Tape Library Option Guide

Arcserve® Backup

18.0

arcserve®

Legal Notices

Arcserve Product References

This document references the following Arcserve products:

- Arcserve® Backup
- Arcserve® Unified Data Protection
- Arcserve® Unified Data Protection Agent for Windows
- Arcserve® Unified Data Protection Agent for Linux
- Arcserve® Replication and High Availability

Contact Arcserve Support

The Arcserve Support team offers a rich set of resources for resolving your technical issues and provides easy access to important product information.

Contact Support

With Arcserve Support:

- You can get in direct touch with the same library of information that is shared internally by our Arcserve Support experts. This site provides you with access to our knowledge-base (KB) documents. From here you easily search for and find the product-related KB articles that contains the field-tested solutions for many top issues and common problems.

- You can use our Live Chat link to instantly launch a real-time conversation between you and the Arcserve Support team. With Live Chat, you can get immediate answers to your concerns and questions, while still maintaining access to the product.

- You can participate in the Arcserve Global User Community to ask and answer questions, share tips and tricks, discuss the best practces and participate in conversations with your peers.

- You can open a support ticket. By opening a support ticket online, you can expect a callback from one of our experts in the product area you are inquiring about.

- You can access other helpful resources appropriate for your Arcserve product.

Arcserve Backup Documentation

Arcserve Backup documentation contains specific guides and release notes for all major releases and service packs. Click links below to access documentation.

- Arcserve Backup r18 Release Notes
- Arcserve Backup r18 Bookshelf

Contents

Chapter 1: Introducing the Option

This section contains the following topics:

Introduction

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 Arcserve Backup offers is the Arcserve Backup Tape Library Option. The option includes support for tape RAID libraries. The option supports and provides advanced device and media management for multiple-drive tape libraries. With this option, Arcserve Backup can send simultaneous streams of data to each drive to optimize throughput on any multiple-drive tape library.

The option adds tape RAID capabilities to Arcserve Backup. All of the standard backup and restore functionality Arcserve Backup provides applies to the tape RAID devices that you create using the option.

Note: Tape RAID devices do not support multiplexing and hardware encryption.

This guide describes how to install, configure, and manage Arcserve Backup using the following types of devices:

- Multi-drive tape libraries
- Tape RAID libraries

How the Option Manages Libraries

The option helps you manage libraries using the following capabilities:

▪ **Multiple drive support**--The option provides support for libraries with multiple drives and with single drives.

   Note: Arcserve Backup Tape Library Option license is required for multiple drive libraries only.

▪ **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)**--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**--The Quick Initialization option lets you quickly inventory libraries that do not have a bar code reader without having to stop and restart the Tape Engine.

   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 from the Library Properties dialog.

Note: If you move tapes in or out of a library using any method or mechanism other than the Arcserve Backup Manager interface, you must inventory the library using the Device Manager.

▪ **Scheduled automated drive cleaning procedures**--You can configure devices and schedule 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 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 Arcserve Backupinventories 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 non-defective 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 the following manners:

  – Large or small icons

  – Library details

  – Reports and lists

▪ **64-bit Windows operating system support**--The option supports backup and restore operations on 64-bit Windows operating systems running a 32-bit application.

How Libraries Manage Data

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)**--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.

This Library has two magazines.
Each magazine has ten slots.

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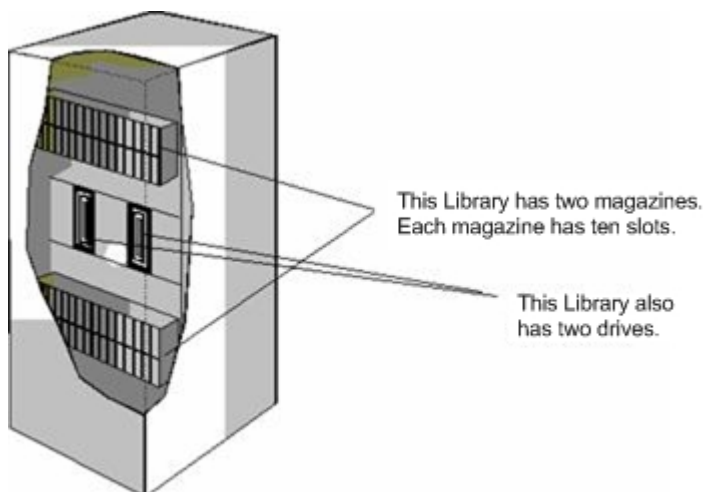
A library can contain one or more drives, and from one to several hundred magazines. Smaller libraries are sometimes referred to as autoloaders or changers.

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: 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 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.

How You Can Use the Option to Manage Tape RAID Libraries

Arcserve Backup offers significant performance benefits to your backup system by providing fault tolerance. During a restore, if one of the media becomes unusable, you can still restore data from the remaining media.

This option combines a number of tape drives to give better cost, performance, capacity, and reliability than you can achieve with a single drive. It also provides data redundancy, improved performance, and quick data recoverability from disk failures.

The following summarizes the benefits of each RAID level:

- **RAID 0: Striping**--RAID 0 level is an ideal solution when you require optimum performance. However, RAID 0 does not provide fault tolerance.

- **RAID 1: Mirroring**--RAID 1 offers a reasonably good fault tolerance and performance by creating two copies of the data that you are backing up.

- **RAID 5: Striping with Parity**--RAID 5 increases the virtual capacity of your media as three drives or more appear as one virtual drive. The end result is excellent performance and good fault tolerance.

Note: System and installation requirements using the option with tape RAID libraries can be found in the Release Notes for this release.

The Tape Library Option for tape RAID libraries does not support the following:

- Multiplexing

- File system devices

- Write Once Read Many (WORM) media

- Hardware encryption

How Tape RAID Works

RAID (redundant array of independent disks) is a performance enhancing method of spreading or duplicating data across multiple drives. It is a method of using several tape drives that are grouped together to provide fault-tolerance in the event that one or more drives or media fail.

Because multiple tape drives increase the mean time between failures (MTBF), storing data redundantly increases fault-tolerance and, in some scenarios, achieves faster data throughput.

Note: Throughput increases will be recognized only in environments where the bottleneck is the performance capabilities of the tape drive. If the drives are causing Arcserve Backup to wait, RAID Striping can help to minimize this condition and increase throughput.

How You Can Maintain a Tape RAID Media Set

All media in a RAID media set are subject to formatting, erasing, ejecting, and changing compression. For example, if you select Format, all media in the drives comprising the specified RAID device are formatted concurrently.

Note: To clean the drive, you must enable the hardware cleaning provided by the library.

Chapter 2: Installing and Configuring the Option

This section contains the following topics:

Installation Prerequisites

Before installing the Arcserve Backup Tape Library Option, verify that:

- Your system meets the software requirements needed to install the option. For a list of these requirements, refer [Compatibility Matrix](#).

- 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.

- Arcserve Backup is installed and working properly.

  Important! Arcserve Backup supports libraries configured with one drive. If your library has more than one drive, you must license the Arcserve Backup Tape Library Option to enable multi-drive capabilities.

- Before you install the option for use with tape RAID devices, ensure that:

  - Arcserve Backup is installed and working properly.

  - For a primary server in a SAN configuration, you must determine the RAID levels that you want to configure.

Install the Option

For information about how to install the option, see the Implementation Guide.

Configure Libraries

Arcserve Backup automatically detects and configures your libraries as the Tape Engine starts. You do not need to run a wizard or other external application to enable Arcserve Backup to detect your libraries.

Note: If Arcserve Backup does not automatically configure your libraries, use Device Configuration to manually configure your libraries.

To configure a library, verify that the following prerequisite tasks are complete:

1. Install the Arcserve Backup base product.

2. Install the license for the Arcserve Backup Tape Library Option as required for your environment.

3. Start the Tape Engine.

   Arcserve Backup automatically detects and configures your libraries.

4. If you want Arcserve Backup to read the data on the tapes, do the following:

   a. Open Arcserve Backup Device Manager

   b. Browse to and select the library.

   c. Click Inventory on the toolbar.

   Arcserve Backup reads the tapes.

   To configure libraries

1. Open the Device Manager window and browse to the library.

2. Right-click the library and select Library Properties from the pop-up menu.

   The Library Properties dialog opens.

3. Click the General tab.

   Modify the following General options as required for your library:

   ▪ **Bar code reader installed**--If your library contains a bar code reader, this option lets you use the bar code reader in the device to inventory the tapes in the library.

      – **Set unknown bar code media to not inventoried during initialization**--To enable this option, you must select the Bar code reader installed option.

         This option lets Arcserve Backup initialize faster by designating media with a bar code that is not recorded in the Arcserve Backup database as "Not Inventoried." This option prevents Arcserve Backup from

inventorying the "not inventoried" slots as the Tape Engine starts. Media that is designated as not inventoried can remain in its slot until you need it. To use media that is designated as "Not Inventoried," you must inventory the media using the Manual Inventory option from the Device Manager window.

- **Bar code reader not installed**--Specify this option if your library does not contain a bar code reader.

  - **Library Quick Initialization**--To enable this option, you must select the Bar code reader not installed option.

    This option is designed for libraries that cannot read bar codes. With this option enabled, Arcserve Backup retains information about the library's slots in the Arcserve Backup database. As a result, Arcserve Backup does not repeat the inventory process when the Tape Engine is restarted. Arcserve Backup ignores this option on libraries that contain a bar code reader.

    Note: If the library does not support bar codes and this option is disabled, Arcserve Backup inventories the entire library when Arcserve Backup starts.

    This option lets Arcserve Backup initialize faster by bypassing the inventory slots process when the Tape Engine starts. When you use this option, Arcserve Backup assumes that the media in the slot have not been added, removed, moved, or swapped since the last shutdown. If you added, removed, moved, or swapped media, you should manually inventory the entire library or inventory the slots that changed.

    Note: Arcserve Backup must inventory the library after you configure the library. The quick initialization option takes affect after you complete the first full inventory of the library

- **Eject media upon backup job completion**--Lets you direct Arcserve Backup to move the tapes back to their original slots after the backup job is complete rather than allow them to remain in the drives.

  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.

- **Library is a VTL**--This option lets you set up a library to function as a virtual tape library (VTL).

Be aware of the following behavior:

- Arcserve Backup ignores media expiration dates when you select this option.

- Read performance improves when you identify a library as a VTL. This capability lets Arcserve Backup maximize drive efficiency and overall VTL backup and data migration performance.

- You should not identify a physical library as a VTL. When you identify a physical library as a VTL, the library's backup and data migration performance can be adversely affected.

- **Monitor blank tapes**--Lets you log a warning message in the Activity Log when the number of blank tapes available to the library is less than the specified value. This option can be applied to single and multiple drive libraries.

  Default value--1

  Range--1 to 65535

4. Click the Cleaning tab.

   Modify the following Cleaning options as required for your library:

   - **Clean by slot**--Lets you designate specific slots as cleaning slots. You can specify one or more cleaning slots and they do not need to be in a successive order.

   - **Clean by Barcode**--Lets you specify cleaning slots for your library based on a specific bar code or a range of bar codes using a prefix and a wildcard character. In the Clean Bar Code Prefixes field, enter the prefixes of your bar coded cleaning tapes.

     Specify the bar code prefixes into the Clean Barcode Prefix(s) field.
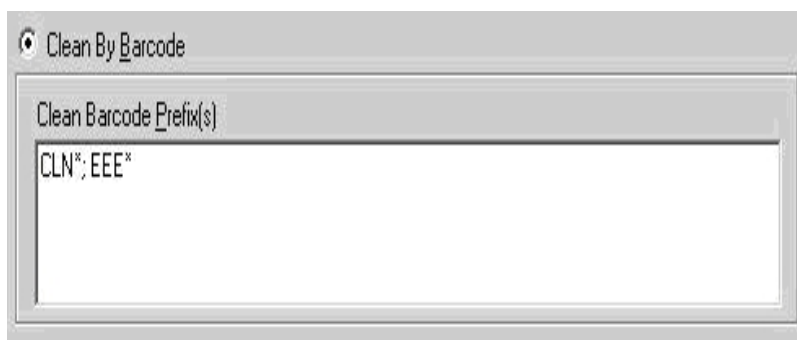
     Note: The asterisk is a wildcard character.

5. Click OK.

   The cleaning slots are set based on their bar code prefix.

Examples:

- The bar code on your cleaning tape is CLN123. In the Clean Barcode Prefix(s) field, specify CLN123.

- There are several cleaning tapes in your library. The bar code prefix for the cleaning tapes is ABC. In the Clean Barcode Prefix(s) field, specify ABC*.

- There are several cleaning tapes in your library. The cleaning tapes' bar code prefixes are ABC, CLN1, and MX. In the Clean Barcode Prefix(s) field, specify ABC*; CLN1*; MX*.

Automatic tape cleaning--Lets you direct Arcserve Backup to manage your tape cleaning tasks automatically. When you enable this option you must specify the number of hours that must elapse between cleaning tasks.

6. Click OK.

The library is configured.

Configure Libraries Using Device Configuration

After you start or stop and restart the Tape Engine, Arcserve Backup automatically detects and configures your libraries with a default set of options. This section describes how to configure a library when Arcserve Backup does not automatically detect and configure the library, or you want reconfigure a library.

Important! When you reconfigure a library using Device Configuration, all previous option values will be cleared.

To configure a library using Device Configuration

1. From the Administration menu in the Navigation Bar on the Home Page, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. From Device Configuration Welcome dialog, select Tape Library and click Next.

   The Assign Devices dialog opens.

   Note: Delays can occur while Device Configuration 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.

3. To manually assign a drive, highlight the drive and the library and click Assign.
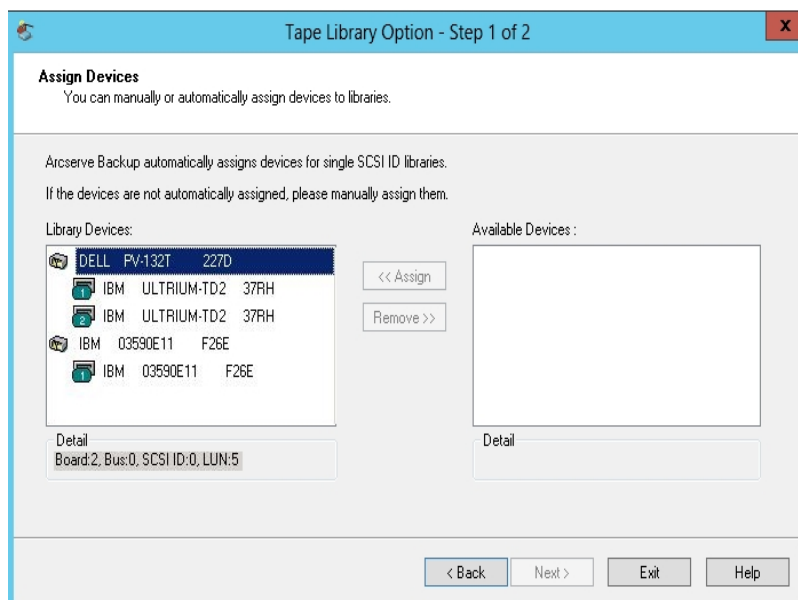
Note: Assigning a drive to a library lets the Tape Engine detect the presence of the drive in the library. If you are assigning drives manually, the drives inside multiple drive libraries must be assigned in the order that the library detects them.

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.

4. Click Next.

   The Library Options dialog opens.
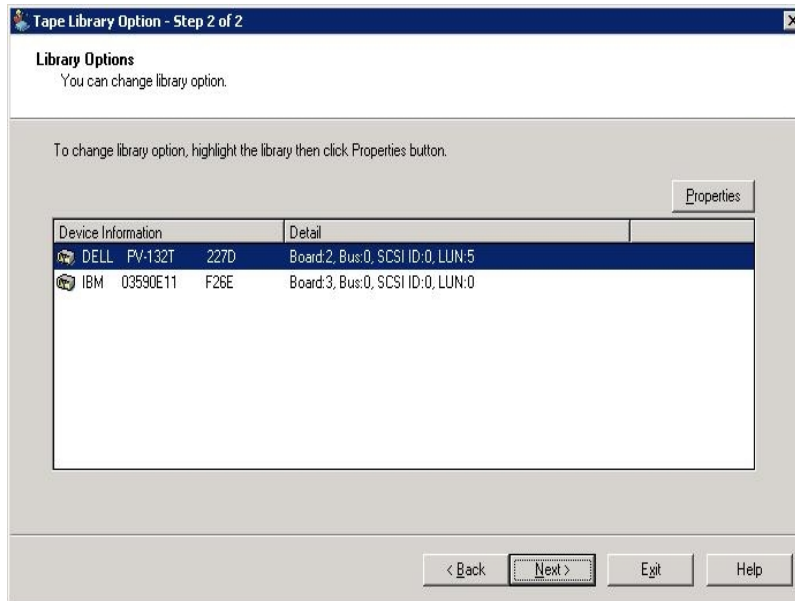
5. Highlight the library you want to configure and click Properties.

   The Properties dialog opens.

6. Specify the following bar code reader and eject media options that you require:

   ▪ **Bar code reader installed**--If your library contains a bar code reader, this option lets you use the bar code reader in the device to inventory the tapes in the library.

     – **Set unknown bar code media to not inventoried during initialization**--To enable this option, you must select the Bar code reader installed option.

       This option lets Arcserve Backup initialize faster by designating media with a bar code that is not recorded in the Arcserve Backup database as "Not Inventoried." This option prevents Arcserve Backup from inventorying the "not inventoried" slots as the Tape Engine starts. Media that is designated as not inventoried can remain in its slot until you need it. To use media that is designated as "Not Inventoried," you must invent-

ory the media using the Manual Inventory option from the Device Manager window.

- **Bar code reader not installed**--Specify this option if your library does not contain a bar code reader.

  - **Library Quick Initialization**--To enable this option, you must select the Bar code reader not installed option.

    This option is designed for libraries that cannot read bar codes. With this option enabled, Arcserve Backup retains information about the library's slots in the Arcserve Backup database. As a result, Arcserve Backup does not repeat the inventory process when the Tape Engine is restarted. Arcserve Backup ignores this option on libraries that contain a bar code reader.

    Note: If the library does not support bar codes and this option is disabled, Arcserve Backup inventories the entire library when Arcserve Backup starts.

    This option lets Arcserve Backup initialize faster by bypassing the inventory slots process when the Tape Engine starts. When you use this option, Arcserve Backup assumes that the media in the slot have not been added, removed, moved, or swapped since the last shutdown. If you added, removed, moved, or swapped media, you should manually inventory the entire library or inventory the slots that changed.

    Note: Arcserve Backup must inventory the library after you configure the library. The quick initialization option takes affect after you complete the first full inventory of the library.

- **Eject media upon backup job completion**--Lets you 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 about global options, see the *Administration Guide*.

7. Click OK, and click Next.

   The Summary dialog opens.

8. Click Next.

   The Device Configuration Completed dialog opens.

9. Follow the prompts on the Device Configuration Completed dialog to complete the configuration.

10. Restart the Tape Engine.

    The library is configured.

    More information:

    Configure Libraries

How to License the Tape Library Option

To successfully license Arcserve Backup Tape Library Option, you must fulfill the following installation requirements:

- You must install and license the option to enable backup and restore operations to multiple drive libraries.

- You must install the option on the primary server or on a stand-alone server.

- You must issue all licenses on the primary server or on a stand-alone server.

- Ensure that you have a sufficient number of Tape Library Option licenses to support your environment.

  The Tape Library Option is a count-based license. You must issue a license to all Arcserve Backup servers that are connected directly to a multiple drive library or share a multiple drive library with another Arcserve Backup server.

Examples: How to License the Tape Library Option

The following examples describe how count-based licensing works with the Tape Library Option:

- Your environment consists of a primary server and three member servers that are not connected to a SAN. Each Member server has an attached multiple drive library. This configuration requires you to have three Tape Library Option licenses issued on the primary server.

- Your environment consists of a primary server, two member servers, and one data mover server. The primary server, the member servers, and the data mover server share a multiple drive library on a SAN. This configuration requires you to have four Tape Library Option licenses issued on the primary server.

Configure a RAID Device

Partitioning your library can provide you with a more flexible RAID configuration. For more information about partitioning a library, see Configure an Arcserve Backup Virtual Library.

After you start or stop and restart the Tape Engine, Arcserve Backup should automatically detect and configure your libraries with a default set of options. This section describes how to:

- Configure a new RAID device.

- Modify an existing RAID device.

To configure a RAID device

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. From Device Configuration Welcome dialog, select RAID Device and click Next.

   The Configure RAID Devices dialog opens.

3. You can perform any of the following actions from the Configure RAID Devices dialog:

   - Create a new RAID device.

   - Delete an existing RAID device.

   - Change properties, such as RAID level.

   - Assign a device to an existing RAID device.

   - Remove devices from an existing RAID device.

More information:

Create and Assign a RAID Device

View a Summary of RAID Devices

Create and Assign a RAID Device

Arcserve Backup lets you create and assign RAID devices that you can implement in your environment.

To create and assign a RAID device

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. Select RAID Device and click Next.

   Note: If the Tape Engine is currently running, you are asked to stop it. Click Yes to continue.

   The Configure RAID Device dialog opens.

3. Click New.

   The Create RAID device dialog opens.

4. On the Create RAID Device dialog, click More.

   Define the type of RAID device you want to implement.

5. Click OK to create the RAID device and return to the Configure RAID Device dialog.

   The new RAID device is displayed on the RAID Device(s) list.

6. In the Available Devices list, select and assign the device or devices you want to add to the RAID device.

   Note: A RAID level 0 RAID device must contain at least two drives, a RAID level 1 RAID device must contain exactly two drives, and a RAID level 5 RAID device must contain a minimum of three drives.

7. Click Next.

   You have successfully created and assigned the RAID device.

View a Summary of RAID Devices

The steps that follow help to ensure that your RAID devices are configured properly.

To view a summary of RAID devices

1. From the Configuration menu on the Arcserve Backup Manager window, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. Click Next.

   The Device Manager Options dialog opens.

   Note: You must shut down the Tape Engine to perform this task. If the Tape Engine is currently running, you are asked to stop it. Click Yes to continue.

3. Select RAID Device and click Next.

   The Configure RAID Devices dialog opens.

4. Click Next.

   The Summary dialog opens with a summarized list of all RAID devices.

5. To close the Summary dialog, click Next, and then click Exit.

Configure Arcserve Backup Virtual Libraries

After you start or stop and restart the Tape Engine, Arcserve Backup should automatically detect and configure your libraries with a default set of options. This section describes how to:

- Configure an Arcserve Backup virtual library.

- Modify the options for an existing Arcserve Backup virtual library.

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

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

  The following graphic illustrates a sample Device Manager view:
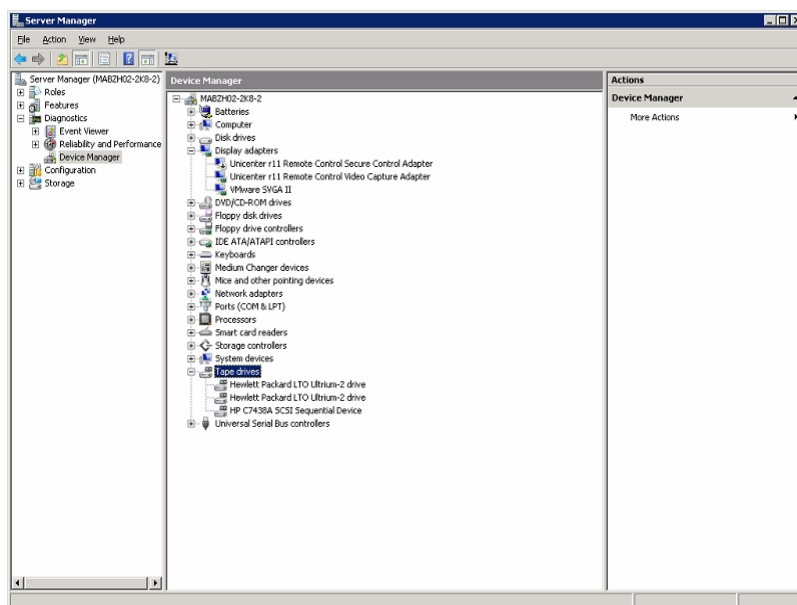
  The library should be listed under Medium Changers and the Drives are usually listed under Tape drives. If there are no available Windows drivers for the Tape drives, they will be listed under Other devices. Arcserve Backup does not require device specific Windows drivers.

To configure Arcserve Backup virtual libraries

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. Select Virtual Library and click Next.

Note: If the Tape Engine is currently running, you are asked to stop it. Click Yes to continue.

3. Select the library from the Available Libraries list that you want to divide into Arcserve Backup virtual libraries and click New.
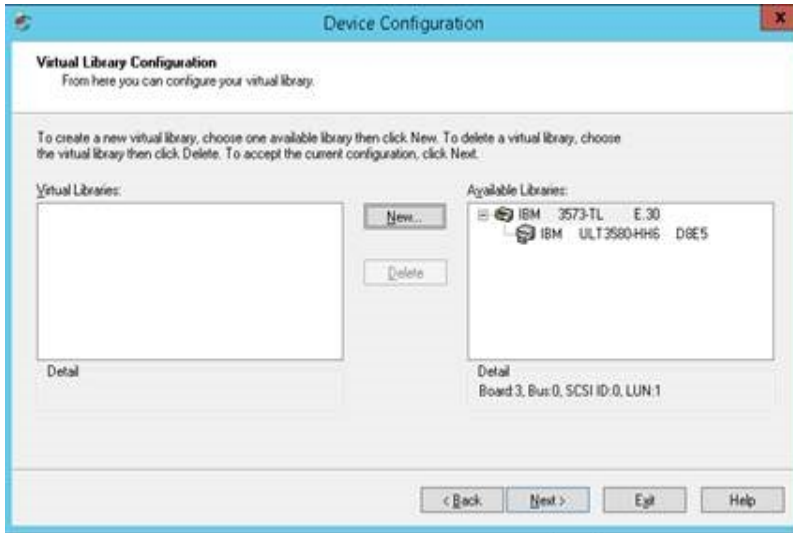
The New Virtual Library Properties dialog opens.

4. Select the drive or drives and the slot range that you would like to assign to the drive and click OK.
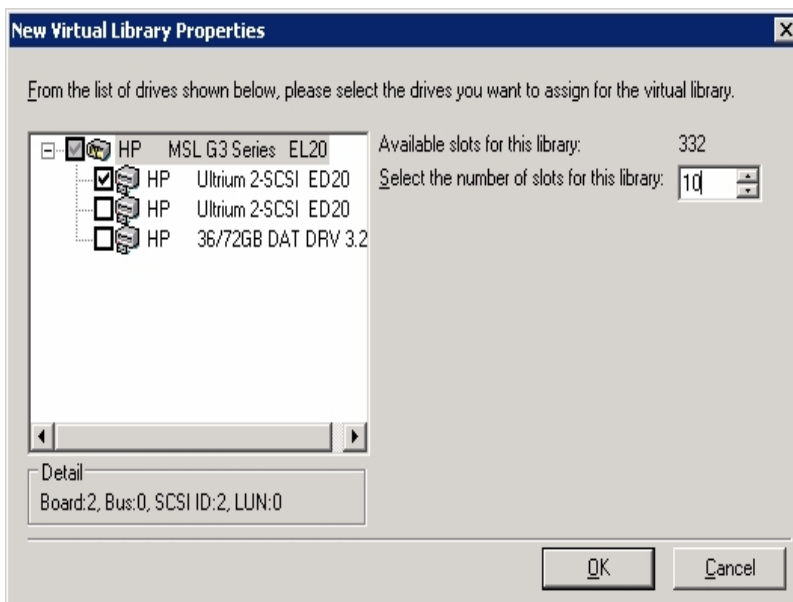
You have successfully created an Arcserve Backup virtual library.

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

6. Click Next.

   You have successfully saved your Arcserve Backup virtual library configuration.

Notes:

▪ If you need to modify your configuration, select one of the Arcserve Backup virtual libraries and click Delete to reconfigure the library. When you delete an Arcserve Backup virtual library, Device Configuration prompts you to remove all the virtual libraries, and reconfigure.

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

Configure Mixed Media, Arcserve Backup Virtual Libraries

When you create an Arcserve Backup virtual library using Arcserve Backup, you can configure a mixed media library into different Arcserve Backup virtual libraries to handle the different media types. Device Configuration lets you 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 LTO drives.

After you start or stop and restart the Tape Engine, Arcserve Backup should automatically detect and configure your libraries with a default set of options. This section describes how to:

- Configure an Arcserve Backup virtual library to manage mixed media.

- Modify the options for an existing mixed media library.

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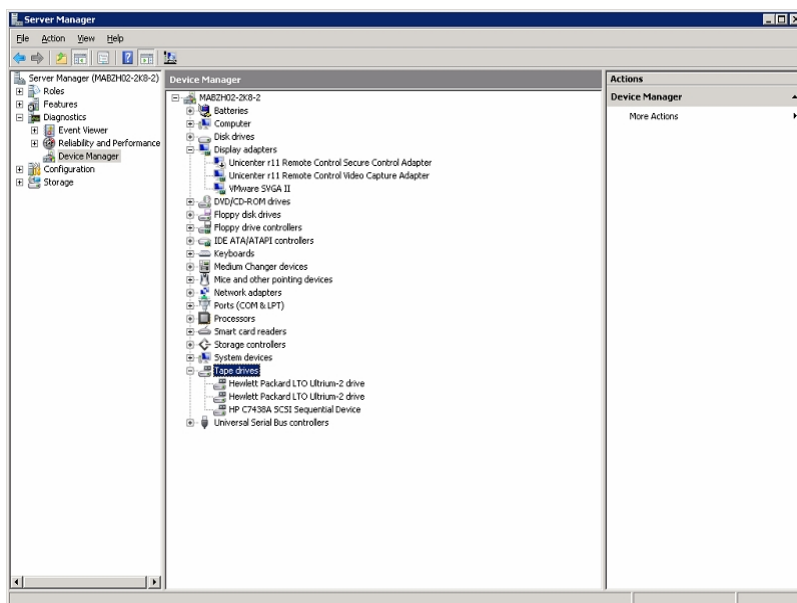

The library should be listed under Medium Changers and the Drives are usually listed under Tape drives. If there are no available Windows drivers for the Tape drives, they will be listed under Other devices. Arcserve Backup does not require device specific Windows drivers.

To configure mixed media, Arcserve Backup virtual libraries

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

    The Device Configuration Welcome dialog opens.

2. Select the Virtual Library option (to divide your library into Arcserve Backup virtual library devices), and click Next.

    Note: If the Tape Engine is currently running, you are asked to stop it. Click Yes to continue.

3. In the first Virtual Library Configuration dialog, select the Mixed Media Library. Click New to access the New Virtual Library Properties dialog.
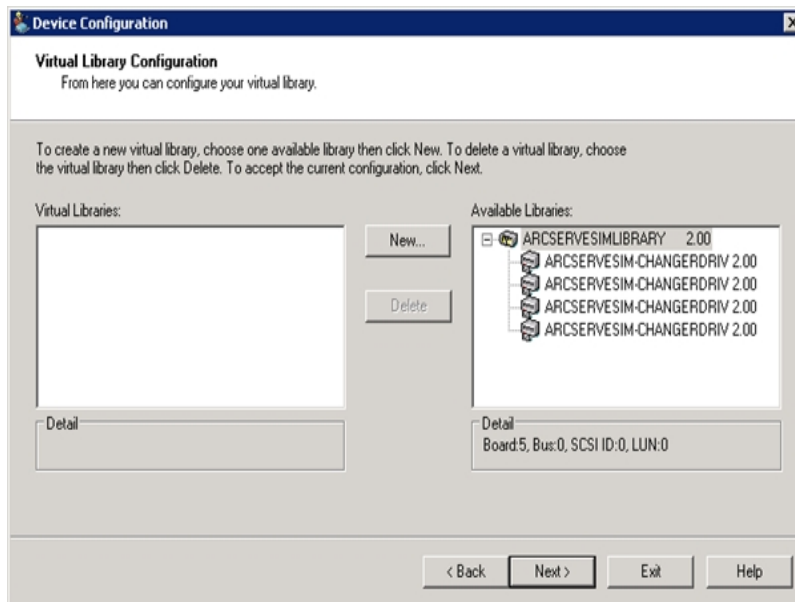
4. From the New Virtual Library Properties dialog, select the drives that use the same media type and also select the corresponding slot range that will hold that media type. Click OK to continue.
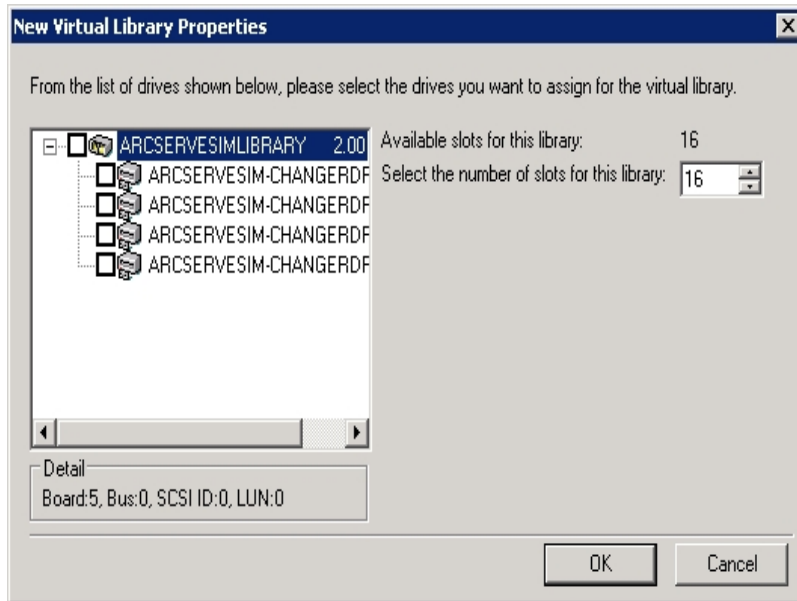
Note: The slot range specified is in sequential order, beginning with the first slot in the library. Make sure that you select the drives having the same media type as the media in the first slot range.

5. Repeat Steps 3 and 4 for each set of drives that use the same media type.

6. Click Next.
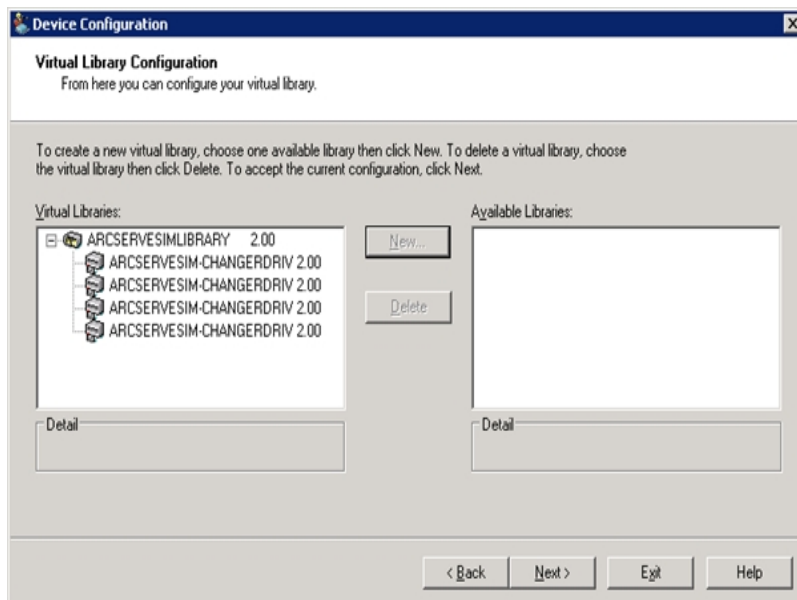
You have successfully configured a mixed media, Arcserve Backup virtual library.

Note: If your hardware configuration changes, you must reconfigure your Arcserve Backup virtual libraries forArcserve Backup to work properly. If you must dis-

connect a library that was configured into Arcserve Backup virtual libraries, you should delete the Arcserve Backup virtual libraries before disconnecting.

Configure VTLs to Function as Arcserve Backup VTLs

Virtual tape libraries (VTLs) are disk-based devices that are designed to behave like physical tape libraries. To allow Arcserve Backup to back up data to these devices, VTLs, you must configure the devices to function as Arcserve Backup VTLs.

Important! You should not configure standard physical libraries to function as an Arcserve Backup VTLs. The library's backup and data migration performance can be adversely affected when configured to function as a VTL.

Prerequisite Tasks

Before you can configure devices to function as VTLs, verify that the following pre-requisite tasks are complete:

- ▪ The Tape Library Option is licensed.
- ▪ The VTLs are properly configured using Device Configuration.
- ▪ Arcserve Backup detects the VTLs.

To configure VTLs to function as Arcserve Backup VTLs

1. From the Administration menu in the Navigation Bar on the Home Page, select Device.

   The Device Manager window opens.

2. From the Server directory tree, locate the VTL.

   Right-click the VTL and select Library Properties from the pop-up menu.

   The Library Properties dialog opens.

3. Select the General tab.

   In the VTL (Virtual Tape Library) section, check the Library is a VTL check box and click OK. Arcserve Backup ignores specified media expiration dates when you select this option.

The library is identified as a VTL in the Backup Manager, Destination tab.
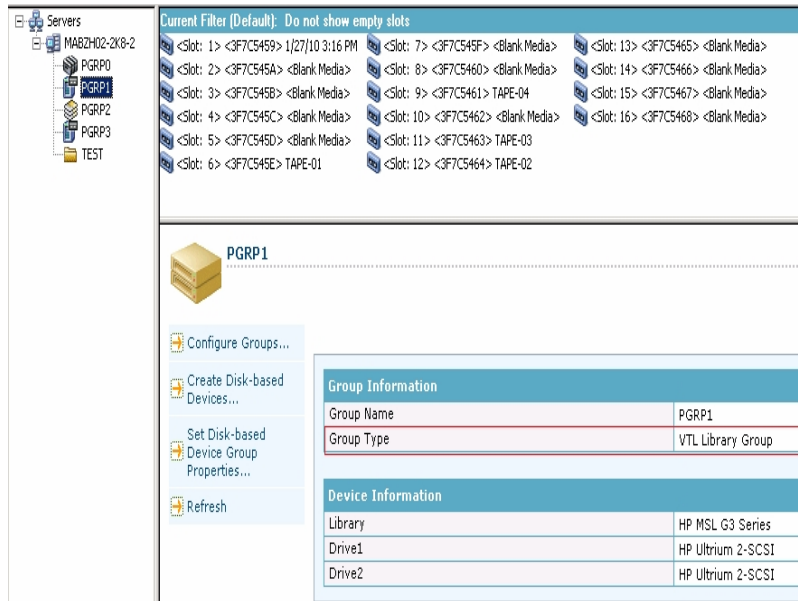
Note: If you do not want to identify a library as a VTL, repeat the above steps and remove the check mark from the Library is a VTL check box.

Specify the Block Size for Backups to Tape Libraries

Arcserve Backup lets you specify the block size for tape backups. This capability lets Arcserve Backup transfer more data per block to the device. Before you specify a larger tape block size, consider the following circumstances:

- The largest default tape block that Arcserve Backup can transfer is 64 KB. You can increase the tape block size to 128 KB, 256 KB, or 512 KB when using tape drives in your backup environment that support larger tape blocks.

  Note: See the device and host bus adapter (HBA) manufacturer documentation to verify that the device supports larger data transfers.

- Large block backups require HBAs that support large transfer sizes. When Arcserve Backup detects the HBA cannot support the data transfer size required for the larger block size, Arcserve Backup disables the larger block size and records an error message in the Tape engine log file.

- When Arcserve Backup overwrites or uses blank tapes, Arcserve Backup formats the media using the newly defined tape block size.

- When Arcserve Backup appends data to media, Arcserve Backup writes the appended data to the media using the block size originally applied to the media.

- For SAN attached libraries, verify that the HBA for all SAN member servers can support the transfer size that the tape block size requires. Backups to SAN member servers that do not support the larger transfer size usually fail.

To specify the tape block size for tape libraries

1. Stop the Arcserve Backup Tape Engine service on the backup server that you want to configure.

   Note: If the backup server is a SAN primary server, stop the Tape Engine service on the SAN member servers.

2. Open Windows Registry Editor and browse to the following key:

   - **x86 platforms:**

     HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\CA ARCServe Backup\Base\TapeEngine

   - **x64 platforms:**

     HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\CA ARCServe Backup\Base\TapeEngine

   Locate the DEVICE# key for the tape library that you want to configure.

3. Under the DEVICE# key, create a DWord registry key named ForceBlockSize.

    Specify one of the following DWORD values:

    ▪ 0x100 (256 KB)

    ▪ 0x200 (512 KB)

4. Close the Edit DWORD Value dialog and close Windows Registry Editor.

5. Restart the Arcserve Backup Tape Engine service on the SAN primary server and the SAN member servers.

    The tape block size is applied to all of the drives contained in the tape library.

Uninstall the Option

The Tape Library Option is a primary server and stand-alone server-based install-ation. You must use the Server Admin to uninstall primary server and stand-alone server-based agents and options.

Note: The Tape Library Option does not appear in the Windows, Control Panel, Add or Remove Programs application.

To uninstall the option

1. Log into the primary server or stand-alone server.

   From the Quick Start menu in the Navigation Bar on the home page, click Server Admin

   The Server Admin opens.

2. From the domain directory tree, right-click the primary server or stand-alone server and select Install/Uninstall Options from the pop-up menu.

   The Install/Uninstall Options dialog opens.

3. Clear the check box next to Tape Library Option and click OK.

   Arcserve Backup uninstalls the option.

Chapter 3: Using the Option

This section contains the following topics:

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 Arcserve Backup home page.

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

This section contains the following topics:

View Library Information

View Library Drive Information

View Media Information

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, serial number, and SCSI compliance. The Summary section is the default view.

A sample Summary section is shown next.
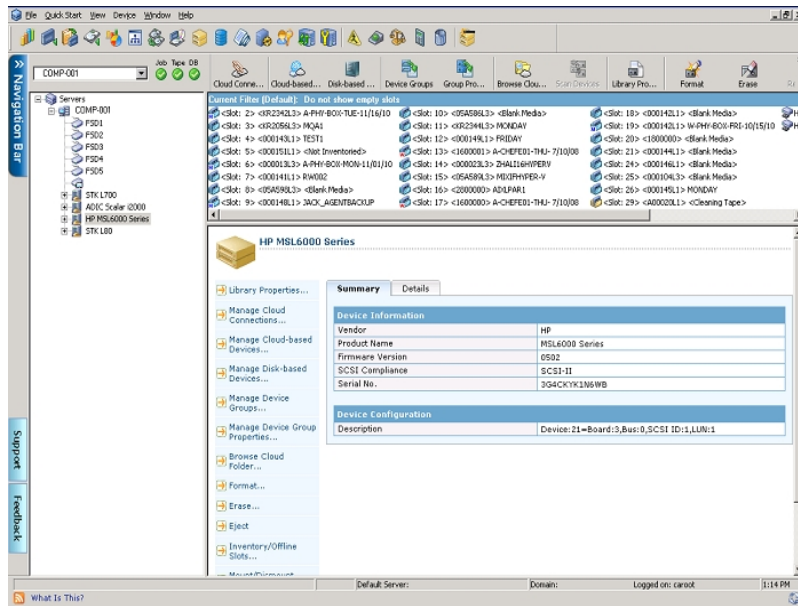
Detailed Information About Libraries

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

▪ The Groups configured for the library.

You can also view information about the current library status. For more information about bar code/serial numbered media, see How Arcserve Backup Labels Media with Bar Codes or Serial Numbers.

A sample Detail section is shown next.

View 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, serial number, and SCSI compliance. The Summary section is the default view.

A sample Summary section is shown next.
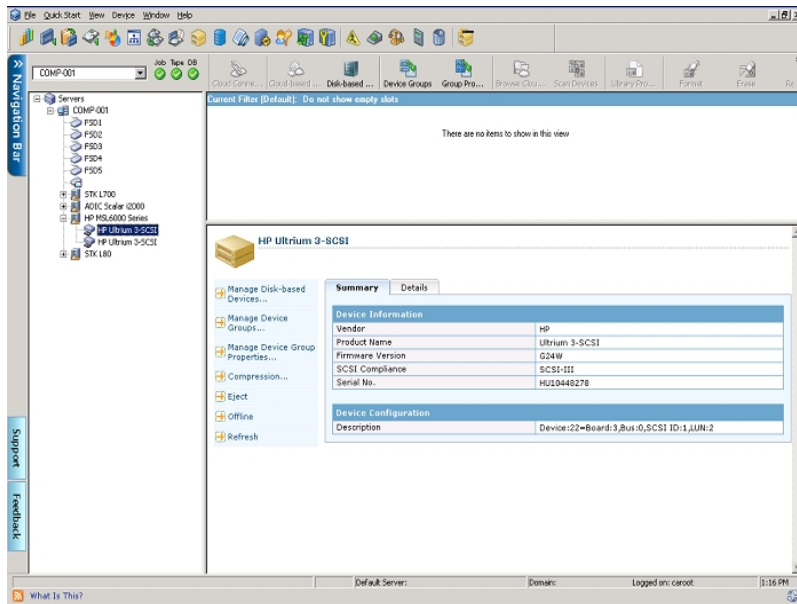
Detailed Information About Library Drives

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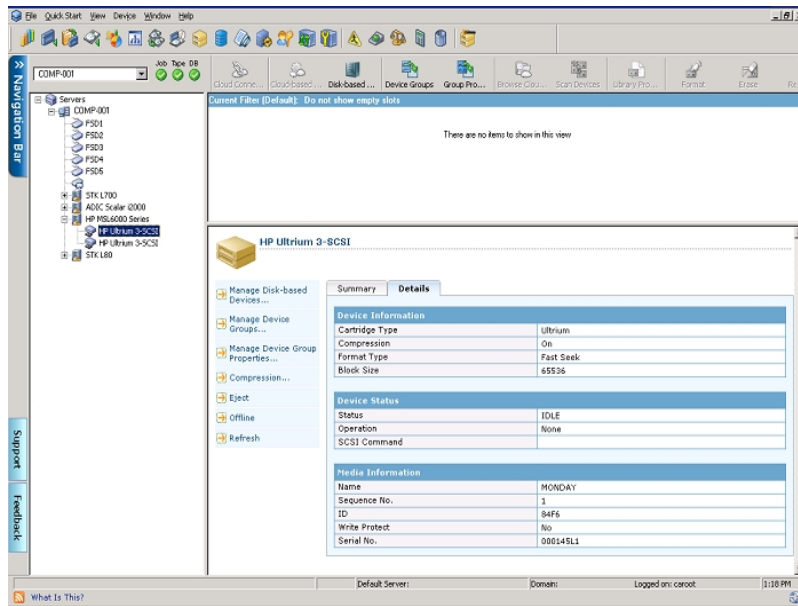
The Media Information section indicates which media is currently located in the library drive.

View 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.
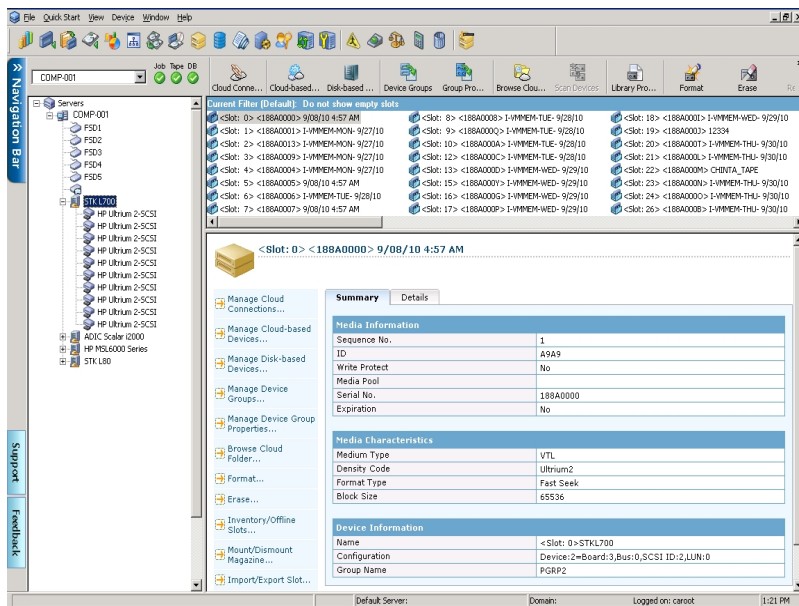
Detailed Information About Media

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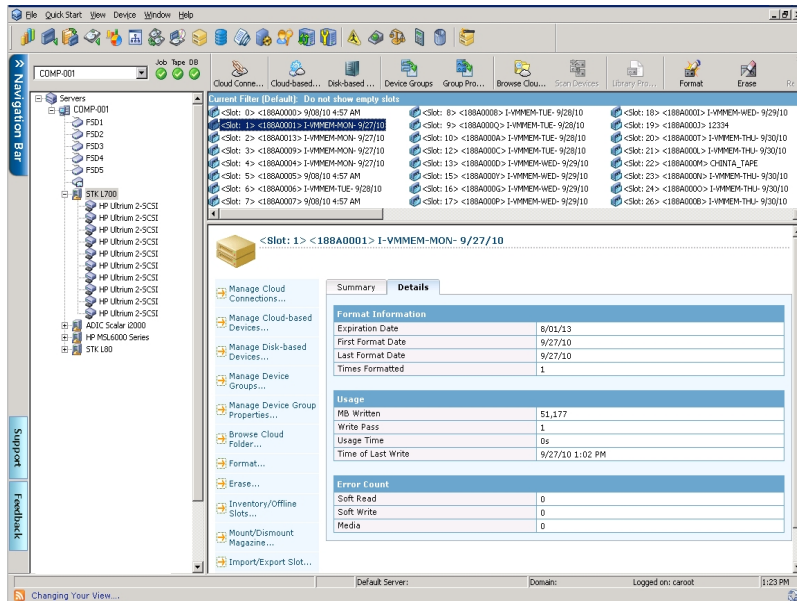
The Detail section of the Media Information window also provides information about Soft Read, Soft Write, and Media errors.

- 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.

Linear Tape-Open (LTO)

Linear Tape-Open (LTO) is an open-format tape storage technology. The open format functionality lets you access multiple sources of compatible storage media products. Arcserve Backup r18 supports LTO-8.

The enhanced data rate of LTO-8 provides a performance increase when compared to LTO-7. The performance boost helps you in performing the same amount of work with lesser number of tape drives.

How to Enable or Disable Logical Block Protection

Logical Block Protection (LBP) is a functionality offered by manufacturers, such as IBM and HP for data integrity using CRC check, where 4 byte of CRC data will be written on drive following each block of data received.

Important! You can enable or disable LBP only when you use LTO-7 or above generation drive.

LBP allows Arcserve Backup to detect read and write errors. Consider the following conditions:

- An error occurs where CRC sum is not correct during the process of writing data to media, which could lead to data corruption.

- Change of backup data blocks while getting transmitted over the network (LAN) for Storage Area Network (SAN).

- When an error occurs, the drive reports a SCSI error with the drive and the backup fails.

Logical Block Protection (LBP) does not support the following:

- Tape RAID backups

- NAS (Network Attached Storage) backups

- UNIX/Linux Data Mover backups

- File system device backups, for example, backup to Data Deduplication media or using file system device as staging device for Staging backups.

You can enable or disable LBP.

Enable Logical Block Protection (LBP):

1. Open Device Manager in Arcserve Backup.

2. Right-click the drive on which you want to Enable LBP.

3. From the menu options available, select the option **Enable Logical Block Protection**.

   A pop-up is displayed with the message: *LBP is enabled*.

Note: Insert Blank media into the drive before enabling LBP.
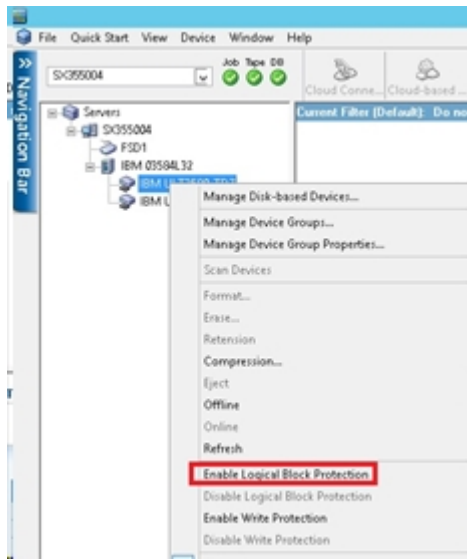
4. After enabling Logical Block Protection(LBP) the following Warning message gets displayed in generic logs:
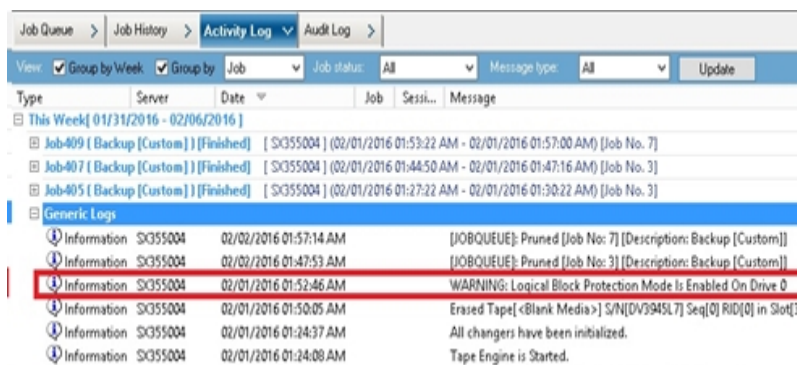
Disable Logical Block Protection (LBP):

1. Open Device Manager in Arcserve Backup.

2. Right-click the drive on which you want to disable LBP.

3. From the right-click menu options available, select the option **Disable Logical Block Protection**.

    A pop-up is displayed with the message: *LBP is Disable*.

    Note: Eject media from the drive before disabling LBP.

How to Enable or Disable Write Protection

Write Protection (WRP) is a functionality offered by manufacturers, such as IBM and HP for data protection to prevent data from being overwritten to an LTO tape cartridge. You can enable Write Protection on blank media or formatted media. When Write Protection is enabled on formatted media, you can only append data but not overwrite.

You can enable or disable WRP using either of the following two methods:

1. **Manually Positioning write-protect switch**

   Note: Applicable with drive of LTO-7 or previous versions.

   The position of the write-protect switch on an LTO tape cartridge determines whether you can write to the tape:

   - If the switch is set to Locked (solid red), data cannot be written to the tape.

   - If the switch is set to unlocked (black void), data can be written to the tape.

2. **Using Arcserve Backup GUI interface**

   Note: Applicable only when you use LTO-7 or above generation drives.

   Use Arcserve Backup to write-protect your cartridges rather than manually setting the write-protect switch.

   Enabling Write Protection (WRP):

1. Open Device Manager from Arcserve Backup.

2. Right-lick the drive on which you want to enable WRP on cartridge.

3. From the menu options, select the option **Enable Write Protection**.

   A pop-up is displayed with the message: *Write Protection is Enable*.

   Note: New Blank media should be inserted into drive to enable WRP and format. Write Protection works on a brand new tape or tape must be long erased.
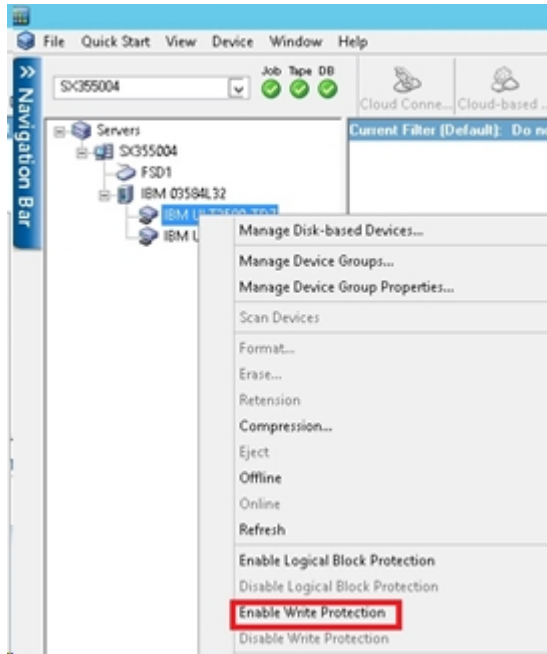
Disabling Write Protection (WRP):

1. Open Device Manager from Arcserve Backup.

2. Right-click the drive on which you want to disable WRP on cartridge.

3. From the menu options, select the option **Disable Write Protection**.

   A pop-up is displayed with the message: *Write Protection is Disable*.

   Note: Media should be ejected from the drive to perform Disable WRP.
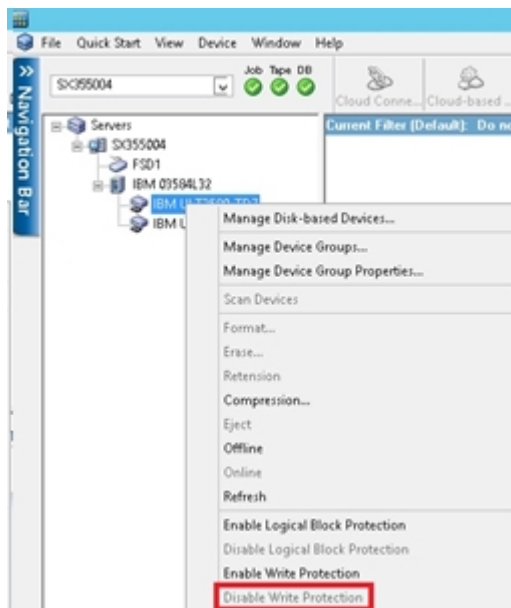
Device Management Functions

Using the Device Manager, you can perform device management tasks for your tape libraries and tape RAID libraries.

The following functions are library specific and are accessible only if the device supports the capability.

- Inventory the slot range.

  Note: Because Arcserve Backup 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.

- Online and Offline drives.

- Retension the tapes.

- Mount or Dismount the magazines.

- Clean media.

- Import and export media.

- Compress data on the media.

- Rebuild media option - RAID devices only.

- Offline and online removable drives.

- Configure library groups.

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

How Arcserve Backup 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.

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.

Note: When the serial number or bar code does not exist on the media, Arcserve Backup displays N/A (not available) on the media description in the Device Manager.
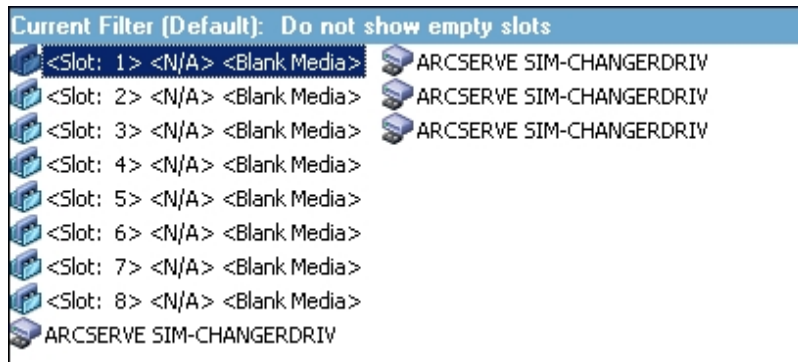
How to Choose Expiration Dates

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 expiration dates 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 one year, or less, from the date of formatting. 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, Arcserve Backup notifies you that you cannot overwrite to expired media. To remedy this condition, you can specify to append the backup data to the expired media by doing the following:

1. Open the Backup Manager and click Options on the toolbar.

   The Global Options dialog opens.

2. Select the Backup Media tab.

3. In the First Backup Media section, click Append, click OK, and resubmit the job.

Expiration Dates for New Media

Arcserve Backup formats media using the following guidelines:

- If you are formatting new, blank media, the default expiration date is three years 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.

How Expired Media Appears in the Backup Manager and Device Manager

Arcserve Backup can detect expired media.

The following screen illustrates how expired media displays in the Backup Manager, Destination tab.
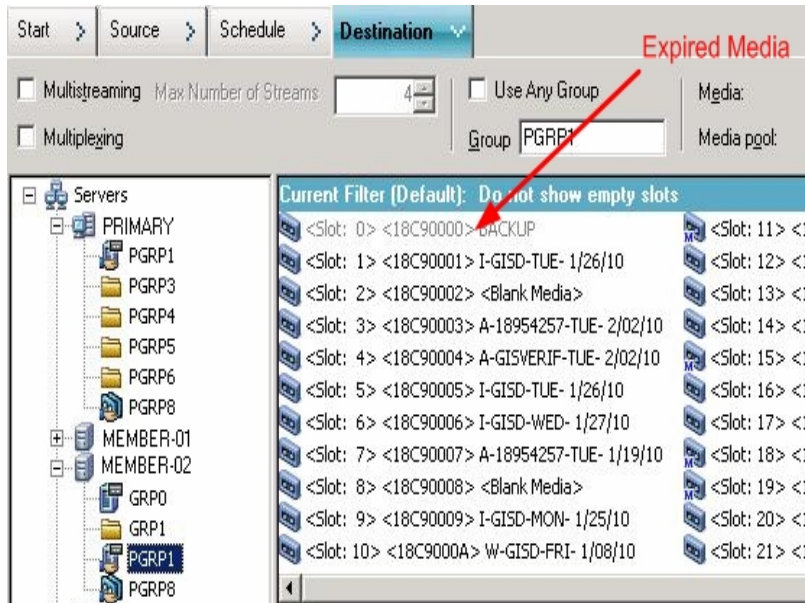
The following screen illustrates how expired media displays in the Device Manager.
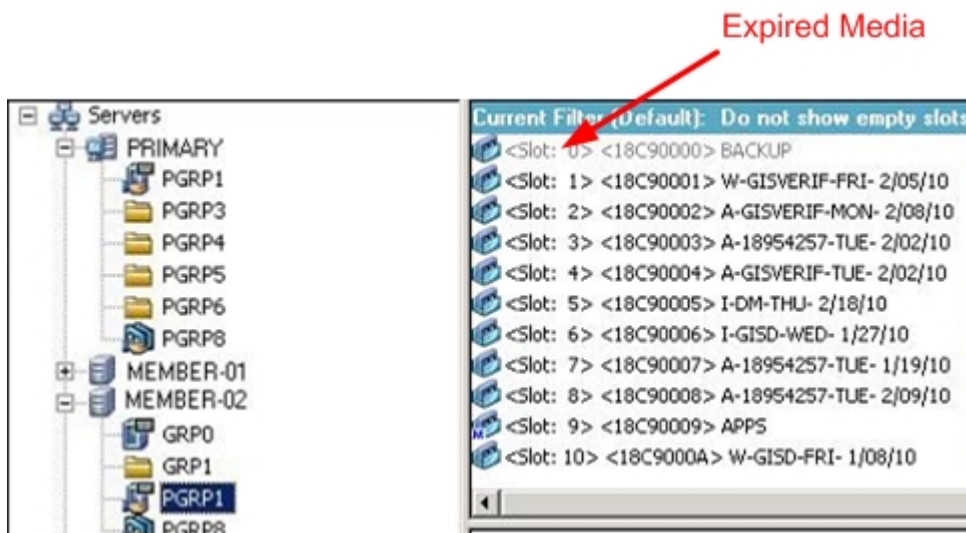
How Arcserve Backup Logs Expired Media

Arcserve Backup logs messages in the Activity Log that relate to media that is expired or will expire in certain number of days.

- When the backup job appends the backup data to an expired media, a warning message is displayed as shown below:

  This job is appending to an expired media. (MEDIA=media_name[S/N:serial_number], ID=media_id, SEQ=sequence_number)

- When a backup job chooses a media to overwrite or append the backup data, it checks the alert period of the media expiration and displays the following message:

  This job is using media that will expire after <# of days> (MEDIA=media_name [S/N:serial_number], ID=media_id, SEQ=sequence_number).

  Where <# of days> represents a specific number days (for example, 3, 5), Media_name represents the name of the media (for example, tape1, Media_id represents the media ID (for example, 3d3c), and Sequence_number represents the sequence number.

  Note: This operation applies to both first tape and spanning tape.

- The alert period of the media expiration is 30 days by default. You can change this by adding the DWORD AlertPeriodForTapeExpiration to the following registry key to set the alert period (number of days):

  \\HKEY_LOCAL_MACHINE\ComputerAssociates\Arcserve Backup\Base\Task\Backup\AlertPeriodForTapeExpiration

  Note: This approach only applies to tape media, and you cannot overwrite to an expired media.

Inventory Slots

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.

Be aware of the following considerations when using the Inventory Slots option to inventory media:

- Each media that 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.

- For media that was created using a previous Arcserve release, this release automatically creates a new media pool with the same name given to media that was inventoried and used in a media pool in the previous Arcserve release.

To inventory slots

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

   The Inventory/Offline Slots dialog opens.

	Slot	Group Name	Media Name	Seq.	ID	Serial No.	\
🟢	1	PGRP3	A	1	ECFE		
	2	PGRP3	B	1	E90E		
	3	PGRP3	C	1	EC66		
	4	PGRP3	D	1	EAEE		
	5	PGRP3	<Blank Media>				
	6	PGRP3	<Blank Media>				
	7	PGRP3	<Blank Media>				
	8	PGRP3	<Blank Media>				
	9	PGRP3	<Blank Media>				
	10	PGRP3	<Blank Media>				

   - Quick Inventory - retrieve media information from Database
   - Regular Inventory - read in all media information
   - Offline - dismount the media in the slot

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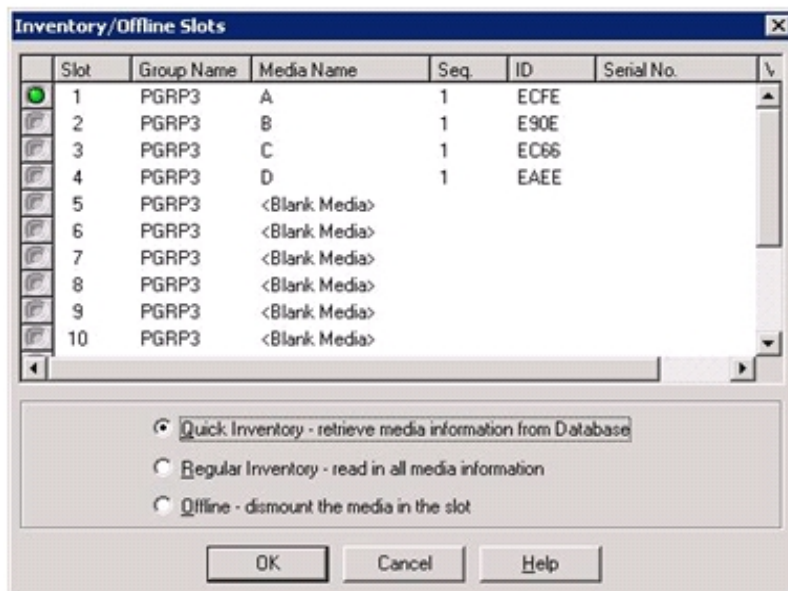
2. Select the slot you want to inventory. Press the Shift key to select multiple contiguous media. Press the Ctrl key to select multiple non-contiguous media. The light icon next to selected media turns green.

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

   ▪ **Regular Inventory--**The Tape Engine reads all the media information from the media.

     Note: This method is also known as a Manual Inventory.

   ▪ **Offline--**Dismounts the selected slots.

4. Click OK.

   Arcserve Backup inventories the slots.

Format Media

Although 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 the media is formatted, Arcserve Backup can no longer restore the data and any job sessions associated with the media.

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

To format media

1. Click the Format toolbar button on the Device Manager window.

   The Format dialog opens. It 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.

   Important! File System Devices (FSD) that are part of a staging group cannot be formatted using the Format toolbar button. To prevent accidental formatting of an FSD before the data is migrated to a final destination media, Arcserve Backup disables the Format toolbar button on the Device Manager window. If you want to format the FSD, you can either use the command line (ca_devmgr) or disable the staging option for the selected FSD.

2. Select the slot containing the media that you want to format. Assign a New Media Name and an Expiration date to the media that you want to format.

   Note: When you assign a New Media Name to a slot, the light icon next to the selected slot turns green. Slots with write-protected media appear in red. These media cannot be formatted. You must specify a New Media Name before formatting the media.

   Repeat this step if you want to specify more media.

3. If you want to use the media in a media pool, select a slot with the green light icon and check the Use Rotation option. Then, from the Media Pool drop-down list, select the media pool that you want to use the newly formatted media in. In the Serial No. field, you can accept the default serial number or specify a user-defined serial number. (If no media pool name is defined and the media has an assigned bar-coded serial number, then Arcserve Backup does not overwrite that serial number during the format procedure.)

Note: Click the Apply to all button if you want to use all of the formatted media in a media pool and assign all the media to the same media pool.

4. Assign a name and an expiration date to the media you want to format. You must specify a New Media Name before formatting the media. For more information, see How to Choose Expiration Dates.

5. Click OK.

    The Format dialog closes and the following message appears:

    "Formatting will erase ALL of your data from the media. Do you want to format the media?"

6. Do one of the following:

    ▪ To start the formatting process, click OK.

      Arcserve Backup formats the media.

    ▪ To cancel the formatting process, click Cancel.

      Arcserve Backup does not format the media.

Erase Media

Use this option to erase all data from a single media or from multiple media. 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 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.

  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 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.

  Note: The long erase process consumes more time than the quick erase process. This will be apparent when you erase large capacity libraries. Exercise caution when using this option on large capacity libraries.

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

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

To erase media

1. Click the Erase toolbar button.

   The Erase dialog opens.
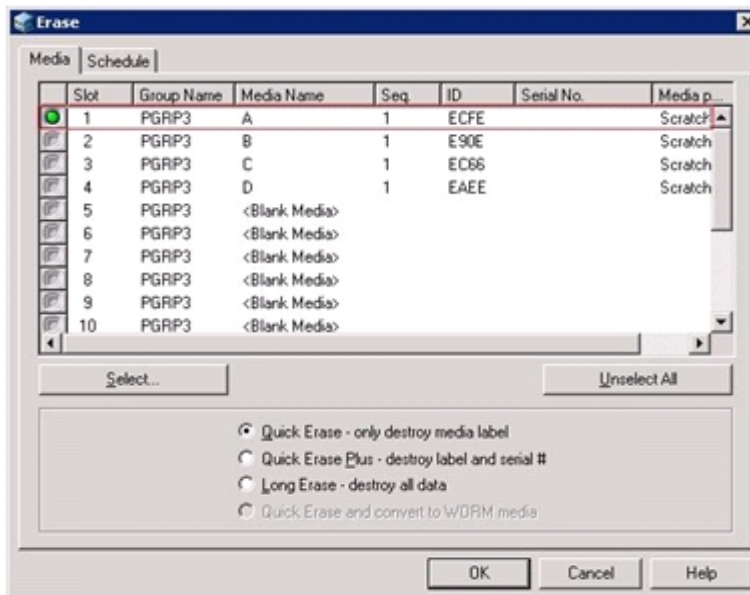
Note: Slots reserved for cleaning media do not appear In the Erase dialog.

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

    Arcserve Backup erases the media.

Eject Media

Use this option 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).

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.

   Arcserve Backup ejects the media.

Online and Offline Drives

You can status library drives as offline or online from the Device Manager by right-clicking on the drive and selecting offline or online, depending on the current state of the drive.

This capability can be useful for marking defective drives in a library as offline, which prevents Arcserve Backup from using the drive until it is repaired and in an online status.

Note: If there is media inside the drive you want to mark as online or offline, eject the media prior to marking the drive offline. Arcserve Backup cannot access the media inside an offline drive.

To online and offline drives

1. Open the Device Manager and browse to the server connected to the library containing the drive that you want to status as online or offline.

2. Expand the library, right-click the drive, and select Online or Offline from the pop-up menu.

   The drive status changes to offline or online.

   Note: Drives display in a disabled mode when they are in an offline state.

Retension Tapes

The Retension option helps to ensure that tapes are tensioned properly to avoid errors, jamming, or breaking. You should retension media if you are having trouble writing to it or reading from it.

Note: This feature applies only to quarter inch cartridge tapes.

To retension tapes

1. Insert the tape into a storage device.

2. Select that tape.

3. In the left pane of the Device Manager, expand the tree under the storage device containing the tape.

   Then highlight the tape.

4. Click the Retension on the toolbar.

5. Click OK.

   Arcserve Backup retensions the tape.

Mount and Dismount Magazines

Use this option to mount (load) or dismount (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.

To mount and dismount a magazine

1. Click the Mount toolbar button.

   The Mount/Dismount Magazine dialog opens.

2. From the Magazines drop-down list, select the magazine you want to mount or dismount.

   Depending on the operation that you want to perform, click one of the following:

   - Mount

   - Dismount

   Arcserve Backup mounts or dismounts the magazine.

Clean Media

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

Note: To use this option, you must have at least one cleaning tape configured in your library.

To clean media (tape heads)

1. Click the Clean toolbar button.

   The Clean Tape Head dialog opens.
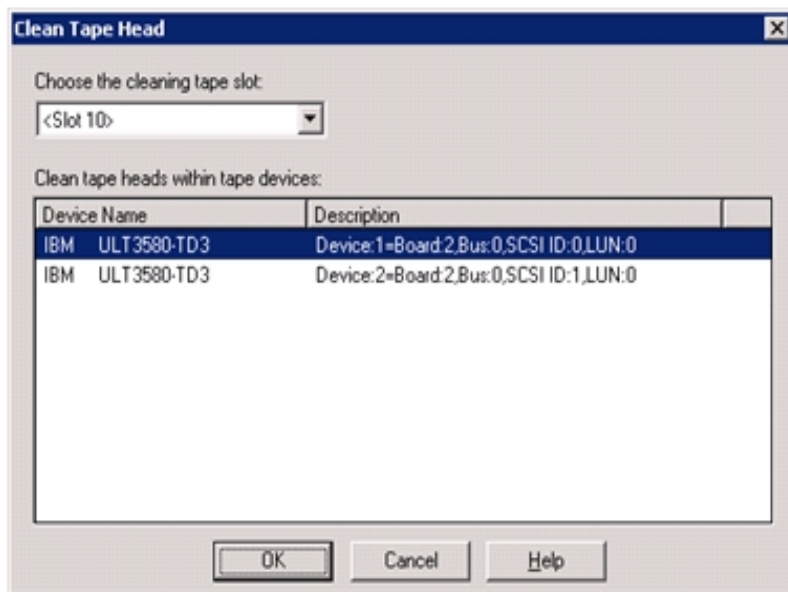
Note: Offline drives do not appear in the Device Name and Description lists.

2. From the Choose the cleaning tape slot drop-down list, select the cleaning slot that you want to use.

3. From the Clean tape heads within tape device list, select the drive whose head you want to clean.

4. Click OK.

   Arcserve Backup cleans the tape heads.

More information:

Configure Libraries

Configure Libraries Using Device Configuration

How to Configure Cleaning Slots

This section describes how you can configure more than one cleaning slot.

If supported by your library, you can use Arcserve Backup to specify more than one cleaning slot. You can designate a slot based on the following:

- **Slot number**--This option lets you designate specific slots as cleaning slots. You can specify one or more cleaning slots and they do not need to be in a successive order.

- **Bar code prefix**--This option lets you designate slots based on a bar code prefix.

  Example 1: If your cleaning tape bar code number is CLN123, specify "CLN*" as the bar code prefix.

  Example 2: If you are using more than one cleaning tape, and their bar codes start with ABC, specify "ABC*" as the bar code prefix.

More information:

Add Cleaning Slots Based on Slot Number

Remove Cleaning Slots Based on Slot Number

Configure Cleaning Slots Based on Bar Code Prefix

Add Cleaning Slots Based on Slot Number

Arcserve Backup lets you add cleaning slots based on the slot number.

To add cleaning slots based on slot number

1. Open the Device Manager and browse to the library that you want to configure.

2. Right-click the library and select Library Properties from the pop-up menu.

   The Library Properties dialog opens.

3. Select the Cleaning tab.

   The cleaning options display.

4. Select the Clean by Slot option.

5. From the Available Slots list, select the slot that you want to designate as a cleaning slot and click the Add button.

   The available slot is added to the Clean Slots list.

6. Repeat the previous step to add more cleaning slots.

7. Click OK.

   You have successfully added cleaning slots based on their slot number.

   More information:

   How to Configure Cleaning Slots

Remove Cleaning Slots Based on Slot Number

Arcserve Backup lets you remove cleaning slots based on the slot number.

To remove cleaning slots based on slot number

1. Open the Device Manager and browse to the library that you want to configure.

2. Right-click the library and select Library Properties from the pop-up menu.

   The Library Properties dialog opens.

3. Select the Cleaning tab.

   The cleaning options display.

4. Select the Clean By Slot option.

5. From the Available slots list, select the slot that you want to remove.

6. Click the Remove button to exclude the slot from use as a cleaning slot.

   The available slot is removed from the Cleaning Slots list.

7. Repeat the previous step to configure more cleaning slots.

8. Click OK.

   The cleaning slots are removed based on their slot numbers.

More information:

How to Configure Cleaning Slots

Configure Cleaning Slots Based on Bar Code Prefix

The Clean By Bar Code function lets you specify cleaning slots for your library based on a specific bar code or range of bar codes using a prefix and a wildcard character.

To configure cleaning slots based on bar code prefix

1. Open the Device Manager and browse to the library that you want to configure.

2. Right-click the library and select Library Properties from the pop-up menu.

   The Library Properties dialog opens.

3. Select the Cleaning tab.

   The cleaning options display.

4. Select the Clean by Barcode option.

   Specify the bar code prefixes into the Clean Barcode Prefix(s) field.
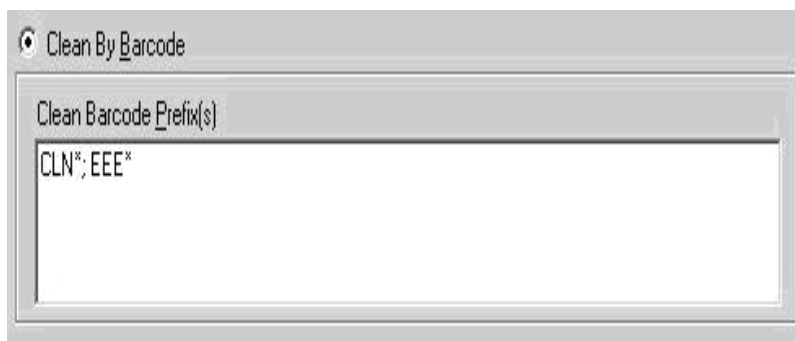
   Note: The asterisk is a wildcard character.

5. Click OK.

   The cleaning slots are set based on their bar code prefixes.

   Examples: Clean Bar Code Prefixes

   The bar code on your cleaning tape is CLN123. In the Clean Barcode Prefix(s) field, specify CLN123.

   There are several cleaning tapes in your library. The bar code prefix for the cleaning tapes is ABC. In the Clean Barcode Prefix(s) field, specify ABC*.

   There are several cleaning tapes in your library. The cleaning tapes' bar code prefixes are ABC, CLN1, and MX. In the Clean Barcode Prefix(s) field, specify ABC*; CLN1*; MX*.

Import and Export Media

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

If the library has mail slots, 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**--Arcserve Backup imports the media and attempts to use the media's bar code information to retrieve the corresponding information from the 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.

To import media to libraries

1. Open the Device Manager and browse to the library that you want to configure.

   Select the library in the Device Management tree.

2. Click Import/Export from the tool bar.

   The Import/Export dialog opens.
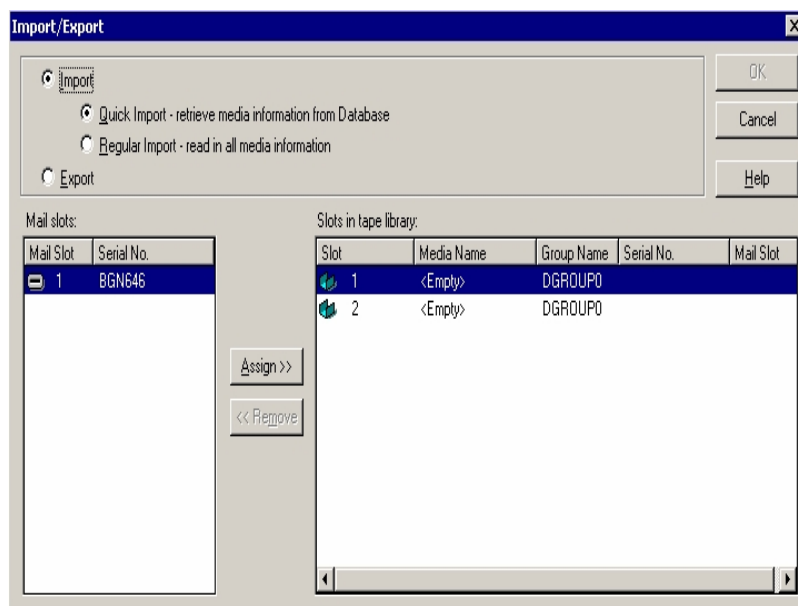
3. Choose Import to view all the available empty slots in a media library.

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.

Arcserve Backup imports the media into the library.

Note: The best practice is to import cleaning tapes to slots that you have designated as cleaning slots, or set the barcode as a cleaning tape prefix. You can do this from the Library Properties window of the Device Manager. If you import it to a different slot, you may receive unrecognized media errors.

4. Repeat the previous step for each media you want to import.

5. Choose an Import method and click OK.

The media is imported to the library.

To export media from libraries

1. Open the Device Manager and browse to the library that you want to configure.

2. Select the library in the Device Management tree.

3. Click Import/Export on the toolbar.

The Import/Export dialog opens.
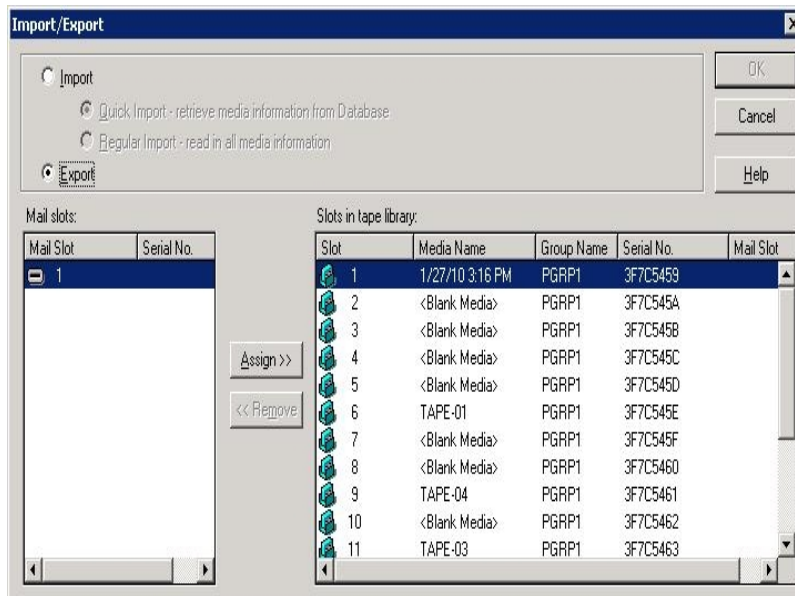
4. Select the Export option to view all the occupied slots in a library.

Highlight the media you want to export.

5. Select the mail slot to export to, and click Assign.

Arcserve Backup exports the media from the library.

6. Repeat the previous step for each media you want to export.

7. Click OK.

The media is exported from the library.

Compress Media

Arcserve Backup lets you compress the backup data that is stored on the media. Use the Compression option only if your storage device supports tape compression. If it does not, the Compression toolbar button will be disabled.

Note: Set the Compression option off only 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.

To turn compression on or off

1. Open the Device Manager and browse to the library that you want to configure.

2. Select the device drive in the Device Management tree.

   If the device drive supports compression, then Arcserve Backup enables the Compression toolbar button. To verify if the device supports compression, select the Detail tab when the device is highlighted.

3. Click Compression on the toolbar.

4. Click OK to set the Compression Mode to Off (if it is On) or On (if compression is Off).

Rebuild Media

Arcserve Backup lets you rebuild one missing or unusable tape containing backup data in a RAID level 5 environment. Due to the architecture of RAID Level 5 (striping with parity), you cannot rebuild more than one missing or defective tape.

To rebuild RAID tape drives

1. Eject the incomplete RAID set, using the eject option from Arcserve Backup Device Manager (choosing 'Eject' while highlighting the RAID ejects all tapes in RAID).

2. Insert a tape that the user wants to use as the replacement for the missing tape in one of the tape drives.

3. Chose Erase from the Device Manager.

   Arcserve Backup erases the tape.

4. Insert the incomplete RAID set in the other tape drives and click the Rebuild toolbar button.

   Arcserve Backup rebuilds the media.

To rebuild RAID tape libraries

1. If there are no blank tapes in the library, import one tape, or erase an unused tape in the library.

2. Choose the RAID set that you want to rebuild and click the Rebuild toolbar button.

   Arcserve Backup rebuilds the media.

Offline and Online Removable Drives

Arcserve Backup automatically detects removable drives that are connected via Universal Serial Bus (USB) or Serial Advanced Technology Attachment (SATA) to an Arcserve Backup primary or member server. Before you can back up data to a removable drive, you must perform a one-time configuration and then bring the removable drive online.

After you perform a one-time configuration, you can specify removable drives as online or offline from Device Manager by right-clicking on the drive and selecting online or offline (depending on the current state of the drive) from the pop-up menu.

Note: If there is media inside the drive that you want to mark as online or offline, eject the media prior to marking the drive offline. Arcserve Backup cannot access the media inside a drive that is in an offline state.

Arcserve Backup automatically detects and configures removable drives that are connected via USB or SATA to an Arcserve Backup primary or member server. Before you can back up data to a removable drive, you must configure the removable drive and then bring the removable drive online.

To specify a removable drive as online

1. Ensure that the removable drive is attached to an Arcserve Backup domain primary or member server.

2. Open the Device Manager window and expand the Servers object.

   Browse to and select the server to which the removable drive is connected.

   Arcserve Backup presents you with a list of devices attached to the selected server.

3. From the list of devices attached to the server, select and right-click the removable drive that you want to bring online.

4. From the pop-menu, select **Online**.

   Arcserve Backup prompts you to confirm that you want to configure the device.

   Note: This message displays only the first time that you bring the removable drive online.

5. Click OK.

   Arcserve Backup prompts you to confirm that you want to bring the device online.

6. Click OK.

   The removable drive is now configured and is in an online state.

Use the **Offline** removable drive option when you want to perform maintenance, repairs, or detach a drive from your Arcserve Backup environment. For example:

- You do not want to use the removable drive for a period of time and you do not want to overwrite the media in the drive.

- You want to detach the removable drive from the Arcserve Backup server so that you can replace it with an identical removable drive, or remove it completely from your Arcserve Backup environment.

Important! When the removable drive is offline, jobs associated with the removable drive may fail.

To specify a removable drive as offline

1. Open the Device Manager window, expand the Servers object.

   Browse to and select the server to which the removable drive is attached.

   Arcserve Backup presents you with a list of devices attached to the selected server.

2. From the list of devices attached to the server, select and right-click the removable drive that you want to take offline.

3. From the pop-up menu, select **Offline**.

   Arcserve Backup prompts you to confirm that you want to take the removable drive offline.

4. Click OK.

   The removable drive is now in an offline state in the Device Manager window.

   Note: After you mark the removable drive as offline, *<Offline>* displays in the Device Manager window.
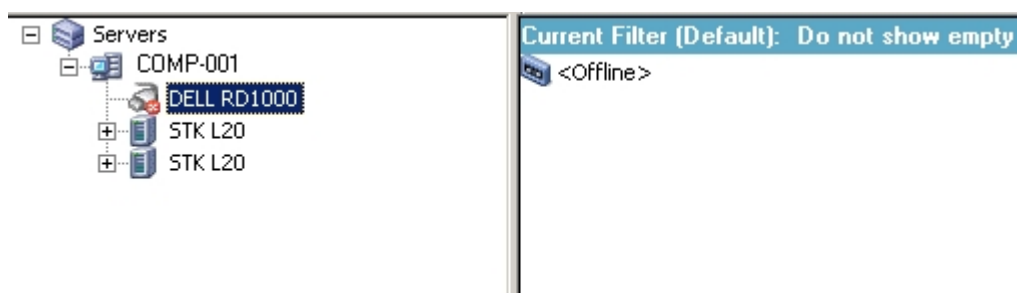
Scan Devices

Use the Scan Device option to enumerate USB storage devices that are connected directly to the Arcserve Backup server.

Note: This option applies to USB storage devices only.

To scan a USB storage device using the Scan Device option

1. Open the Device Manager.

2. Connect the USB storage device to the Arcserve Backup server.

3. Select the USB controller icon in the device directory tree and click the Scan Device toolbar button.

   Arcserve Backup detects and enumerates the device in the Device Manager, device directory tree.

   Important! If the drivers for the USB storage device are not Plug and Play (PnP) compatible, Arcserve Backup may not be able to detect and enumerate the storage device. To resolve this, you must configure the USB storage device by stopping and restarting the Tape Engine.

To scan a USB storage device by stopping and starting the Tape Engine

1. Stop the Tape Engine by doing the following:

   a. From the Quick Start menu, select Server Admin.

      The Server Admin Manager opens.

   b. From the server tree, locate and select the primary server.

      The Arcserve Backup services appear in the right side of the window.

   c. Right-click Arcserve Tape Engine and select Stop on the pop-up menu.

   The Tape Engine stops.

   Note: Do not close the Server Admin Manager.

2. Attach the USB storage device directly to the Arcserve Backup server.

3. Restart the Tape Engine by doing the following:

   a. From the server tree, locate and select the primary server.

   The Arcserve Backup services appear in the right side of the window.

   b. Right-click Arcserve Tape Engine and select Start on the pop-up menu.

   The Tape Engine starts.

After the Tape Engine starts, Arcserve Backup detects and enumerates the device in the Device Manager device directory tree.

Device Group Configuration Using the Device Manager

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 group.

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

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

Example: Library Configuration Using the Device Manager

For example, if you have two libraries attached to your machine, you will have two 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 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.

Create New Library Groups

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 then click Manage Device Groups.

▪ From the Device Manager window or the Staging Location tab in the Backup Manager window, click Manage Device Groups located in the device properties preview pane.

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 new library groups

1. From the Device Manager, click the Device menu and select Manage Device 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 opens.

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

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

Assign Slots to a Library Group

Arcserve Backup lets you assign specific slots to a library group.

To assign slots to a library group

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Group Configuration.

   The Device Group Configuration Welcome dialog opens.

2. Click Next.

   The Login Page dialog opens.

3. Complete the required fields on the Login Page dialog and click Next.

   The Options dialog opens.

4. Select the server that you want to configure, click the Configure Groups option, and then click Next.

   The Device Group Configuration dialog opens. Library devices and their corresponding slots (available for assignment) display in the Available Devices list.
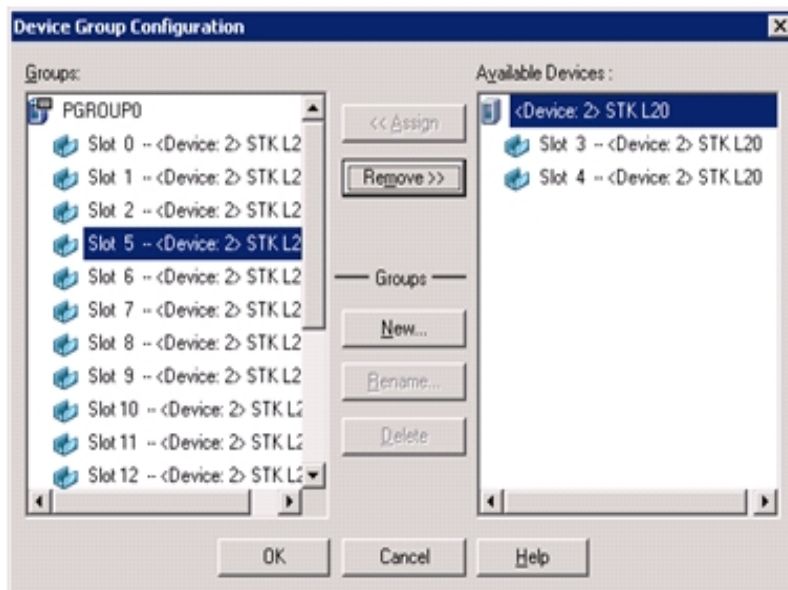
5. From the Available Devices list, select the slots that you want to assign to a group. You can select one available slot at a time, or you can select the library to assign all of its available slots to a group.

6. From the Groups list, select the group to which you want to assign the slot.

7. Click Assign.

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.

8. 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.

9. Click Finish and then click Exit to exit Device Group Configuration.

   The slots are assigned to the library groups.

Remove Slots from a Library Group

Arcserve Backup lets you remove (unassign) specific slots from a library group.

To remove slots from a library group

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

   The Device Group Configuration dialog opens.

2. 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.

3. 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.

4. Repeat Steps 2 and 3 to remove more slots from groups.

5. Click OK.

   The slots are removed from the library groups.

Delete Library Groups

If you no longer require a specific library group, Arcserve Backup lets you delete library groups.

To delete library groups

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 box opens.

2. Select the group you want to delete.

3. Click Delete, and then click OK to confirm.

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

Rename Library Groups

Arcserve Backup lets you rename specific library groups.

To rename library groups

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 the group you want to rename and click Rename.

   The Rename Group dialog opens.

3. Specify a new name for the group and click OK.

   The new group name is appears in the Groups list.

How You Can Filter Libraries

The available filters for libraries are:

- **Empty Slots filter**--Lets you to view all occupied slots or all slots of the library.

- **Range Slot filter**--Lets you filter the slots belonging to a specified range of slots.

- **Media Pool filter**--Lets you view only the media in a particular media pool.

- **Bar code filter**--Lets you filter the media matching the bar code if the library supports a 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.

Filter Libraries

Arcserve Backup lets you use filters to configure the Device Manager to display only the information you need, thereby increasing data manageability and application performance.

To filter libraries

1. Open the Device Manager window and select Preferences from the View menu.

   The Preferences dialog opens.

2. Select the Library Filter tab and specify the filter options that are appropriate to your needs:

   - **Show Write Protected Media in Format / Erase dialogs**--Lets you view information about write-protected media in all Format and Erase dialogs.

   - **Show device name as Vendor ID and Serial Number**--Lets you view device names as the Vendor ID and the serial number.

   - **Show Empty Slots**--Select this option to view the empty slots in the library.

   - **Show Slots Between**--Specify the range of slots to be displayed in the current manager. To define the range, enter the minimum and maximum number of slots allowed.

   - **Show Blank Media Only**--Select this option to view the blank media in the library.

   - **Show Tapes within Media Pool**--Select this option to view the tapes within a particular media pool. Wild cards ("*" and "?") are accepted in the media pool.

   - **Show Tapes Matching Serial #**--Select this option to view the tapes that match a certain serial number. Wild cards ("*" and "?") are accepted in the serial number.

   If a filter was applied to the current manager, the status bar will indicate it by displaying FILTER in the second panel and it will be detailed in the right panel of the view.

   Note: Click Clear to clear all the fields of their information and remove all library filter criteria.

3. Optionally, click the Save as Default button after you have entered the criteria for your library filter to apply the filtering criteria to all Device Manager views.

4. Click Apply.

The filtering criteria are applied to the current view.

Note: Click the **Cancel** button to discard the changes to your filtering options.

How Backup and Restore Operations Work

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 Administration 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, 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 select any of the available menu options.

How the Option 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, Arcserve Backup checks for available drives in the library. If 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, Arcserve Backup begins additional backup or restore jobs for the group, as long as additional drives are available.

How Single-Step Spanning Works

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 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: 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 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 Arcserve Backup had originally required three media to complete the backup of the directory, a prompt appeared requiring the third media that 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: 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 GROUP0 to allow tape spanning.

If 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: 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 GROUP0 and the other two to GROUP1. Then you can run the backup using GROUP0.

However, since 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 GROUP0 with a new tape. Close the library door and mount the slot that contained the new tape so that Arcserve Backup recognizes the new tape. After the mount completes, the backup job resumes.

RAID Back Up and Restore Device Selection

Fault tolerance lets you continue your backup or restore even in the event of media or drive failure. The use of RAID 0 or RAID 5 improves backup and restore performance by distributing data over multiple drives. RAID displays in the Arcserve Backup interface as a virtual drive and the special processing of the RAID backup is transparent.

- To back up data to a RAID device, select the RAID grouping as the destination in the Backup window and follow your standard backup procedures.

- To restore data from a RAID device, select the RAID grouping as the source in the Restore window and follow your standard backup procedures.

Manage Tape RAID Devices

The following sections describe how you can manage Tape RAID devices.

This section contains the following topics:

Delete a RAID Device

Modify RAID Device Properties

Manage a Tape RAID Group

How You Can Avoid Degraded Performance on a RAID Device

Optimize Buffer Size

Delete a RAID Device

If you no longer require RAID devices, Arcserve Backup lets you delete them from your environment.

To delete RAID devices

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. Select RAID Device and click Next.

   The Configure RAID Devices dialog opens.

3. Select the RAID device you want to delete in the RAID Devices list and click Delete.

   Arcserve Backup deletes the RAID device.

Modify RAID Device Properties

Arcserve Backup lets you modify the RAID level for your RAID devices.

To modify RAID device properties

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. Select RAID Device and click Next.

   The Configure RAID Devices dialog opens.

3. Select the RAID device you want to modify in the RAID Devices list.

   Click Properties.

   The Change RAID properties dialog opens.
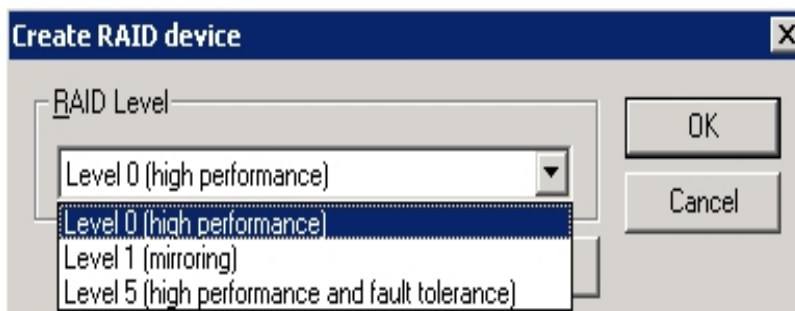
4. Click More.

   Change the properties for the selected device and click OK.

   Arcserve Backup modifies the properties of the RAID device.

Manage a Tape RAID Group

You can manage RAID groups with the Arcserve Backup Device Group Configuration utility. This dialog lets you perform the following tasks:

- Create a new RAID group.

- Delete an existing RAID group.

- Change group properties.

- Assign a device to a RAID group.

- Remove devices from a RAID group.

- Rename a RAID group.

To manage tape RAID groups

1. Open the Device Manager and click Group on the toolbar.

   The Device Group Configuration dialog opens.
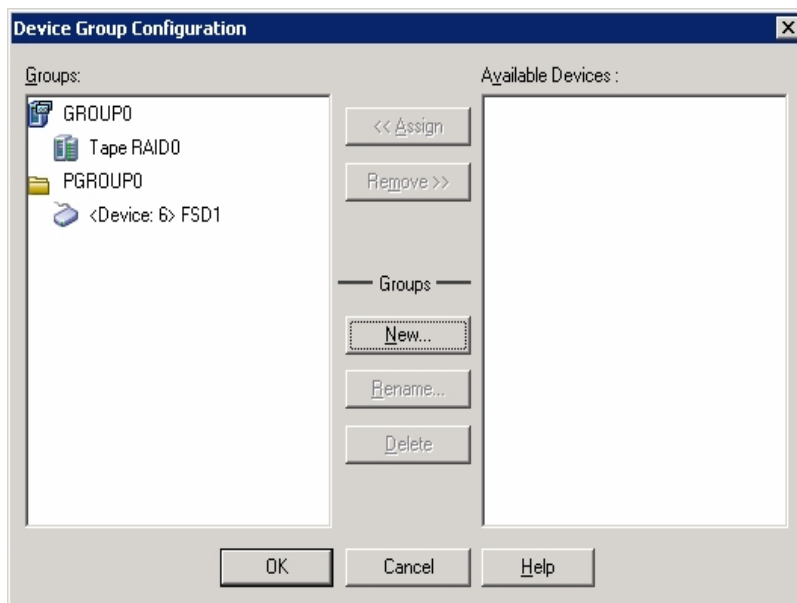
2. Select a RAID group in the Groups list and click the appropriate button to perform the desired task.

How You Can Avoid Degraded Performance on a RAID Device

When you perform backup and restore operations on a RAID device using Arcserve Backup, you may observe data transfer rates that are significantly lower than expected. Consider the following possible sources of degraded performance:

- If you use high performance drives, you may need to limit the number of drives per adapter; connecting more than one drive to the same board can significantly reduce performance.

- The speed of the hard disk you want to back up or restore can limit performance. Ensure that you have a hard disk that is fast enough to keep up with the data capabilities of your RAID implementation.

- Degraded media in one or more of the media drives reduces performance.

- Other applications may be accessing the hard disk during backup. This may degrade performance due to hardware limitations.

- The performance of a RAID device depends on the speed of the slowest drive attached. For example, in a three-drive RAID level 0 configuration where drive 1=100 MB/min., drive 2=120 MB/min., and drive 3=120 MB/min., the total throughput is 300 MB/min. Keep this information in mind when coordinating drives for RAID.

Optimize Buffer Size

You can improve the performance of a backup or restore job by optimizing the buffer size. The optimum buffer size depends on the following factors:

- The media drive
- The hard disk
- The amount of memory in the system
- The number of jobs that are running simultaneously

You can determine the optimum buffer size for your environment by experimenting with a few different values.
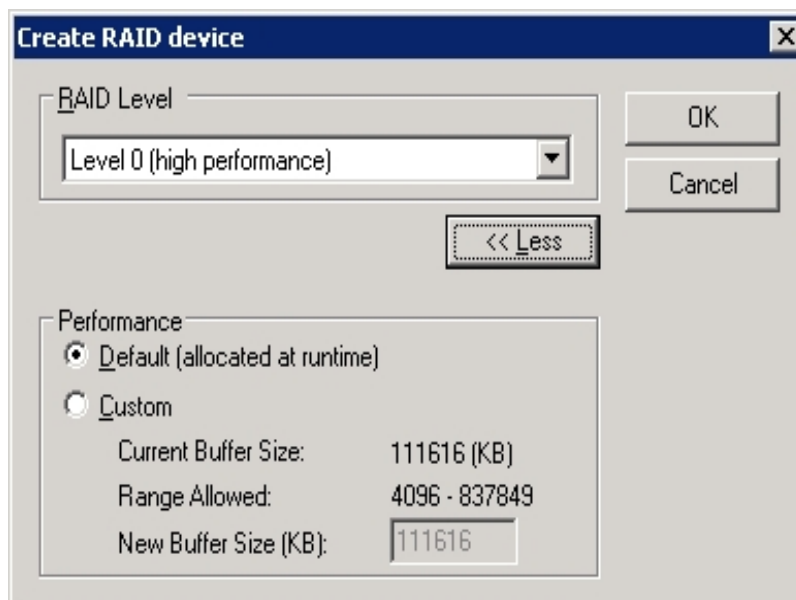
To optimize the buffer size

1. From the Administration menu in the Navigation Bar on the Arcserve Backup Manager Console, select Device Configuration.

   The Device Configuration Welcome dialog opens.

2. Select RAID Device and click Next.

   The Arcserve Backup RAID setup dialog opens.

3. Select the RAID Configuration from the list, choose Properties, and click More. The Change RAID properties dialog opens.

4. In the Performance area, select one of the following options:

    ▪ **Default**--Arcserve Backup calculates and applies an optimum value.

    ▪ **Custom**--Enter the buffer size in the New Buffer Size (KB) field. For example, to create a buffer size of 150 MB, enter **150000**.

5. Click OK to close the dialog and save your changes, and then close the remaining dialogs.

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 Arcserve Backup features.

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

1. Select Enable/Disable devices (for RSM), and click Next.

2. Select the devices you want Arcserve Backup to manage from the list.

   Note: This feature is only available for Windows XP and Windows Server 2003.

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.

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. 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.

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, 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, Arcserve Backup may attempt to automatically correct the problem and complete the job.

How Arcserve Backup Cures Tape Drive Errors

If Arcserve Backup detects a problem with a tape drive, there are three mechanisms that Arcserve Backup uses to cure tape drive errors. Each are discussed in the following sections.

These mechanisms run automatically upon error detection. After Arcserve Backup cures the error, the backup job continues.

How Arcserve Backup Prevents Tape Drive Errors

Before performing a backup job, Arcserve Backup evaluates the "health" of the tape drive. If a problem is detected, Arcserve Backup performs the following analyses and actions:

- If another tape drive is available (empty) Arcserve Backup moves the tape to the next available tape drive and runs the backup job.

- If there are no available drives, Arcserve Backup moves the tape to a tape drive that is not locked, and runs the backup job.

- If all other drives are locked, Arcserve Backup runs the backup job in the current tape drive.

How Arcserve Backup Balances Drive Usage

Arcserve Backup balances tape drive usage by rotating the usage of tapes evenly between all tape drives in your library. When 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, 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.

How Uninterrupted Drive Cleaning Works

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

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

- If Arcserve Backup detects a write error during a backup, and the symptoms relate to a contaminated tape drive or media, Arcserve Backup makes a second attempt to write to the tape drive.

- If the second write attempt fails, 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 Arcserve Backup determines that a tape drive must be cleaned to continue a job, the following actions take place:

1. Arcserve Backup pauses the job.

2. The library returns the tape to its home slot and locks the tape drive.

3. Arcserve Backup directs the cleaning operation.

4. The library reloads the tape into the cleaned drive and aligns the tape with the buffer.

5. Arcserve Backup resumes the job.

Implement Logical Block Protection

Logical Block Protection (LBP) is functionality offered by manufacturers of tape drives, such as IBM and HP, that lets Arcserve Backup detect read and write errors that occur on library drives under the following conditions:

- An error occurs during the process of writing the backup data to the media. For example, the data is corrupt.

- The backup data changed as it transmitted through the network or storage area network.

When an error occurs, the drive reports a SCSI error in the Tape Engine log file and the backup will fail.

The Arcserve Backup implementation of LBP does not support the following backups:

- LBP on Read operations

- Arcserve Tape RAID backups

- NAS (Network attached storage) backups

- Arcserve Backup UNIX/Linux Data Mover backups

- File system device backups

Example: Data deduplication and staging backups

To implement LBP, you can create the registry key described in the following procedure. The registry entry can be created under the DEVICE<#> key in the registry for the library. When implemented on a library, LBP is enabled for all drives in the library. When the library resides on a SAN, you implement LBP for the library only on the Primary server, which lets you implement LBP for all Member servers that use the library.

Follow these steps:

1. Log into the Arcserve Backup server

2. Open the following registry key:

   HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\CA ARCServe Backup\Base\TapeEngine\DEVICE<#>

   Note: DEVICE# represents the number of the device where you want to implement LBP.

3. Create the following DWORD:

   LBP

4. Set the DWORD value of LBP to 1 and save the changes.

    Note: To disable LBP, set the DWORD value of LBP to 0.

How Arcserve Backup Integrates with Secure Key Manager

Secure Key Manager (SKM) is encryption technology that lets hardware vendors, such as HP and Quantum, secure data that is stored on storage devices. To support the encryption key management capabilities of these vendors, Arcserve Backup integrates with SKM technology.

If you are backing up data to devices that support SKM, as best practice, you should use the encryption features provided by the devices instead of the encryption features provided by Arcserve Backup. We recommend this approach because hardware-based encryption provides a higher level of security than software-based encryption.

Integration with SKM technology lets Arcserve Backup behave in a manner that is transparent to the user.

In some instances, devices may not be able to read from the media because the media is not recognized or the encryption key is not available. These conditions cause the device to appear as if it is offline or not functioning. If a device appears to be offline or not functioning, Arcserve Backup behaves as follows:

Note: The following behaviors apply to single-drive libraries and multiple-drive libraries that support SKM technology.

Device Manager

The Device Manager demonstrates the following behavior when Arcserve Backup detects that SKM is installed on the device and the SKM application is offline or not functioning:

- **Encryption type--**For SKM controlled devices, Unknown Encryption appears in the Device Manager.
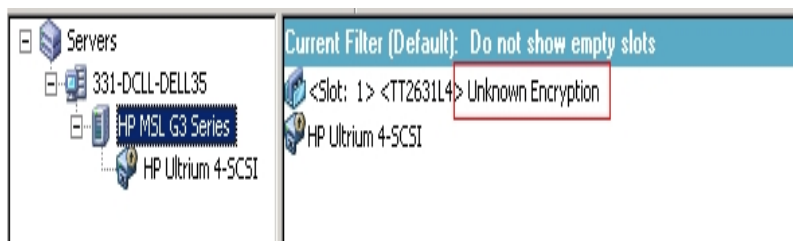
▪ **Format and Erase operations**--For SKM controlled devices, Unknown Encryption appears in the Device Manager.
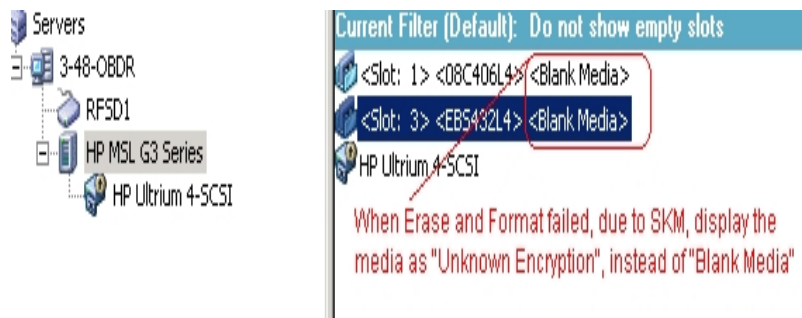
Messages

The messages that follow appear when Arcserve Backup detects that SKM is installed on the device and the SKM application is offline or not functioning:

▪ **Failed Format and Erase Operations**--The message that follows opens when Format and Erase operations fail on SKM controlled devices:

▪ **Activity Log messages**--Arcserve Backup generates the Activity Log messages highlighted in the following screen when Format and Erase operations fail on

SKM controlled devices:

The following Activity Log message appears when Arcserve Backup cannot decrypt the encryption that is detected on SKM controlled media:

Chapter 4: Troubleshooting

This section provides troubleshooting information to help you identify and resolve problems that you may encounter when using Arcserve Backup.

This section contains the following topics:

General Problems

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

This section contains the following topics:

Devices Do Not Appear to be Working Properly

Arcserve Backup Cannot Detect the Library

Arcserve Backup Does Not Detect a Cleaning Tape

Devices Do Not Appear to be Working Properly

Valid on Windows platforms.

Symptom

Devices do not appear to be working properly.

Solution

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 multi-drive 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, from your Windows desktop, right-click My Computer and select Manage from the pop-up menu.

Arcserve Backup Cannot Detect the Library

Valid on Windows platforms.

Symptom

Arcserve Backup is unable to detect the library.

Solution

There are several corrective actions that you can use to determine why 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, 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 Arcserve.

6. Make sure you have the latest driver for the HBA.

    After performing these corrective actions, run the Device Configuration utility and reconfigure the library.

Arcserve Backup Does Not Detect a Cleaning Tape

Valid on Windows platforms.

Symptom

There is a cleaning tape in the library but Arcserve Backup does not detect a cleaning tape.

Solution

To remedy this problem, Arcserve Backup must detect the location (slot) of the cleaning tape. There are two methods that you can use to let Arcserve Backup detect the location (slot) of the cleaning tape.

- **Method 1**--Let Arcserve Backup discover the location (slot) of the cleaning tape. To do this, complete the following steps:

    a. Insert a cleaning tape into any available slot in your library.

    b. Open the Device Manager window, right-click the library and select Inventory from the pop-up menu.

  Arcserve Backup inventories the media in the slots. After the inventory process is complete, Arcserve Backup detects the presence of a cleaning tape. The slot where the cleaning tape resides becomes the cleaning slot.

- **Method 2**--Manually specify the location (slot) of the cleaning tape. To do this, complete the following steps:

    a. Open the Device Manager window, right-click the library and select Properties from the pop-up menu.

      The Library Properties dialog opens.

    b. Click the Cleaning tab.

      The Cleaning options appear.

    c. From the Available Slots lists, click an available slot and then click the Add button.

      The available slot moves to the Clean Slots list.

    d. Click OK.

    e. Insert the cleaning tape into the slot specified.

Library Does Not Initialize Properly

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

This section contains the following topics:

Slots Indicate Dismounted When Initializing the Library

Arcserve Backup Displays Incorrect Slot Details When Using Quick Initialization

Library Reads All Media When Using Quick Initialization

Slots Indicate Dismounted When Initializing the Library

Valid on Windows platforms.

Symptom

The library does initialize properly and the slots indicate dismounted.

Solution

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 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.

Arcserve Backup Displays Incorrect Slot Details When Using Quick Initialization

Valid on Windows platforms.

Symptom

The Quick Initialization option is enabled and Arcserve Backup displays incorrect information for the slots.

Solution

To remedy this problem, 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

Valid on Windows platforms.

Symptom

The Quick Initialization option is enabled and the library still reads all the media during initialization.

Solution

To remedy this problem, 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 LIBRARY.CFG file was deleted or overwritten. LIBRARY.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.

This section contains the following topics:

Library Does Not Detect Media

Media Home Slot Changes

Cleaning Media Not Returned to the Home Slot

No Empty Slots Available

Tape Engine Times Out

Tape MisCompare Errors Occur When Formatting or Erasing Media

Library Does Not Detect Media

Valid on Windows platforms.

Symptom

Arcserve Backup cannot detect a media added to the library or cannot detect a media moved from one slot to another slot.

Solution

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

Media Home Slot Changes

Valid on Windows platforms.

Symptom

The home slot for the media changed.

Solution

To remedy this problem, 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 Arcserve Backup detects that the home slot of a media is occupied by another media, it moves the media to the first available non-cleaning slot.

▪ A media is in a library drive and LIBRARY.CFG file was deleted or overwritten.

LIBRARY.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 the Home Slot

Valid on Windows platforms.

Symptom

The cleaning media is not returned immediately to its home slot after cleaning a library drive.

Solution

To remedy this problem, 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 Empty Slots Available

Valid on Windows platforms.

Symptom

Arcserve Backup indicates that it does not have a free slot to return a media from a library drive.

Solution

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

Valid on Windows platforms.

Symptom

The Tape Engine timed out unexpectedly.

Solution

To remedy this problem, 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 Media

Valid on Windows platforms.

Symptom

Arcserve Backup indicates that a Tape MisCompare error occurred when formatting or erasing media.

Solution

To remedy this problem, consider the following:

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

   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 Arcserve Backup. When media are manually added, removed, or moved, you must inventory the slots or mount the library magazine to update Arcserve Backup.

- You may also see this error if you attempt to erase or format a "not inventoried" 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.

This section contains the following topics:

Unable to Submit Another Job

Autoloaders and Changers Appear Offline

Backup Job or Restore Job Causes the Library to Inventory Slots

Slots Fail to Inventory When Groups Span a Multiple Drive Library

Backups to Tape RAID Devices Fail

Unable to Submit Another Job

Valid on Windows platforms.

Symptom

A job is running and you cannot submit another job.

Solution

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

Autoloaders and Changers Appear Offline

Valid on all Windows platforms. Affects stand-alone libraries and changers.

Symptom

In Device Manager, the device appears offline. Jobs associated with the device fail. The Tape Engine is running.

Solution

When the Tape Engine detects problems with devices, Arcserve Backup statuses the device as offline and generates a message, similar to the following, in the Activity Log:

[Library Failure: Manual intervention required [Device:5][Iomega REV LOADER]]

To remedy this problem, do the following:

1. Stop the Tape Engine.

2. Disconnect the device and correct the problem with the device.

   Note: For information about troubleshooting the device, see the device manufacturer's documentation.

3. Connect the device to Arcserve Backup

4. Start the Tape Engine.

   If the device is working properly, Arcserve Backup will detect the device and status the device as online.

Backup Job or Restore Job Causes the Library to Inventory Slots

Valid on Windows platforms.

Symptom

A backup or restore job causes the library to automatically inventory slots after adding media to devices manually.

Solution

After 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 Multiple Drive Library

Valid on Windows platforms.

Symptom

There is more than one job running and the media spans two groups in the same multiple drive library. Only one job inventories its slot group and continues after the media are replaced in both groups.

Solution

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

Backups to Tape RAID Devices Fail

Valid on Windows platforms.

Symptom

When you submit a backup job to a RAID group, the job fails with an error message indicating that there are mismatched tapes in the RAID set.

Solution

This problem may occur after you add or replace hardware that is attached to your Arcserve Backup environment.

To ensure that RAID-based backups do not fail with mismatch errors after you add or replace hardware in your environment, do the following:

1. Restart the Tape Engine after you add or replace hardware attached to your Arcserve Backup environment.

2. Remove all RAID configurations.

3. Reconfigure your RAID devices.

Chapter 5: Using RAID

This section contains the following topics:

How RAID Devices Work

The option provides a set of drives that act as a single, high-performance drive. With this option you perform operations the same way you perform regular Arcserve Backup operations, except that you are working with a RAID media set instead of a single media drive.

A RAID set is a set of drives that share the same RAID level and act as a single, high-performance drive. When configuring a backup job with the option, you select the RAID group as your destination; this group contains all the drives configured in that RAID set.

RAID configurations typically require small computer system interface (SCSI) disk drives and may require identical drives.

RAID Levels

The option offers three types of fault tolerance modes: RAID levels 0, 1, and 5. The different levels are each designed for a specific use:

- **RAID 0**--Data Striping

- **RAID 1**--Disk Mirroring

- **RAID 5**--Striping with Parity at byte level and Stripe Error Correction Information

Note: The RAID level for your installation depends on how you use your network.

How RAID 0 Works

RAID 0, also referred to as "data striping," transparently distributes data over multiple drives to make them appear as a single, high-performance drive. This involves spreading out blocks of each file across multiple disks. Data striping uses parallel data processing to provide high throughput performance.

Although data striping provides high performance by allowing data to be processed in parallel, it does not provide fault tolerance. If a single drive in a RAID level 0 array fails, all data is lost; in the case of RAID tape drives, the backup is not available because of the drive failure.

RAID level 0 is an ideal solution when you require optimum throughput and fault tolerance is not an issue. If fault tolerance is required, you must use RAID level 1 or RAID level 5. The following diagram shows how data is distributed in a RAID 0 configuration:
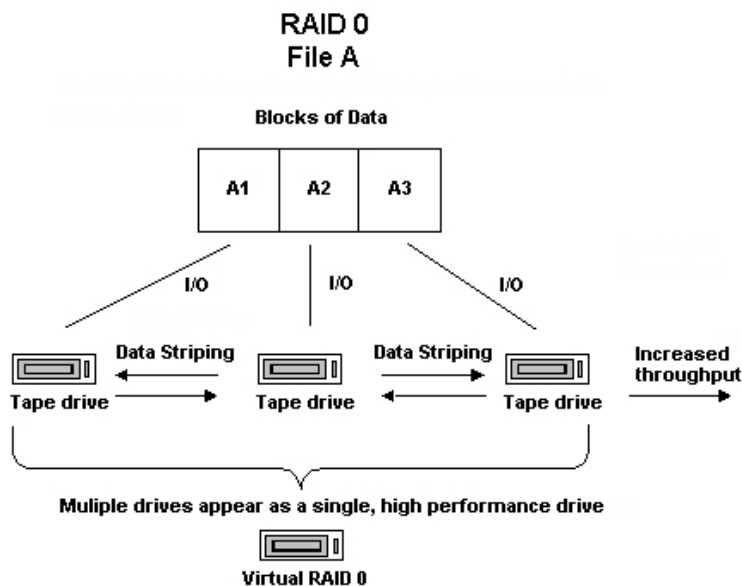
Note: Optimum performance is limited by the speed of the slowest drive in the array.

How RAID 1 Works

RAID 1, also known as "mirroring," is the most widely implemented level of RAID. It allows you to maintain two copies of backup data. One copy is typically maintained at the backup location and the other is located safely off site. It combines two physical disks into a single array. Data is written to or read from both drives at the same time. RAID 1 provides fault tolerance and reliability, by allowing you to maintain two copies of backup data: one that is typically maintained at the backup location and the duplicate or mirrored copy located safely at another site. You can use this RAID level to transport your data easily without performing a media copy operation.

In the mirroring mode, the operations of the drives are duplicated. Whenever data is written to one drive, the same data is also written to the redundant drive, so there are always two copies of the data. The redundant drive ensures that the backup is completed, even if a drive or media fails. In case of drive failure, the backup or restore continues with the remaining drive.

Note: RAID 1 is also referred to as disk mirroring or duplexing. Mirroring uses one channel and duplexing uses two channels.

In non-RAID mode functions, the media sets used in mirroring are compatible with Arcserve Backup. You can use Arcserve Backup in this mode to restore data from either of the RAID drives, but a session appended in non-RAID mode makes the media unusable in RAID mode. If the media needs to be used again, it must first be erased or reformatted.

How RAID 5 Works

RAID 5, also known as "parity," is an error-detection method used to detect and correct errors in data transmissions by performing specific checks of the data blocks within a stripe. In the event of a single drive failure, the information for the missing drive or media can be recreated by examining the remaining data and the parity information. This information enables the system to regenerate the missing data bits.

RAID 5 incorporates data striping. With a RAID 5 array using three or more drives, data and parity are striped across all the drives. Data is processed on two drives while the third drive holds the parity information. If one of the data drives is lost, the parity information ensures that the missing data can be recreated.

RAID 5 combines good performance, fault tolerance, high capacity, and storage efficiency. Because of the need for the system to calculate parity information during write activity, RAID 5 is best suited to situations where read activity is much higher than write activity. (For situations where write activity is high, RAID 1 is probably a better choice).

RAID 5 increases the virtual capacity of your media since three drives appear as one virtual drive. For example, if your media's capacity were two GB, normally you would need two spanning tapes to back up four GB. However, with RAID 5, you can store the same four GB on one virtual media without spanning. If you are using three drives with RAID 5, your storage capacity doubles. If you are using five drives with RAID 5, your perceived storage capacity quadruples.

Chapter 6: Glossary

This section contains the following topics:

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

mount

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

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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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