

BrightStor® ARCserve® Backup for UNIX

Tape Library Option Guide **r11.5**



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Chapter 1: Introducing the Option

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

Among the options BrightStor ARCserve Backup offers is the BrightStor® ARCserve® Backup Tape Library Option. The option supports and provides advanced device and media management for multiple-drive libraries. Utilizing this option, BrightStor ARCserve Backup can send simultaneous data streams to each drive to optimize throughput on any multiple-drive tape library.

Product Features

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

- Multiple drive support—These options provide support for libraries with multiple drives, as well as those with single drives.
- Multiple library support—These options support multiple libraries. The number of libraries that can be installed at one computer is limited only by the computer's available resources and system performance.
- Concurrent drive initialization—The Device Manager allows you to track the initialization process. For multiple drive libraries, the Tape Engine uses all of the drives for the initialization process.
- Multiple, concurrent, device management functions—Includes storage drive cleaning from any specified slot. These options use available drives as needed on a library and perform device management functions concurrently (when multiple drives are available).

The following library device management functions can be performed concurrently:

- Quick Inventory
- Format Slot Range
- Erase Slot Range (both Quick Erase and Long Erase)
- Importing and Exporting
- Clean Library Drive
- Bar code ID (when supported by the tape library)—BrightStor ARCserve Backup quickly locates individual media by reading the bar code attached to the media, thus not having to load the media into a drive.

- Quick initialization—After installation is complete and the Tape Engine is started for the first time, the entire library is inventoried and recorded. For all subsequent starts, you can skip the normal inventory process by enabling the Quick Initialization feature either during installation or through setup used in non-bar code libraries.
- Scheduled automated drive cleaning procedures—You can configure devices and scheduling drive cleaning.
- Grouping by slots—Library groups employ the same concept as device groups, except that library groups are based on slots. You can select any of the slots inside a library to form a library group. If the library runs out of media to span to, you can insert new media and BrightStor ARCserve Backup can identify the media as part of the pre-defined group.
- Single-step library group spanning—These options support single-step group spanning. Using this feature, you can insert new blank media into a library and continue the backup or restore operation without interruption because BrightStor ARCserve Backup inventories the new media for you.
- Fault tolerant operations—These options provide continuous operation with a defective drive. If a drive in a multiple drive library becomes defective, you can record its status as offline. If the Tape Engine detects a problem reading and writing to and from a tape, the Tape Engine sets the drive status to offline. This enables the Tape Engine to continue to operate using the remaining nondefective drives in the library.
- Multiple, concurrent, group access—You can run as many jobs at the same time as you have media and drives available.
- Large library support—Allows a changer with more than 1000 slots to be displayed in a list on the right side of the screen instead of in the tree of devices. Slots can be displayed in five ways: large icons, small icons, details, reports, and list.
- IBM fibre-channel support—The BrightStor ARCserve Backup Tape Library Option supports IBM fibre-channel and regular SCSI enabled devices. This allows the option to communicate with all devices, whether or not an IBM Atape driver is installed.

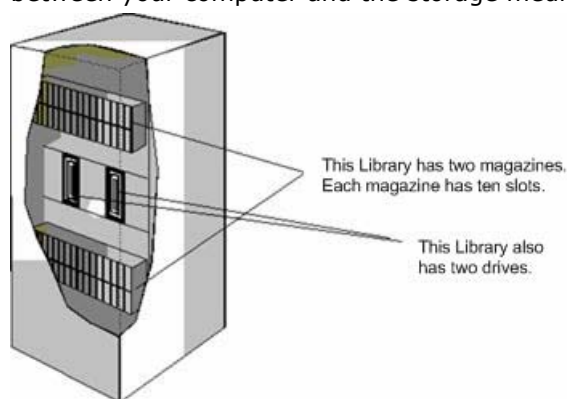
Note: This feature affects AIX-based platforms only.

Libraries

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

Libraries are made up of the following components:

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



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

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

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

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

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

Some of the advantages of using a library include:

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

Chapter 2: Installing the Option

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

Installation Prerequisites

Before proceeding, make sure the following prerequisites are in place:

- Verify that your system meets the minimum hardware and software requirements needed to install the BrightStor ARCserve Backup Tape Library Option. For a list of requirements, see the readme file.
- You have Superuser privileges or the proper authority to install software on the computers where you will be installing the option.
- The BrightStor ARCserve Backup base product must be installed in your system, including the BABmgr and BABsvr packages.
- For AIX-based IBM servers: If an AIX-based IBM server is not attached to an IBM changer, you must uninstall the atape device driver on the IBM server before running csetup.

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

Install the Option

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

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

Configure the Option

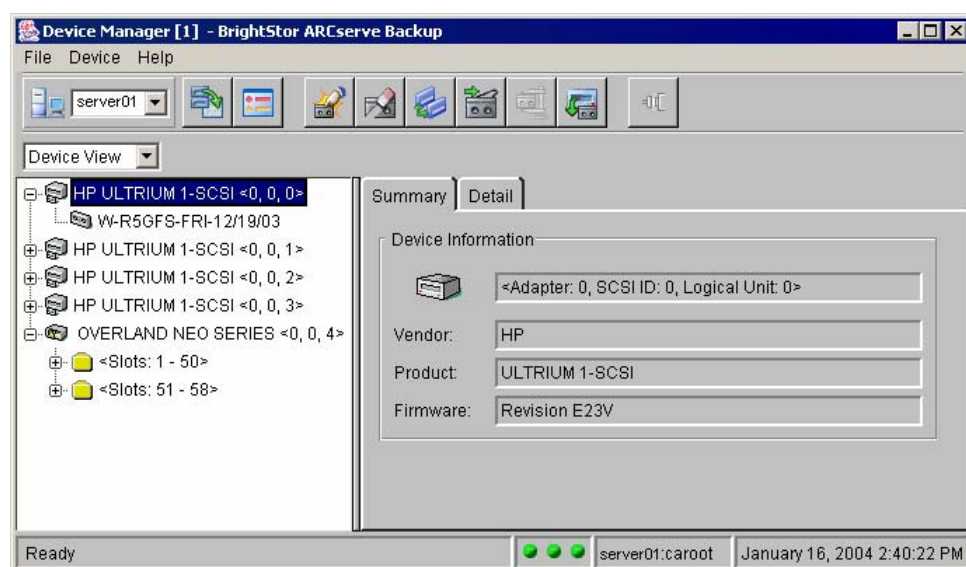
To configure the option, BrightStor ARCserve Backup provides you with the flexibility of using either the *csetup* command line utility or the Device Manager to detect and configure your libraries. This capability lets you configure the library devices in your environment such as library drives, library groups, slots, and bar code capable devices.

The following sections describe how to use both methods to configure your libraries.

Note: For detailed information about running *csetup*, see the chapter Configuring Libraries Using *csetup*."

Library Configuration Using the Device Manager

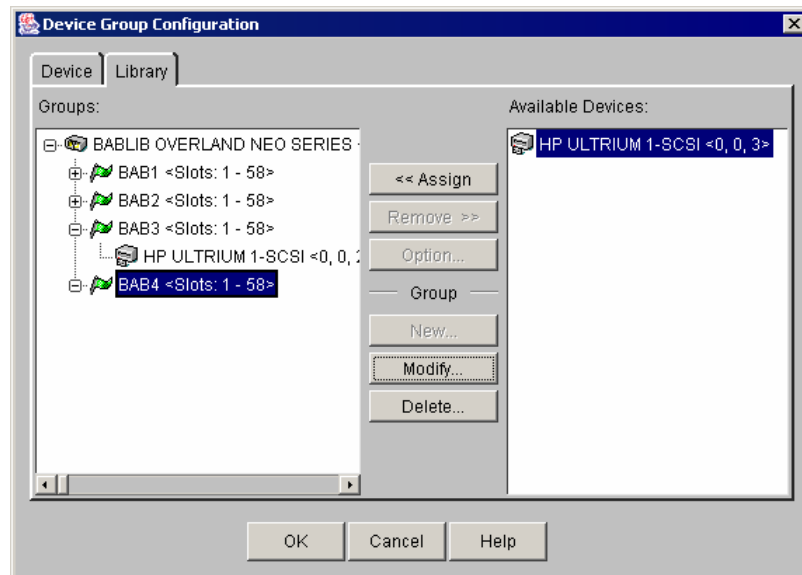
You can configure a library, or modify the configuration of a library, by starting Device Manager from the BrightStor ARCserve Backup Home Page. BrightStor ARCserve Backup retrieves the device information. When you select the Device View and select the device that you want to configure, your window should look like the following example:



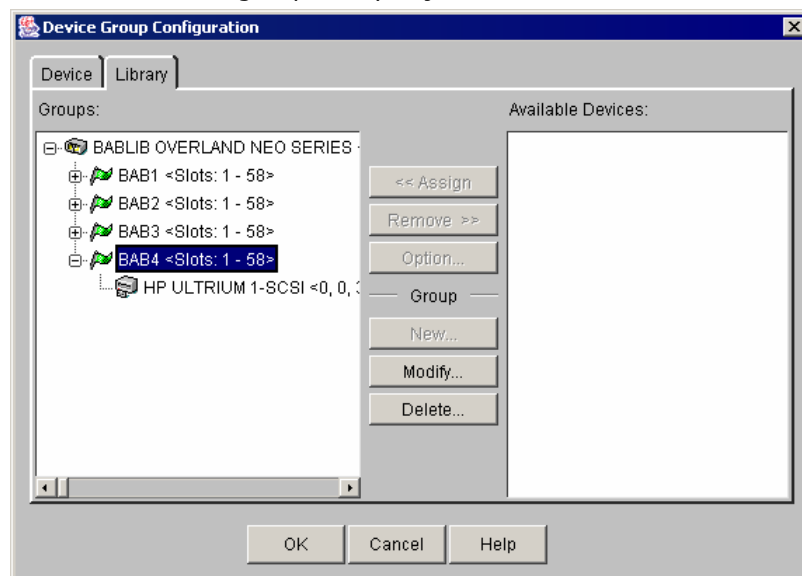
Assign a Device to a Group

To assign a device to a group, follow these steps:

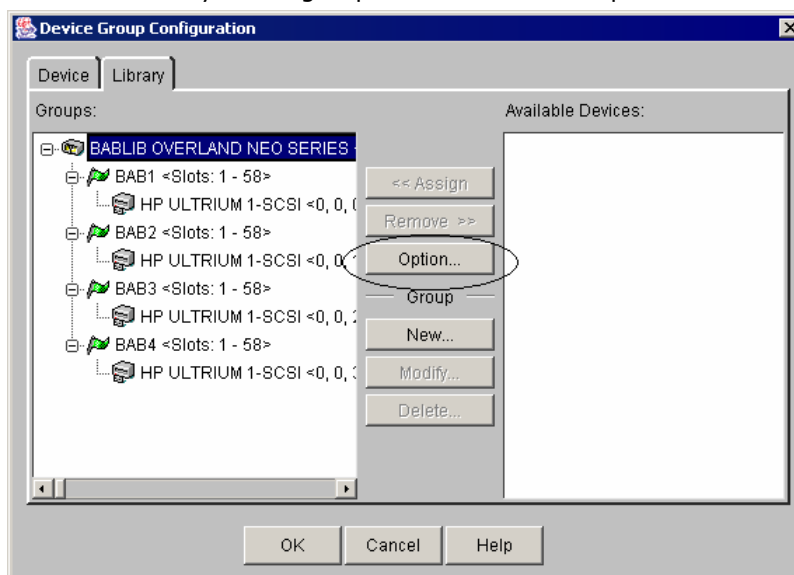
1. You will see a green flag appear under the library with the group name. Select this group, and then select the drive in the Available Devices list. An example of the Device Group Configuration dialog follows:



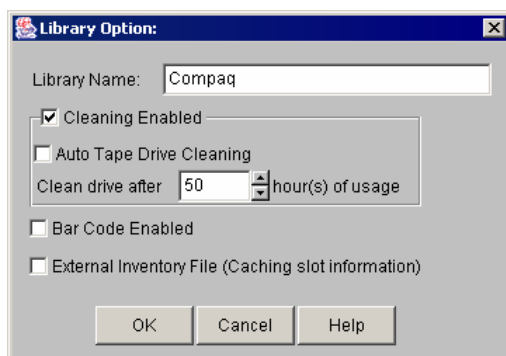
2. Click Assign. The drive moves from the Available Devices list to the Groups list under the new group that you just created.



3. Select the library in the group window and click Option.



The Library Option dialog opens as shown in the following example:



- Enter a library name (up to eight characters) and, if you want, check the Cleaning Enabled check box if you have a cleaning tape in the library.
 - If you have a cleaning tape, note that BrightStor ARCserve Backup reserves a slot for the tape-cleaning media. In most cases, the tape-cleaning media should be installed in the last slot. However, some libraries (such as certain Exabyte and ADIC libraries) use slot 1. Refer to your library's documentation to determine the slot in which you should install your tape-cleaning media.
 - You can also enable automatic tape cleaning at specified intervals, enable the bar code reader (check your library manual to see if your library has a bar code reader), and create an external inventory file by checking the appropriate check boxes.
4. Click OK on the Library Option dialog to append the Library Name of the library that you just modified.

5. Click OK in the Device Group Configuration window. A message appears informing you that the new configuration will take effect when the media service restarts and asks if you want to restart it now.

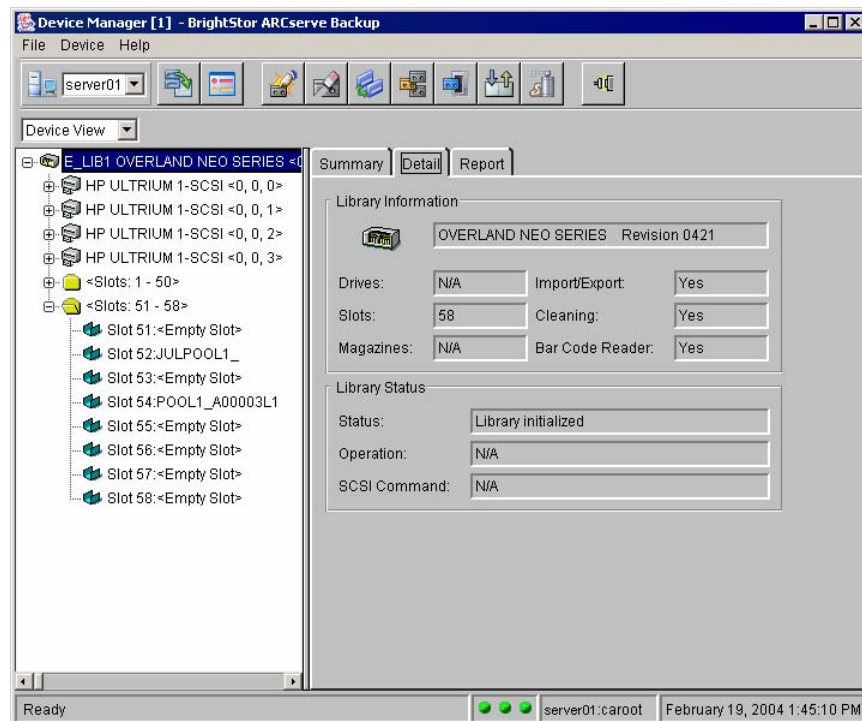
6. Click Yes and wait until the media service restarts.



The middle green button in the device manager turns red, then blinks green, indicating that the BrightStor ARCserve Backup Media Server was stopped and is being restarted to use the new configuration.

When the reconfiguration process is finished, the Media Server indicator turns steady green and another message displays informing you that the media service has just come up and asking if you want to refresh the device manager.

7. Click Yes. The Device Manager window opens again, as shown in the following example. Click the + to expand the library configuration.

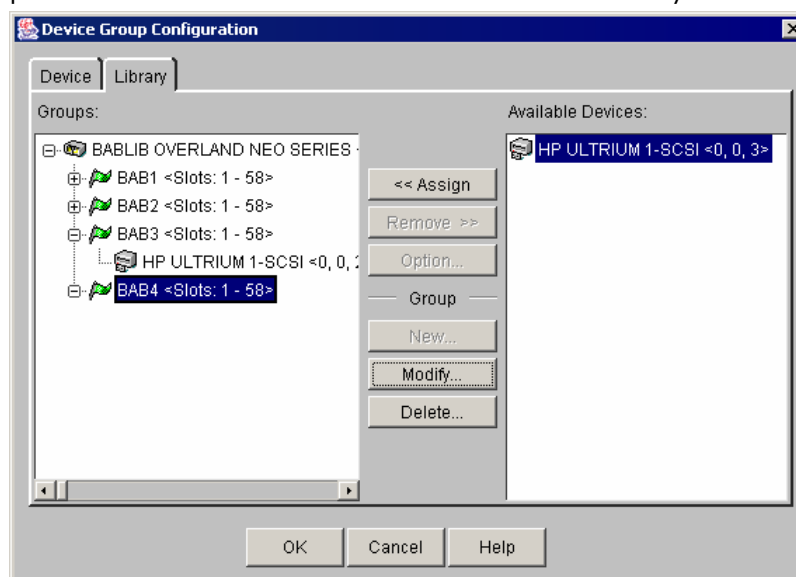


Note how this window has changed since you started configuring the library. You can now use the configured library with BrightStor ARCserve Backup, including loading, unloading, formatting, erasing tapes, and so on.

Configure Devices

To configure devices, use the following steps:

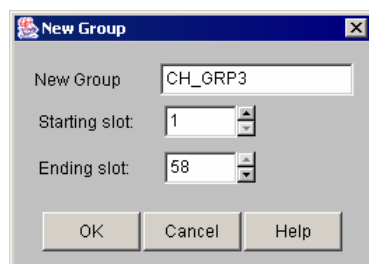
1. From the Device menu, select Device Group Configuration. The Device Group Configuration window opens. Click the Device tab. On the Device Group Configuration dialog, there are two sub-windows. On the left side are the groups and on the right side are the available devices. You must move the drive from the Groups list to the Available Devices list.
2. To move the drive from the Group list to the Available Devices list, click the device you want to move and click Remove. This makes the drive available to any library into which you want to configure it.
3. Click the Library tab. You should see the tape drive you moved in the previous tab in the Available Devices list and the library in the Groups list.



Create a New Group

To create a new group, follow these steps:

1. Click the library in the list of Groups and click New. The New Group dialog opens, as shown in the following example:



2. Enter a name for this group that is eight characters or less, choose a starting and ending slot range, and then click OK.

Configuring Libraries Using the *csetup* Command Line Utility

This section describes summary information regarding the *csetup* command line utility. For a more descriptive guide to using the *csetup* command line utility, see the chapter "Configuring Libraries Using *csetup*."

There are two scenarios where you can configure your libraries using the *csetup* command line utility (*csetup* is the setup command for BrightStor ARCserve Backup):

- During BrightStor ARCserve Backup installation—When you run *csetup* for the first time, the BrightStor ARCserve Backup command line configuration utility will prompt you to configure individual modules (Database, Discovery, Authentication, and so on). You will enter the library configuration dialogue when the command line asks—Do you want to configure libraries now? Select Y to continue, and it will walk you through the library configuration dialogue step by step.
- After BrightStor ARCserve Backup installation—Run *csetup* again to configure libraries that were not configured at install time. You can also run *csetup* to modify your current library configuration or to add libraries. When you run *csetup*, a menu prompt appears. Select "Media Server" to enter the library configuration dialogue.

There are three methods to this utility—an interactive method, an automatic method, and an express method. You can choose either the interactive (which requires more information from you about the devices), automatic (which handles the device portion for you), or express (which configures the devices, groups, and slots for you) to configure your library. For examples of these methods, see the next sections.

Start *csetup*

From the command line, start the *csetup* script. The following example shows only the library configuration called from another script which is called by *csetup*.

Do you want to configure libraries now? (default: n) [y,n,?,q] y

- 1.) Local SCSI Library
- 2.) Quit

Please enter your choice. ("1" | "2") 1

Configuring for local scsi media library

If you would like BrightStor AB to auto-detect your devices it is essential that you remove all tapes from your external tape drives. By external tape drives we mean drives connected to this system that are external to your changer(s). If you do not have external tape drives or if you do not want BrightStor AB to auto-detect your devices then this is not an issue.

[!!!WARNING: during interactive configuration we do not cross check which drive belongs to which changer. You may assign wrong drives to the changer or the groups. You need to know which drives belong to which changer beforehand.]"

(Press enter when done...)

If we are auto-detecting your devices please enter the letter 'a' for auto. If you know the scsi ID's of your devices and want to go directly to our interactive library group configuration section enter the letter 'i'

- e - Express setup (Library, drives, and groups are automatically configured)
- a - Automatic setup (Library and drives are automatically configured, requires group setup by user)
- i - Interactive setup (Complete user interaction of configuring the library, drives, and groups)

Please enter your choice: (e|a|i) _

If you entered **e**, see the section Configure Libraries Using Express Configuration. If you entered **a**, see Configure Libraries Using Automatic Configuration. If you entered **i**, see Configure Libraries Using Interactive Configuration."

Configure Libraries Using Express Configuration

The script in this section configures your libraries using the express configuration method.

Be aware that if this script has been run directly from the command line and NOT through csetup, then any previous library parameters in the camediad.cfg file will remain unchanged.

We will be starting some background processes to determine your parameters. This can take a considerable length of time. If you wish to view the auto detect process dynamically open another terminal and issue the following command:
tail -f /opt/BrightStorAB/logs/camediadcfg.log

Shall we continue? (y/n) y

Updating adapter/device information in camediad.cfg...

Scanning for SCSI devices

We will be configuring one library at a time. After the first library and its device groups are configured we will come back and configure the remaining changers (if any).

The notation used to describe devices is called a tuple. Our tuples are of the form (adapter,scsid,lun) - So if you see (0,4,0) it means you have a device on adapter 0, scsiid 4 lun 0

We will first define library parameters for library (0,6,0)

Do you want to enable tape drive cleaning? (default yes) [y,n,q] n
If you have bar coding would you like to enable it? (default yes) [y,n,q] y

OK - let's see what we have

Your library name is : "E_LIB1"
The tape cleaning option is set to "NO"
The bar code option is set to "YES"
The auto map drives option is set to "YES"
The slots file option is set to "NO"
The total slots in this library are: 30
Tape drive : (0,4,0)
Group association: CH_GRP0
Start slot : 1 End slot: 30

Tape drive : (0,5,0)
Group association: CH_GRP1
Start slot : 1 End slot: 30

Please review carefully. The script did not test for every possible error condition.

Is this correct? (default yes) [y,n,q] y

Configure Libraries Using Automatic Configuration

The script in this section configures your libraries using the automatic configuration method.

Be aware that if this script has been run directly from the command line and NOT through csetup, then any previous library parameters in the camediad.cfg file will remain unchanged.

We will be starting some background processes to determine your parameters. This can take a considerable length of time. If you wish to view the auto detect process dynamically open another terminal and issue the following command: `tail -f /usr/BrightStorAB/logs/camediadcfcfg.log`

Shall we continue? (y/n) y

Updating adapter/device information in camediad.cfg...

Scanning for SCSI devices

We will be configuring one library at a time. After the first library and its device groups are configured we will come back and configure the remaining changers (if any).

The notation used to describe devices is called a tuple. Our tuples are of the form (adapter,scsid,lun) - So if you see (0,4,0) it means you have a device on adapter 0, scsiid 4 lun 0

We will first define library parameters

Groups names and library names are restricted to an 8 character limit with no white space. Library names are optional but group names are not.

Enter a name for library

NAME: ATL P3000

SERIAL NUMBER: 0000000100160401

TUPLE INFO: (2,7,0)

(Name optional: <ENTER> when done) MY_LIBRARY

Do you want to enable tape drive cleaning? (default yes) [y,n,q] n

If you have bar coding would you like to enable it? (default yes) [y,n,q] y"
Would you like to share ALL slots across ALL groups? (default no) [y,n,q] y
First we will take information about each group and
when we are done we will associate the library drives
with the groups you have created.

Enter a group name - (default: CH_GRP0)

Going with default

do you wish to configure more groups? (default yes) [y,n,q] y

Enter a group name - (default: CH_GRP1)

Going with default

do you wish to configure more groups? (default yes) [y,n,q] y

Enter a group name - (default: CH_GRP2)

Going with default

do you wish to configure more groups? (default yes) [y,n,q] y

Enter a group name - (default: CH_GRP3)

Going with default

We will now associate the library drives with the groups you have created.
Please be aware that multiple device groups are not supported within changer
groups. Only one tape drive per group is supported.

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,0) SN# 1310101182 with?

- 1.) CH_GRP0
- 2.) CH_GRP1
- 3.) CH_GRP2
- 4.) CH_GRP3

(pick a number from the list) : 1

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,1) SN# 13SE07S30X with?

- 1.) CH_GRP0
- 2.) CH_GRP1
- 3.) CH_GRP2
- 4.) CH_GRP3

(pick a number from the list) : 2

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,2) SN# 13SE07D2K5 with?

- 1.) CH_GRP0
- 2.) CH_GRP1
- 3.) CH_GRP2
- 4.) CH_GRP3

(pick a number from the list) : 3

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,3) SN# 1310100987 with?

- 1.) CH_GRP0
- 2.) CH_GRP1
- 3.) CH_GRP2
- 4.) CH_GRP3

(pick a number from the list) : 4

Your library name is : "MY_LIBRARY"
The tape cleaning option is set to "NO"
The bar code option is set to "YES"
The auto map drives option is set to "YES"
The slots file option is set to "NO"
The total slots in this library are: 229
Tape drive : (2,0,0)
Group association: CH_GRP0
Start slot : 1 End slot: 229

Tape drive : (2,0,1)
Group association: CH_GRP1
Start slot : 1 End slot: 229

Tape drive : (2,0,2)
Group association: CH_GRP2
Start slot : 1 End slot: 229

Tape drive : (2,0,3)
Group association: CH_GRP3
Start slot : 1 End slot: 229

Configure Libraries Using Interactive Configuration

The script in this section configures your libraries using the interactive configuration method.

Be aware that if this script has been run directly from the command line and NOT through csetup, then any previous library parameters in the camediad.cfg file will remain unchanged.

We will configure one library at a time. Please be patient: on some systems probing the scsi bus takes time...

We found the following devices. Please retain this information: you will need it when we make group assignments later.

```
ADAPTERS:
Adapter 1: scsi1
Adapter 2: fscsi0
```

```
Library Found:
ATL      P3000  SCSIID:    7  LUN:  0  ADAPTER 1: fscsi0  SERIAL NUMBER:
0000000100160401
```

```
Tape drive found:
Quantum   DLT7000  SCSIID:  0  LUN:  0  ADAPTER 1: fscsi0  SERIAL NUMBER:
1310101182
```

```
Tape drive found:
Quantum   DLT7000  SCSIID:  0  LUN:  1  ADAPTER 1: fscsi0  SERIAL NUMBER:
13SE07S30X
```

```
Tape drive found:
Quantum   DLT7000  SCSIID:  0  LUN:  2  ADAPTER 1: fscsi0  SERIAL NUMBER:
13SE07D2K5
```

```
Tape drive found:
Quantum   DLT7000  SCSIID:  0  LUN:  3  ADAPTER 1: fscsi0  SERIAL NUMBER:
1310100987
```

Press <ENTER> when ready...

Groups names and library names are restricted to an 8 character limit with no white space. Library names are optional but group names are not.

Does this library (7,0, ADAPTER 2:fscsi0) reside on SAN? [y|n|q]y

Enter a name for library

NAME: ATL P3000

SERIAL NUMBER: 0000000100160401

TUPLE INFO: (2,7,0)

(Name optional: <ENTER> when done) MY_LIBRARY

Do you want to enable tape drive cleaning? (default yes) [y,n,q] n

If you have bar coding would you like to enable it? (default yes) [y,n,q] y

Would you like to enable auto drive mapping? (default no) [y,n,q] n

Would you like to share slots across groups? (default no) [y,n,q] y

How many slots does your Library have? 229

How many tape drives are associated with this changer? 4

Lets take a look at your system tape drives...

1) Quantum DLT7000 SCSIID: 0 LUN: 0 ADAPTER: 2 SERIAL NUMBER: 1310101182
with?

Is this drive a part of this Library (Y/N)? y

2) Quantum DLT7000 SCSIID: 0 LUN: 1 ADAPTER: 2 SERIAL NUMBER: 13SE07S30X
with?

Is this drive a part of this Library (Y/N)? y

3) Quantum DLT7000 SCSIID: 0 LUN: 2 ADAPTER: 2 SERIAL NUMBER: 13SE07D2K5
with?

Is this drive a part of this Library (Y/N)? y

4) Quantum DLT7000 SCSIID: 0 LUN: 3 ADAPTER: 2 SERIAL NUMBER: 1310100987
with?

Is this drive a part of this Library (Y/N)? y

First we will take information about each group and when we are done we will associate the library drives with the groups you have created.

Enter a group name - (default: CH_GRP0)

Going with default

do you wish to configure more groups? (default yes) [y,n,q] y

Enter a group name - (default: CH_GRP1)

Going with default

do you wish to configure more groups? (default yes) [y,n,q] y

Enter a group name - (default: CH_GRP2)

Going with default

do you wish to configure more groups? (default yes) [y,n,q] y

Enter a group name - (default: CH_GRP3)

Going with default

We will now associate the library drives with the groups you have created.

Please be aware that multiple device groups are not supported within changer groups. Only one tape drive per group is supported.

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,0) SN# 1310101182 with?

- 1.) CH_GRP0
 - 2.) CH_GRP1
 - 3.) CH_GRP2
 - 4.) CH_GRP3
- (pick a number from the list) : 1

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,1) SN# 13SE07S30X with?

- 1.) CH_GRP0
 - 2.) CH_GRP1
 - 3.) CH_GRP2
 - 4.) CH_GRP3
- (pick a number from the list) : 2

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,2) SN# 13SE07D2K5 with?

- 1.) CH_GRP0
 - 2.) CH_GRP1
 - 3.) CH_GRP2
 - 4.) CH_GRP3
- (pick a number from the list) : 3

With which group do you wish to associate drive QUANTUM DLT7000 (2,0,3) SN# 1310100987 with?

- 1.) CH_GRP0
 - 2.) CH_GRP1
 - 3.) CH_GRP2
 - 4.) CH_GRP3
- (pick a number from the list) : 4

OK - let's see what we have

Your library name is : "MY_LIBRARY"
The tape cleaning option is set to "NO"
The bar code option is set to "YES"
The auto map drives option is set to "NO"
The slots file option is set to "NO"
The total slots in this library are: 229
Drive SCSIID: 0
Drive LUN: 0
Drive Adapter: 1
Group association: CH_GRP0
Start slot : 1 End slot: 229


```
Drive SCSID: 0
Drive LUN: 1
Drive Adapter: 1
Group association: CH_GRP1
Start slot : 1 End slot: 229
```

```
Drive SCSID: 0
Drive LUN: 2
Drive Adapter: 1
Group association: CH_GRP2
Start slot : 1 End slot: 229
```

```
Drive SCSID: 0
Drive LUN: 3
Drive Adapter: 1
Group association: CH_GRP3
Start slot : 1 End slot: 229
```

How Slot Configuration Works Using `csetep`

You can configure slots in two ways. You can either assign all the slots to all the groups or keep the slots exclusive.

For example, a library with two drives and 20 slots will have two groups, GROUP0 and GROUP1. Either GROUP0 can have slots from 1 to 10 and GROUP1 can have slots from 11 to 20, or both GROUP0 and GROUP1 can have slots from 1 to 20. Using the second approach, you can share tapes across groups. This is the recommended method.

The following is an excerpt from the csetup script that directs you to configure your library's slots:

```
Would you like to share slots across groups? (default no) [y,n,q] y
```

First we will take information about each group and when we are done we will associate the library drives with the groups you have created.

We will now associate the library drives with the groups you have created.

Please be aware that multiple device groups are not supported within changer groups. Only one tape drive per group is supported.

```
With which group do you wish to associate drive SONY SDX-500C (0,4,0) SN#  
0000910887 with?
```

```
1.) G1
```

```
2.) G2
```

```
(pick a number from the list) : 1
```

```
With which group do you wish to associate drive SONY SDX-500C (0,5,0) SN#  
0000910884 with?
```

```
1.) G1
```

```
2.) G2
```

```
(pick a number from the list) : 2
```

```
OK - let's see what we have
```

```
Your library name is : "SonyLib"
```

```
The tape cleaning option is set to "YES"
```

```
The bar code option is set to "YES"
```

```
The auto map drives option is set to "YES"
```

```
The slots file option is set to "NO"
```

```
The total slots in this library are: 30
```

```
Tape drive : (0,4,0)
```

```
Group association: G1
```

```
Start slot : 1 End slot: 30
```

```
Tape drive : (0,5,0)
```

```
Group association: G2
```

```
Start slot : 1 End slot: 30
```

Please review carefully. The script did not test for every possible error condition. Review your slot information carefully. Be sure that slot numbers assigned to one group are not a part of another.

```
Is this correct? (default yes) [y,n,q] y
```

How the Option Works with Bar Codes

If a library has a bar code reader, it will read the bar codes off the tape and store the bar codes in its own memory. BrightStor ARCserve Backup can access that information from the library and associate each bar code with the tape and the slot that the tape is in.

After the BrightStor ARCserve Backup services are started for the first time, all the tapes are read one by one by moving the tapes into the drives. After the first reading of all the tapes, the information related to each tape name and its bar code is stored within the BrightStor ARCserve Backup /data directory. The next time you shut down and restart the BrightStor ARCserve Backup services, BrightStor ARCserve Backup retrieves the tape information from the bar code database, including the tape name, sequence number, tape ID, and so on. This allows for quicker initialization and hastens the startup of the Media Server.

To enable bar coding, answer yes to the following prompt from csetup:

```
If you have bar coding would you like to enable it? (default yes) [y,n,q] y
```

If you answer no to the above question, you will then be asked:

```
Would you like to enable slots file? [y,n] y
```

If you are using a library that does have bar code reading capability, you should enable this setting by entering yes. Enabling the slots file allows all groups to share slots in the library. BrightStor ARCserve Backup supports only one drive per group.

Note: Do not manually modify the camediad.cfg file to say Yes to both, or BrightStor ARCserve Backup may not function properly.

AIX Device Drivers

The AIX device driver enables BrightStor ARCserve Backup to communicate with the robotic arm on IBM fibre-channel enabled and regular SCSI enabled devices. BrightStor ARCserve Backup installs and configures the AIX device driver while you are installing the BrightStor ARCserve Backup base product. IBM provides the Atape device driver to enable systems to communicate with IBM fibre-channel devices.

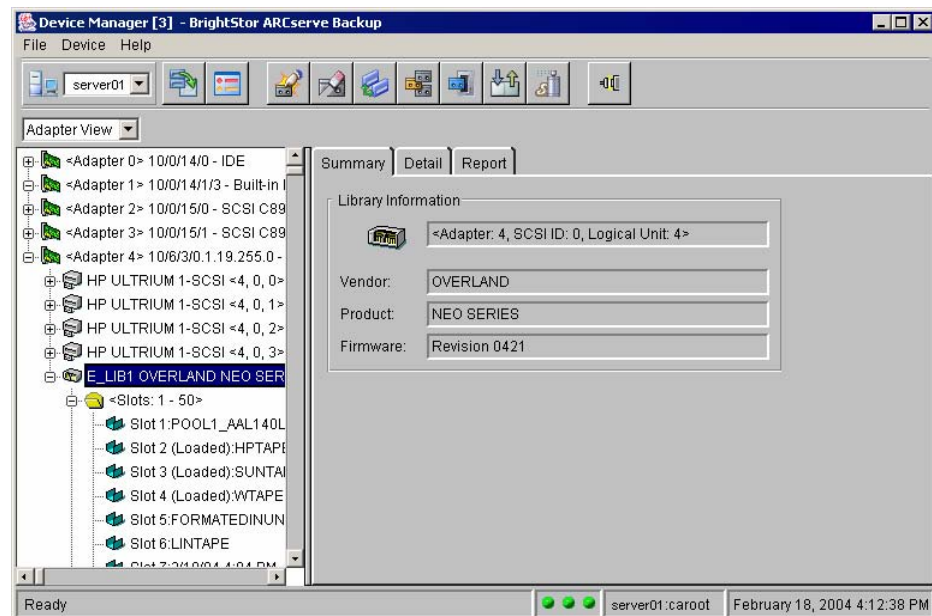
Although it is not necessary to install the Atape device driver, the AIX device driver can co-exist in the same system as the Atape device driver. Nonetheless, there are no special configuration settings or requirements necessary to use the AIX device driver.

Chapter 3: Using the Option

This chapter shows you how to use the BrightStor ARCserve Backup Tape Library Option. For an overall description of the backup and restore features and functionality, see the *Administrator Guide*.

Device Manager Operations

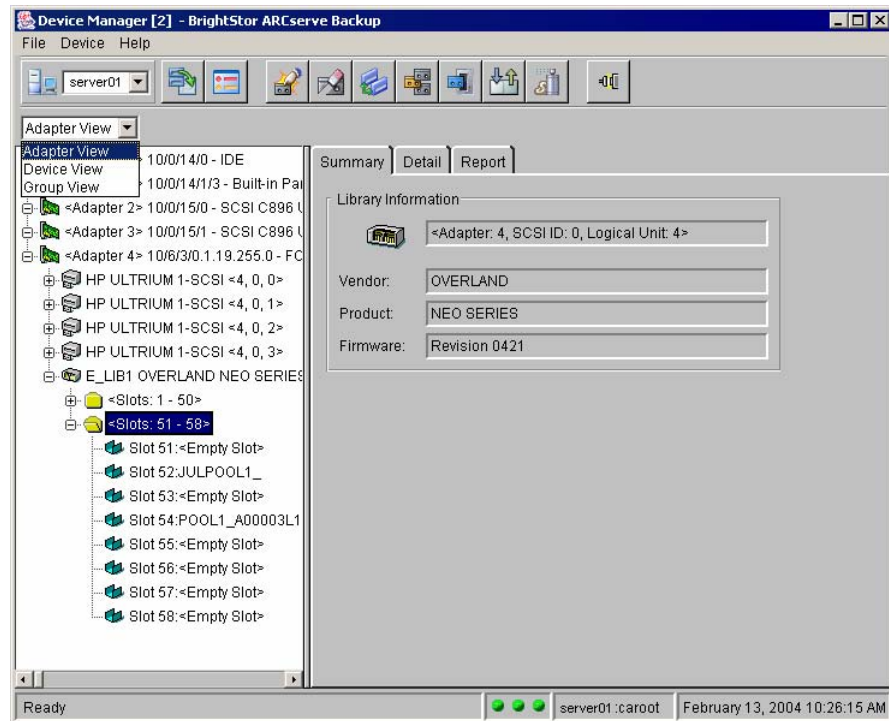
The Device Manager is used for all storage device operations, including library slot monitoring and maintenance. To access the Device Manager, click the Device Manager icon on the BrightStor ARCserve Backup Home Page. The Device Manager opens, as shown in the following example:



Using the Device Manager, you can view information about your libraries, including the media and storage devices in your environment. Click the + next to the device name to view detailed information about tapes, drives, slots, and so on.

View Modes

There are three different view modes in the Device Manager. To change a view mode, click in the view drop-down list, as shown in the following example:



The view modes available to you are:

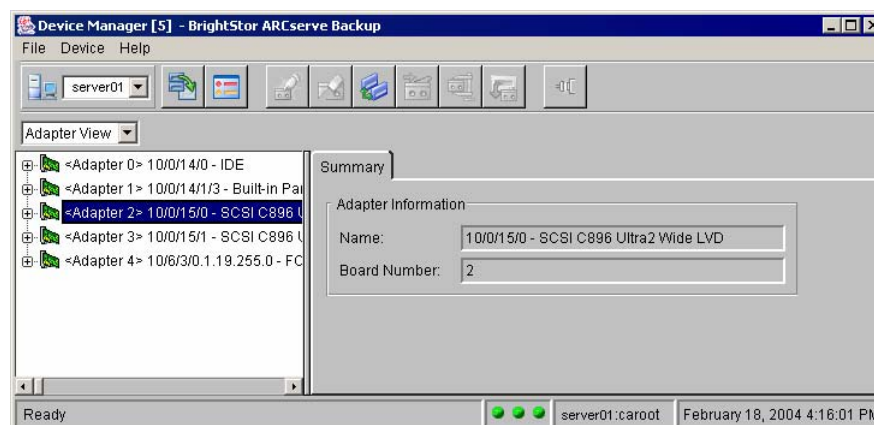
- **Adapter View**—Use this view mode to view adapter information.
- **Device View**—Use this view mode to view device information.
- **Group View**—Use this view mode to view group information.

Using the Device Manager, you can view information about the media, including the libraries and storage drives connected to your system. The following sections describe how to view information about:

- Adapter cards
- Libraries
- Library drives
- Media

Adapter Card Information

You can view general information about the adapter card, including the name of the adapter and its board number, as shown in the following example.

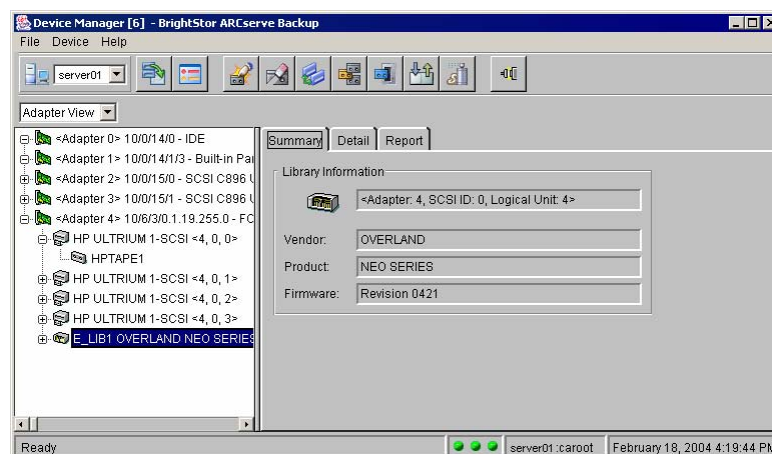


View Library Information

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 for Libraries

The Summary tab for libraries displays general information about the library, such as its vendor, product name, firmware version, and SCSI compliance. The Summary tab is the default view, as shown in the following example:

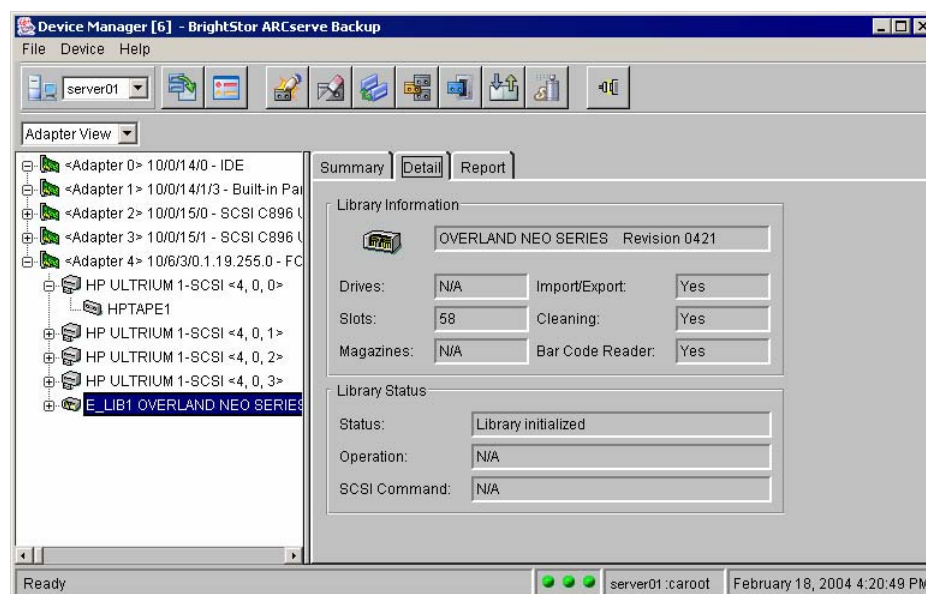


Detailed Information for Libraries

The Detail tab for libraries 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, and a cleaning tape.

An example of the Detail tab is shown next:

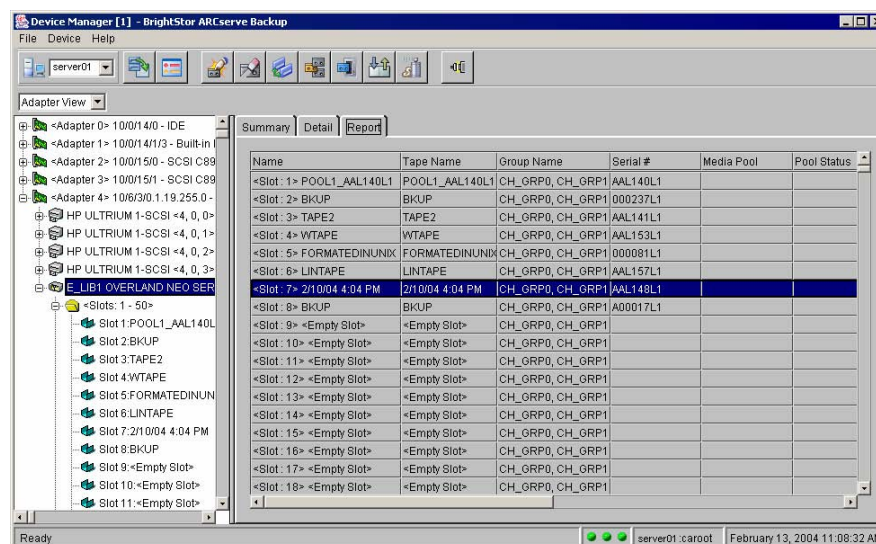


You can also check the current library status. For more information about bar code and serial numbered media, see Mount and Dismount Option.

Report Information for Libraries

The Report tab appears only if you select a library in the Adapter View or the Device View. This tab provides more detailed device information, including the Slot Number, Tape Name, Group Name, Serial Number, Media Pool Name, and the Media Pool Status (Blank, Save Set, or Scratch Set).

In the example shown below, the seventh row indicates a media in Slot 7, with a Tape Name of 02/10/04 4:04 PM, which belongs to Group Names CH_GRP0 and CH_GRP1. This media has a serial number of AAL148L1 and is not a member of any Scratch Sets or Media Pools. From the Report tab, you can also select media to perform media operations on, such as formatting and erasing by clicking the corresponding toolbar button.

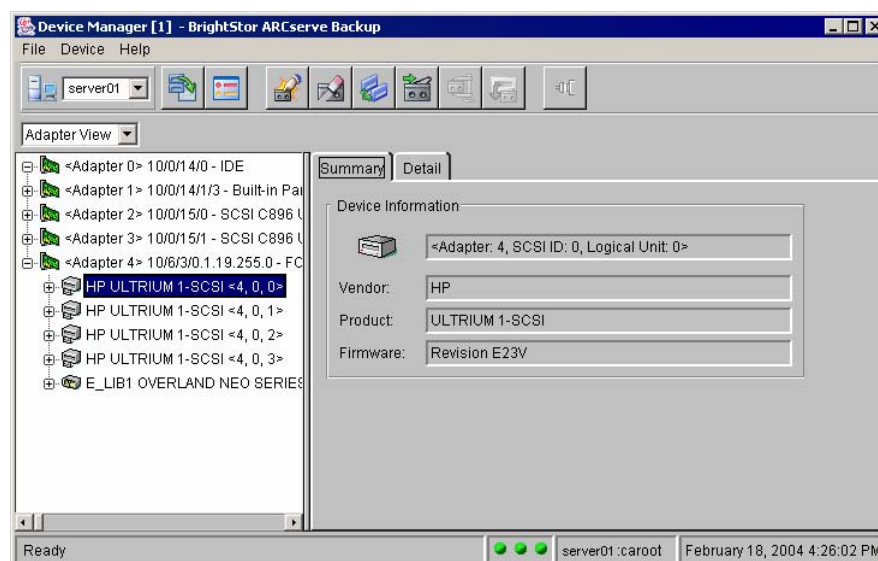


Library Drive Information

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

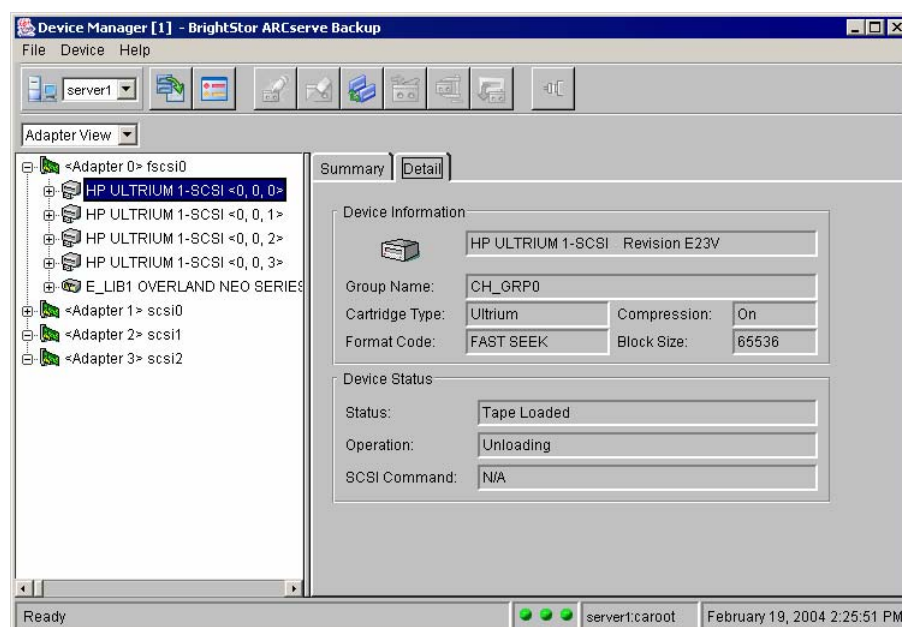
Summary Information About Library Drives

The Summary tab for library drives provides general information about the library drive, such as its vendor, product name, firmware version, and SCSI compliance. The Summary tab is the default view. An example Summary tab follows:



Detailed Information About Library Drives

The Detail tab for library drives displays specific information about the library drive, such as its group name, cartridge type, compression, format code, block size, and device status. An example of the Detail tab follows:



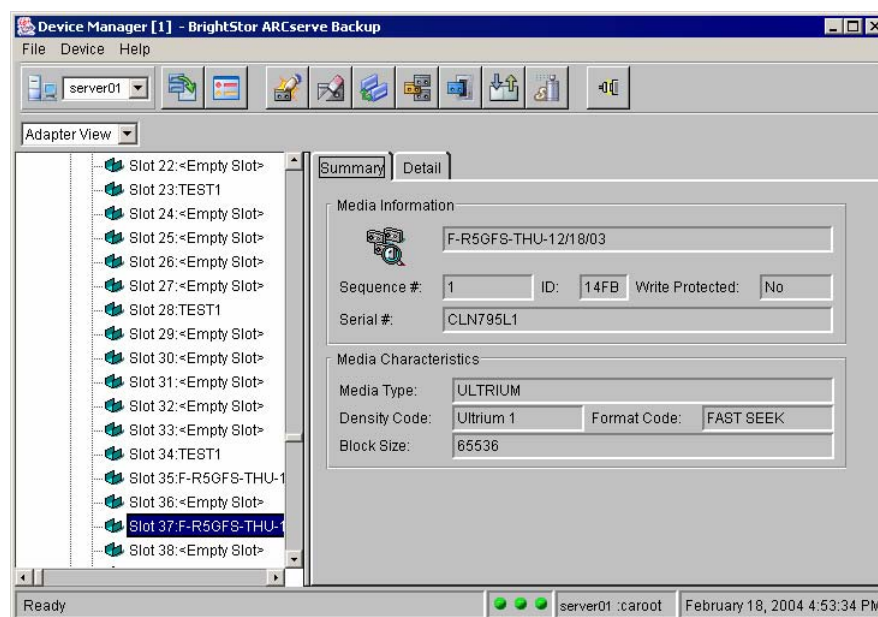
Media Information

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

The Summary tab for media displays general information about the media in the selected slot, such as the media name, sequence number, ID, characteristics, and whether it is write-protected.

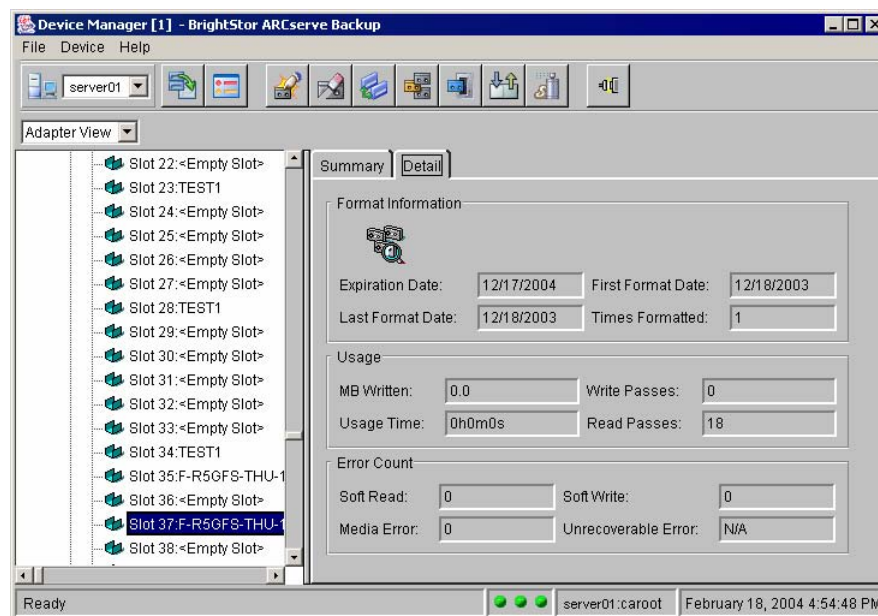
An example of the Summary tab for media follows:



Detailed Information about Media

The Detail tab for media 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.

An example of the Detail tab for media follows:



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

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

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

Device Management Functions for Libraries

The buttons on the Device Manager toolbar provide you with a number of options to help you manage and maintain groups, devices and media.



Options—Displays the slots in libraries based upon a range of criteria.



Device Group Configuration—Creates a new device group, assign or remove a device from a device group, rename or delete a device group.



Format—Formats blank media and previously used media.



Erase—Erases all data from media. Unlike the format option, this option also erases all references to the contents of the media from the BrightStor ARCserve Backup database..



Media Copy—Copies the contents of one media to another blank media. You can only use this option when copying to media of the same device type, model, and firmware



Retension—Ensures that your media is evenly wound and properly tensioned. This option is very useful if you are experiencing difficulties writing to or reading from a tape.



Compression—Enables or disables compression, if your tape drive supports compression.



Eject—Ejects media from the storage device, if your tape device supports this option.

BrightStor ARCserve Backup enables the following library-specific functions after installing the option.



Mount/Dismount—Loads or removes a magazine from the library.



Load/Unload—Loads or unloads a specific media from the slots in a library.



Import/Export—Adds new media to a library by specifying an empty slot to which you can import the media (add) to a library, or export (remove) the media from the library.



Clean—Cleans the head of any drive in your library.

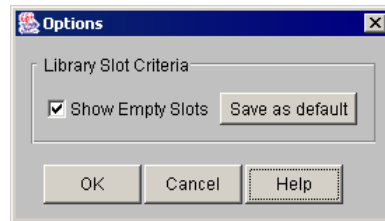


Offline Library—Takes a tape library offline to secure backup media from being overwritten.

Options

If your changer has a large number of slots, you can direct BrightStor ARCserve Backup to show only those slots that contain media.

This option can help you manage and maintain media in large libraries. For example, if your changer contains 200 slots, and 100 slots are full, you can easily locate slots containing media when you hide empty slots.



To show or hide empty slots, perform the following procedure:

1. From the Adapter View, Device View, or Group View in the Device Manager window, select the adapter, changer, or Slots group that you want to show or hide.
2. Click the Options toolbar button.
3. To view all slots, regardless of whether a slot contains media or not, check the Show Empty Slots check box. If you want to save this setting as the default option for your entire system, click the Save as default button.
4. To hide slots that do not contain media, clear the Show Empty Slots check box. If you want to save this setting as the default option for your entire system, click the Save as default button.
5. When you are finished, click OK.

Format Media Option

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

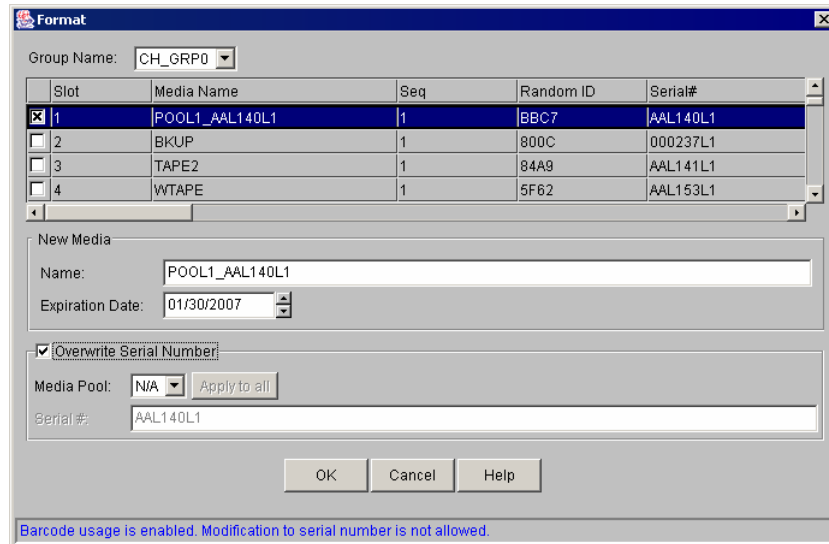
Note: Use this option with care. After you format media, the data it contained and any job sessions associated with this media are gone permanently.

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

Format Media

To format media, use the following procedure:

1. From the Device Manager window, click the Format toolbar button. The Format dialog displays, as shown in the following example:



Slot	Media Name	Seq	Random ID	Serial#
☒ 1	POOL1_AAL140L1	1	BBC7	AAL140L1
☐ 2	BKUP	1	800C	000237L1
☐ 3	TAPE2	1	84A9	AAL141L1
☐ 4	WTAPE	1	5F62	AAL153L1

Group Name: CH_GRP0

New Media

Name: POOL1_AAL140L1

Expiration Date: 01/30/2007

☒ Overwrite Serial Number

Media Pool: N/A Apply to all

Serial #: AAL140L1

OK Cancel Help

Barcode usage is enabled. Modification to serial number is not allowed.

2. The dialog shows the media for the selected group. Click the Group Name drop-down list to select a different group.
3. Click the media you want to format. The check box next to the selected media becomes checked.
4. Assign a name and an expiration date to the media you want to format. Media must be named before it can be formatted. For information on expiration dates, see Expiration Dates and Expiration Dates for New Media in this chapter.
5. If you want to overwrite the serial number, check the Overwrite Serial Number check box.

If your library supports bar codes and you enabled bar code use during the library configuration process, you cannot overwrite the serial number, because the bar code is used as the serial number. Additionally, if you are using bar code or assigning the tape to a media pool and using bar code, the bar code number will be used as the serial number.

6. Repeat Steps 2 through 5 to format other media. Click on all of the media you want to format. The check boxes next to the selected media become checked.
7. Click OK, and then click Yes to confirm.

Expiration Dates

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

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

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

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

Expiration Dates for New Media

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

Erase Media Option

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

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

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

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

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

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

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

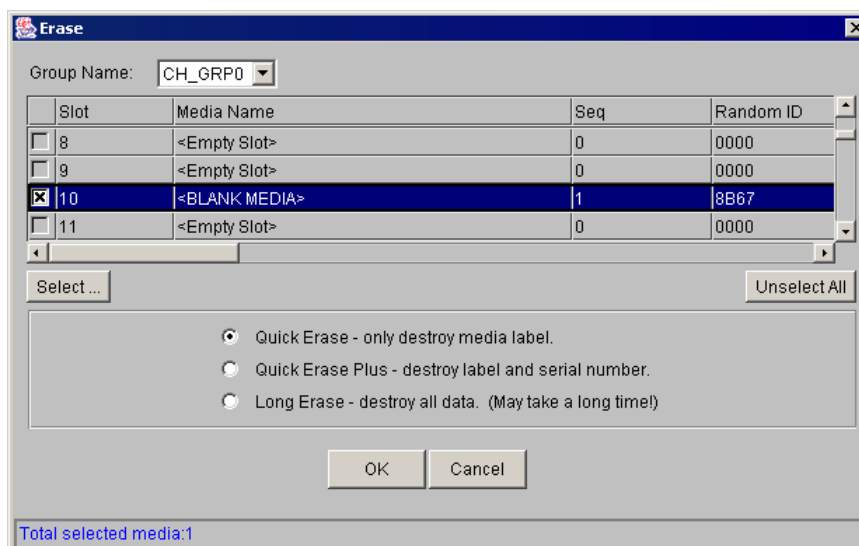
- Quick Erase and convert to WORM—This option quickly erases all data from the media. In addition, BrightStor ARCserve Backup converts the media to Write Once - Read Many (WORM) media.

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

Erase Media

To erase media, use the following procedure:

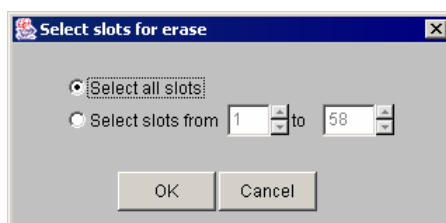
1. From the Device Manager window, click the Erase toolbar button. The Erase dialog opens as shown:



This dialog shows the media for this group. To select a different group, click the Group Name drop-down list. Slots reserved for cleaning tapes do not appear.

2. Select the media you want to erase. The check box next to the selected media becomes checked.

Note: If you want to select all slots, or if you have a large number of tapes to erase, click Select to open the Select slots for erase dialog as shown in the following example.



3. Choose Select all slots to select all available slots, or, choose Select slots from to specify a range of slots, and then click OK.

Alternatively, click Unselect All to clear all of the check boxes on the Erase dialog.

Media Copy Option

Use this function to copy data from a source media to a target media. To make a media to media image copy (for example, make an exact copy of a tape), you need two drives that use the same type media. Also, the media should be the same size and length.

To make a media to media copy of two different type media, or on session level, you can run the `tapcopy` command or run the Tapecopy Manager from the BrightStor ARCserve Backup Home Page.

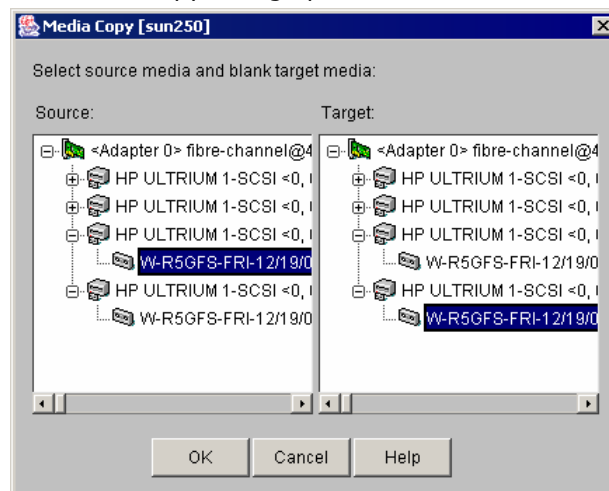
You can copy only to blank media. If you insert media into the destination drive that was not formatted by BrightStor ARCserve Backup and has data on it written by another application, BrightStor ARCserve Backup treats that media as a blank media. Any information on that media is erased.

Note: When copying media to media, your hardware must have the same vendor ID and product ID number.

Copy Media

To copy media, use the following procedure:

1. Load the tape into the drive.
2. From the Device Manager window, click the Media Copy toolbar button.
The Media Copy dialog opens as shown:



3. Select the Source media that you want to copy.

Note: When copying media to media, your hardware must have the same vendor ID and product ID number.

4. Select the blank Target media to which you want to copy.
5. Click OK, and then click Yes to confirm.

Retension Media Option

Use the Retension option to make sure media is evenly wound and properly tensioned. Retension a media, especially, if you are having trouble writing to it or reading from it. When a media becomes unevenly wound, it is prone to errors, may jam, or worse yet, break.

Note: The Retension option applies primarily to Quarter Inch Cartridge tapes.

Retension Media

To retension media, use the following steps.

1. From the adapter, device, or group view on the Device Manager window, select the media that you want to retension.
2. Click the Retension toolbar button.

A message box opens to inform you that the process may require several minutes to complete.

3. If you want to continue, click OK. Otherwise, click Cancel.

When the retension task is complete, a message box opens to inform you of the results.

Compression Option

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

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

Important! *You can only change compression when a blank tape is in the drive. This prevents mixing of uncompressed and compressed data between sessions on a tape.*

If your storage device supports Improved Data Recording Capability (IDRC) compression and you are using the Linux/390 device driver, you can instruct BrightStor ARCserve Backup to enable compression.

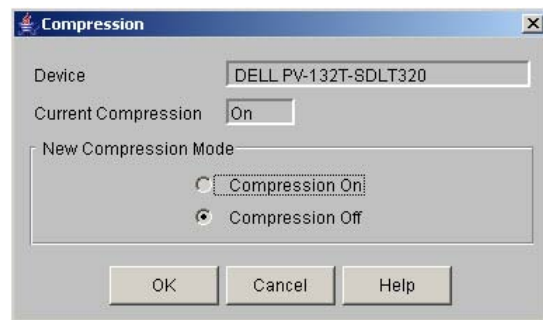
Data that is backed up using IDRC must also be restored with IDRC.

Compress Media

To turn compression on or off, follow these steps:

1. In the Device Manager, select the device drive you want to set. If the device drive supports compression, the Compression button on the toolbar is enabled. To verify if the device supports compression, select the Detail tab while the device is highlighted.
2. Click the Compression toolbar button.

The Compression dialog opens as shown in the following example:



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

Eject Media Option

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

Eject Media

To eject media, follow these steps:

1. Select the device drive from which you want to eject the media.
2. Click the Eject button. BrightStor ARCserve Backup prompts you to confirm that you want to eject the media.
3. Click Yes to confirm that you want to eject the media from the drive.

The media is ejected from the device drive.

Disable Device Option

You can dynamically enable or disable your entire library or any drive being used in that library, using the Enable/Disable button available on the Device Manager toolbar.

Using this option you can enable or disable a device for security purposes, to protect your backup media. Disabling a device means that no one can use that device until you enable it.

Disable a Device

To enable or disable a device, use the following steps:

1. In the Device Manager, select the device you want to enable or disable.
2. Click the Enable/Disable button.

If the device has already been disabled, click this button to enable it. If the device is presently enabled, this button will disable it. The device remains disabled until you enable it again.

Mount and Dismount Option

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

This option checks the library slots and reads the media header. It then associates the media header with the slot in which it was found (its home slot). This enables the Media Server to keep track of any changes made to media in the library (media added 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 Media Server is running, so that you can immediately inventory your slots.

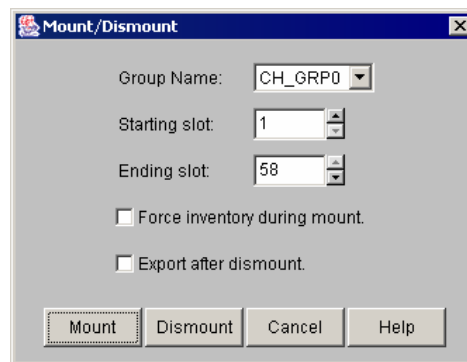
Important! *If you export a tape and import it again, BrightStor ARCserve Backup does not force an inventory of your media. BrightStor ARCserve Backup behaves in this manner because the tape has the same bar code which prevents the tape name, tape ID and sequence from being updated. If you use a tape that was previously imported but was formatted by another Brightstor ARCserve Backup server (not a part of the SAN), manually mount the slot in which the tape resides and select the Force Inventory option before you use the tape again.*

Mount and Dismount a Magazine

Magazines must be mounted for library operations to start. Magazines should be dismounted before they are physically removed.

To mount or dismount a magazine, use the following procedure:

1. From the Device Manager window, click the Mount/Dismount toolbar button. The Mount/Dismount dialog opens as shown:



2. Click the Group Name drop-down list to select the group that contains the magazines you want to mount or dismount.
3. Click both the Starting slot and the Ending slot spin boxes to select a range of slots to mount or dismount.
4. To ensure that the media in these slots are moved to inventory during the mount, check the Force inventory during mount check box.

5. To export the media in these slots after the dismount, check the Export after dismount check box.
6. Click Mount or Dismount, depending on which operation you want to perform.

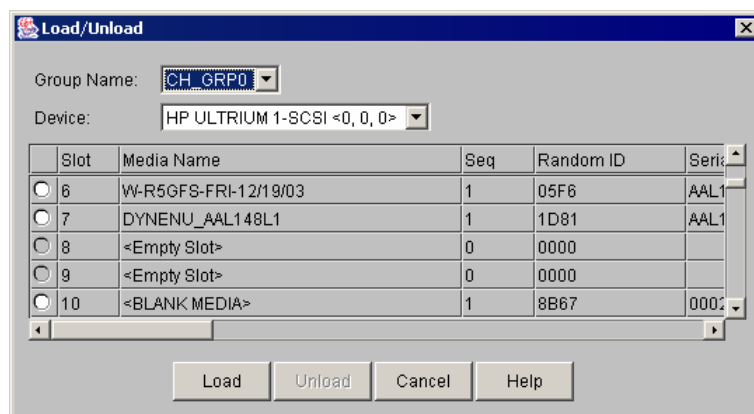
Load and Unload Option

If you need to change a specific media currently loaded in a drive, or load media into an empty drive, use the Load or Unload Media function.

Load and Unload Media

To load or unload media, use the following procedure:

1. From the Device Manager window, click the Load/Unload toolbar button. The Load/Unload dialog opens as shown:



2. This dialog shows the media for this group. To select a different group, click the Group Name drop-down list.
3. Select the media that you want to load or unload. You can load or unload one slot at a time.
4. Click Load or Unload.

Import and Export Option

Use the Import/Export option to add new media to a library by specifying an empty slot to which the media can be imported, or by directing BrightStor ARCserve Backup to locate available slots. You can import one tape at a time or many tapes simultaneously. When you import media, the library reads the media and adds it to its inventory. Use the Export function to remove media for off-site storage, or if you suspect it is defective.

The Import/Export dialog contains the following fields:

- Import—Click this button to import the media.
- Export—Click this button to export the media.
- Group Name—The name of the group that you want to import tapes to or export tapes from.
- Import any slots—Choose this option to direct BrightStor ARCserve Backup to scan the group for available slots and import each tape to the next available slot. This function eliminates the need for you to scroll the Import/Export dialog to find available slots and import many tapes simultaneously. Use the spin box to specify the number of tapes that you want to import.
- Select all slots—Choose this option to direct BrightStor ARCserve Backup to import all of the slots in your library to the specified group.
- Slot—Select an empty slot to which to import a media, or choose the slot containing the media you want to export. If you know the slot that you want to import the tape to, check the check box corresponding the slot or media name and then click Import.

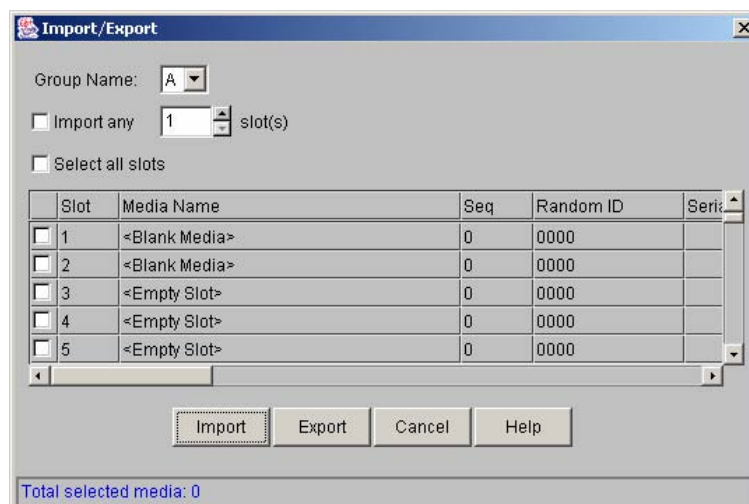
When importing media, you can choose one of the following methods:

- Quick Import—BrightStor ARCserve Backup imports the media and attempts to use the media's bar code information to retrieve the corresponding information from the BrightStor ARCserve Backup database.
Note: You can only use this method if you are using the bar code option.
- Regular Import—Reads all media information from the media itself.

Import Media to Libraries

To import multiple library slots, use the following procedure:

1. From the Device Manager window, click the Import/Export toolbar button. The Import/Export dialog opens, as shown in the following example:

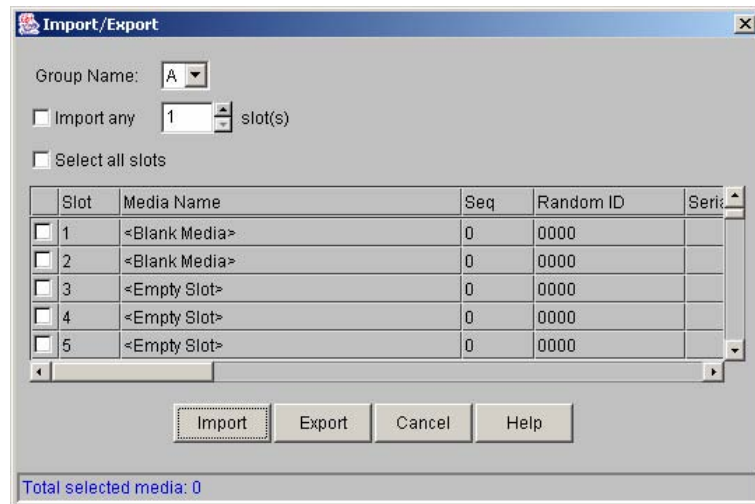


2. This dialog shows the media for this group. Click the Group Name drop-down list to select a different group.
3. Check the check boxes corresponding to the slots that you want to import to. Or, you can choose one of the following options:
 - Import any slots: Choose this option to direct BrightStor ARCserve Backup to scan the group for available slots and import each tape to the next available slot. Use the spin box to specify the number of tapes that you want to import.
 - Select all slots: Choose this option to direct BrightStor ARCserve Backup to import all of the slots in your library to the specified group.
4. Click Import.

Export Media from Libraries

To export multiple library slots, use the following procedure:

1. From the Device Manager window, click the Import/Export toolbar button. The Import/Export dialog opens, as shown in the following example:



2. This dialog shows the media for this group. Click the Group Name drop-down list to select a different group.
3. Do one of the following:
 - Check the check boxes corresponding to slots that you want to export.
 - Check the Select all slots check box to direct BrightStor ARCserve Backup to export all slots from the library to the specified group.
4. Click Export.

Clean Media Option

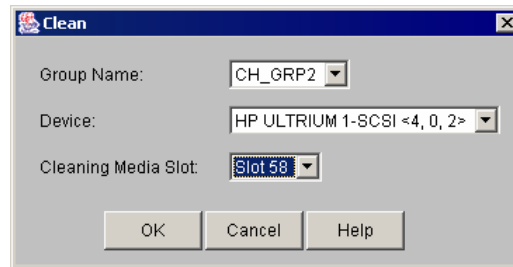
Use this option to clean the heads of any media drive in your library.

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

Clean Tape Drive Heads

To clean tape drive heads, use the following procedure:

1. From the Device Manager window, click the Clean toolbar button. The Clean dialog opens, as shown in the following example:



2. This dialog shows the media devices for this group. To select a different group, click the Group Name drop-down list.
Note: Offline library drives do not display in the list.
3. From the Device drop-down list, select the drive whose heads you want to clean.
4. From the Cleaning Media Slot drop-down list, select the slot that you want to clean.
5. Click OK.

Device Group Management

BrightStor ARCserve Backup allows you to separate the slots in your library into groups. Grouping slots allows you to 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.

BrightStor ARCserve Backup allows only one tape drive per group when configuring libraries. For example, if you have two libraries and the first library has three drives while the second library has two drives, then each drive in its respective library will have its own group. The first library will have three groups, each group containing only one tape drive and the slots assigned to it. The second library will have two groups, each group containing only one tape drive and the slots assigned to it. All groups must have unique names, even if they are in separate libraries.

Slot Grouping

You can use one of the following methods to group the slots.

- Separate a range of slots so that each group has its own set of slots and does not overlap into other groups.
- Overlap the slots so that each group can see the other groups' slots.

Not Using Overlapping Slots

When you do not overlap slots, you can group your slots in a configuration that enables you to direct backups of critical information to a particular group while directing backups of less critical information to other groups.

Example

For example, suppose you have servers that you deem very important in that you do not wish other information from other servers to go onto the same tape. You can then group your slots as below and then direct your backups of your critical information to certain groups, such as CH_GRP0 in this example. Your other servers, in which you want to keep the data separate from the critical servers, can be directed to the other groups, such as CH_GRP1, CH_GRP2, and CH_GRP3. To achieve this, answer No to the prompt "Would you like to share slots across groups?" when configuring the library using *csetup*.

An example of the *csetup* configuration script is shown below:

```
[CHANGER]
CHANGER_NAME = "mylib" (2,0,0)
CLEANING_ENABLED YES
BARCODE_ENABLED YES
AUTOMAP_DRIVES_ENABLED YES
READ_SLOTS_FILE_ENABLED NO
CHANGER_DEVICES = (2,1,0) (2,2,0) (2,3,0) (2,4,0)
CHANGER_GROUP = "CH_GRP0" (2,1,0) FROM 1 TO 10
CHANGER_GROUP = "CH_GRP1" (2,2,0) FROM 11 TO 20
CHANGER_GROUP = "CH_GRP2" (2,3,0) FROM 21 TO 30
CHANGER_GROUP = "CH_GRP3" (2,4,0) FROM 31 TO 40
CHANGER_SLOTS = 40
[CHANGER_END]
```

Overlapping Slots

Overlapping slots enables you to allow multiple device groups to share all of the slots in the library.

Example of Using Overlapping Slots

From the previous example, if you have more tapes in CH_GRP3 which do not get used much, but your CH_GRP0 gets used quite a lot, you would use more tapes in the slot range from 1 to 10, and you may require more tapes.

The slot overlapping example shown below details how CH_GRP0 can access all the tapes from slots 1 to 40, thus making it easier to obtain new tapes when they are needed. To achieve this, answer Yes to the prompt “Would you like to share slots across groups?” when configuring the library using csetup.

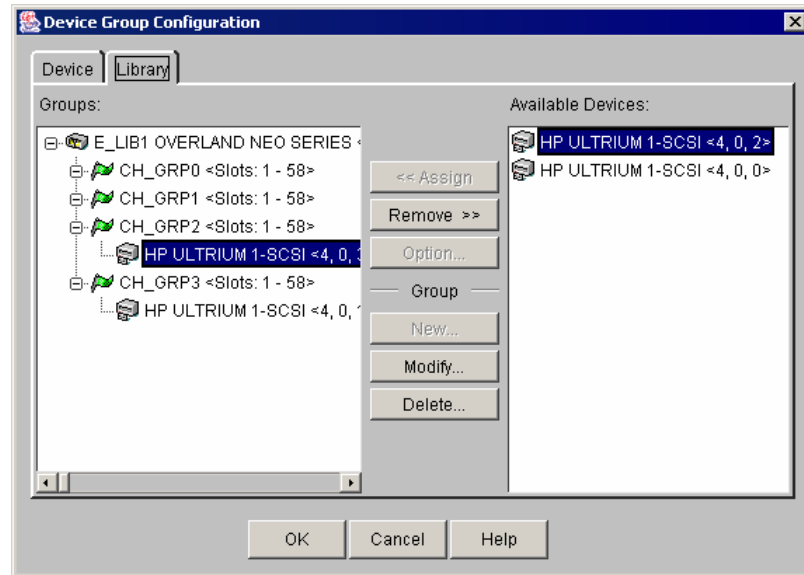
```
[CHANGER]
CHANGER_NAME = "mylib" (2,0,0)
CLEANING_ENABLED YES
BARCODE_ENABLED YES
AUTOMAP_DRIVES_ENABLED YES
READ_SLOTS_FILE_ENABLED NO
CHANGER_DEVICES = (2,1,0) (2,2,0) (2,3,0) (2,4,0)
CHANGER_GROUP = "CH_GRP0" (2,1,0) FROM 1 TO 40
CHANGER_GROUP = "CH_GRP1" (2,2,0) FROM 1 TO 40
CHANGER_GROUP = "CH_GRP2" (2,3,0) FROM 1 TO 40
CHANGER_GROUP = "CH_GRP3" (2,4,0) FROM 1 TO 40
CHANGER_SLOTS = 40
[CHANGER_END]
```

Device Group Configuration Using the Device Manager

After you start BrightStor ARCserve Backup, you can use the Device Manager to configure device groups. The following sections describe how to:

- Create a new group
- Assign a slot to a group
- Remove a slot from a group
- Rename a group

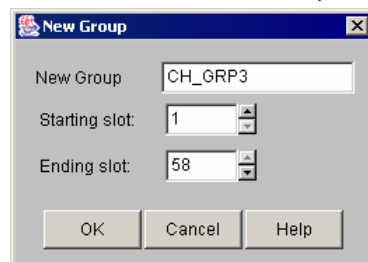
To open the Device Group Configuration dialog, start the Device Manager and click the Device Group Configuration toolbar button. The Device Group Configuration dialog opens as shown:



Create a New Group Using Device Configuration

The Device Group Configuration dialog describes the existing groups and the slots assigned to each group. To create a device group, use the following procedure:

1. Click the Library tab in the Device Group Configuration dialog.
2. Click New. The New Group dialog opens as shown:



3. Enter a name for the device group and also a starting slot number and an ending slot number (slot range), and click OK. The new device group appears in the Groups list.

Assign a Device to a Device Group

To assign a device to a device group, use the following procedure:

1. Click the Library tab in the Device Group Configuration dialog.
2. Click New.
3. Enter a name for this group, and select the starting and ending slots.
4. Click OK.
5. Select a device from the Available Devices list.
6. From the Groups list, select the group to which you want to assign the device.
7. Click Assign. The device is removed from the Available Devices list and placed in the Groups list, below the name of the group to which it was assigned.
8. Repeat steps 2 through 7 to assign more devices to device groups.
9. When finished, click OK.

Note: In the Device Group Configuration dialog, if there are no devices available to be assigned, the Available Devices list will be empty.

Remove a Device from a Device Group

To remove a device from a device group, use the following procedure:

1. Click the Library tab in the Device Group Configuration dialog.
2. Select the device you want to remove.
Devices are listed in the Groups list, below the name of the group to which they were assigned.
3. Click Remove.
The device 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 other devices from groups.
5. When you are finished, click OK.

Delete a Device Group

To delete a group, use the following procedure:

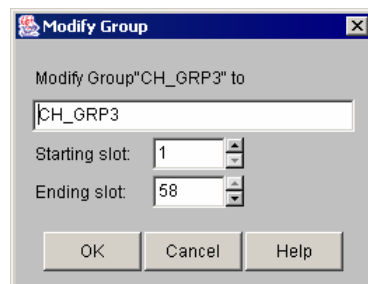
1. Click the Library tab in the Device Group Configuration dialog.
2. Select the group you want to delete.
3. Click Delete.

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

Rename a Device Group

To modify a group, use the following procedure:

1. Click the Library tab in the Device Group Configuration dialog.
2. Select the group you want to modify.
3. Click Modify. The Modify Group dialog opens as shown:



4. Enter a new name or new slot ranges (or both, if needed) for the group and click OK. The new group name is reflected in the Groups list.

Backup and Restore Jobs

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

You can submit additional jobs to the same group or different groups. If you submit more than one job for the same group, BrightStor ARCserve Backup submits the jobs to the job queue and marks them ready to execute as soon as the previous jobs submitted to that group are finished.

How Single-Step Spanning Works

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

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

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

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

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

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

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

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

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

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

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

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

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

Example 2: Adding a Magazine with Additional Media

A backup job was scheduled to back up a database server to a library that holds a single magazine with four slots. Before the job was run, a full magazine (four tapes in its slots) was mounted into the library, causing an inventory of the slots in the magazine. All of the slots were assigned to GROUP0 to allow tape spanning.

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

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

Example 3: Swapping Full Media for New Media

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

If you are only supposed to use two tapes, you can assign the slots of two of the tapes to GROUP0 and the other two to GROUP1. Then you can run the backup using GROUP0.

However, since BrightStor ARCserve Backup requires more than two tapes to complete the backup, you will be prompted to insert a tape into the library in the middle of the job. Open the library door and swap one of the tapes in GROUP0 with a new tape. Close the library door and mount the slot that contained the new tape so that BrightStor ARCserve Backup recognizes the new tape. After the mount completes, the backup job resumes.

Chapter 4: Configuring Libraries Using `csetup`

This chapter describes specific information for running the `csetup` command line utility to configure the BrightStor ARCserve Backup Tape Library Option.

Each topic describes the item being configured and shows the corresponding portion of the script.

Kernel Parameters

The `csetup` script's first step is to check for the kernel parameters that are necessary for BrightStor ARCserve Backup to function successfully. See the following for the default parameters recommended for the Solaris, HP-UX, and Tru64 environments. IBM AIX dynamically self-tunes, so it requires no specific tuning.

The parameter sets given are simplistic in that they give only the bare requirements to run BrightStor ARCserve Backup software, they do not indicate how these parameter sets might change as they are applied to systems that have additional kernel tuning requirements because of additional load on the system.

The following is an excerpt from the csetup script that checks your kernel parameters:

Solaris

```
msgmap=2048
msgmax=32768
msgmnb=65535
msgmni=128
msgseg=32767
msgssz=32
msgtql=2048
shmmax=1000000000
shmmni=720
shmmin=1
shmseg=120
semnmi=256
semume=128
semmsl=128
semopm=20
semvmx=128000
semaem=16384
semnmu=128
semmap=256
semnms=1024
semusz=96
rlim_fd_cur=1024
rlim_fd_max=1024
```

HP

```
semmap=256
semnmi=256
semnms=1024
semnmu=512
semume=512
semvmx=65535
semaem=16384
shmmax=1000000000
shmmni=720
shmseg=256
msgmap=2048
msgmax=32768
msgmnb=65535
msgmni=256
msgssz=32
msgtql=2048
msgseg=32767
maxfiles=2048
maxuprc=1024
nproc=2048
```

Tru64

```
ipc:
num_of_sems=512
max_kernel_ports=22487
port_hash_max_num=1124350
port_reserved_max_num=22487
set_max_num=1029
max_proc_per_user=128
msg_map=2048
msg_max=32768
msg_mnb=65535
msg_mni=128
msg_tql=256
shm_max=512000000
shm_min=1
shm_mni=1024
shm_seg=256
sem_msl=500
sem_mni=256
sem_opm=20
sem_ume=128
sem_vmx=32767
```

Domain Configuration

BrightStor ARCserve Backup uses its own authentication mechanism for management purposes. It creates a default user named 'caroot' during BrightStor ARCserve Backup setup. You can log in to the BrightStor ARCserve Backup manager using caroot.

A BrightStor ARCserve Backup domain is the security implementation that allows more than one BrightStor ARCserve Backup server to be accessed using the same password for caroot. All the BrightStor ARCserve Backup machines in the domain can be discovered by the BrightStor ARCserve Backup Manager, thus simplifying security management. Each domain has a primary server that supports this network security model and can have any number of member BrightStor ARCserve Backup servers. For redundancy to the primary server, an optional secondary server can be configured within the domain. Each domain can have a logical name, which is configured during installation. Each domain configuration is stored on the BrightStor ARCserve Backup server under the \$BAB_HOME/config/discovery.cfg file.

The following is an excerpt from the csetup script that directs you to configure the domain:

```
Is this host [dev-test1] the primary discovery server (default: y) [y,n,?,q]
Do you have a secondary discovery server (default: y) [y,n,?,q] n
What is the BrightStor ARCserve Backup domain name? dev-test1
```

```
PRIMARY_SERVER:    dev-test1
SECONDARY_SERVER:  none
DOMAIN_NAME:       dev-test1
```

```
Is this information correct (default: y) [y,n,?,q] y
```

Web Server Port Configuration

Port numbers allow different applications on the same computer to utilize network resources without interfering with each other. Typically, web servers run on port 80. To avoid conflicting with other web servers on this host, BrightStor ARCserve Backup defaults to port 6060. When connecting to this web server, you must include the port number at the end of the address, for example, `http://servername:6060`.

If you do not accept the default port, you should avoid using known port numbers, such as 20 or 21 for ftp, 23 for telnet, and 25 for SMTP.

The following is an excerpt from the csetup script that directs you to configure the port number:

```
What is the port number for the Web server (default: 6060)? 6060
```

Database Configuration

BrightStor ARCserve Backup uses the Ingres database to store the information resulting from the backup execution and configuration. The database maintains information about tapes being used, sessions stored on them, and all the information about the files that were backed up. The amount of information stored inside the database can be considerable, and you need to make sure that you allocate enough disk space to receive all the information. If you do not initially allocate enough disk space, tools are provided to extend the database to a different file system.

Storage Allocation

To properly install Ingres, you must plan for three different disk spaces.

- **Binaries**—The Ingres binaries require approximately about 400 MB of disk space.
- **Transaction log**—The transaction log file is the file where Ingres records all insert, update, and delete activities until the operation is either completed or committed. This file is used to maintain the integrity of the data inside the database. In the context of BrightStor ARCserve Backup utilization, the largest number of files being backed up in a single session determines the transaction log size. For example, if you plan back up file systems containing between 300 files and 300,000 files, you need to make sure the transaction log file can support operations performed on the largest file system, in this case, 300,000 files.

Use the following table as a guideline for determining transaction log size:

Setup Method	Maximum Number of Files per Session	Transaction Log Size (Default)
Small setup	< 100 K	400 MB
Medium setup	> 100 K and < 500 K	1 GB
Large setup	> 500 K	2 GB

- **Data storage**—The amount of disk space allocated for data storage depends on the amount of backup file information that you expect the database to contain. This is based on the number of files being backed up on a weekly basis and the retention period of such backups. Also, some database maintenance tasks can be used regularly in order to reclaim some disk space. The following table provides guidelines for disk space allocation, depending on the number of file details you expect the database to keep:

Maximum Number of File Records in the Database	Disk Space Required
100,000,000	30-50 GB
250,000,000	70-80 GB
500,000,000	120-150 GB

Database Location

Another consideration is the physical location where you plan to store the binaries, transaction log, and data files. For performance reasons, you should use a different disk or controller for the data files and the transaction log. During insert, update, and delete operations performed on the database, both the transaction log and the data files are affected simultaneously. Separate locations will provide the greatest benefit, through parallel input and output operations. For example, a best practice would be to use the same file system for the Ingres binary and the transaction log and to use a different file system for the data.

In a scenario where you would not have allocated or planned enough disk space to receive the data, or you know that more than one file system will be necessary to store all the data, you can create several database extensions to spread the data on different file system locations. You can configure a database extension during the initial setup of the Ingres database or when you see that it is needed. Configuring a database extension during initial installation is faster, because this operation requires spreading the actual data across all locations.

During the initial installation of Ingres, you are prompted first for the directory where Ingres binaries will be installed. Subsequently, you are prompted to do a Normal setup or a Custom setup. Use the Normal setup for a fast and easy installation where performance is not a requirement and you expect to do small backups. In the Normal setup, you will install Ingres on a single file system where the binaries, the transaction log, and the data are all residing. A 400 MB transaction log file is created.

We recommend, for a production environment as well as for a testing environment with a large amount of data, that you use the Custom setup. Using the Custom setup, you are prompted for an alternate location for the transaction log file and the data files. Also, you are prompted for the transaction log file size.

Database Extensions

At the end of the Ingres installation, you are prompted whether to create database extensions. If you need to create database extensions, then you are prompted for the number of database extensions to create, and where to create them.

The following is an excerpt from the csetup script that directs you to configure the database:

```
Preparing for Ingres installation on SunOS
```

```
Please specify the full installation path for Ingres,  
if this is your first time setting up Ingres.
```

```
Hit Enter to accept the default installation path, otherwise enter the existing  
Ingres path if already installed (/opt/ingresii):
```

```
Found an Ingres DBMS installation in '/opt/ingresii'. We will not re-install  
Ingres.
```

```
Found a BrightStor AB database in the current Ingres installation.
```

```
Do you want to re-initialize the current BrightStor AB database (all data will be  
lost)? (y/n [n]): n
```

```
BrightStor ARCserve Backup provides the ability to extend its embedded database  
information to multiple directory locations. The reasons could either be related  
to database size growth, should the underlying file-system not support large  
files (greater than 2 GB) or not have enough space (please refer to your  
documentation for space requirements); or also to improve performance by  
splitting the information on multiple file-systems.
```

```
BrightStor ARCserve Backup allows you to extend the internal database now or  
later. Do you want to extend the database now? (y/n [n]):n
```

```
You can configure Ingres to shutdown when BrightStorAB database engine is  
shutdown.
```

```
Note: This is not advisable if there are other applications using the same Ingres  
installation.
```

```
Do you want to stop Ingres when BrightStorAB database engine is shut down (y/n  
[n]): n
```

```
The BrightStor ARCserve Backup database installation completed successfully.
```

Media Management Option Configuration

BrightStor ARCserve Backup provides a Media Management Option (MMO) that allows you to create vaulting rules in order to protect, control, and manage tape resources. In an environment where multiple BrightStor ARCserve Backup servers are being used, you can set up an MMO Primary that will receive the tape and media pool information from all BrightStor ARCserve Backup servers. The MMO Primary machine is by default the same machine as the BrightStor ARCserve Backup Primary discovery machine.

After the MMO is configured, all single tape and media pool information is centralized on the MMO Primary database.

The following is an excerpt from the csetup script that directs you to configure the MMO:

```
Configuring MMO on Local Primary Server ...  
A vnode for MMO primary server is created!
```

System Tape Driver Configuration File for Devices on Fibre Network

This section applies to Solaris environments only.

In a fibre environment, the device driver assigns the SCSI ID for a target when the device is first discovered. If persistent binding is not used, the SCSI ID/target relationship will change during discovery. The SCSI IDs that are assigned can be numbers such as 128 and LUNs such as 12. Entries are added up to a limit of 256 for SCSI IDs and a limit of 15 for LUNs in the system driver configuration file (*st.conf*) from Sun Microsystems. These same SCSI ID and LUN entry limits apply for the *cha.conf* configuration file for the BrightStor ARCserve Backup SCSI passthrough driver. When the driver loads during system boot, depending on the entries in the configuration file, it tries to locate the device. During system boot, the *st* and *cha* drivers can take long time to scan for so many entries in the file. To avoid these delays, you should use persistent binding.

If you use persistent binding, the SCSI ID/target relationship is maintained during discovery. Discovery occurs each time a system boots. After a system has booted, it maintains a constant view of the same SCSI ID/target relationship.

Note: For more information about persistent binding, see your specific fibre HBA vendor's documentation.

The following is an excerpt from the `converttost` script that directs you to modify the system tape driver.

```
PLEASE READ CAREFULLY!!!
This script (converttost) is to be used if you have fibre connected tape devices.
This script will insert a generic tape configuration into the file
/kernel/drv/st.conf.
It will also prompt you if you wish to add more entries into the file
/usr/kernel/drv/cha.conf, as well as show you how to edit the file.
It will also prompt you if you want to unload and reload the st driver.
For these changes to take effect, you must unload and reload the st driver.

If you do not elect to make any of these changes at all, you may run converttost
at your convenience.

Do you wish to update the file /kernel/drv/st.conf? (y|n|q) n

You may run converttost at a later time.
```

File System Backup

Backing up to disks gives you the functionality of using a file system residing on a disk as the backup medium. After configuring a file system device as a backup device, BrightStor ARCserve Backup provides the same functionality that it provides with a tape device.

Media server configuration allows you to configure directory locations to use as file system devices.

When backing up file systems, the follow considerations apply:

- The amount of data that can be backed up on a file system device is limited by the available disk space.
- For NFS mounted file system devices, the root of the BrightStor ARCserve Backup server must have read-write privileges on this NFS mount.

The following is an excerpt from the `csetup` script that directs you to modify your backup options:

```
Updating adapter/device information in camediad.cfg ...
Do you want to enable backup to disks? (default: n) [y,n,?,q] n
```

Library Configuration Using csetup

To configure libraries, the script first checks for any existing configuration. It then asks if you want to remove that configuration.

If you choose yes, the library configurations are removed from `$BAB_HOME/config/camediad.cfg`. This is done by placing a semicolon (;) in front of each line of the library configuration. Library configurations are the sections in the `camediad.cfg` file that start with the label [CHANGER]. The semicolon prevents the Media Server, `camediad`, from reading that line when `camediad` is started.

If you choose no, the `camediad` ignores the library configurations and progresses to configure your other libraries. You would choose no if you have two libraries and have configured only one of them.

For example, suppose you have two libraries, Library A and Library B. If you configured Library A previously, and not Library B, you can choose “no” to configure Library B. However, if you reconfigure Library A, and then configure Library B, you will have two sets of configurations for Library A and one for Library B. Starting `camediad` results in access to the same library twice, causing the Media Server to run improperly and library initialization to fail.

The following is an excerpt from the `csetup` script that directs you to modify your library configuration:

```
Are any of your tape devices or tape library devices attached by fibre?

(default: n) [y,n,?] n

Scanning for SCSI devices

Do you want to remove your library configurations now? (Do this if you have added
or removed any tape libraries.) (default: y) [y,n,?,q] y
Do you want to configure libraries now? (default: n) [y,n,?,q] y
1.) Local SCSI Library
2.) Quit

Please enter your choice. ( "1" | "2" ) 1

Configuring for local scsi media library
```

Express Configuration Method

In express configuration, `camediad` runs automatically and determines which tape drives belong to which library. Because only one group per tape drive is allowed, the groups are automatically configured for you with slot sharing. This method enables all groups have access to all slots. If you do not want to use slot sharing, and you want to separate the slots by groups, use the automatic or interactive configuration method.

Auto-Detect Configuration Method

With the auto-detect configuration method, `camediad` starts and performs the configuration by detecting the devices on your system and mapping the devices to the library. The `camediad` script first attempts to map the serial numbers from the tape drives to the serial numbers reported by the library. If this process fails (for example, because no serial number was obtained), `camediad` uses the failover method. Depending on your system's configuration, this method may take a while.

Here is an overview of the failover process:

1. The tape is ejected from any tape drive that contains a tape.
2. The first available tape in the library is inserted in the first tape drive in that library.
3. After the tape is inserted, a "test unit ready" command is sent to all the drives to determine which one has the tape.
4. After the drive with the tape is located, it is automatically mapped to that drive in the library.
5. The tape is removed from the drive and inserted in the next drive in the library.
6. Steps 3 through 5 are repeated until all drives in the library are mapped.

How the Interactive Configuration Method Works

With the interactive configuration method, `camediad` does not start or perform the configuration. This method requires that you know which tape drives correspond with which library. If you are not sure about your tape drive to library relationship, you should use the auto-detect method.

The following is an excerpt from the `csetup` script that directs you to configure your libraries using the interactive method:

```
If we are auto-detecting your devices please enter the letter 'a' for auto. If
you know the scsi ID's of your devices and want to go directly to our interactive
library group configuration section enter the letter 'i'
e - Express setup      (Library, drives, and groups are automatically configured)
a - Automatic setup    (Library and drives are automatically configured, requires
group setup by user)
i - Interactive setup  (Complete user interaction of configuring the library,
drives, and groups)
```

```
Be aware that if this script has been run directly from the command line
and NOT through csetup, then any previous library parameters in the camediad.cfg
file will remain unchanged.
```

```
We will be starting some background processes to determine your parameters. This
can take a considerable length of time. If you wish to view the auto detect
process dynamically open another terminal and issue the following
command: tail -f /opt/BrightStorAB/logs/camediadcfg.log
```

```
Shall we continue? (y/n) y
```

```
Updating adapter/device information in camediad.cfg...
```

```
Scanning for SCSI devices
```

```
We will be configuring one library at a time. After the first library and its
device groups are configured we will come back and configure the remaining
changers (if any).
```

```
The notation used to describe devices is called a tuple. Our tuples are of the
form (adapter,scsiid,lun) - So if you see (0,4,0) it means you have a device on
adapter 0, scsiid 4 lun 0
```

```
We will first define library parameters
```

```
Groups names and library names are restricted to an 8 character limit
with no white space. Library names are optional but group names are not.
```

```
Enter a name for library
NAME:          SONY LIB-304
SERIAL NUMBER: 67000358
TUPLE INFO:    (0,6,0)
(Name optional: <ENTER> when done) SonyLib
Do you want to enable tape drive cleaning? (default yes) [y,n,q] y
```


Automatic Cleaning

The automatic cleaning feature enables you to configure BrightStor ARCserve Backup to clean your drives.

The following is an excerpt from the csetup script that directs you to configure your library to use automatic cleaning. If you enable the auto cleaning feature, the script prompts you to specify the number of "tape use hours." If you do not specify a value, the default 14 will be selected for you.

BrightStor ARCserve Backup has an autocleaning feature. If this feature is turned on, it will check the AUTO_CLEAN_TIME variable in the camediad.cfg file for the cleaning interval. The number assigned to this variable represents the number of "tape use hours" BrightStor ARCserve Backup should wait before cleaning the drive.

For example, if this variable is set to "14" and your tape drive is in use for a full hour each day of the week, then BrightStor ARCserve Backup will clean your drive once every two weeks.

```
Do you want to enable this feature? (y|n) y
How many "tape use hours" do you want BrightStor ARCserve Backup to wait between
cleanings: (default: 14 )
```

All Done

We have finished configuring all of your libraries. You may now quit the library configuration script or you may wish to reconfigure your libraries again. Keep in mind that if you reconfigure your libraries again, the configurations that you have just completed will be removed.

Automatic Startup

BrightStor ARCserve Backup can be configured to start and shut down automatically as part of operating system startup and shutdown.

The following is an excerpt from the csetup script that directs you to configure automatic startup:

```
Do you want to enable automatic startup and shutdown of
BrightStor ARCserve Backup (y/n [y]): n
```

How caroot Equivalence Works

For command line operations, BrightStor ARCserve Backup uses the concept of “equivalence.” You must execute `ca_auth` to set up equivalence between the BrightStor ARCserve Backup caroot user and an operating system user. Any system user account on any host can be granted the same access privileges as caroot.

The equivalence performs an implicit login on behalf of the logged in user while running any command line utilities. You can set the password for caroot during BrightStor ARCserve Backup setup, and modify it later by using `ca_auth`.

To set up equivalences, you need to know the password for caroot.

Note: You cannot log in to the BrightStor ARCserve Backup application interface using this equivalence.

```
Initializing authentication database ...
```

```
Setting up password for caroot user account ...
```

```
[!!! WARNING: This is the main administrative password for  
BrightStor ARCserve Backup. Please remember this password for future use.]
```

```
Please enter caroot password:  
Please confirm caroot password:
```

```
Setting up BrightStor ARCserve Backup resources...  
Congratulations! BrightStor ARCserve Backup has been set up on dev-test1  
successfully.
```

```
(dev-test1|root): / >
```

Appendix A: Frequently Asked Questions

This appendix contains answers to frequently asked question about using the BrightStor ARCserve Backup Tape Library Option.

I am experiencing difficulties initializing or unable to initialize my library. Do you have any troubleshooting tips?

If the library does not initialize (that is, you cannot move the tapes into the drives, read the tapes, and display their proper tape name in the Device Manager), try these solutions:

- Verify that you configured the library. If you did not configure the library, it will not initialize. To check if your library is configured, go to the Device Manager window, select Device View, and expand the library. You should see the tape drives and slots under the library.
- Verify the front panel of the library and make sure it is set to random mode and is also set to online. Both of these must be set in order for the library to work with BrightStor ARCserve Backup.
- Verify that the cables are on properly and correctly seated and that the library is properly shut down.
- Verify the front panel of the library to see if any error codes are being displayed. If there are, consult the documentation for your library for information about the error codes. Also make sure that there is nothing obstructing the robotic arm inside the library and that the door to the library is closed. If the library door has a lock, make sure the door is locked, or the library will not initialize. For example, with the Exabyte 220 and the Exabyte 480, the library will not perform any operation until the door is both closed and locked.
- Verify that the front panel of the library is not being used to move tapes into the drives. In most libraries, doing this takes the library out of random mode and puts it in manual or another mode. For proper operation with BrightStor ARCserve Backup, the library must be in random mode.
- Verify that the tapes are properly seated in their slots.
- For example, with the IBM 3590 library, to put a tape in the magazine, you must slide it in until it stops and then push it past that stop point until it stops again. For this type of magazine, there are two stop points. Consult the documentation for your library for specific information about how to insert the tapes into the slots.

- Verify that the library is set to SCSI MODE. Libraries can be set to different modes.
- For example, the Exabyte 690D library can be set to LCD mode to allow the user to manually load and unload tapes. However, when used with BrightStor ARCserve Backup, the library must be set to SCSI MODE.
- If the library does not have a bar code reader, make sure that the bar code reader is disabled in the configuration file.
- Verify that the bar code reader and the read slots file are not both enabled. They will not work together; you can use one or the other, or neither.
- If you have a cleaning tape, make sure that Cleaning is enabled.
- Verify that you have the correct drives with the correct library. If a standalone drive or a drive inside another library is assigned to a library it does not belong to, the library will not initialize properly.

My library is not able to detect tapes in the drives. How can I troubleshoot the library?

If you have a problem seeing the tapes in the slots or the slots appear empty, try these solutions:

- If the slots appear empty, or there is no text written next to them, then your library may not be configured properly. To verify this, go to the Device Manager window, select Device View, and expand the library. If you do not see the tape drives and slots underneath the library, the library was not configured properly. For information about how to configure the library, see Library Configuration Using the Device Manager in the chapter "Installing the Option."
- If you see the slots with the icon of a blue tray and you see nothing written next to that icon, it is possible that the BrightStor ARCserve Backup user interface did not refresh or the library is still initializing. Observe the library; if it is in the process of inserting tapes into the drives and taking them out, then it is initializing and you must wait for the process to finish. When it finished, the BrightStor ARCserve Backup user interface updates with the proper tape names. If the initialization has completed, go to the open the Device Manager window and from the File menu, click Refresh to refresh the BrightStor ARCserve Backup user interface.

Note: During initialization, BrightStor ARCserve Backup does not write anything next to the icon until it determines the tape type.

- If you still see a slot that has nothing in it (a slot that has no tape name and is not marked empty, but has no text in it), use the Force inventory during mount option (located on the Mount/Dismount dialog) to mount that slot. It is possible that it was skipped.

- Verify that the tape is in the correct slot. A library that supports importing and exporting usually has a specific slot designated for importing and exporting. BrightStor ARCserve Backup does not use this slot for any reason other than importing and exporting. If you did not specify an import or export (for example, if you are not running import or export), and you put a tape in the slot designated by the library for importing and exporting, BrightStor ARCserve Backup will not detect the tape. You must move the tape to an appropriate slot.
- If a slot is marked "Unreadable Media," verify that there is a cleaning tape in the corresponding slot. If you place a cleaning tape inside the library, and you do not indicate that you have a cleaning tape or you place it in the wrong slot, BrightStor ARCserve Backup attempts to read it as if it were a regular tape. Because a cleaning tape cannot be read in the same manner as a data tape, it comes up as unreadable.
- See your library's documentation to determine the correct slot into which to place tape-cleaning media. In most cases, tape-cleaning media should be placed into the last slot. However, some libraries (such as certain Exabyte and ADIC libraries) use slot 1.
- The tape may be defective. If the library has another drive inside, you can test the tape by placing it the other drive. If your library does not have another drive, you can test the tape in a standalone drive that supports that particular tape.

I am unable to clean the drive in the library. What should I do?

If you have a problem cleaning the library, try these solutions:

- Verify that the cleaning tape is in the cleaning slot.
- If the cleaning process seems slow, be aware that some drives require more time than others to clean. For example, a 4mm cleaning tape cleans faster than a DLT cleaning tape.
- The more a cleaning tape is used, the more time it takes to clean the drive. Check the number of times that the cleaning tape has been used; it may have expired.
- Consult the hardware manufacturer's documentation.

Glossary

adapter

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

autoloader

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

bar codes

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

changer

See library.

concurrent drive initialization

Concurrent drive initialization is the process in which two or more library drives work in parallel to read media into the library.

dismount

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

home slot

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

inventory

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

library

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

library drive

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

library group

A library group is a collection of magazine slots.

logical unit number

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

magazine

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

mail slot

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

mount

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

retension

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

robotic picker

A robotic picker is a library component that moves the media in and out of the slots and library drives. This component is also known as an arm.

slot

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

virtual library

A virtual library is a logical view of a library mapped to a physical device. The logical view can remap several virtual libraries to different parts of a single physical library.

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