure acsssi to use a non-default socket name, the ACS daemon and ACS test utility also must be configured to use the same socket name. If this is not done, successful IPC communications cannot be established.

The ACS library software host name is passed to acsssi using the CSI_HOSTNAME environment variable.

acsssi is based on the SSI provided by STK and supports features, such as use of environment variables to affect most aspects of operational behavior. See "Optional Environment Variables" on page 489, for a list of environment variables that are supported.

Using the ACS_SSI_SOCKET Environment Variable

By default, acsssi listens on unique, consecutive socket names starting at 13741. To specify socket names on a ACS library software host basis, you can add a configuration entry in vm.conf.

Use the following format:

ACS_SSI_SOCKET = *ACS_library_software_host socket_name*

The following is an example entry:

```
ACS_SSI_SOCKET = einstein 13750
```

Starting acsssi Manually

Note This is not the recommended method to start acsssi. Normally, acsd starts acsssi.

1. Start the event logger, acssel.
2. Start acsssi. The usage format is acsssi *socket_name*.

   The CSI_HOSTNAME environment variable is required. The following is a Bourne shell example:

   ```
   CSI_HOSTNAME=einstein
   export CSI_HOSTNAME
   /usr/openv/volmgr/bin/acsssi 13741 &
   ```

Optional Environment Variables

If you want individual acsssi processes to operate differently, you can set environment variables before the acsssi processes are started manually or from a custom-designed script.

The following are the optional environment variables:

SSI_HOSTNAME - Specifies the name of the host where ACS library software RPC return packets are routed for ACS network communications. By default, the local host name is used.

CSI_RETRY_TIMEOUT - Set this to a small positive integer. The default is 2 seconds.

CSI_RETRY_TRIES - Set this to a small positive integer. The default is 5 retries.

CSI_CONNECT_AGETIME - Set this in the range of 600 to 31536000 seconds. The default is 172800 seconds.

ACS SSI Event Logger (acssel)

acssel is modeled after the mini_el event logger provided by StorageTek, so its functional model differs slightly from other robotic test tools provided with Media Manager.

If ACS robots have been configured, the event logger is automatically started by acsd. Event messages are logged to the file, /usr/openv/volmgr/debug/acsssi/event.log.

Note acssel should be running for optimum ACS SSI performance, since acsssi tries to connect on the event logger's socket for its message logging. If acsssi cannot connect to acssel, request processing from ACS library software is delayed. This leads to retries and error recovery situations. VERITAS recommends that acssel be kept running for best results.

acssel can be started automatically or manually, but only stopped using the kill command (such as is done in the NetBackup bp.kill_all utility).

The full path to the event logger is /usr/openv/volmgr/bin/acssel. The usage format is as follows:

acssel [-d] -s *socket_name*

where

-d d displays debug messages (by default, there are no debug messages).

socket_name is the socket name (or IP port) to listen on for messages.

Using acssel with a Different Socket Name

If there is no ACS_SEL_SOCKET entry in vm.conf, acssel listens on socket name 13740 by default. This default can be changed using one of the following methods:

Modifying the Media Manager Configuration File

1. Edit vm.conf and add an ACS_SEL_SOCKET entry.

   For example:

   ```
   ACS_SEL_SOCKET = 13799
   ```

2. Use /usr/openv/netbackup/bin/goodies/bp.kill_all to stop the acsd, acsssi, and acssel processes. (This script stops all NetBackup and Media Manager processes.)

3. Restart the NetBackup / Media Manager daemons.

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

Using Environment Variables

This method assumes there is one ACS robot configured and the SSI default socket name has not been changed with an ACS_SEL_SOCKET entry in vm.conf.

1. Use /usr/openv/netbackup/bin/goodies/bp.kill_all to stop the acsd, acsssi, and acssel processes. (This script stops all NetBackup and Media Manager processes.)

2. Set the desired socket name in an environment variable and export it.

```
ACS_SEL_SOCKET = 13799
export ACS_SEL_SOCKET
```

Note acssel also has a command line option to specify the socket name. However, since the ACS Server System Interface (acsssi) needs to know the event logger socket name, setting an environment variable is preferred.

3. Start the event logger in the background.

```
/usr/openv/volmgr/bin/acssel &
```

4. Set the ACS library software host name for acsssi in an environment variable.

```
CSI_HOSTNAME = einstein
export CSI_HOSTNAME
```

5. Start acsssi.

```
/usr/openv/volmgr/bin/acsssi 13741 &
```

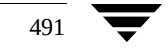
6. Optionally, start acstest using robtest or by using the following command line:

```
/usr/openv/volmgr/bin/acstest -r einstein -s 13741
```

Note If you request SCSI unloads, you must also specify drive paths on the acstest command line (see “ACS Robotic Test Utility (acstest)” on page 492). This is done automatically by robtest if ACS drives have been configured.

7. Start ltid, which starts acsd. You can use the -v option for verbose message output.

```
/usr/openv/volmgr/bin/ltid
```

During initialization, acsd obtains the SSI Event Logger socket name from vm.conf and sets ACS_SEL_SOCKET in the environment before starting acssel. If acsssi is started manually, it has to use (listen on) the same SSI socket that acsd is using to send data.

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 acsssi being started successfully. You can use the system command, netstat -a, to verify there is a process listening on the SSI socket. acstest attempts to communicate with ACS library software using acsssi and connects on an existing socket.

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. You can pass the socket name on the command line. Otherwise, the default socket name (13741) is used.

acstest -r *ACS_library_software_host* [-s *socket_name*]
[-d *drive_path ACS*, *LSM*, *panel*, *drive*] ... [-C *sub_cmd*]

The following example assumes that acsssi has been started using socket name 13741:

```
/usr/openv/volmgr/bin/acstest -r einstein -s 13741
```

Making ACS Robotic Configuration Changes

After making any ACS robotic configuration changes, you should follow the correct steps so that acsssi can successfully communicate with acsd, acstest, and ACS library software.

Any acsssi processes must be cancelled after your changes are made and before the Media Manager device daemon, ltid, is restarted. Also in order for the acstest utility to function, acsssi for the selected robot must be running.

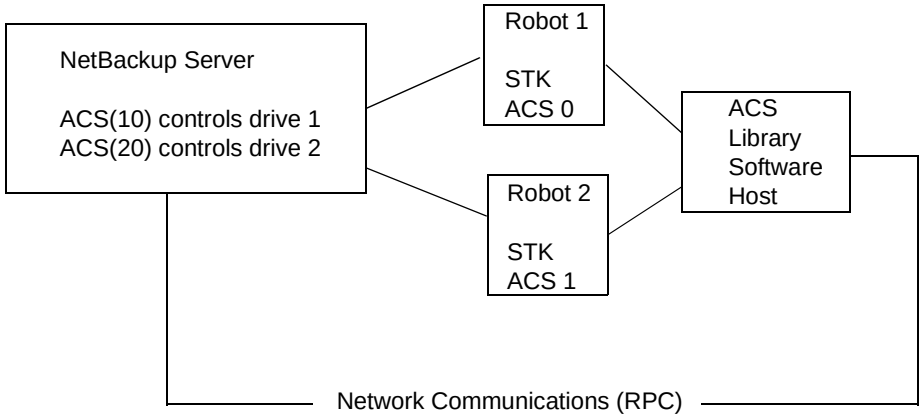
The easiest way to do this is to

1. Make your configuration changes.
2. Use bp.kill_all to stop all running processes.
3. Restart all processes.

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

Multiple ACS Robots with One ACS Library Software Host

NetBackup supports configurations where a NetBackup server is connected to drives in multiple ACS robots, and these robots are controlled from a single ACS library software host. See the following example:



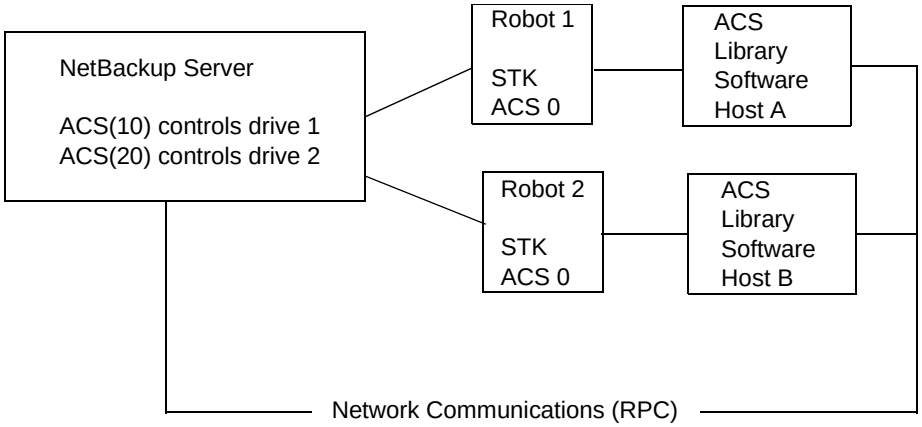
Inventory requests for a robot will include those volumes configured on the ACS library software host which are resident to the ACS robot (ACS 0 or ACS 1) that is designated in the drive address.

In the example, assume that drive 1 has an STK address (ACS, LSM, panel, drive) of 0,0,1,1 in the Media Manager device configuration and is under control of robot number 10 (ACS(10)). If any other drives configured under robot number 10 have a different ACS drive address (for example, 1,0,1,0) it is considered an invalid configuration.

Configurations consisting of multiple LSMs in a single ACS robot are supported if a passthru port exists.

Multiple ACS Robots and ACS Library Software Hosts

NetBackup supports configurations where a NetBackup server is connected to drives in multiple ACS robots and these robots are controlled from separate ACS library software hosts. See the following example:



Inventory requests for a robot will include those volumes configured on the ACS library software host (in this example, Host A for Robot 1 and Host B for Robot 2) which are resident to the robot (ACS 0 for each) that is designated in the STK drive address.

In this example, assume drive 1 has an STK address (ACS, LSM, panel, drive) of 0,0,1,1 in the Media Manager device configuration and is under control of robot number 10 (ACS(10)). If any other drives configured under robot number 10 have a different ACS drive address (for example, 1,0,1,0) it is considered an invalid configuration.

Configurations consisting of multiple LSMs in a single ACS robot are supported if a passthru port exists.

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.

IBM Automated Tape Library (ATL) G

Media Manager provides support for robotics under control of the IBM Automated Tape Library (ATL), including the IBM Magstar 3494 Tape Library.

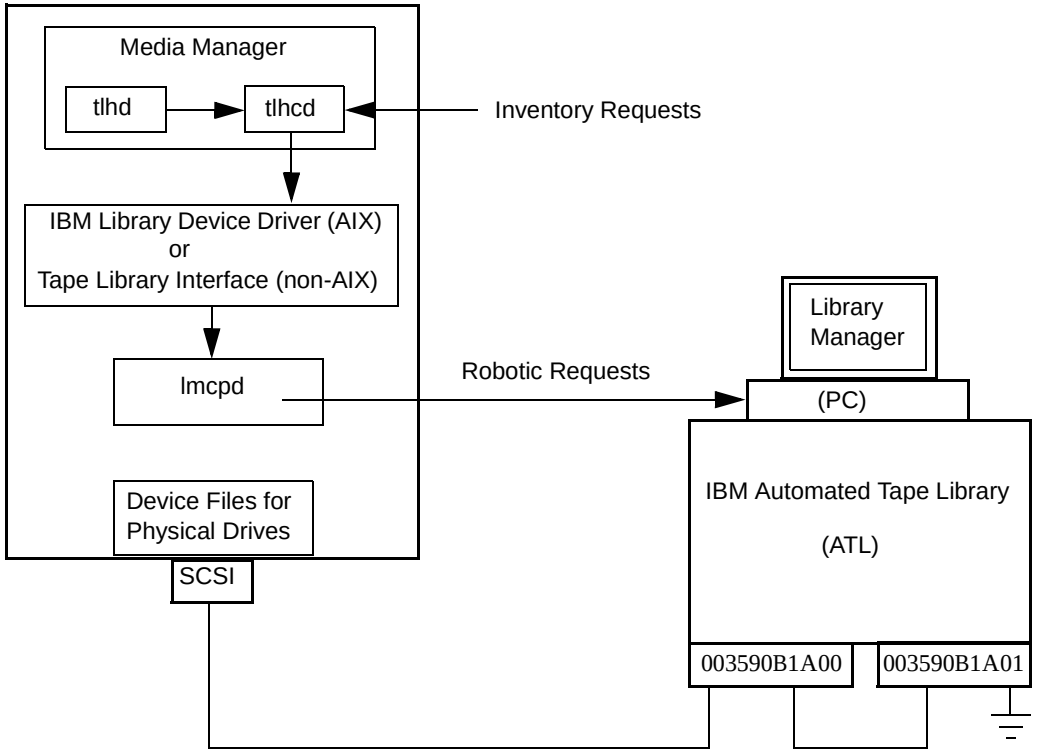
Under Media Manager, robotic support for ATL robots is classified as Tape Library Half-inch (TLH) and these robots are considered API robots (the robot manages its own media). Support for these devices is different than for other types of Media Manager robotic control. This appendix provides an overview of those differences.

The following figures show two possible ATL configurations. The table, “Automated Tape Library Components” on page 500 explains the major components in these configurations.

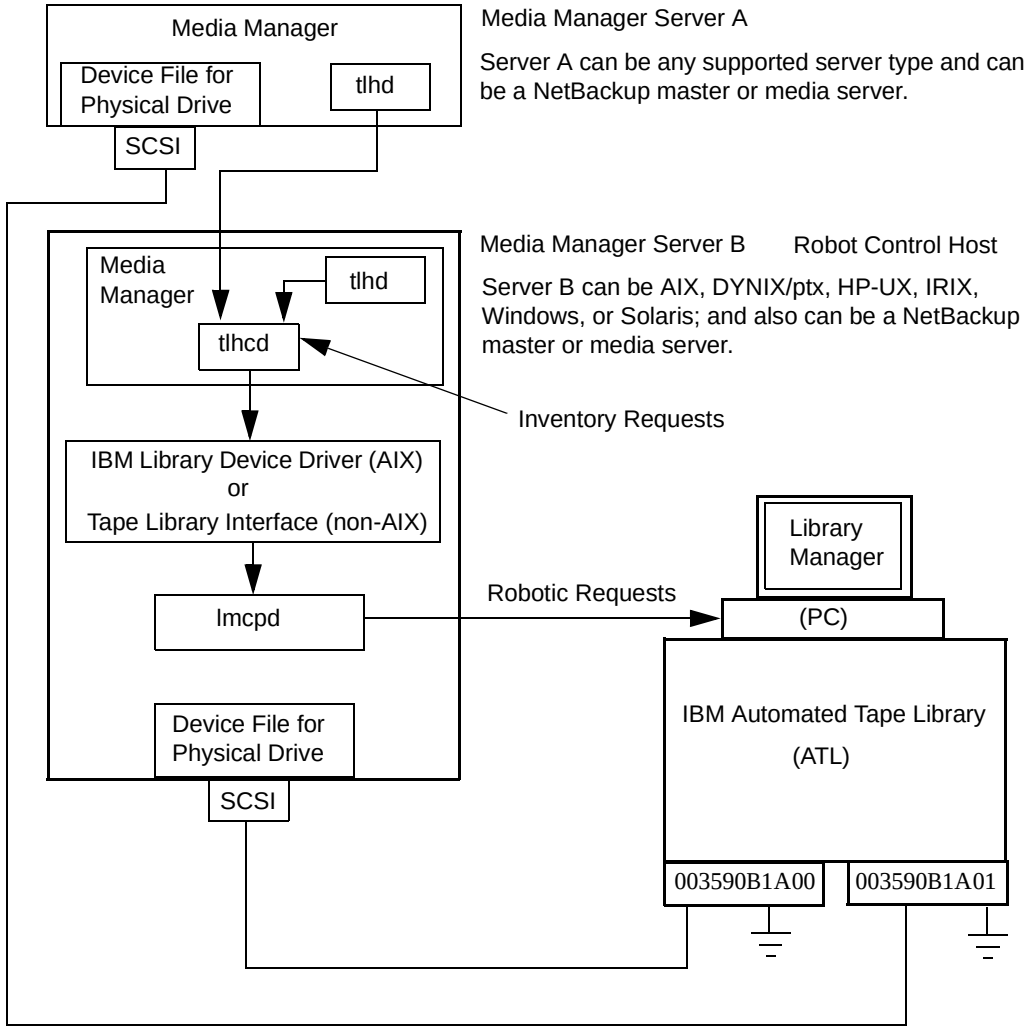
Robotic Control Host Communicates Directly to Robot

Media Manager Server

This server can be an AIX, DYNIX/ptx, HP-UX, IRIX, Windows, or Solaris server. This server also 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 and acts as a client to the ATL through the Library Manager Control Point daemon (`lmcpd`). Media Manager's device daemon, `ltid`, forwards mount and dismount requests to the Tape Library Half-inch daemon (`tlhd`).
Tape Library Half-inch daemon (`tlhd`)	This daemon resides on a Media Manager server and passes mount and dismount requests to the Tape Library Half-inch control daemon (`tlhcd`) on the robotic control host.
Tape Library Half-inch control daemon (`tlhcd`)	This daemon 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 `lmcpd` by using the IBM Library Device Driver interface (on AIX) or IBM Tape Library system calls (on non-AIX).
Library Manager Control Point daemon (`lmcpd`)	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 daemon (`ltid`) receives the request and queries the Media Manager volume daemon (`vmd`) for the location of the media. The volume daemon, 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 daemon (tlhd). This daemon passes the request to the TLH control daemon (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. If the Media Manager server is an AIX system, the control daemon communicates with the Library Manager Control Point daemon (lmcpd) by using the Library Device Driver interface. If the Media Manager server is a non-AIX system, such as Solaris, the control daemon communicates with lmcpd through Tape Library system calls from an application library interface.

lmcpd 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 an AIX System

The following topics explain the steps for configuring robotic control when the media server is an AIX system.

Determine the Path to the LMCP Device File

Use the Library Manager Control Point (LMCP) device file as the robotic device file in Media Manager. This file is set up when the Automated Tape Library is first configured.

Use the lsdev command (or smit) to determine the LMCP device file.

The following example uses the lsdev command:

```
/etc/lsdev -C | grep "Library Management"
```

The following is the output from this command:

```
lmcp0      Available          LAN/TTY Library Management Control Point
```

Verify Library Communications

After you determine the path to the LMCP device file, verify library communications through the IBM-provided `mtlib` interface. Resolve all errors before attempting to configure IBM 3494 support in Media Manager.

To verify communications with a specific library, specify the Library Manager Control Point device file with the `mtlib` command. For example, if the LMCP device path is `/dev/lmcp0`, the following command verifies communication with the library:

```
/usr/bin/mtlib -l /dev/lmcp0 -qL
```

The following is the output from this command:

```
Library Data:
   state..................... Automated Operational State
                              Dual Write Disabled
   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.
   avail 3490 cleaner cycles..0
   avail 3590 cleaner cycles..92
```

Configure the Robotic Device File

Configure the robotic path as explained in “Configuring Storage Devices” on page 11. When the configuration is complete you can view the robotic device information.

The following example uses `tpconfig -d` to view the robotic device information. In this example, the first two drives shown are standalone drives. The drive with drive index 31 is under TLH robotic control and the drive with drive index 78 is under TL4 control.

```
# /usr/openv/volmgr/bin/tpconfig -d

Index  DriveName            DrivePath      Type    Shared     Status
*****  *********            **********     ****    ******     ******
  5    DRIVE0               /dev/rmt4.1    hcart     No        DOWN
 13    DRIVE2               /dev/rmt8.1    hcart     No        DOWN
 31    DRIVE1               /dev/rmt12.1   hcart     No        DOWN
        TLH(8)  IBM Device Name = 003590B1A00
 78    DRIVE1               /dev/rmt11.1   4mm       No        UP
        TL4(77) Definition    DRIVE=1
Currently defined robotics are:
  TL4(77)    robotic path = /dev/ovpass0, volume database host = maui
  TLH(8)    LMCP device path = /dev/lmcp0, volume database host = maui
Standalone drive volume database host = maui
```

In this example, note the following line:

```
  TLH(8)    LMCP device path = /dev/lmcp0, volume database host = maui
```

Where `/dev/lmcp0` is the path to the robotic device file and `maui` is the volume database host for this robot.

Robotic Control on a Non-AIX System

The following topics explain the steps for configuring robotic control when the media server is not an AIX UNIX system.

Determine the Library Name

Use the library name instead of the robotic device file when configuring in Media Manager. This name is set up when the Automated Tape Library is first configured (see your IBM system documentation). The library name is configured in the `/etc/ibmatl.conf` file and you 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:

```
/usr/bin/mtlib -l 3494AH -qL
```

The following is the output from this command:

```
Library Data:
state.....................Automated Operational State
                          Dual Write Disabled
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.
```

```
avail 3490 cleaner cycles..0
avail 3590 cleaner cycles..92
```

Configure the Robotic Device File

Configure the robotic path as explained in “Configuring Storage Devices” on page 11. 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.

```
/usr/openv/volmgr/bin/tpconfig -d

Index  DriveName           DrivePath      Type    Shared    Status
*****  *********           **********     ****    ******    ******
  6    DRIVE2              /dev/rmt/17cbn  hcart    No        UP
       TLH(0) IBM Device Name = 003590B1A00
 55    DRIVE1              /dev/rmt/15cbn  dlt      No        UP
       TLD(5) Definition   DRIVE=1
Currently defined robotics are:
  TLH(0)     library name = 3494AH, volume database host = grozer
  TLD(5)     robotic path = /dev/sg/c2t0l0, 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, and you use the same methods to create or identify device files for these drives as for other drives. Refer to the system documentation for your platform and operating system for details on physically adding drives to your robots. The Media Manager device configuration guide has information on configuring device files.

See “Configuring Storage Devices” on page 11 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:

```
/usr/openv/volmgr/bin/tlhtest -r /dev/lmcp0
```

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 /dev/lmcp0
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
```

If the robotic control is configured on a non-AIX UNIX server using the IBM Automated Tape Library support, use the library name as configured in `/etc/ibmatl.conf` in place of the LMCP device path on the call to `tlhtest`.

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 135.
   - Add new volumes, as explained under “Adding New Volumes” on page 95.

   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 Man page appendix).
   - The NetBackup Administration Console (see “Methods for Ejecting Volumes From a Robot” on page 94).

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 135.

- Move volumes, as explained in “Moving Volumes” on page 106.

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 daemon.

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 156) 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** tab. See "Changing the Update Options" on page 141.

   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 510).

   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 510).

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 137.

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 337 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 a 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:

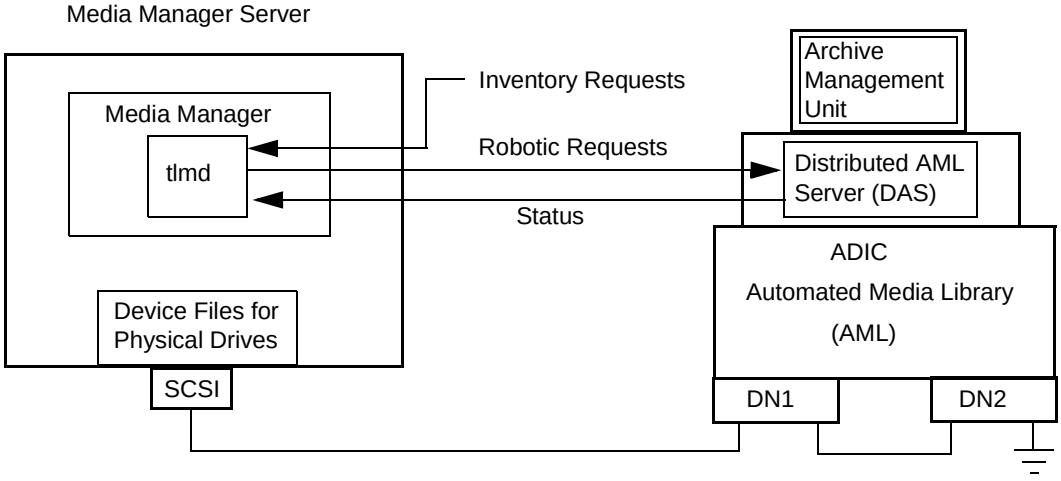
```
TLH_3590J = HCART4
```

ADIC Distributed AML Server (DAS) H

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 512 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. Media Manager's device daemon, `ltid`, forwards mount and dismount requests to the TLM daemon (`tlmd`).
TLM daemon (`tlmd`)	This daemon 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) 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). The Media Manager robotic daemon (or TLM daemon) 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 daemon, `ltid`, receives the request and queries the Media Manager volume daemon, `vmd`, for the location of the media. The volume daemon, 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 daemon, `tlmd`. This daemon 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.

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` daemon to enable the TLM daemon 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 can have several different types of drives, usually with a SCSI interface, and you use the same methods to create device files for these drives as for other drives. If the drives are SCSI and connect to the robot through a 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. The Media Manager device configuration guide also has information on configuring device files.

See “Configuring Storage Devices” on page 11 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`:

```
/usr/openv/volmgr/bin/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.

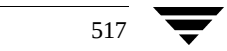
2. Define the media to Media Manager by using the DAS volsers as media IDs.

   To accomplish this, do one of the following:

   - Update the volume configuration, as explained under “Updating the Volume Configuration for a Robot” on page 135.
   - Add new volumes, as explained under “Adding New Volumes” on page 95.

   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 Man page appendix).
   - The NetBackup Administration Console (see “Methods for Ejecting Volumes From a Robot” on page 94).
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 135.
   - Move volumes, as explained in “Moving Volumes” on page 106.

   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 156.

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** tab. See "Changing the Update Options" on page 141.

   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 521).

   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 521).

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 137.

vm.conf Map Entries For TLM Robots

See “Media Manager Configuration File (vm.conf)” on page 337 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 (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 a `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
```

Fujitsu Library Management Facility (LMF)

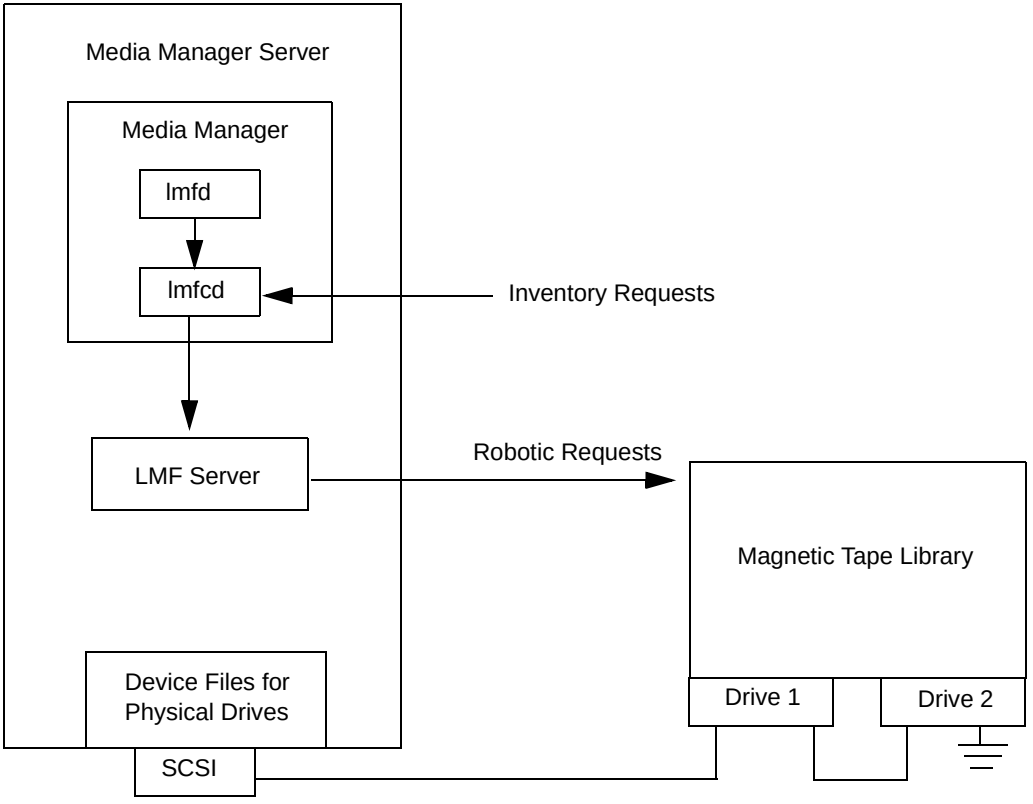
Media Manager provides support for robotics under control of the Fujitsu Library Management Facility (LMF), including the Fujitsu F6458/M2498 Magnetic Tape Library.

Under Media Manager, robotic support for Library Management Facility robots is classified as LMF 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.

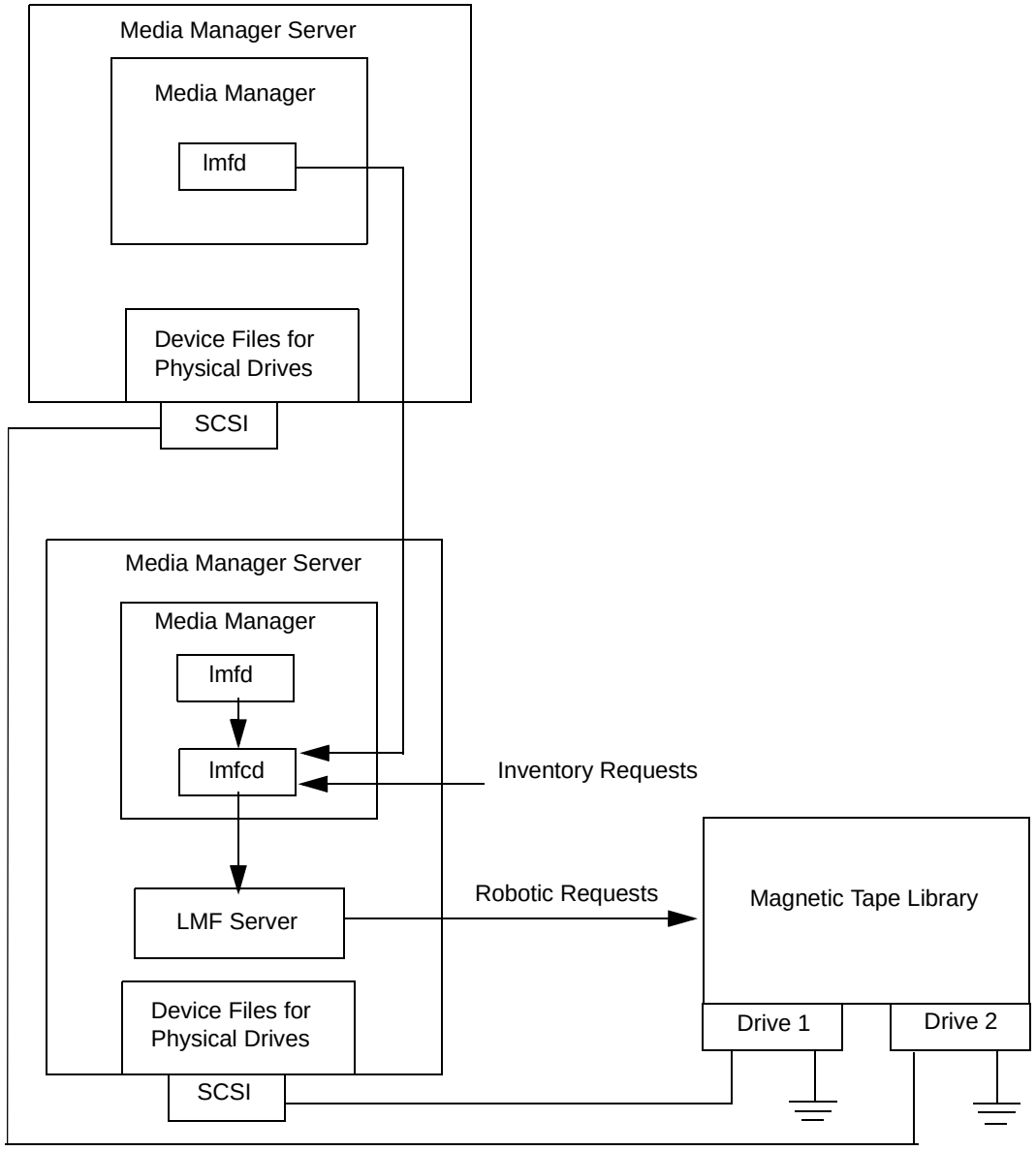
The following figures show possible LMF configurations. In these configurations, the Media Manager servers and the server where LMF is installed (shown in the figure "Robotic Control on Host with LMF Client" on page 526) must be Sun Solaris systems.

The table "Distributed LMF Server Configuration" on page 527 defines the major components in these sample configurations.

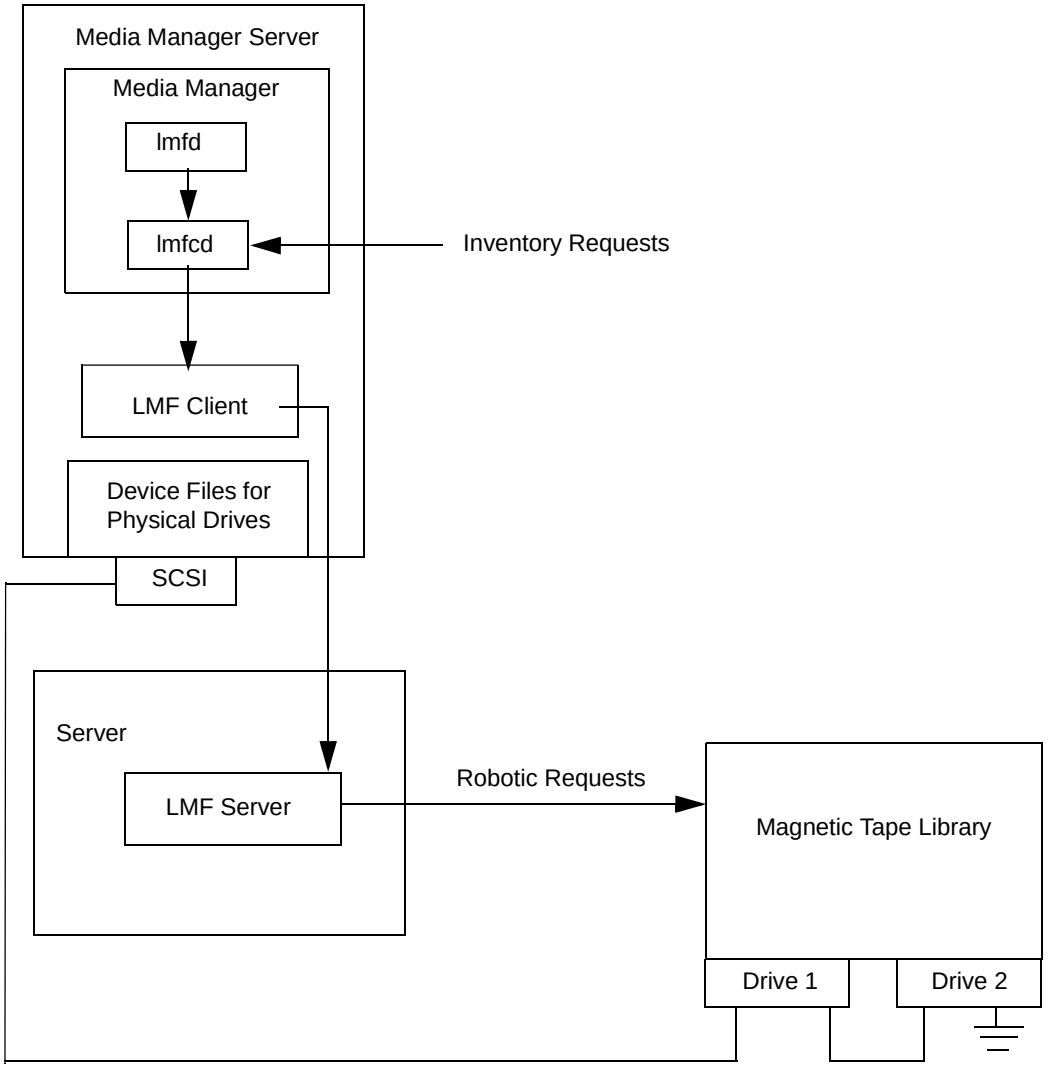
Robotic Control Host Connecting Directly to Robot



Robotic Control and Robot Connection on Separate Hosts



Robotic Control on Host with LMF Client



Distributed LMF Server Configuration

Component	Description
Media Manager Server	A host that has Media Manager software and accesses the Library Management Facility through the LMF Server or LMF Client. The Media Manager device daemon, `ltid`, forwards mount and dismount requests to the LMF daemon (`lmfd`).
LMF daemon (`lmfd`)	This daemon resides on a Media Manager server and passes mount and dismount requests to the LMF control daemon (`lmfcd`).
LMF control daemon (`lmfcd`)	This control daemon receives mount or dismount requests from `lmfd` or robot inventory requests through an external socket interface. This daemon must reside on a host that is running the LMF Server or the LMF Client.
LMF Server	The LMF Server software sends mount and dismount requests to the Magnetic Tape Library.
LMF Client	The LMF Client software transfers mount and dismount requests to the LMF Server software.
Magnetic Tape Library	A physical library under automated robotic control, including the Fujitsu F6458/M2498 Magnetic Tape Library.

Media Requests Involving an LMF Robot

A request for media in an LMF robot in a Library Management Facility Magnetic Tape Library begins in the same manner as other media requests. The Media Manager device daemon, `ltid`, receives the request and queries the Media Manager volume daemon, `vmd`, for the location of the media. The volume daemon returns only the robot number and type, since the volume database does not store slot information for media in a LMF 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 LMF daemon (`lmfd`). This daemon passes the request to the LMF control daemon (`lmfcd`).

The LMF control daemon resides on an LMF Server host or LMF Client host. This can be the host where `lmfd` is running or another host. The control daemon communicates with the Magnetic Tape Library through the LMF Server program interface or the LMF Client program interface.

The LMF Server passes information to the Magnetic Tape Library, which then locates the media and directs the robotics to mount the media in the drive. When the host (where Media Manager is installed) receives a successful response from the LMF Server or LMF Client, it allows the requesting application (for example, NetBackup) to start sending data to the drive.

Configuring LMF Robotic Control

The following topics explain the steps to configure LMF robotic control.

Robotic control can be through an LMF Server or LMF Client. Some functions (inject and eject) are not available when running through an LMF Client.

The library name is used to identify the robot, when configuring robotic control in Media Manager.

Determining the Library Name

The library name is set up when the robot is configured, using the Fujitsu `lmadmin` command. You can also list the library name using the `lmadmin -r` command.

Sample output from this command follows:

```
Displaying all parameters
system parameters
    times of load retry                                    = 3
    time of waiting for setting cartridge to entry(sec.) = 30
    polling interval of DEE operation(min.)                = 30
    auto cleaning                                          = enable
    network service name                                   = lmf
    journal of volume management database                  = disable

  library name = KOALA0
    library model                                  = F6458
    library ID                                     = 0005
    special file of the accessor                   = /dev/ftla/0
    frame setup
FRAME Z       FRAME       DRIVE                        HOST NAME /
CODE  ADDRESS TYPE       NAME     LOGICAL DRIVE NAME SPECIAL FILE NAME
02    00      ACCESSOR    -          -                  -
02    01      CAS         -          -                  -
```

```
21    00      WALL CELL   -          -                 -
21    01      DRIVE       drive#01   LIB001DRV001      /dev/rmt/3
                          drive#02   LIB001DRV002      /dev/rmt/1
41    00      -           -          -                 -
41    01      -           -          -                 -
```

Verifying Library Communications

When you determine the library name, you can verify library communications using the following Fujitsu command. You should resolve any errors before attempting to configure Fujitsu F6458/M2498 Magnetic Tape Library (LMF) support in Media Manager.

```
lmdisplay -l KOALA0
```

Sample output from this command follows:

```
volume database                 = normal
journal of volume
  management database           = not use
LMF log file                    = normal
library                         = KOALA0
  machine type                  = F6458
  library logical status        = available
  ACC status                    = active
  barcode reader                = normal
  ARC                           = active
  reserve cell #0               = cartridge not exist
  reserve cell #1               = cartridge not exist
  reserve cell #2               = cartridge not exist
  reserve cell #3               = cartridge not exist
  reserve cell #4               = cartridge not exist
  reserve cell #5               = cartridge not exist
  reserve cell #6               = cartridge not exist
  reserve cell #7               = cartridge not exist
  ACC SCSI path
    special file name(main)     = /dev/ftla/0
    logical status(main)        = available
  CAS
    logical status
      entry                     = available
      exit                      = available
    entry
      status                    = empty
      entry No.1                = normal
      entry No.2                = normal
      entry No.3                = normal
      entry No.4                = normal
```


```
      entry No.5                = normal
      entry No.6                = normal
      entry No.7                = normal
      entry No.8                = normal
      entry No.9                = normal
      entry No.10               = normal
    exit
      status                    = empty
      exit No.1                 = normal
      exit No.2                 = normal
      exit No.3                 = normal
      exit No.4                 = normal
      exit No.5                 = normal
      exit No.6                 = normal
      exit No.7                 = normal
      exit No.8                 = normal
      exit No.9                 = normal
      exit No.10                = normal
  FES status                    = cartridge not exist
  frame code                    = 02
  frame code                    = 21
    cleaning cartridge No.10    = use count:7
    cleaning cartridge No.11    = use count:7
    cleaning cartridge No.12    = use count:7
    cleaning cartridge No.13    = use count:6
    cleaning cartridge No.14    = not exist
    cleaning cartridge No.15    = not exist
    cleaning cartridge No.16    = not exist
    cleaning cartridge No.17    = not exist
    drive                       = drive#01
      logical drive name        = LIB001DRV001
      logical status            = available
      status                    = empty
    drive                       = drive#02
      logical drive name        = LIB001DRV002
      logical status            = available
      status                    = empty
  frame code                    = 41
```

Configuring Robotic Control

Configure the robotic path as explained in the chapter, “Configuring Storage Devices” on page 11. When the configuration is complete you can view the robotic device information.

The following example uses `tpconfig` to view the robotic device information.

```
/usr/openv/volmgr/bin/tpconfig -d
```

Sample output from this command follows. This example does not have any drives configured yet.

```
Currently defined robotics are:
  LMF(47)    library name = KOALA0, volume database host = dill
```

Configuring Drives for LMF Robots

The LMF robot has half-inch cartridge drives and you use the same methods to create device files for these drives as for other drives. Refer to the system documentation for your platform and operating system for details on physically adding drives to your host. The Media Manager device configuration guide also has information on configuring device files.

See the chapter “Configuring Storage Devices” on page 11 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 robot drive number to each drive. If the robot drive number is incorrect, tape mounts or backups may fail.

Use the Media Manager LMF test utility (`lmftest`) to determine the mapping between the Media Manager drive designations and the LMF drive designations.

The following example uses `lmftest` and shows which drives in the robot are under Media Management control:

```
/usr/openv/volmgr/bin/lmftest -r KOALA0
```

The following is the output from this utility (the user entered the `drstat` command on the fifth line). You would use drive number 1 and 2 when adding these drives in Media Manager.

```
Opening robotic library: KOALA0
Drive=1 Name=LIB001DRV001
Drive=2 Name=LIB001DRV002
Enter lmf commands (? returns help information)
drstat
WARNING: Only changes made to the drive status during
         this test session are shown below.
Drive 1 information:
   Logical drive name:     LIB001DRV001
   Library name:           KOALA0
   Special file name:      /dev/rmt/3
   Drive logical status:   00000000
```


```
   Drive type:             0000000e
   Name of loaded volume:
Drive 2 information:
   Logical drive name:     LIB001DRV002
   Library name:           KOALA0
   Special file name:      /dev/rmt/1
   Drive logical status:   00000000
   Drive type:             0000000e
   Name of loaded volume:
QUERY DEVICE DATA complete
```

The following example uses `tpconfig -d` to display the configuration. Sample output from this command shows these two drives configured in Media Manager.

```
Index   DriveName              DrivePath      Type    Shared     Status
*****   *********              **********     ****    ******     ******
  0     DRIVE1                  /dev/rmt/3cbn  hcart     No         UP
         LMF(47) Definition      DRIVE=1
  1     DRIVE2                  /dev/rmt/1cbn  hcart     No         UP
         LMF(47) Definition      DRIVE=2

Currently defined robotics are:
  LMF(47)    library name = KOALA0, volume database host = dill
```

Cleaning LMF Drives

The Fujitsu Library Management Facility interface does not allow applications (such as Media Manager) to request or configure drive cleaning. For this reason, you cannot assign cleaning tapes to an LMF robot in a Media Manager volume configuration.

You must configure drive cleaning using a Fujitsu administrative interface. Media Manager is designed to work with the Fujitsu LMF auto cleaning feature, whether auto cleaning is enabled or disabled.

Adding LMF Volumes

For LMF robots, the preferred method for adding media is as follows:

1. Add barcode labels and then insert the media into the robot using the media access port.

2. Define the media to Media Manager using the LMF 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 135.
- Add new volumes, as explained under “Adding New Volumes” on page 95.

3. Use **Show Contents** and **Compare Contents with Volume Configuration** from the Media and Device Management Robot Inventory dialog to verify your configuration.

Removing Tapes from the Robot

1. Physically remove the media from the library using a Fujitsu LMF administrative interface or the `eject` command from the Media Manager test utility, `lmftest`.

2. 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 under “Updating the Volume Configuration for a Robot” on page 135.
   - Move volumes, as explained under “Moving Volumes” on page 106.

   Otherwise, Media Manager will not be aware that the media is missing and may issue mount requests for it. The result will be an error such as Misplaced Tape.

Robot Inventory Operations

Media Manager considers a LMF robot as one that supports barcodes. The following sequence explains what occurs when you select an operation that requires a robotic inventory for a LMF robot.

1. Media Manager requests volume information from the library through the LMF Server or LMF Client.

2. The LMF Server or Client responds by providing a list of volume IDs and volume attributes from its database. Media Manager then filters out volumes that do not belong to the specified robot or have a volume ID longer than 6 characters. Media manager displays a list of volumes along with a translated version of the volume's media type. The media type is based upon the attributes that were returned.

The table below is an example of LMF information displayed by Media Manager:

LMF Volume ID	LMF Media Type
AJS147	18/36TRK
ZZ9999	128TRK

3. Media Manager translates the volume IDs directly into media IDs and barcodes. In the previous table, volume AJS147 becomes media ID AJS147 and the barcode for that media ID is also AJS147.

4. Media Manager maps the LMF media types into the Media Manager media types as explained in step 5 or step 6.

5. If this is an operation that does not require updating the volume configuration, Media Manager uses the media type defaults for LMF robots when it creates its report (See the table "Default and Allowable LMF Media Types" on page 535).

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 any mappings that you have set for this update in the **Media Type Mappings** tab. See "Changing the Update Options" on page 141.

   b. If you have not set any media type mappings, Media Manager tries to use any `LMF_`*mediatype* settings in the `vm.conf` file (see "vm.conf Map Entries for LMF Robots" on page 535).

   c. If the `vm.conf` file does not exist or does not map the media type, Media Manager uses the default for LMF robots (see the table "Default and Allowable LMF Media Types" on page 535).

   The Update Volume Configuration report for an LMF robot is similar to the one shown for an API robot in "To Update the Volume Configuration for a Robot" on page 137.

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.

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 (LMF in upper case).

robot_number is the robot number.

filter_type is the keyword (BY_PREFIX).

value1 is the prefix of the volume IDs you want to use.

value2 is a second volume ID prefix (up to 10 filter values are allowed).

For example:

```
INVENTORY_FILTER = LMF 47 BY_PREFIX AJS
```

vm.conf Map Entries for LMF Robots

See "Media Manager Configuration File (vm.conf)" on page 337 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 LMF 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 LMF Media Types

LMF Media Type	Default Media Manager Media Type	Allowable Media Types Through Mappings
36TRK	HCART (1/2-inch cartridge)	HCART, HCART2, HCART3
128TRK	HCART (1/2-inch cartridge)	HCART, HCART2, HCART3
UNKNOWN (for unknown LMF 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 a vm.conf file and adding LMF_*mediatype* entries.

For example, the following vm.conf entry maps the LMF media type 128TRK to the HCART2 media type. Without this entry, Media Manager assigns HCART (the default) to LMF 128TRK media types.

```
LMF_128TRK = HCART2
```

The third column shows the media types that Media Manager allows in LMF_*mediatype* entries. For example, you *cannot* specify the following mapping, since HCART4 is not an allowable LMF media type:

```
LMF_36TRK = HCART4
```

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

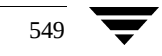
A character-based interface for use on terminals that do not have graphical capabilities.

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

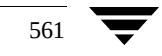
In the context of the NetBackup Vault, a vault is logical entity associated with a particular robot that acts as a designated holding place for backups that will eventually be sent to a physical offsite vault. The term ‘vault’ is used to refer both to the process, and to the physical storage location 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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