

# BrightStor<sup>®</sup> ARCserve<sup>®</sup> Backup for Windows

## Tape and Optical Library Option Guide

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Computer Associates®

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# Chapter 1: Introducing the Option

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BrightStor® ARCserve® Backup is a comprehensive storage solution for applications, databases, distributed servers, and file systems. It provides backup and restore capabilities for databases, business-critical applications, and network clients.

Among the options BrightStor ARCserve Backup offers are the BrightStor® ARCserve® Backup Tape Library Option and the BrightStor® ARCserve® Backup Optical Library Option. The options support and provide advanced device and media management for multiple-drive and optical libraries. Utilizing these options, BrightStor ARCserve Backup can send simultaneous data streams to each drive to optimize throughput on any multiple-drive tape library.

The Tape and Optical Library Option Guide describes the following options:

- BrightStor ARCserve Backup Tape Library Option—Allows you to back up large amounts of data to tape libraries.
- BrightStor ARCserve Backup Optical Library Option—Allows you to back up large amounts of data to optical libraries.

Both options provide the same basic functionality. Differences between the BrightStor ARCserve Backup Tape Library Option and the BrightStor ARCserve Backup Optical Library Option are noted where appropriate.

## Product Features

The BrightStor ARCserve Backup Tape and Optical Library Option includes the following features:

- 64-bit Windows operating system support—The BrightStor ARCserve Backup Tape Library Option supports backup and restore operations on 64-bit Windows operating systems.

**Important!** *The BrightStor ARCserve Backup Optical Library Option uses drivers that are not supported under 64-bit Windows platforms. As such, you cannot install the Optical Library Option on a 64-bit Windows platform.*

- Multiple drive support—These options provide support for libraries with multiple drives, as well as those with single drives.
- Multiple library support—These options support multiple libraries. The number of libraries that can be installed at one computer is limited only by the computer's available resources and system performance.

- Concurrent drive initialization—The Device Manager allows you to track the initialization process. For multiple drive libraries, the Tape Engine uses all of the drives for the initialization process.
- Multiple, concurrent, device management functions—Includes storage drive cleaning from any specified slot. These options use available drives as needed on a library and perform device management functions concurrently (when multiple drives are available).

The following library device management functions can be performed concurrently:

- Quick Inventory
  - Format Slot Range
  - Erase Slot Range (both Quick Erase and Long Erase)
  - Importing and Exporting
  - Clean Library Drive
- Bar code ID (when supported by the tape library)—BrightStor ARCserve Backup quickly locates individual media by reading the bar code attached to the media, thus not having to load the media into a drive.
  - Quick initialization—After installation is complete and the Tape Engine is started for the first time, the entire library is inventoried and recorded. For all subsequent starts, you can skip the normal inventory process by enabling the Quick Initialization feature either during installation or through setup used in non-bar code libraries.
  - Scheduled automated drive cleaning procedures—You can configure devices and scheduling drive cleaning.
  - Grouping by slots—Library groups employ the same concept as device groups, except that library groups are based on slots. You can select any of the slots inside a library to form a library group. If the library runs out of media to span to, you can insert new media and BrightStor ARCserve Backup can identify the media as part of the pre-defined group.
  - Single-step library group spanning—These options support single-step group spanning. Using this feature, you can insert new blank media into a library and continue the backup or restore operation without interruption because BrightStor ARCserve Backup inventories the new media for you.
  - Fault tolerant operations—These options provide continuous operation with a defective drive. If a drive in a multiple drive library becomes defective, you can record its status as offline. If the Tape Engine detects a problem reading and writing to and from a tape, the Tape Engine sets the drive status to offline. This enables the Tape Engine to continue to operate using the remaining nondefective drives in the library.

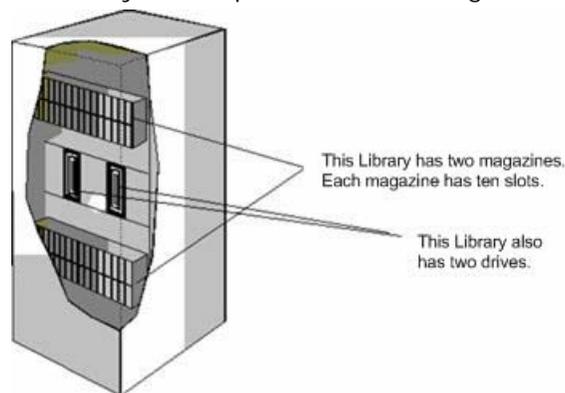
- Multiple, concurrent, group access—You can run as many jobs at the same time as you have media and drives available.
- Large library support—Allows a changer with more than 1000 slots to be displayed in a list on the right side of the screen instead of in the tree of devices. Slots can be displayed in five ways: large icons, small icons, details, reports, and list.

## Libraries

A library is a device containing one or more media drives with an automated media delivery system, such as a robotic picker. Using a robotic picker, a library can back up large amounts of data without manual intervention.

Libraries are made up of the following components:

- Bar code readers and scanners (if supported by the library)—BrightStor ARCserve Backup quickly locates individual media by reading the bar code affixed to the media.
- One or more magazines (or bins)—Magazines store one or more groups of storage media (such as tape media).
- A robotic picker—This device moves the storage media units between the magazine slots and the drives.
- One or more drives—Hardware located in a device that transfers data between your computer and the storage media for backups and restores.



A library can contain one or more drives, and from one to several hundred magazines. Smaller libraries are sometimes referred to as autoloaders or changers.

**Note:** In this guide, the term library refers to libraries of any size.

A library is similar to using a single storage drive. For example, a primary difference is that a library automates the media insertion and removal processes to and from the drive.

Some libraries use a single Small Computer System interface (SCSI) ID. When a library uses only one SCSI ID, the library and the library drive are each assigned a Logical Unit Number (LUN) to differentiate between the drive and library.

**Note:** BrightStor ARCserve Backup does not support stackers. Libraries allow random access of media slots while stackers do not.

Some of the advantages of using a library include:

- Automation—No manual intervention is required during backup and restore operations.
- Capacity—Libraries can contain multiple storage drives and a large number of media.
- Fault Tolerance—If one of the tapes loaded in your tape library goes bad, the tape library marks the tape and BrightStor ARCserve Backup does not use it for subsequent backups.
- Tape Drive Cleaning—You can configure the tape library to hold one or more cleaning tapes in its slots to clean the tape drives when necessary.

# Chapter 2: Installing the Option

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This chapter details how to install and configure the BrightStor ARCserve Backup Tape and Optical Library Option.

## Installation Prerequisites

Before installing the BrightStor ARCserve Backup Tape and Optical Library Option, verify that:

- Your system meets the software requirements needed to install the option. For a list of these requirements, see the readme file.
- You have administrative privileges or the proper authority to install software on the computers where you will be installing the option.
- You know the name and the password of the machine you are installing the option on.
- BrightStor ARCserve Backup is installed and working properly.

**Note:** BrightStor ARCserve Backup supports libraries configured with one drive. If your library has more than one drive, you must license the BrightStor ARCserve Backup Tape and Optical Library Option to enable multi-drive capabilities.

## Install the Option

For detailed information about how to install the option, see the *Getting Started*.

After you complete the installation process, be sure to restart your system when prompted to do so.

## Uninstall the Option

To uninstall the BrightStor ARCserve Backup Tape and Optical Library Option, use the following steps:

1. Open the Windows Control Panel.
2. Double-click the Add or Remove Programs icon.
3. Select CA BrightStor ARCserve Backup Tape and Optical Library Option.
4. Click the Remove button. The Add or Remove Programs dialog opens asking whether you want to remove CA BrightStor ARCserve Backup Tape and Optical Library Option.
5. Click Yes.

## Configure the Option Using Device Configuration

You can configure (or modify the configuration of) a library by selecting Device Configuration from the Configuration menu or the BrightStor ARCserve Backup Program Group. To configure a library, follow these steps.

1. Start Device Configuration, select the Windows Server (local machine only) option and click Next.

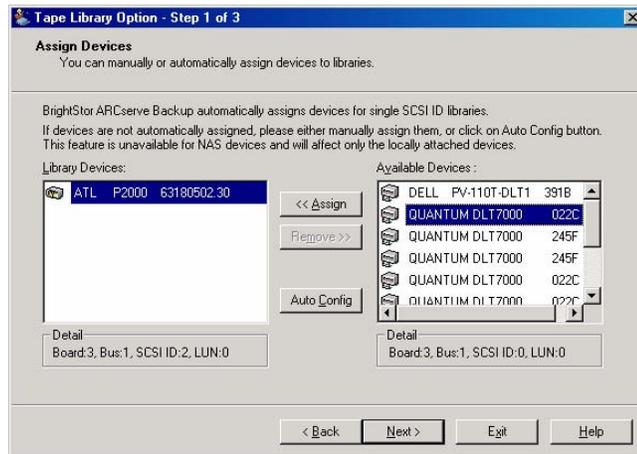
The Device Configuration Options dialog opens.

2. Select Tape/Optical Library and click Next.

The BrightStor ARCserve Backup Library Setup dialog opens. There can be a delay while BrightStor ARCserve Backup configures the library. Delays can occur while the Tape Engine scans the SCSI devices in your environment.

If the Tape Engine is running, you are prompted to stop the engine. The engine must be stopped to configure a library device.

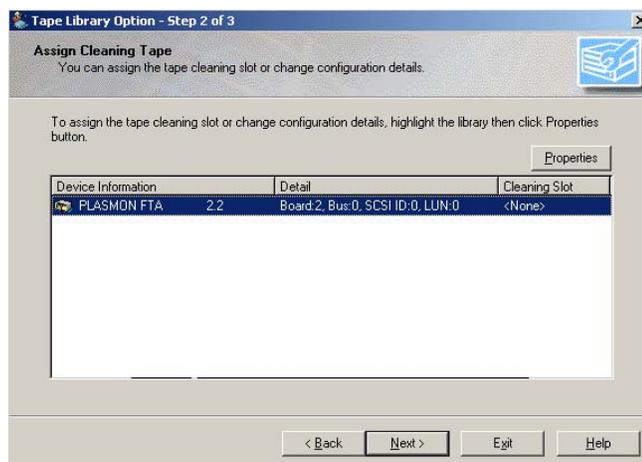
- If the library supports device serial numbers, the drives should already be configured and appear under the library in the Library Devices list. If the drives were not assigned to the library automatically, they can be assigned manually. To manually assign a drive, highlight the drive and the library and click Assign.



**Note:** Assigning a drive to a library makes the library options aware of the drive's existence within the library. If you are assigning drives manually, the drives inside multidrive libraries must be assigned in the correct order. Typically, manufacturers configure libraries so that the first library drive has the lowest SCSI ID number, and the last library drive has the highest SCSI ID number. Be aware that this is not always the case. See the documentation supplied with your library for information about how your library's drives are configured.

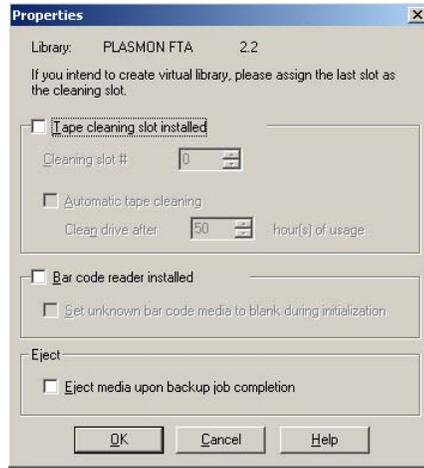
- Click Next.

The Assign Cleaning Tape dialog displays as shown in the following example.



5. Highlight the library you want to configure and click Properties.

The Properties dialog displays as shown in the following example:



The Properties dialog allows you to specify which slot holds the cleaning media (if present) and whether a bar code reader is installed.

- Tape cleaning slot installed—Enable this if your library has a tape cleaning slot installed and select a cleaning slot number.

**Note:** If you want to import a cleaning tape, you must import it to the cleaning slot specified here. If you import it to a different slot, unrecognized media errors display.

- Automatic tape cleaning—Enable this property if you want BrightStor ARCserve Backup to automatically clean tapes and select the threshold for when tapes should be cleaned.
- Bar code reader installed—This option is for tape libraries only. Enable this if you have a bar code reader installed and, if you want to set unknown bar code media to blank, enable the Set unknown bar code media to blank during initialization.

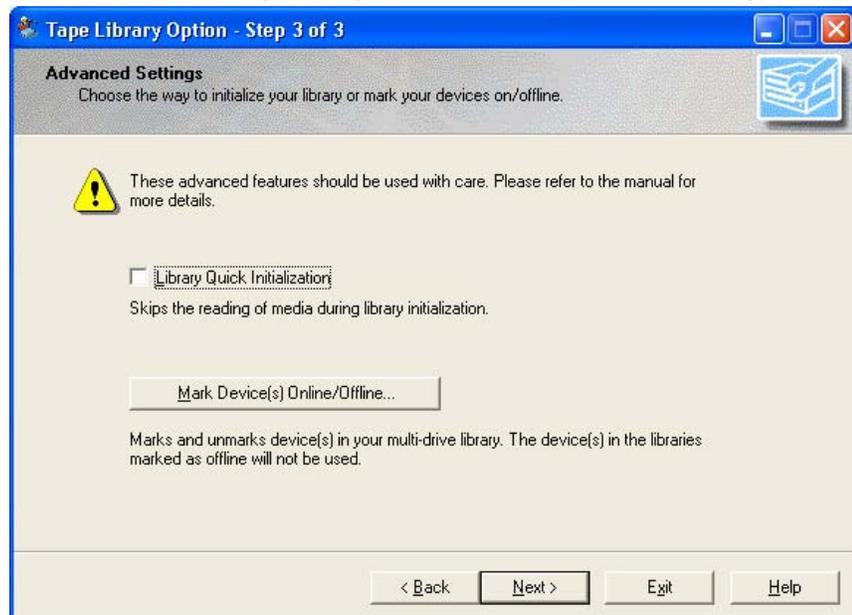
The option Set Unknown Bar code to Blank During Initialization helps speed up library initialization. Any media with bar code numbers not found in the database are designated “Marked Blank Media” and are not automatically inventoried. This is useful in speeding up the initial inventory on large libraries, but if the media are not truly blank, you must manually inventory these media so they can be used in backup jobs.

- Eject media upon backup job completion—Enable this property if you want to move tapes back to their slots after a backup job.

**Note:** You can override this option on a job-by-job basis by enabling the global option for jobs called Do not Eject Media. In addition, if you do not enable the ejection of media after a backup job completes and later decide that you want to eject media after a particular job, you can enable the global option for jobs called Eject Media. For more information on global options see Global Options in the chapter “Backing Up Data” in the *Administrator Guide*.

6. Click OK, and click Next.

The Advanced Settings dialog opens as shown in the following example:



Complete this dialog by selecting one or more of the following advanced settings:

- Library Quick Initialization—Select this setting to skip the library inventory process which is automatically activated when the Tape Engine is started. This setting assumes that media was not moved, added, removed, or swapped since the last shutdown. If media was moved, added, removed, or swapped, you should either manually inventory the entire library or the slots whose status has changed.

If the library does not support bar codes and Library Quick Initialization is disabled, the Tape Engine inventories the entire library each time BrightStor ARCserve Backup starts.

If the library supports bar codes, the bar code option is enabled, and Library Quick Initialization is disabled, the Tape Engine inventories the entire library the first time it starts. For all subsequent starts, the Tape Engine synchronizes the bar code information with the library and retrieves information about the media from the BrightStor ARCserve Backup database.

**Note:** BrightStor ARCserve Backup must run an inventory after configuring a library. Library Quick Initialization setting takes effect after this first inventory is run.

- Mark Device(s) Online/Offline—This allows you to mark defective drives in a multidrive library as offline. BrightStor ARCserve Backup continues to operate using the remaining nondefective drives. When the drive is repaired or replaced, it can be brought online.

**Note:** When the Tape Engine is running, you can use the Online/Offline Device Manager function to set the status of the drive to online or offline.

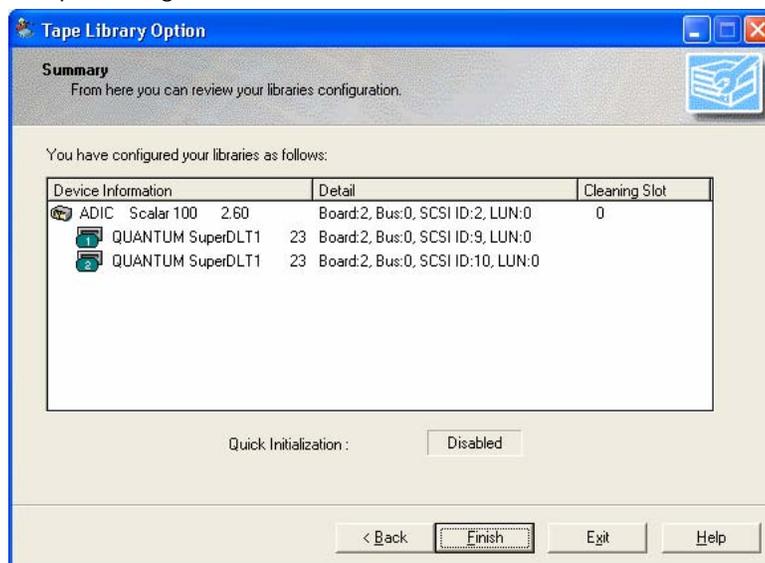
Selecting this setting displays the following dialog:



- To change the status a device to online or offline, select the device and click Online or Offline. Click Close to save your settings.

7. Click Next.

The Summary dialog displays the choices you made during setup. A sample dialog is shown next:



8. Click Finish.
9. Click Exit when you see the message Device Configuration Completed.
10. If you are sure that you want to exit Device Configuration, click Yes.
11. Restart the Tape Engine.

## Virtual Library Configuration

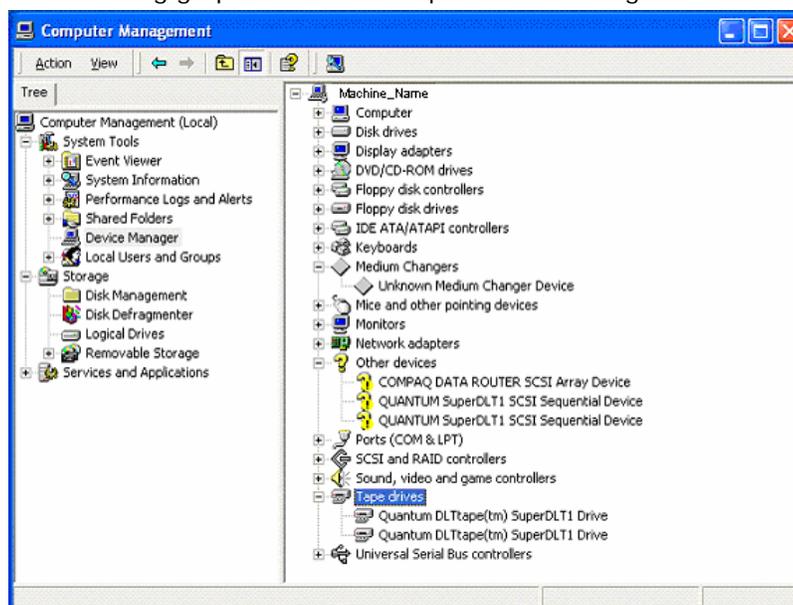
The following sections describe how to configure a virtual library.

## Virtual Library Preconfiguration Steps

Before you can configure your system to use a virtual library, perform the following task:

- Verify that Windows detects your hardware by accessing Computer Management Console and selecting Device Manager.

The following graphic shows a sample Device Manager view:

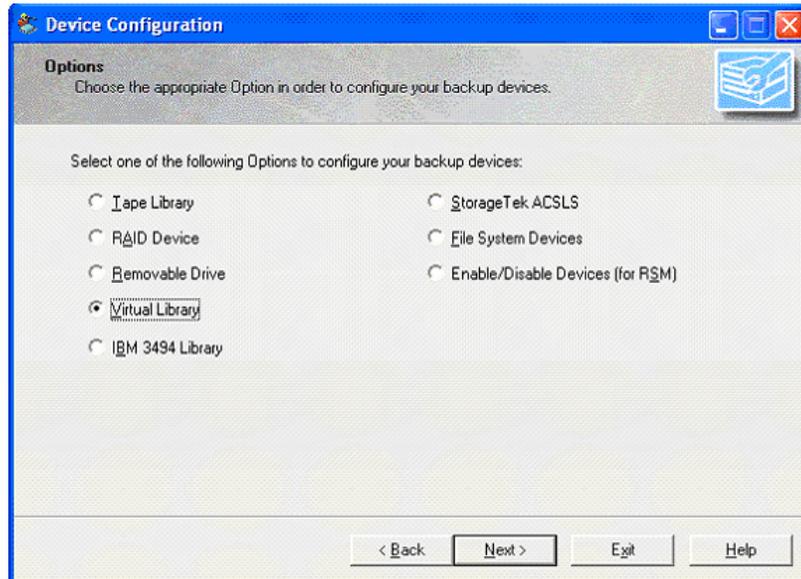


The library should be listed under Medium Changers and the Drives are usually listed under Tape drives. If there are no available Windows drivers for the Tape drives, they will be listed under Other devices. BrightStor ARCserve Backup does not require device specific Windows drivers.

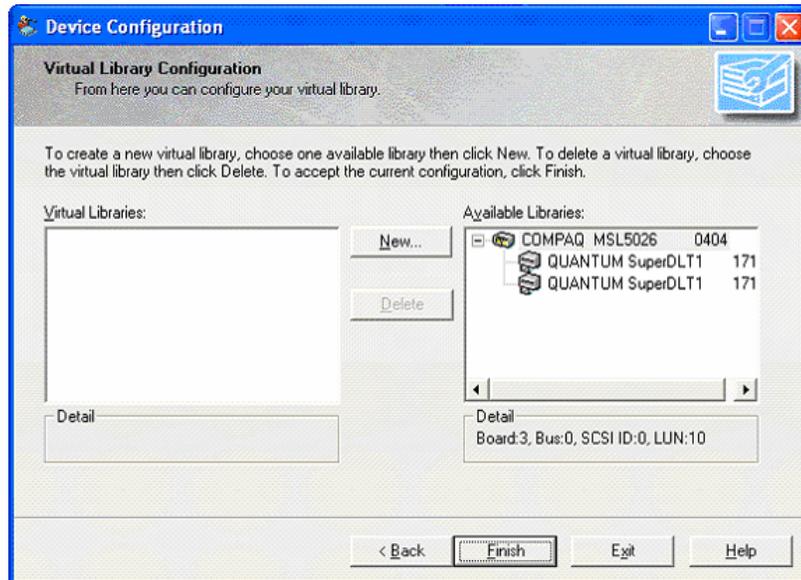
## Configure Virtual Libraries

Use the following steps to configure a virtual library.

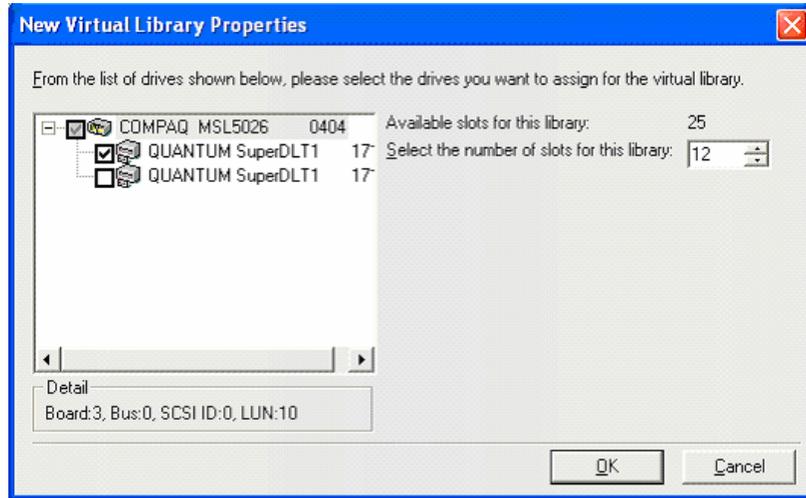
1. Start Device Configuration and select Virtual Library to divide your library into virtual library devices.



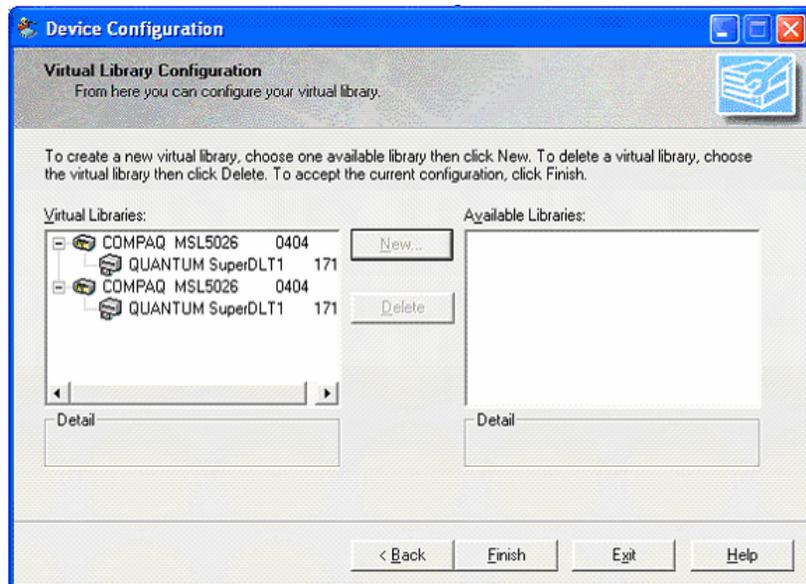
2. Click Next.
3. Select the library from the Available Libraries list that you want to divide into virtual libraries and click New.



4. Select the drive or drives and the slot range that you would like to assign to the drive and click OK.



5. Repeat Steps 3 and 4 to configure as many virtual libraries and drives as necessary for your library.



6. Click Finish to save your configuration.

**Note:** If you need to modify your configuration, select one of the Virtual Libraries and click Delete to reconfigure the library. When you delete a virtual library, Device Configuration prompts you to remove all the virtual libraries, and reconfigure.

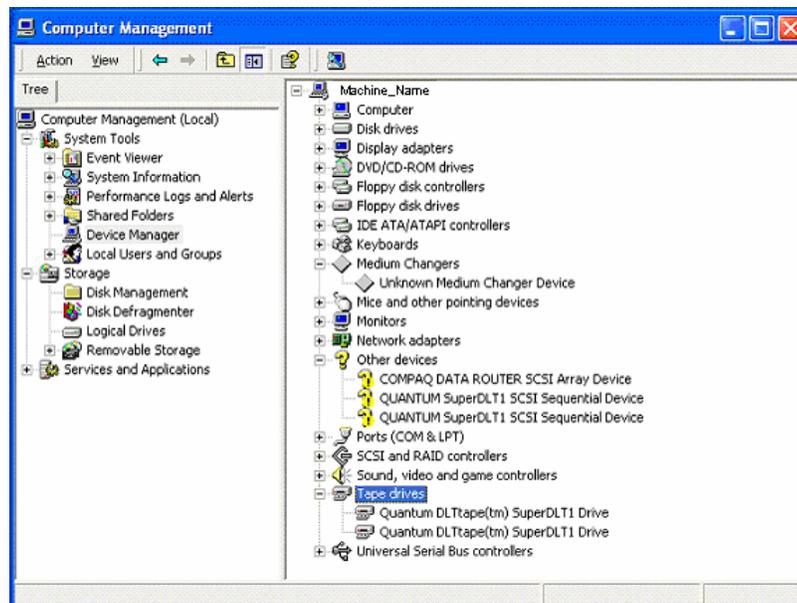
## Mixed Media Libraries

The following sections describe how to configure a mixed media library.

### Mixed Media Preconfiguration Steps

Before you can configure your system to use a mixed media library, perform the following task:

- Verify that Windows detects your hardware by accessing Computer Management Console and selecting Device Manager. The following graphic shows a sample Device Manager view:



The library should be listed under Medium Changers and the Drives are usually listed under Tape drives. If there are no available Windows drivers for the Tape drives, they will be listed under Other devices. BrightStor ARCserve Backup does not require device specific Windows drivers.

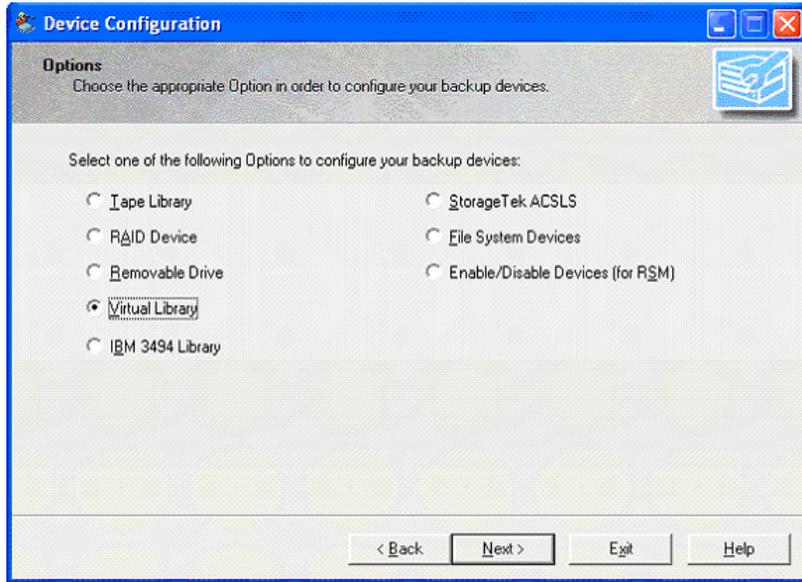
Using the Virtual Library Configuration wizard you can configure a library that contains multiple drives, where not all of the drives use the same media types. An example of this would be a library that has two DLT drives in it and also has two Ultrium drives.

## Configure Mixed Media Libraries

Creating a virtual library allows you to configure a mixed media library into different virtual libraries to handle the different media types. The first virtual library would be configured to use just the Ultrium drives and the slots that would contain Ultrium Tapes and the other virtual library would be configured to use the DLT drives and their corresponding slots.

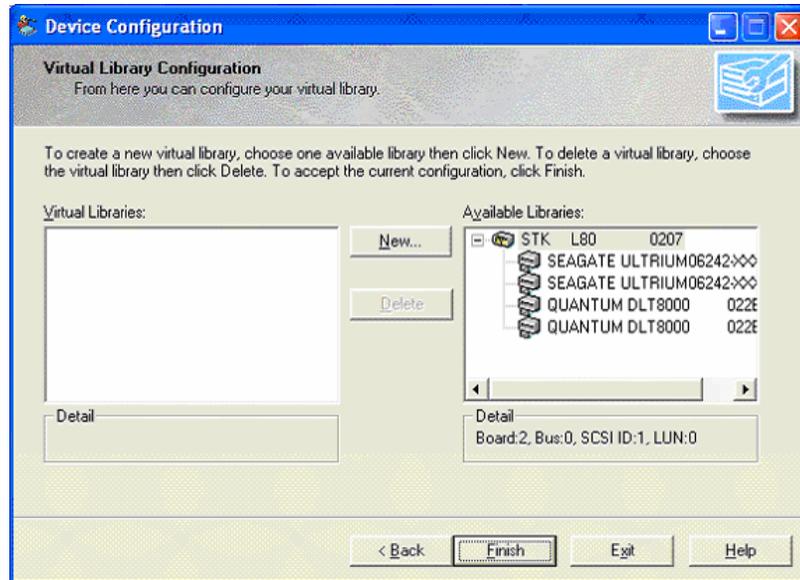
To configure a mixed media, virtual library use the following steps.

1. Start Device Configuration and select Virtual Library to divide your library into virtual library devices.

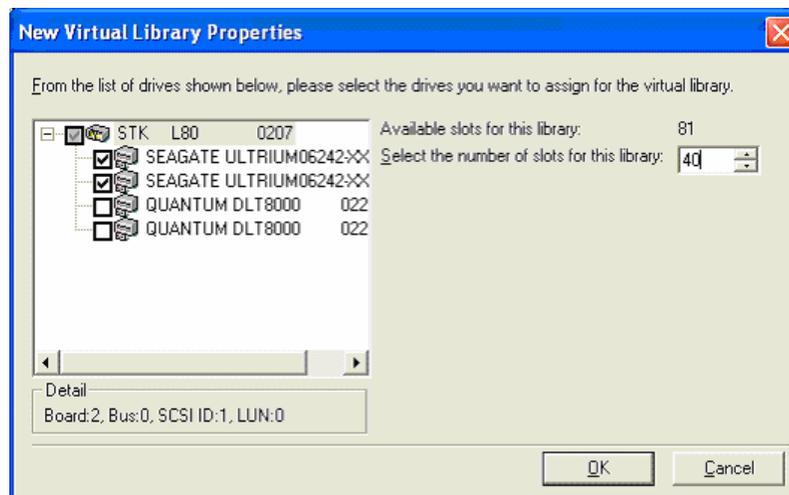


2. Click Next.

- In the first Virtual Library Configuration dialog, highlight and Select the Mixed Media Library. Click New to access the New Virtual Library Properties dialog.

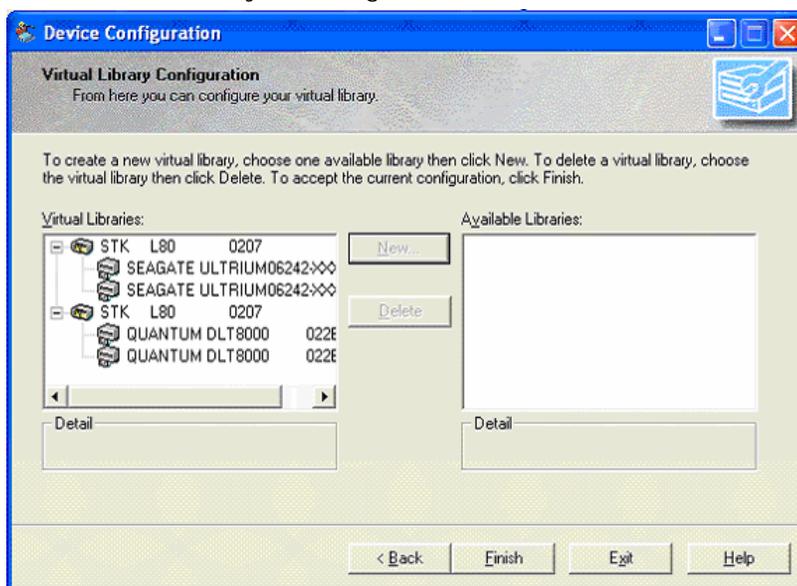


- From the New Virtual Library Properties dialog, select the drives that use the same media type and also select the corresponding slot range that will hold that media type. Click OK to continue.



**Note:** The slot range specified is in sequential order, beginning with the first slot in the library. Make sure that you select the drives having the same media type as the media in the first slot range.

5. Repeat Steps 3 and 4 for each set of drives that use the same media type.
6. Click Finish to save your configuration.



## BrightStor® ARCserve® Backup Tape RAID Option Integration

One part of a physical library can be configured to handle redundant array of independent disks (RAID) Level 1 while still allowing you to use the rest of the library's resources. This is especially useful when using large libraries with more than two drives, where media mirroring could not be achieved.

**Note:** This feature is not supported under optical libraries.

To properly configure BrightStor ARCserve Backup for use with the BrightStor ARCserve Backup Tape RAID Option, you must configure the required options in the proper sequence.

The following steps list the correct sequence:

1. Configure your physical libraries using the option, as described in the “Configure the Option Using Device Configuration” section of this chapter.
2. Configure your physical libraries into virtual libraries using the Virtual Library Configuration utility as described in the “Virtual Library Configuration” section in this chapter.
3. Install and configure the BrightStor ARCserve Backup Tape RAID Option. For more information about installing the BrightStor ARCserve Backup Tape RAID Option, see the *Getting Started*.

For more information about configuring RAID devices, see the following sections.

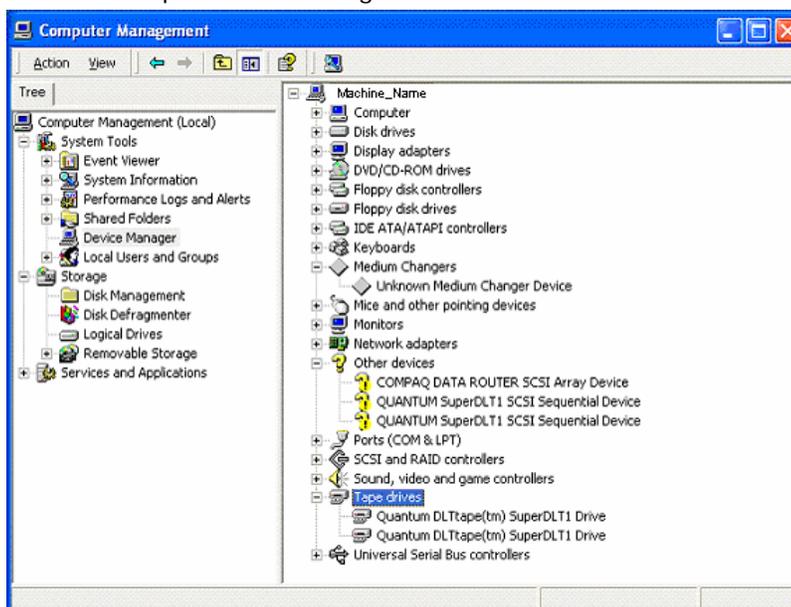
## RAID Device Configuration

The following sections describe how to configure a RAID device.

### RAID Device Preconfiguration Steps

To prepare your computer for RAID configuration, perform the following task:

- Verify that Windows detects your hardware by accessing Computer Management Console and selecting Device Manager. The following graphic shows a sample Device Manager view:

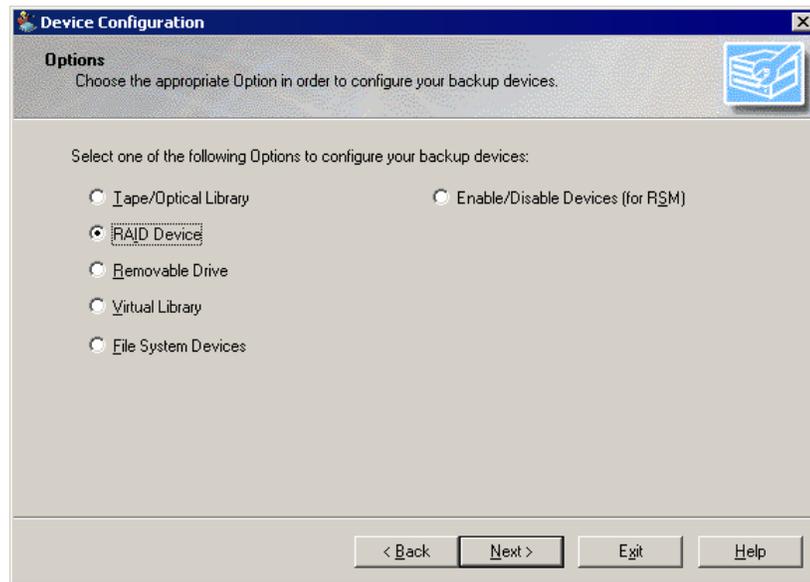


The library should be listed under Medium Changers and the Drives are usually listed under Tape drives. If there are no available Windows drivers for the Tape drives, they will be listed under Other devices. BrightStor ARCserve Backup does not require device-specific Windows drivers.

## Configure RAID Devices

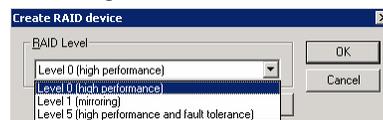
Use the following steps to configure RAID devices.

1. Start Device Configuration and select RAID Device to add your library to a RAID device.



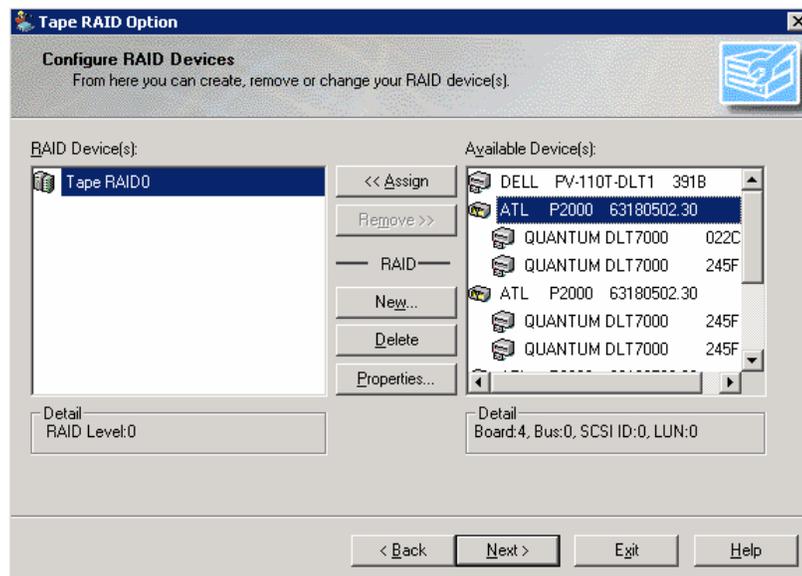
**Note:** Before you can configure a RAID device, you must first configure your library as described under Virtual Library Configuration.

2. Click Next.
3. Create a RAID device by clicking New and choosing from one of the following RAID levels:

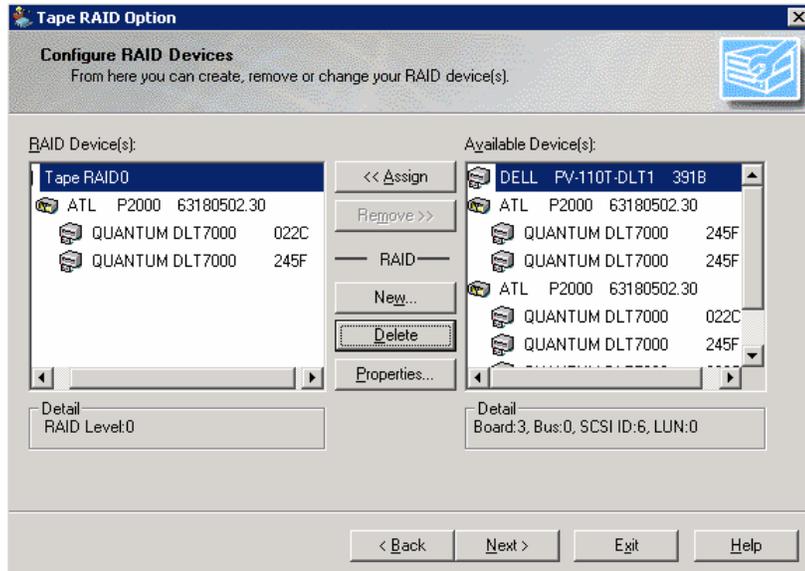


- RAID Level 0 (high performance): Used with 2 or more tape drives, either in a single Library or single drives in 2 or more Libraries. This RAID Level will stripe data across the drives in the RAID device, and was used with slower tape drives to increase performance by eliminating the single drive bottleneck. It is not needed with today's faster tape drives.

- RAID Level 1 (mirroring): Used with exactly two drives and can be in a single library or a single drives in two libraries. This RAID level will mirror data across two tape drives, so you can create two identical copies of your data with one backup job This allows you to keep one copy on site and send another copy off to another location.
  - RAID Level 5 (high performance and fault tolerance): Used with three or more tape drives, either in a single library or single drives in three or more libraries. This RAID Level stripes data across the drives in the RAID device, using one drive for a parity bit that allows the RAID set to be rebuild if one of the media is destroyed or lost. This gives similar performances increases as RAID 0 when used with slower tape drives, but also offers fault tolerance.
4. Select the RAID device that you want to configure from the RAID device list. Select the library that you want to assign to the RAID device from the Available Devices list.

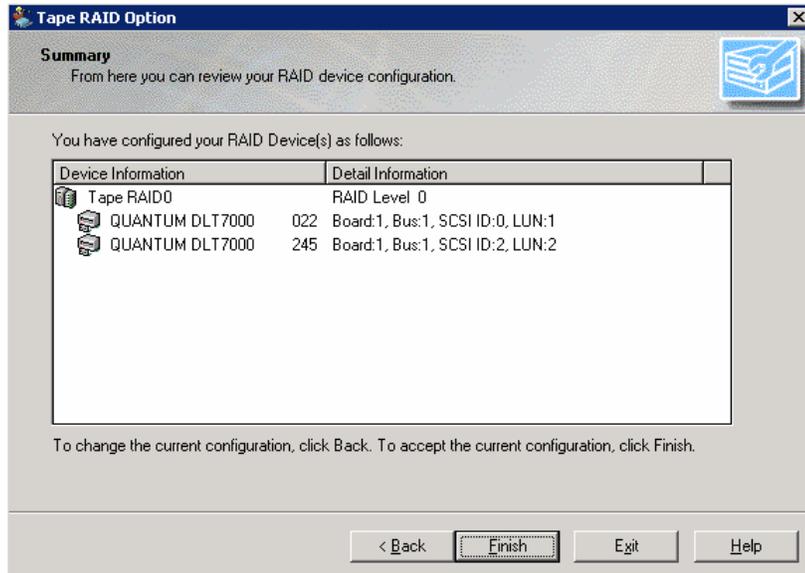


- Click Assign.



- Click Next.

The Summary dialog for the RAID device displays.



- Click Finish to save your configuration.

## Reconfigure Devices After Hardware Modifications

If your hardware configuration changes, you must reconfigure your virtual libraries for BrightStor ARCserve Backup to work properly. If you must disconnect a library that was configured into virtual libraries, you should delete the virtual libraries before disconnecting.

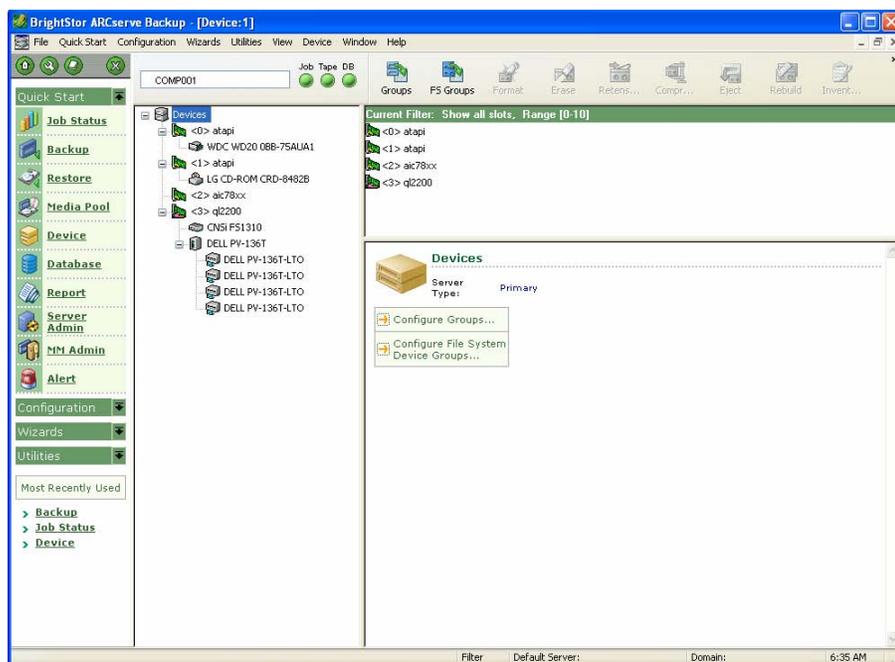


# Chapter 3: Using the Option

This chapter describes how to use the BrightStor ARCserve Backup Tape and Optical Library Option.

## Device Manager Operations

You can use the Device Manager for all storage device operations, including library slot monitoring and maintenance. To access the Device Manager, click Device Manager on the BrightStor ARCserve Backup home page. The Device Manager home page is shown next:



The Device Manager view modes provide information about the media, including the libraries and storage drives, connected to your system.

The following sections describe how to view information about:

- Adapter cards
- Libraries
- Library drives
- Media

## Adapter Card Information

To view information for an adapter card, such as the name of the adapter and its board number, select the adapter card from Devices list on the Device Manager home page for which you want information.

You can see general information about the adapter card, such as the name of the adapter and its board number.

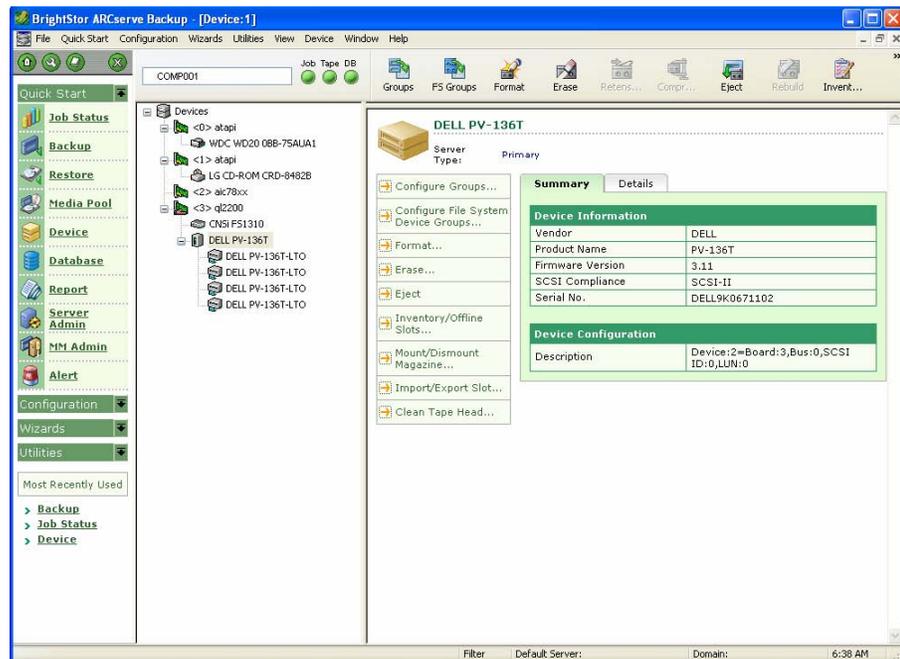
## View Library Information

To view information for a library, highlight the library in the library list that you want information about and select Summary or Detail.

## Summary Information about Libraries

When you select Summary, the Summary section displays general information about the library, such as its vendor, product name, firmware version, and SCSI compliance. The Summary section is the default view.

A sample Summary section is shown next.



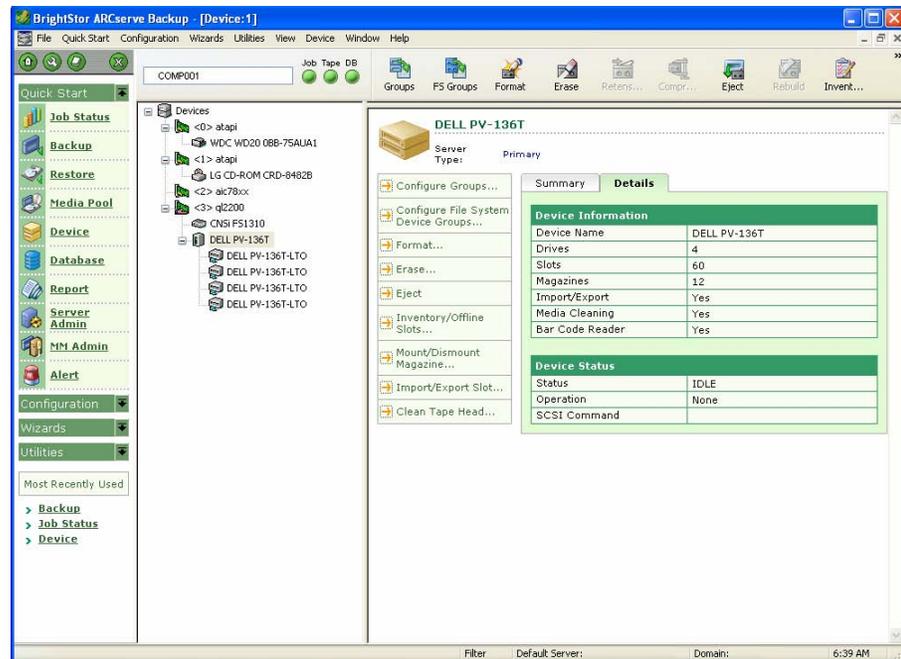
## Detailed Information about Libraries

When you select Detail, the Detail section displays specific information about the library, such as:

- The number of drives, slots, and magazines it contains
- Whether it has a bar code reader, import and export slots, or a cleaning tape

You can also check the current library status. For more information about bar code/serial numbered media, see *How the Option Labels Media with Bar Codes or Serial Numbers* in this chapter.

A sample Detail section is shown next.



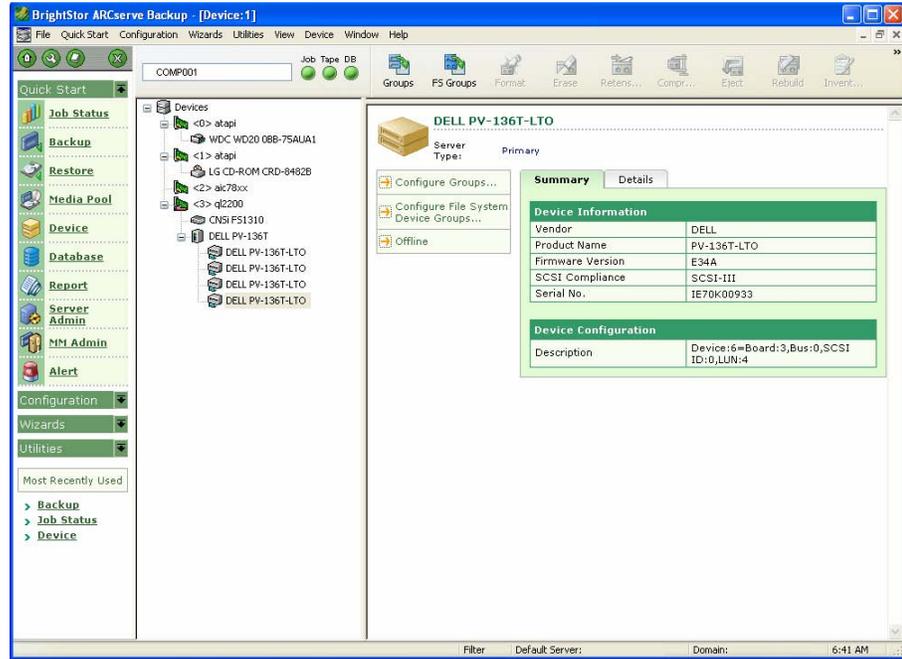
## Library Drive Information

To view information for a library drive, highlight the library drive you want information about and select Summary or Detail.

## Summary Information about Library Drives

When you select Summary, the Summary section displays general information about the library drive, such as its vendor, product name, firmware version, and SCSI compliance. The Summary section is the default view.

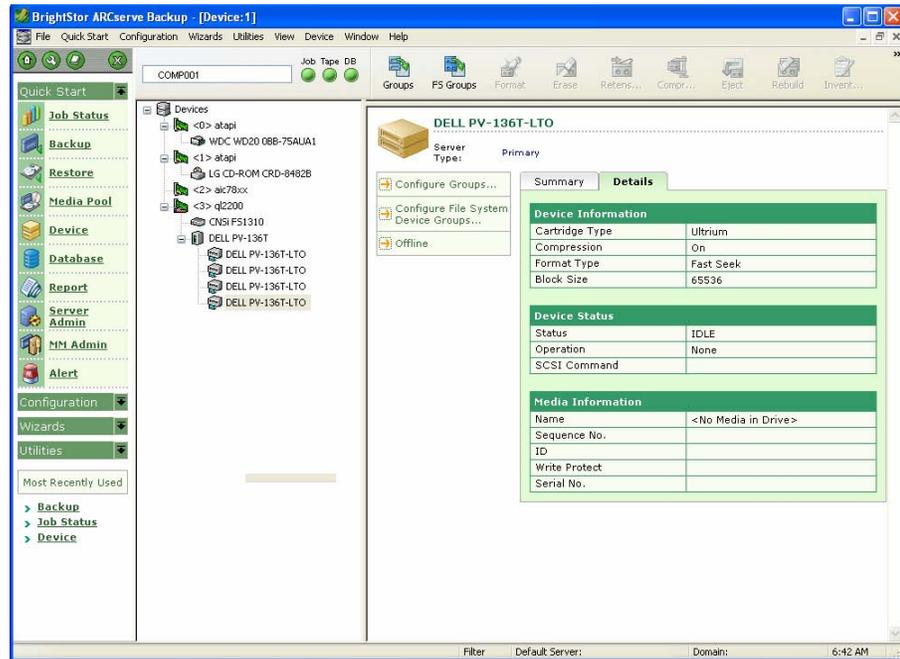
A sample Summary section is shown next.



### Detailed Information about Library Drives

When you select Detail, the Detail section displays specific information about the library drive, such as its cartridge type, compression, format code, block size, and device status.

A sample Detail section is shown next.



The Media Information section indicates which media is currently located in the library drive.

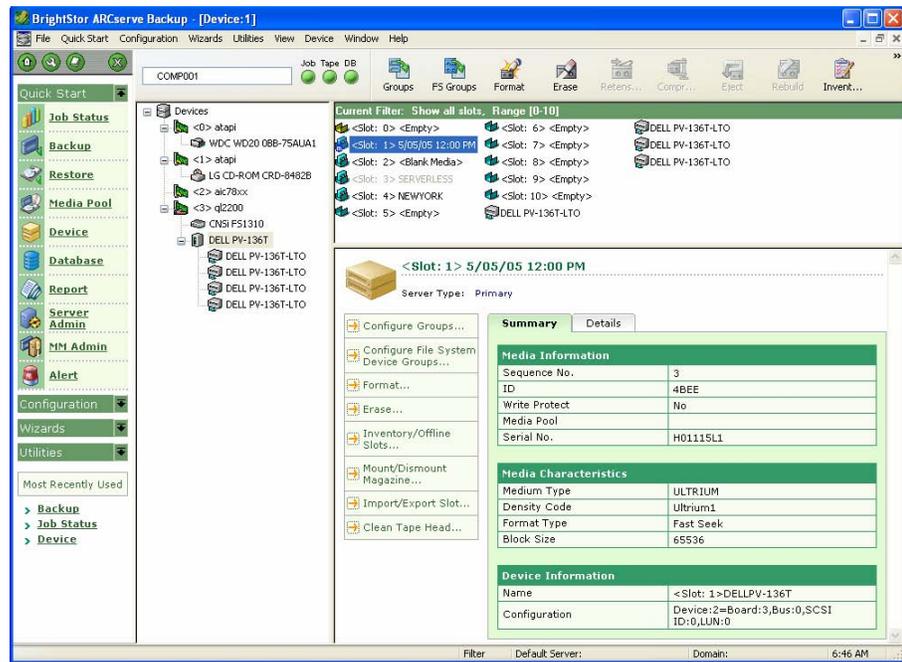
## Media Information

To view information about medium in a slot, highlight the slot that contains the medium that you want information about and select Summary or Detail.

### Summary Information about Media

When you select Summary, the Summary section displays general information about the media in the selected slot, such as the sequence number, ID, and whether it is write-protected. Media characteristics also display.

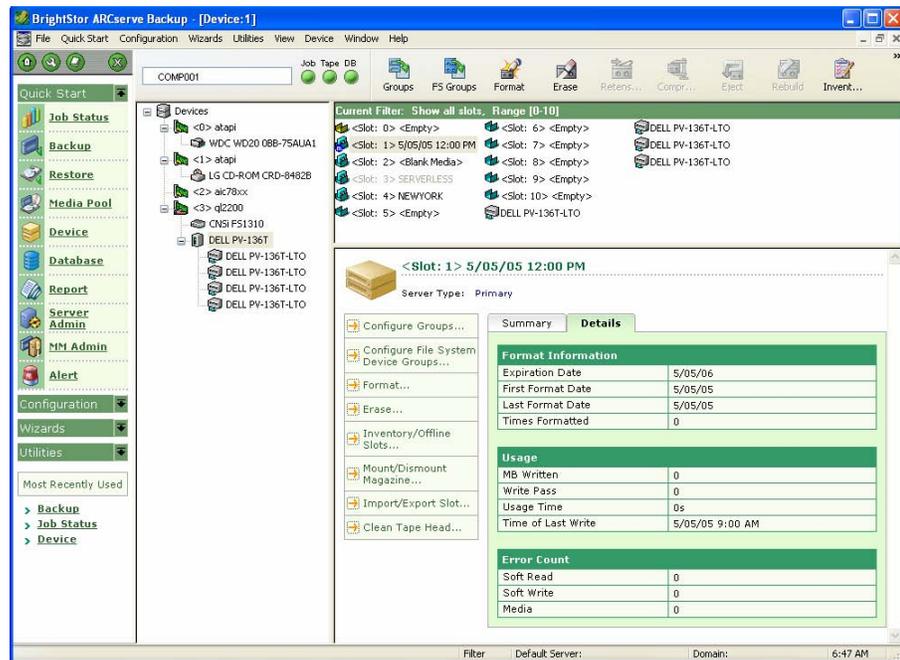
A sample Summary section is shown next.



### Detailed Information about Media

When you select Detail, the Detail section displays specific information about the media in the slot, such as the expiration date, first format date, last format date, and number of times formatted. Media usage and error count information also display.

A sample Detail section is shown next.



The Detail section of the Media Information window also provides information about Soft Read, Soft Write, and Media errors.

- A soft error (Soft Read and Soft Write) indicates that the storage drive detected a problem when it was trying to read from, or write to, the media, but was able to correct the problem by retrying the operation.
- A media error indicates that some sort of data corruption occurred on the media and the data could not be written or read.

Use this information to determine the quality of your media. It is normal for a storage drive to show a certain number of Soft Read or Soft Write errors. However, you should be concerned if the number of errors is very high in relation to the amount of data being read or written.

## Device Management Options for Libraries

Using the Device Manager, you can perform the following management tasks for your libraries.

**Note:** These functions are library specific and are accessible after you install and configure the option.

- Label bar code and serial number of media
- Inventory the slot range

**Note:** Because the BrightStor ARCserve Backup Tape and Optical Library Option is slot-based, when you insert or remove media into or from a magazine slot, you must either inventory the slot or remount the magazine.

- Format the slot range
- Erase the slot range
- Eject media from the library drives
- Mount magazine
- Dismount magazine
- Clean library drive (for tape libraries only)
- Import and export media
- Configure library groups
- Offline and online drives

**Important!** *If you are manually inserting media into a library, always insert media into slots, never into its library drives.*

### How the Option Labels Media with Bar Codes or Serial Numbers

Labeling media allows the library to quickly recognize and differentiate one media from the others. Bar code recognition is a library-specific feature. Each media comes from its manufacturer with a bar code label affixed to the outer edge of the media cartridge. This label has a predefined serial number in letters and numerals, which is used as the media serial number when the media is formatted.

**Note:** If you select a media pool name and the media has an assigned bar coded serial number, that serial number is preserved and the media pool range is ignored.

## Expiration Dates

The expiration date tracks how long media should be in service. The life of media is generally based on passes. A pass is defined as the storage drive head *passing* over a given point on the media. For example, a backup without verification constitutes one pass, whereas a backup with verification constitutes two passes.

Tape manufacturers rate their tapes' useful lives from about 500 to 1500 passes. This does not mean that the tape is unusable after it reaches the maximum number of passes, only that it is more susceptible to errors at this point.

You should choose an expiration date based on how you plan to use the tape. If you plan to use the tape often (for example, a few times a week), you should set the expiration date to a year from the date of formatting or even sooner than that. By contrast, if you plan to use the tape only once or twice a month, you can set the expiration date to two or three years from the current date.

When media reaches its expiration date, you can still use it, but when you make a backup, for example, a note is made in the Activity log that this media has expired.

## Expiration Dates for New Media

If you are formatting new, blank media, the default expiration date is one year from the current date. If you are reformatting media, the expiration date that appears is the date you specified the first time the media was formatted.

## Inventory Slots Option

The Inventory Slots option checks the library slots and reads the media header. It then associates the media header with the slot in which it was found (called the home slot). In this way, the Tape Engine can track changes made to media in the library. For example, media added or removed from a magazine or moved to a different slot.

Each media you load into the storage drives in the libraries must have a unique serial bar code number.

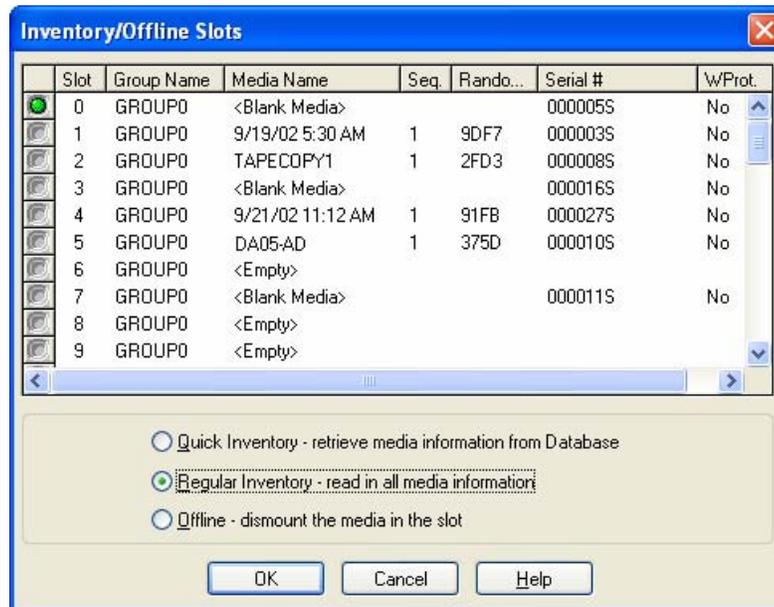
You should only add and remove media when the Tape Engine is running so that you can immediately inventory your slots.

## Inventory Slots

To inventory slots, use the following steps.

1. Right-click a slot and select Inventory/Offline Slots from the pop-up menu.

The Inventory/Offline Slots dialog displays as shown in the following example.



2. Select the slot you want to inventory. Press the Shift key to select multiple contiguous media. Press the Ctrl key to select multiple non-contiguous media. The light icon next to selected media turns green.

**Note:** You can also click and drag the light icon to select multiple contiguous media

3. Choose one inventory method:
  - Quick Inventory—The Tape Engine matches the bar code number to the media serial number, if the library supports bar codes, and the bar code option is enabled. See the *Administrator Guide* for more information about the media database. You can only use this method if you are using the bar code option.
  - Regular Inventory—Reads all the media information from the media.
  - Offline—Allows you to dismount the selected slots.
4. Click OK.

## Format Media Option

Although BrightStor ARCserve Backup automatically formats blank media during a backup job, you can use this option to manually format your media. Formatting writes a new label at the beginning of the media, effectively destroying all existing data on the media.

**Note:** Use this option with care. After you format media, the data it contained and any job sessions associated with this media are gone permanently.

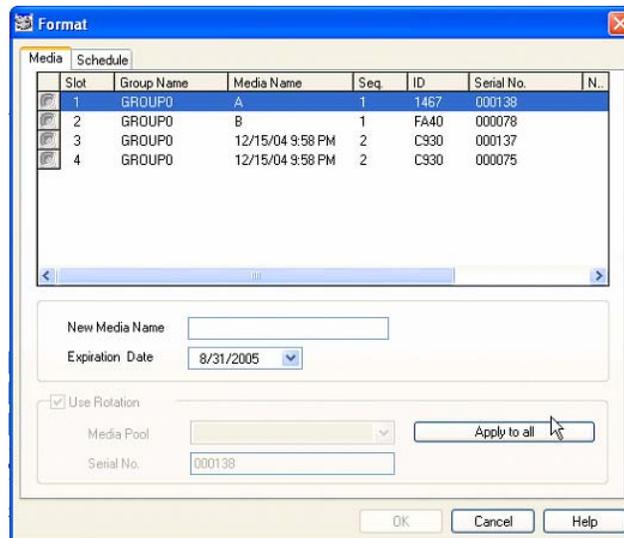
Low level formatting, required on most hard drives and some mini cartridge device drives, is not required for drives that BrightStor ARCserve Backup supports.

### Format Media

To format media, use the following steps.

1. Click the Format toolbar button.

The Format dialog displays as shown in the following example.



**Note:** This dialog displays specific details about the media in your library slots. For example, unformatted media appears as <Blank Media>, and slots reserved for cleaning media do not appear.

2. Highlight the media you want to format.
3. Assign a name and an expiration date to the media you want to format. All media must be named before formatting. For information about expiration dates, see Expiration Dates in this chapter.

4. Repeat Steps 2 and 3 to format additional media. Select all of the media that you want to format. The light icon next to selected media turns green.
5. Click OK, and then OK again to confirm.

## Erase Media Option

Use this option to erase all data from a single media or from multiple media. BrightStor ARCserve Backup also erases all references to the contents of this media (if any) from the database. When you reformat this media, its physical history (read and write passes) is retained.

You should verify that you have selected the correct media before using the Erase option. Erased data cannot be retrieved. When erasing media, you can choose from the following options:

- Quick Erase—Quick Erase effectively erases media. It avoids the time a Long Erase would take (minutes to hours) by overwriting the media label. The media history remains available to BrightStor ARCserve Backup for tracking purposes.
- Quick Erase Plus—This option performs the same operation as Quick Erase, and also erases bar codes and serial numbers. For more information about bar code and serial number cataloging, see Mount and Dismount Option.

**Note:** If the media you are erasing does not have a serial number or bar code, this option functions in the same manner as the Quick Erase option.

Media erased using the Quick Erase Plus option can no longer be tracked by BrightStor ARCserve Backup, and information such as the expiration date is no longer carried forward.

- Long Erase—Long Erase completely removes all data from media. It takes much longer than a Quick Erase, but the media is literally blank. For security reasons, use the Long Erase option to ensure that all data on your media is erased completely.

The Long Erase option is the equivalent of formatting the optical platter when erasing optical media.

- Quick Erase and convert to WORM—This option quickly erases all data from the media. In addition, BrightStor ARCserve Backup converts the media to Write Once - Read Many (WORM) media.

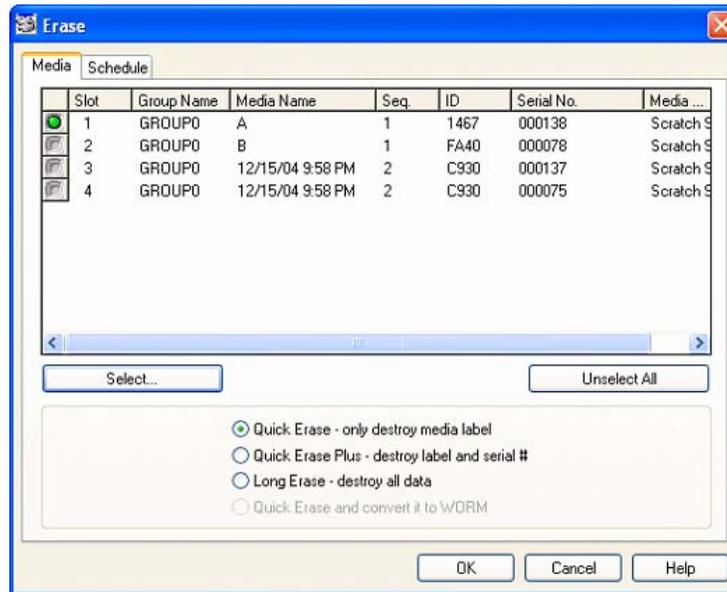
To use this option, BrightStor ARCserve Backup must detect DLTWORM capable media in the library or in a stand-alone drive.

## Erase Media

To erase media, use the following steps.

1. Click the Erase toolbar button.

The Erase dialog displays.



In this dialog, slots reserved for cleaning media do not display.

2. Select the slot you want to erase. When you select media, the light icon next the media turns green.

You can press the Shift key to select multiple contiguous media. Press the Ctrl key to select multiple noncontiguous media. You can also click and drag the light icon to select multiple contiguous media.

3. Select an erase method, click OK, and then click OK to confirm.

## Eject Media Option

Use this function to eject media from library storage drives and return the media to their home slots (the slot with which the media was associated during the inventory process).

## Eject Media From All Drives or a Single Drive

To eject the media from all drives in a library or a single drive:

1. Open the Device Manager window.
2. From the Device Manager's devices directory tree, do one of the following:
  - To eject the media from all drives in a library, select the library.
  - To eject the media from a single drive, select the individual drive.
3. To eject the media, do one of the following:
  - Right-click the library or drive and select eject from the pop-up menu.
  - Click the Eject toolbar button.
4. Click OK to confirm.

## Mount and Dismount Option

Use this function to load or remove a magazine from the library. Mounting a magazine initiates an inventory of the slots in the magazine. Dismounting a magazine returns all media to their home slots and prepares the magazine for removal. The time this process requires varies based upon the number of media in the magazine you are mounting or dismounting. Additionally, the time required to mount and dismount magazines can vary from vendor to vendor.

This option checks the library slots and reads the media header. It then associates the media header with the slot in which it was found (its home slot). This enables the Tape Engine to keep track of any changes made to media in the library (media added to or removed from a magazine or moved to a different slot).

If you are using bar codes, each media that you load into a storage drive in the libraries must have a unique serial bar code number. If you purchased two media having identical serial numbers, you must use one of the media in a different backup session.

You should add and remove media only when the Tape Engine Server is running, so that you can immediately inventory your slots.

## Mount and Dismount a Magazine

To mount or dismount a magazine, use the following steps.

1. Click the Mount toolbar button.

The Mount/Dismount Magazine dialog displays as shown in the following example:



2. Select the magazine you want to mount or dismount.
3. Click Mount or Dismount, depending on the operation you want to perform.

## Clean Media Option

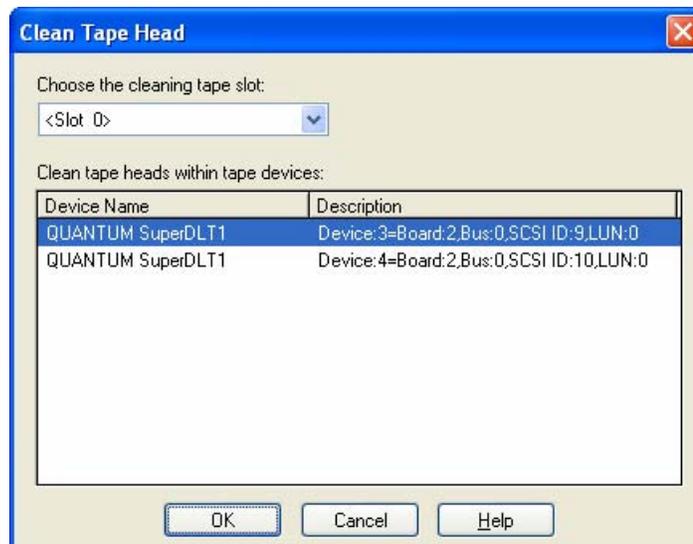
Use this option to clean the heads of any media drive in your library.

**Note:** You must have a cleaning tape installed in the tape cleaning slot specified during setup to use this option.

## Clean Tape Drive Heads

To clean tape heads, use the following steps.

1. Click the Clean toolbar button. The Clean Tape Head dialog opens as shown in the following example.



**Note:** Offline drives will not be displayed in the list.

2. Select the drive whose head you want to clean.
3. Click OK.

## Import and Export Media

BrightStor ARCserve Backup allows you to import media and retrieve media information from the media or the BrightStor ARCserve Backup database. You can also import or export multiple media to or from your library slots.

If the library has mail slots, BrightStor ARCserve Backup lets you move tapes into and out of the library. You can:

- Import one or more media from mail slots to library slots
- Export one or more media from library slots to mail slots

When importing media, you can choose one of the following methods:

- Quick Import—BrightStor ARCserve Backup imports the media and attempts to use the media's bar code information to retrieve the corresponding information from the BrightStor ARCserve Backup database.

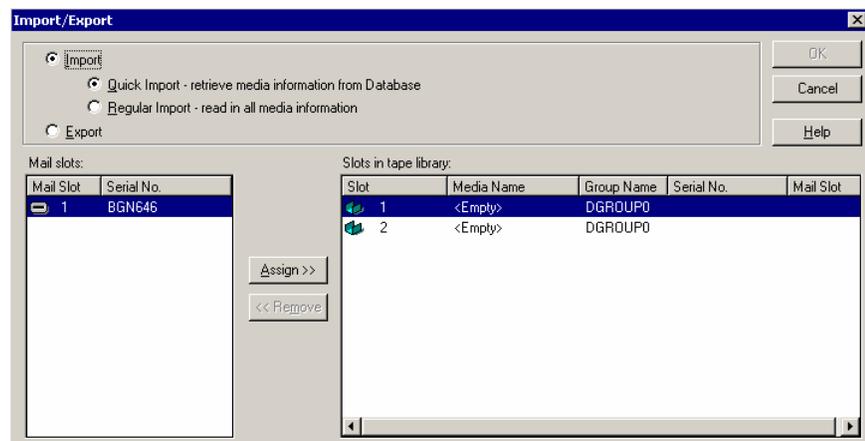
**Note:** You can only use this method if you are using the bar code option.

- Regular Import—Reads all media information from the media itself.

## Import Media to Libraries

To import media to your library, use the following steps.

1. Select the library in the Device Management tree.
2. Click Import/Export from the tool bar. The Import/Export dialog displays as shown in the following example.



- Choose Import to view all the available empty slots in a media library.

**Note:** If your library has a bar code reader, the Serial No. field displays the bar code number of your tape. You can use the Serial No. field to identify tapes located in a specific mail slot.

- Select the mail slot containing the media you want to assign to your library.
- Select the empty slot to which you want to import the media and click Assign.

**Note:** If you want to import a cleaning tape, you must import it to the cleaning slot you specified during Device Configuration. If you import it to a different slot, you will receive unrecognized media errors.

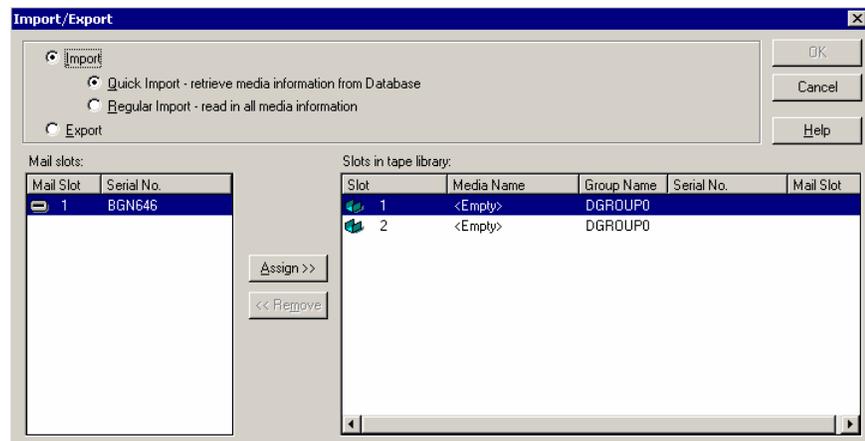
- Repeat Steps 4 and 5 for each media you want to import.
- Choose an Import method and click OK.

## Export Media from Libraries

To export media from a library, use the following steps.

- Select the library in the Device Management tree.
- Click Import/Export on the toolbar.

The Import/Export dialog displays as shown in the following example.



- Select the Export option to view all the occupied slots in a library.
- Highlight the media you want to export, select the mail slot to export to, and click Assign.
- Repeat this process for each media you want to export and click OK.

## Compression Option

You can use the Compression option only if your storage device supports tape compression. If it does not, the Compression toolbar button will be disabled.

Under most circumstances, you should leave compression turned on. You should only turn it off if you plan to use a media in another drive that does not support compression. In this case, the drive that does not support compression will not be able to read the compressed data on the media.

## Compress Media

To turn compression on or off, follow these steps:

1. In the Device Manager, select the device drive you want to set. If the device drive supports compression, the Compression button on the toolbar is enabled. To verify if the device supports compression, select the Detail tab while the device is highlighted.
2. Click the Compression toolbar button.
3. Click OK to set the Compression Mode to Off (if it is On) or On (if compression is Off).

## Device Group Configuration Using the Device Manager

BrightStor ARCserve Backup lets you separate the slots in your library into groups. Grouping slots lets you run several types of jobs at the same time. Additionally, if you have several slots in a group, you can let the library span the media in the group for you.

By default, the first time you start the Tape Engine, all the slots in each library you have attached to your machine are automatically assigned to that library group.

For example, if you have two libraries attached to your machine, you will have two library groups—all the slots in the first library are assigned to GROUP0, and all the slots in the second library are assigned to GROUP1. You can retain these library group names, or you can regroup and rename them. Since each slot in a library is viewed as a virtual storage drive, each slot can be assigned its own group.

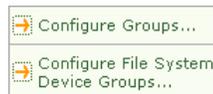
After you start BrightStor ARCserve Backup, you can use the Device Manager to:

- Create new groups
- Assign slots to groups
- Remove slots from groups
- Delete groups
- Rename groups

### Create a New Library Group

To create a new library group, you must first open the Device Group Configuration dialog. The following are methods you can use to open the Device Group Configuration dialog.

- From the Device Manager, click the Device menu and select Configure Groups.
- From the Device Manager window or the Staging tab in the Backup Manager window, click the Configure Groups option located in the device properties preview pane, as shown in the following example.



**Note:** To access the Device Group Configuration dialog using a wizard-like application, from any manager window, click the Configuration menu and select Device Group Configuration.

To create a library group, use the following steps.

1. From the Device Manager, click the Device menu and select Configure Groups.

The Device Group Configuration dialog opens. Existing groups, and the slots assigned to each group, are listed here. If you have reserved one of your slots for cleaning media, it cannot be assigned to a group and it does not appear in this dialog.

2. Click New.

The New Group dialog displays.

3. Enter a name for the library group and click OK.

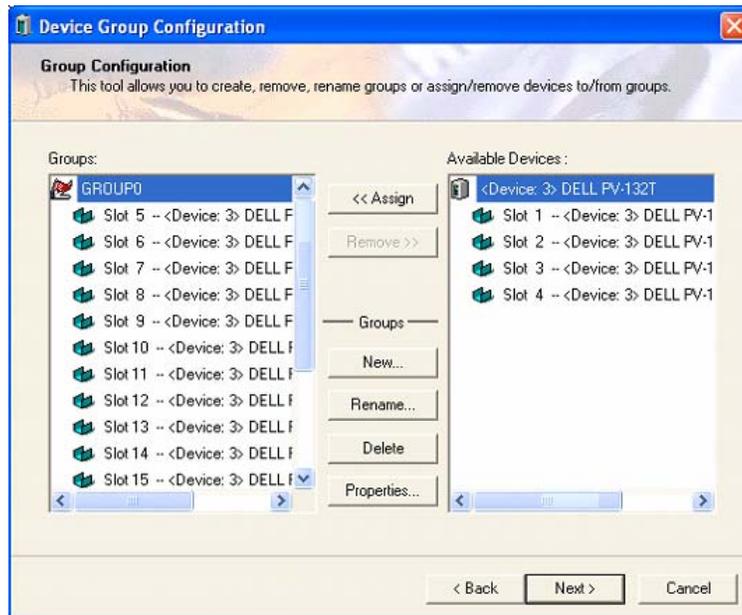
The new library group displays in the Groups panel. You can now begin assigning slots to this group.

### Assign Slots to a Library Group

To assign slots to a library group, use the following steps.

1. Open the Device Manager.
2. From the Configuration menu, select Device Group Configuration.
3. Specify the server by doing one of the following:
  - Check the Use Default Server check box to use the local server and click Next.
  - Clear the Use Default Server check box and click Next. Select a remote server, provide the Domain User Name and Password, and click Next.
4. Select the Configure Groups option and click Next.

The Device Group Configuration dialog opens. Library devices and their corresponding slots available for assignment display in the Available Devices list, as shown in the following example.



5. From the Available Devices list, select the slots that you want to assign to a group. You can select one available slot at a time, or you can select the library to assign all of its available slots to a group.
6. From the Groups list, select the group to which you want to assign the slot.
7. Click Assign.

BrightStor ARCserve Backup removes the slot from the Available Devices list and places it in the Groups list, below the group to which it was assigned.

- Repeat Steps 5 through 7 to assign more slots to groups.

**Note:** If there are no slots available, you can remove them from their currently assigned group to make them available to other groups. To do this, from the Groups list, select the slot that you want to make available to other groups and click Remove. The slot is now available to other groups. You can now perform Steps 5 through 7 to assign the slot to a different group.

- When you are finished, click Finish, and then click Exit to exit Device Group Configuration.

### Remove Slots from a Library Group

To remove slots from a library group, use the following steps.

- From the Device Manager, click the Device menu and select Configure Groups.

The Device Group Configuration dialog displays.

- Highlight the slot you want to remove. Slots are listed in the Groups list beneath the name of the group to which they were assigned.

- Click Remove.

The slot is removed from the group to which it was assigned in the Groups list and placed in the Available Devices list.

- Repeat Steps 2 and 3 to remove more slots from groups.
- When you are finished, click OK.

### Delete a Library Group

To delete a library group, follow these steps:

- From the Device Manager window, click Configure Groups (from the list of functions) or click the Groups toolbar button.

The Device Group Configuration dialog box opens.

- Select the group you want to delete.
- Click Delete, and then click OK to confirm.

The group is removed from the Groups list. Any slots that was assigned to the group is placed in the Available Devices list.

## Rename a Library Group

To rename a library group, follow these steps:

1. From the Device Manager window, click Configure Groups (from the list of functions) or click the Groups toolbar button.

The Device Group Configuration dialog opens.

2. Select or the group you want to rename.
3. Click Rename.

The Rename Group dialog displays.

4. Enter a new name for the group and click OK.

The new group name is reflected in the Groups list.

## Manage Devices Controlled by the Removable Storage Manager

The Removable Storage Manager (RSM) takes exclusive control of media libraries using the library drivers and takes shared control of the media drives. If you allow a device to be controlled by RSM, you cannot benefit from BrightStor ARCserve Backup features.

For BrightStor ARCserve Backup to use this device, the device must be disabled from RSM using the BrightStor ARCserve Backup Device Configuration utility:

1. Select Enable/Disable devices (for RSM), and click Next.
2. Select the devices you want BrightStor ARCserve Backup to manage from the list.

**Note:** This feature is only available for Windows 2000, Windows XP, and Windows 2003.

## How the Option Filters Libraries

You can use filters to configure the Device Manager to display only the information you need, thereby increasing data manageability and application performance. The available filters for libraries are:

- Empty Slots filter—allows you to see all occupied slots or all slots of the library.
- Range Slot filter—filters the slots belonging to a specified range of slots.
- Media Pool filter—allows you to see only the media in a particular media pool.
- Bar code filter—filters the media matching the bar code if the library supports bar code reader; otherwise it matches the serial number.

Library filters apply to the Device Manager view and Backup Manager Destination tab. Use the Preferences menu to display the Library Filter tab. These filters apply to the current Managers that are open, not to all Managers.

The status bar indicates whether a filter was applied to the view. The status bar indicates this by displaying Filter in the second list. By default, the Device Manager and the Destination tab on the Backup Manager filter the empty slots.

## Backup and Restore Operations

You can submit backup jobs or restore jobs to library media from the Backup Manager (backups) or the Restore Manager (restores) in the same manner that you submit backup jobs or restore jobs to a standalone, storage drive. For more information about backing up and restoring data, see the *Administrator Guide*.

You can submit additional jobs to the same group or different groups.

**Note:** If you submit more than one job for the same group, BrightStor ARCserve Backup submits the jobs to the job queue and marks them ready to execute as soon as the previous jobs submitted to that group are finished.

## Access Device Management Functions for Backup or Restore

This capability lets you change group assignments, format or erase media, or perform any other device management function.

To use device management functions without returning to the Device Manager, do the following:

- Right-click a media name in the Backup Manager for backups, or right-click a media name in the Restore window for restores and choose any of the displayed menu options.

## How the Option Concurrently Accesses Multiple Drives

For libraries with multiple storage drives, the option takes maximum advantage of all available drives. When you submit a job or select a device management option, BrightStor ARCserve Backup checks for available drives in the library. If BrightStor ARCserve Backup detects an available drive, the job or device management operation is performed.

You can submit additional jobs to the same group or to a different group. If a job is performed for a group, BrightStor ARCserve Backup begins additional backup or restore jobs for the group, as long as additional drives are available.

## How Single-Step Spanning Works

BrightStor ARCserve Backup supports library group spanning in a single step. This feature allows you to insert new blank media into a library group and continue the backup or restore. To insert new blank media into a library, use the Import/Export mail slots option (if your library supports this feature), and import the media using the Device Manager.

Alternatively, you can open the door of the library and insert the media manually. Although the Media Server does not automatically inventory the library when the library door is opened and then closed, it does inventory the slots in the library group in those special cases where you are prompted to insert media to complete the job. You can also erase media already in the library if you want your backup job to use one of the cartridges already present.

**Important!** *If you are using multiple group access, be particularly careful when using media spanning. You can accidentally overwrite media unless you are sure that no additional jobs are submitted to the same group on a separate drive.*

There are three common conditions associated with an open door condition when backing up or restoring in a single-step spanning environment. You may need to:

- Add a tape to an empty slot in a magazine during tape spanning to allow the completion of a backup job.
- Add a magazine with additional tapes during tape spanning to allow the completion of a backup job.
- Swap tapes that are full for new tapes during tape spanning to allow the completion of a backup job.

For all of these conditions, you are prompted to insert media by the job Status Monitor, the Job Status window, the logs, and the console to allow BrightStor ARCserve Backup to complete the restore job. After the tape is inserted and mounted, the library inventories the tape and the job continues.

The following sections provide you with examples of single-step spanning that correspond directly to the three conditions described above.

### Example 1: Adding Media to an Empty Slot in a Magazine

A backup job was scheduled to back up an entire machine to a library that holds a single magazine with four slots. Before the job was run, a magazine that contained two tapes was mounted into the library, causing an inventory of the slots in the magazine. All of the slots were assigned to GROUP0 to allow media spanning.

If BrightStor ARCserve Backup required more than two tapes to complete the backup, you would be prompted to insert a tape into the library while the job was processing. If you know that one more tape would be enough to complete the backup, then you can open the library door and insert a tape into one of the two slots in the magazine that were empty when the magazine was first put into the library. The other two slots were home slots to the two inventoried tapes.

When the tape is put in and the door is closed, you perform a mount on that slot from the Device Manager. After the mount completes, the backup job resumes.

Here is another example of adding media, this time during a restore job. A restore job was scheduled to restore a directory to a machine from a library that holds a single magazine with four slots. Before the job was run, a magazine with two media in its slots was mounted into the library. This caused an inventory of the slots in the magazine. It was believed that two media contained the entire backed up directory. All of the slots were assigned to GROUP0 to allow media spanning.

If BrightStor ARCserve Backup had originally required three media to complete the backup of the directory, a prompt appeared requiring the third media that BrightStor ARCserve Backup had used to back up this directory. In this case, open the library door and insert the required media into one of the two slots in the magazine that was empty when the magazine was first put into the library. Close the library door, mount the tapes, and then the restore job continues.

### Example 2: Adding a Magazine with Additional Media

A backup job was scheduled to back up a database server to a library that holds a single magazine with four slots. Before the job was run, a full magazine (four tapes in its slots) was mounted into the library, causing an inventory of the slots in the magazine. All of the slots were assigned to GROUPO to allow tape spanning.

If BrightStor ARCserve Backup requires more than four tapes to complete the backup, you would be prompted to insert a tape into the library while the job was processing. If you know that at least two more tapes will be required to complete the backup, you could open the library door, remove the magazine, replace all of the tapes inside the slots with new tapes, and then place the magazine back inside the library.

After the magazine is inserted and the door is closed, you perform a mount on the entire magazine from the Device Manager. After the mount completes, the backup job resumes.

### Example 3: Swapping Full Media for New Media

A backup job was scheduled to back up an entire machine to a library that holds a single magazine with four slots. Since this library has more than one drive, a full magazine was mounted (four tapes in its slots) into the library before the job was run. This caused an inventory of the slots in the magazine.

If you are only supposed to use two tapes, you can assign the slots of two of the tapes to GROUPO and the other two to GROUP1. Then you can run the backup using GROUPO.

However, since BrightStor ARCserve Backup requires more than two tapes to complete the backup, you will be prompted to insert a tape into the library in the middle of the job. Open the library door and swap one of the tapes in GROUPO with a new tape. Close the library door and mount the slot that contained the new tape so that BrightStor ARCserve Backup recognizes the new tape. After the mount completes, the backup job resumes.

## How DLTSage Error Handling Works

DLTSage is an error monitoring, reporting, and alerting technology developed by Quantum for use on SuperDLT tape drives. To receive tape drive alerts, you must use SuperDLT tape drives with DLTSage firmware.

BrightStor ARCserve Backup interfaces with the firmware on SuperDLT tape drives to analyze critical tape drive and media performance parameters collected for each track, segment, Magneto Resistive (MR) channel, and optical band. BrightStor ARCserve Backup uses the information collected to:

- Diagnose information such as threshold conditions and tape drive history.
- Identify high-risk tape drives and media that are approaching or have reached their end of life.
- Predict tape drive cleaning needs.
- Analyze tape drive environmental conditions.
- Generate media and hardware error messages.

BrightStor ARCserve Backup queries DLTSage using a SCSI Log Sense. If a hardware or media error occurs as a backup job starts, during a backup job, or after a backup job ends, BrightStor ARCserve Backup uses the information captured from the SCSI Log Sense to generate tape drive error messages that display in the Tape Log and the Activity Log. An error message displays if any of the following conditions exist:

- The tape drive is experiencing difficulties reading from or writing to a tape.
- The tape drive cannot read from or write to a tape, or the media performance is severely degraded.
- The media exceeded its life or maximum number of passes expectancy.
- The tape drive may have a clogged head or needs cleaning.
- The tape drive has a cooling problem.
- There is a potential tape drive hardware failure.

If an error condition is detected, BrightStor ARCserve Backup may attempt to automatically correct the problem and complete the job.

## How BrightStor ARCserve Backup Cures Tape Drive Errors

If BrightStor ARCserve Backup detects a problem with a tape drive, there are three mechanisms BrightStor ARCserve Backup uses to cure tape drive errors. These mechanisms run automatically upon error detection. After BrightStor ARCserve Backup cures the error, the backup job continues.

## Tape Drive Error Prevention

Before performing a backup job, BrightStor ARCserve Backup evaluates the tape drive's health. If a problem is detected, BrightStor ARCserve Backup performs the following analyses and actions:

- If another tape drive is available (empty) BrightStor ARCserve Backup moves the tape to the next available tape drive and runs the backup job.
- If there are no available drives, BrightStor ARCserve Backup moves the tape to a tape drive that is not locked, and runs the backup job.
- If all other drives are locked, BrightStor ARCserve Backup run the backup job in the current tape drive.

## Drive Usage Balancing

BrightStor ARCserve Backup balances tape drive usage by rotating the usage of tapes evenly between all tape drives in your library. When BrightStor ARCserve Backup starts a backup job, it detects the last drive used and uses the next available drive in the library.

To minimize the movement of tapes from tape drive to tape drive, BrightStor ARCserve Backup performs the following analyses and actions:

- If the media targeted for the job is loaded, allow it to remain in its current drive and run the backup job.
- If the media targeted for the job is not loaded, identify the last used drive and load the tape into the next available, empty drive, and then run the backup job.

## Uninterrupted Drive Cleaning

A contaminated tape drive condition is usually discovered when you are running a backup job. A significant number of tape drive and media errors can be remedied by cleaning the tape drive.

For BrightStor ARCserve Backup to perform uninterrupted drive cleaning, you must have a cleaning tape installed in the tape cleaning slot specified during setup, and specified a cleaning schedule. If you did not specify a cleaning schedule, BrightStor ARCserve Backup defaults to a 100 hour period between scheduled tape cleaning operations.

If BrightStor ARCserve Backup detects a contaminated tape drive condition during a backup job, and a cleaning slot is configured, BrightStor ARCserve Backup automatically performs the following analyses and actions:

- If BrightStor ARCserve Backup detects a write error during a backup, and the symptoms relate to a contaminated tape drive or media, BrightStor ARCserve Backup makes a second attempt to write to the tape drive.
- If the second write attempt fails, BrightStor ARCserve Backup cleans the tape drive if one or more of the following conditions exist:
  - The tape drive was never previously cleaned.
  - DLTSage detected the need to clean the tape drive and drive usage exceeds one fourth of the scheduled cleaning.
  - Tape drive usage exceeds one third of the cleaning.
  - The user specified ForceClean the tape drive.

If BrightStor ARCserve Backup determines that a tape drive must be cleaned to continue a job, the following actions take place:

1. BrightStor ARCserve Backup pauses the job.
2. The library returns the tape to its home slot and locks the tape drive.
3. BrightStor ARCserve Backup directs the cleaning operation.
4. The library reloads the tape into the cleaned drive and aligns the tape with the buffer.
5. BrightStor ARCserve Backup resumes the job.



# Appendix A: Troubleshooting

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Use the information in this appendix to troubleshoot your BrightStor ARCserve Backup Tape and Optical Library installation.

## Devices Do Not Appear to be Working Properly

There are several important points to consider when tracking down hardware problems:

- Make sure the hardware is functional, including the host adapter card, the cables, the library, and the library drive. If you can, test your hardware by connecting it to a properly functioning system.
- Make sure the hardware is configured properly.
- For multidrive libraries, make sure library drives are assigned in the correct order.

Using the Computer Management utility, you can diagnose your hardware. To access the Computer Management utility, right-click My Computer on the Windows desktop and choose Manage from the pop-up menu.

## BrightStor ARCserve Backup Cannot Detect the Library

There are several corrective actions that you can use to determine why BrightStor ARCserve Backup cannot detect the library.

- Make sure your computer can detect the library.

You can quickly check to see if your computer can detect the SCSI device by using the following steps.

1. Run regedt32.exe, which is located in the System32 directory under the Windows System directory. The device should be located under:

```
HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\SCSI\  
SCSI PORT #\SCSI Bus #\Target Id #\Logical Unit Id #
```

2. If SCSI is not listed, your Host Bus Adapter (HBA) is not enabled. Verify that you have installed the proper driver for the HBA.
3. If you do not see a Target ID, Windows did not detect your devices. If Windows cannot detect the devices, BrightStor ARCserve Backup cannot detect them.

- Check to see if your computer detected any problems with the SCSI card. To do so, view the System Log in the Event Viewer, located in the Administrative Tools program group.
- Check to see whether your device driver was loaded.

Use the following steps if you are having difficulty with any of the solutions described previously.

1. Verify that the library power is turned on.
2. Make sure that all cables are properly attached to the SCSI card.
3. Verify that no two devices have the same SCSI IDs. For example, libraries with two SCSI IDs will have problems if the Library Unit and Library Drive have the same SCSI IDs.
4. Ensure that the last device and the first device on the SCSI chain are terminated. See the SCSI card manual for information about SCSI ID and termination issues.
5. Verify that the library and the board are certified by Computer Associates.
6. Make sure you have the latest driver for the HBA.

After performing these corrective actions, run Device Configuration located in the BrightStor ARCserve Backup program group and reconfigure the library.

## Library Fails to Initialize Properly

The following sections describe methods that you can use to troubleshoot library initialization problems.

### Library Cannot Load or Read Media Properly

If the library fails to initialize properly, load media improperly, or is unable to read media, after running the Library Setup program, perform the following corrective actions:

- The library may not have a drive assigned. Run Library Setup and verify that a library drive is attached to your library.
- If you have a multidrive library, you may not have assigned the drives in the correct order. Run Library Setup to verify that you assigned your library drives in the correct order. See the documentation supplied with your library for more information.

**Note:** This may also be a hardware problem.

## Slots Indicate Dismounted When Initializing the Library

If the library is initialized and all of the library slots indicate dismounted, perform the following corrective actions:

- Check whether the library door is open. If it is, close it. Check the BrightStor ARCserve Backup Activity log for error messages.
- The library may be full. The maximum number of media a library can hold is equal to the number of library slots it has. If the library magazine is completely filled with media, make sure that the library drives do not contain media too.

**Note:** This may also be a hardware problem.

## BrightStor ARCserve Backup Displays Incorrect Slot Details When Using Quick Initialization

If the Quick Initialization feature is enabled, and BrightStor ARCserve Backup displays incorrect information for the slots, consider the following:

- If you frequently need to swap media after shutting down the Tape Engine, consider leaving this feature disabled. Quick Initialization requires user awareness. When you use this feature, you must inventory the library slots or remount the magazine after any modification to the slots.

## Library Reads All Media When Using Quick Initialization

If Quick Initialization feature is enabled, and the library still reads all the media during initialization, consider the following:

- The library was not successfully initialized. Quick Initialization is activated only after a successful library initialization.
- The library's hardware configuration was changed. After any change in the library's hardware configuration, Quick Initialization is disabled until another successful initialization.
- The CHANGER.CFG file was deleted or overwritten. CHANGER.CFG contains information used by Quick Initialization, so deleting or overwriting this file disables Quick Initialization.

## Tape Engine Does Not Run Properly

The following sections describe methods that you can use to troubleshoot Tape Engine problems.

## Library Does Not Detect Media Properly

If BrightStor ARCserve Backup cannot detect a media added to the library or cannot detect a media moved from one slot to another slot, consider the following:

- When media is manually added, removed, or moved, you must inventory the slots or mount the library magazine to update BrightStor ARCserve Backup.

## Media Home Slot Changes

If a media's home slot changes, consider the following:

- A media is in a library media drive, and another media is placed in the first media's home slot.

Be careful not to insert media into the home slot of another media. When BrightStor ARCserve Backup detects that the home slot of a media is occupied by another media, it moves the media to the first available noncleaning slot.

- A media is in a library drive and CHANGER.CFG file was deleted or overwritten.

CHANGER.CFG contains information about a media's home slot, so that if, a media is in a library drive at startup, it is returned to the proper home slot.

## Cleaning Media Not Returned to Home Slot

If the cleaning media is not returned immediately to its home slot after cleaning a library drive, consider the following:

- The cleaning media may be completely used. If the cleaning media is ejected from the library drive after a few seconds, you should check whether the cleaning media is completely used.
- If the library drive does not support reporting of media cleaning, the cleaning media is returned to its home slot after approximately two minutes. If the library drive supports the reporting of media cleaning, the cleaning media is returned to its home slot immediately after cleaning.

## No Free Slots Available

If BrightStor ARCserve Backup indicates that it does not have a free slot to return a media from a library drive, consider the following:

- Another media is in the device's home slot and there is no available free slot. If you see an empty slot, this slot is probably assigned as a cleaning slot.

## Tape Engine Times Out

If the Tape Engine times out unexpectedly, consider the following:

- Verify that your library is turned on and that the library unit is moving when initialization takes place.
- Restart the library and machine.

## Tape MisCompare Errors Occur When Formatting or Erasing

If BrightStor ARCserve Backup indicates a Tape MisCompare error when formatting or erasing, consider the following:

- The media read does not match the media shown by BrightStor ARCserve Backup.

BrightStor ARCserve Backup does not erase or format media unless it matches what is shown. This error occurs when media are changed manually and not inventoried to update BrightStor ARCserve Backup. When media are manually added, removed, or moved, you must inventory the slots or mount the library magazine to update BrightStor ARCserve Backup.

- You may also see this error if you attempt to erase or format a marked blank media. You must inventory these media first, using Regular Inventory, before they can be erased or formatted.

## The Option Does Not Back Up Data Properly

The following sections describe methods that you can use to troubleshoot backup problems.

## Unable to Submit Another Job

If a job is running and you cannot submit another job, consider the following:

- If you tried to submit a run now job, try to schedule the job instead. BrightStor ARCserve Backup can run the job when there is a free library drive.

## Backup or Restore Job Causes the Library to Inventory Slots

If a backup or restore job causes the library to automatically inventory slots after adding media to devices manually, consider the following:

- After BrightStor ARCserve Backup prompts you to manually insert additional media to complete a backup or restore job, it automatically inventories the media in the particular backup or restore group. After the inventory of the group is completed, the job continues.

## Slots Fail to Inventory When Groups Span a Multi-drive Library

There is more than one job running. If your media spans two groups in the same multidrive library, and only one job inventories its slot group and continues after the media are replaced in both groups, consider the following:

- Wait until the first job is finished. Then, open and close the library and direct the second job to continue.

# Glossary

---

**adapter**

An adapter is a hardware device that lets a computer communicate with another computer, device, or electronic interface.

**autoloader**

An autoloader, also known as a changer, jukebox, or library, is a device that automates the insertion or removal of media to or from magazine slots or library drives.

**bar codes**

Libraries use bar codes to index or inventory each media. Bar codes create an instant identification for media, eliminating the need for manual records.

**dismount**

Dismount is the process that prepares the selected library magazine for removal. All media in the selected library magazine are marked as dismounted. Further operations with media within the magazine are disabled.

**home slot**

The home slot is the slot in which media was originally placed. Also referred to as the original slot.

**inventory**

Inventory is the process that instructs the library to update the actual status of the selected slots. If media is present in a slot, it is read and inventoried.

**library**

A library is a device containing one or more tape drives with an automated media delivery system, such as a robotic picker, which can back up large amounts of data without manual intervention.

**library drive**

A library drive is a media drive located in a library. This drive works as part of the library.

**library group**

A library group is a collection of magazine slots.

**logical unit number**

A logical unit number (LUN) is an identifier assigned to a device that communicates via SCSI bus. The device can be a changer, hard disk, tape drive, or any kind of device that can communicate using SCSI protocols.

**magazine**

A magazine is a removable container holding a set of media.

---

**mail slot**

A mail slot is a slot in a library that allows media to be loaded and unloaded without opening the library door. This is used for the Import and Export features.

**mount**

The mount process prepares the specified library magazine for use by BrightStor ARCserve Backup. All slots in a magazine are checked for media, and all media found are read.

**retension**

The mechanical process of ensuring that a media is evenly wound. Typically, the retension process involves winding the media to its end and then back to its beginning.

**slot**

A slot is a compartment in the magazine for storing media. This component is also known as a magazine slot.

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