Accessing Storage Devices

AMASS Version 5.3
August 2002
6-00025-01 Rev A

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Preface

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Purpose of This Book

This book:

- Provides an alphabetical list of supported libraries and drives
- Includes any AMASS-specific configuration, loading, and unloading information essential for the successful archiving of data onto media in these storage devices
- Describes how to use a special AMASS interface for standalone drives

Who Should Read This Book

This book is written for the system administrator who needs to know the following:

- Specific configuration and operation requirements for a storage device
- How to interface AMASS with a standalone drive

How This Book is Organized

This book contains the following chapters:

`Chapter 1: Connectivity and Media Preparation —` Network- and SCSI-connections, tape drive features, and summary of steps to prepare media for use by AMASS

`Chapter 2: Supported Libraries —` Alphabetical list of supported robotic libraries and juke boxes

`Chapter 3: Supported Drives —` Alphabetical list of supported drives, including standalone drives

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`Chapter 4: Interface to Standalone Drive —`
How to use the Standalone Operator Interface, run with the `sysop` command

Conventions

The conventions used throughout the AMASS technical books are listed in the following table:

Convention	Example
The word “library” usually includes “jukebox” and “standalone drive” and is a generic way to reference a storage device.	If using HP SunSpot jukeboxes, install patch 1234.

Screen text, file names, program names, and commands are in `Courier` font.	`Request to add a new volume:`
	`Volume group will be “20”`
	`Volume position will be “A123”`

The root prompt is shown as a number symbol.	**`# su root`**
What you should type in is shown in `Courier` **`bold`** font.	**`bulkinlet 1,2-10,21,23`**
Site-specific variables are in a *Times italics* font.	**`tar -xvf`** ***tapedevicename***
A backward slash (\ ) denotes the input is continued onto the next line; the printed page is just not wide enough to accommodate the line.	**`#rsh nodename -n dd \`** **`f=/cdrompath/amass/load.tar\`** **`bs=20b | tar xvBfb - 20`** (Type the entire command without the backward slash.)
Pressing <Return> after each command is assumed.	
A menu name with an arrow refers to a sequence of menus.	Edit Policy —> Add Library

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Books

The CD contains the AMASS books formatted as PDF files, which can be read by using Adobe® Acrobat® Reader®. To download a free copy of the most recent version of Adobe® Acrobat® Reader® software, visit the Adobe web sit at http://www.adobe.com/.

The books described below are part of the technical documentation set:

AMASS Overview
An introduction to AMASS (Archival Management and Storage System). Contains a glossary.

Accessing Storage Devices
Alphabetically lists supported libraries and drives and provides AMASS-specific operating information. Describes how to use AMASS with standalone drives.

Installing AMASS
Describes: server requirements, installation and troubleshooting procedures, and configuration parameters.

Managing the AMASS File System
Perform system administrative tasks with AMASS commands and troubleshoot problems with AMASS utilities and scripts.

Errors and Corrective Action
Provides corrective action for system log errors.

Quick Reference Guide
Summarizes commands and utilities.

Contact Publications

To make corrections or to comment on AMASS publications, please contact Technical Publications at techdocs@adic.com.

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Related Publications

The publications described in the following table are created and distributed on an as-needed basis:

Related Publications	Description
Release Notes	For each version of AMASS, the Release Notes contain: • Summary of enhancements • Describes: - Fixed problems - Known problems
Product Alerts	Informs customers of technical problems and solutions
Product Bulletins	Conveys technical information — not problems — to customers

Secured Web Site

To receive access to the secured web site on the ADIC home page containing technical product information (Release Notes, Product Alerts, Product Bulletins, FAQs), visit http://partners.adic.com/ and follow the password request procedure. In return, ADIC will send instructions and a password.

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Connectivity and Media Preparation

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Storage Systems

AMASS supports a maximum of:

- 8 libraries
- 256 drives per library
- 65,000 volumes

Connectivity

Connectivity to storage systems include:

- SCSI-attached
- RS-232-attached
- Network-attached
- Fibre-attached

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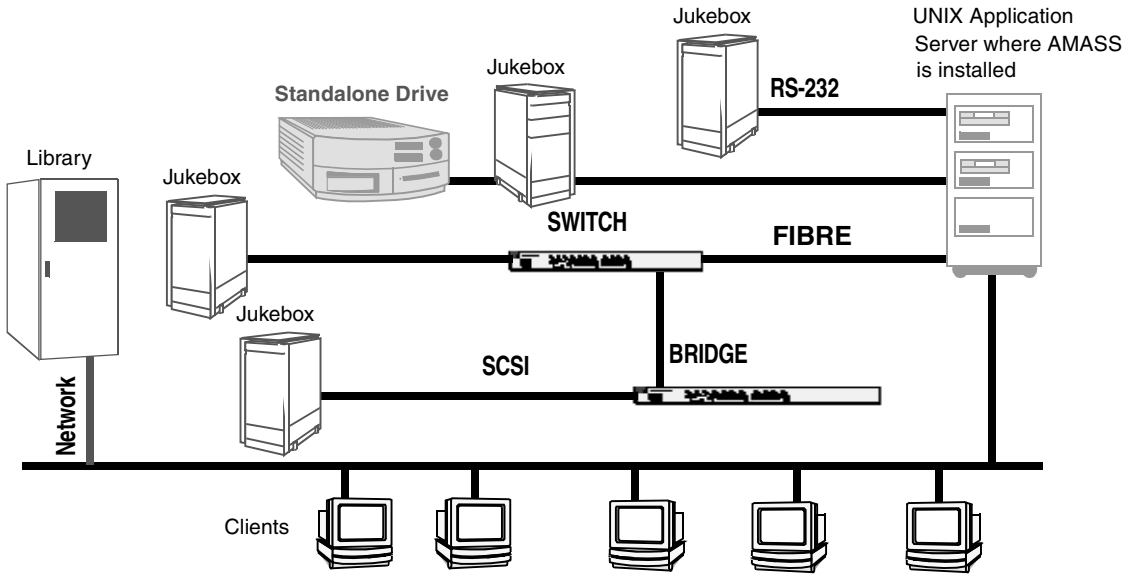
The following figure illustrates AMASS connectivity:



Tip

For best performance, ADIC recommends that each standalone drive be connected to its own SCSI host adapter board.

Prior to Installing AMASS

ADIC recommends that you connect the storage hardware before installing AMASS. After the devices have been connected, the AMASS installation script retrieves and displays as much information as possible to aid in configuring AMASS.

If the storage devices are not connected, you can still install AMASS but you must be prepared to locate the required address information yourself.

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Firmware Levels

For the current firmware levels for libraries, library interfaces, and tape drives supported by AMASS, refer to the Release Notes.

Tape Drive Features

For the current tape drive features, refer to the Release Notes.

Media

The entry for each storage device in this book describes:

- Specific loading and unloading instructions
- Specific AMASS inlet and outlet commands
  These commands are connection-dependent
  SCSI-attached devices use `volinlet` and `voloutlet` commands and network-attached devices use `bulkinlet` and `bulkoutlet` commands.

Caution

Even though you can manually insert media, you **must** use the specified inlet and outlet commands to make sure the AMASS File System Database keeps tracks of the media.

Note

AMASS assumes a compressed capacity of 2:1 ratio, but some newer drives may have a compressed capacity of 3:1. Consequently, the capacity displayed by the `vollist` command after a `volformat` will currently show a 2:1 native GB capacity.

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Tip
Manufacturing variations make “equal” tapes have variable lengths. Consequently, AMASS does not check tape lengths before allowing you to do the `volcopy` process. The system administrator must make sure the source and destination tapes are the same types. However, AMASS will check MO and WORM lengths.

DLT Media

Media formatted on DLT 7000 drives cannot be used by DLT 4000 drives. Currently, AMASS returns an error message stating `"Volume header verification failure."`

If your site uses both drive types, format media only on DLT 4000 drives so it can be used by both DLT 4000 and 7000 drives. As a consequence, the media will have a capacity of 25GB. (DLT 7000 tapes have a 35GB capacity.)

DLT 7000 Directory Fixes

To prevent any media or drive problems, AMASS will perform the following tasks if a directory problem is reported by a DLT 7000 drive:

Step 1. Marks the volume INACTIVE and READONLY and reports this action to the AMASS File System Database.

Step 2. Prints a message to the system log stating: `"E1035: DLT drive directory error on specified drive, on specified juke; rebuilding directory for specified volume ...."`

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Step 3. Attempts to rebuild the directory for the volume:

- If the rebuild is successful, AMASS prints the following message to the system log: `"E1036: DLT drive directory rebuilt on specified volume, in specified drive, in specified juke; volume left READONLY"` AMASS marks the volume ACTIVE and updates the AMASS File System Database.
- Otherwise, if the rebuild fails, AMASS prints the following message to the system log: `"E1041: DLT drive directory NOT rebuilt on specified volume, in specified drive, in specified juke; volume left INACTIVE & READONLY!"` AMASS leaves the volume INACTIVE, and reschedules any pending I/O requests to another volume. For further action, call AMASS technical support.

Note
The status of the drive is not affected.

Step 4. If the rebuild is successful, use the AMASS `volcomp` command on the affected media. Retire the original media as "suspect."

The `volcomp` command rewrites data on the source volume to a different volume in the same volume group. For more information on this command, refer to the Command Reference chapter in *Managing the AMASS File System*.

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Prepare Media for SCSI Devices

For detailed information on the commands in the following tables, refer to the Command Reference chapter in *Managing the AMASS File System*.

For detailed information on the utilities in the following tables, refer to the Utility Reference chapter in *Managing the AMASS File System*.

Load and Initialize New Media

The following table summarizes the AMASS commands required to load and initialize media managed by AMASS in a SCSI-attached storage system.

Step	Command or Utility	Description
1	volnew	Create an entry in the AMASS database. For tracking purposes, AMASS gives the media a unique volume number.
2	volinlet	Load media through mailbox.
3	volloc	Mark the volume “Online” in the AMASS database. Online = media is in storage device.
3A	**Importing Media:**	
	vgimport **NOTE:** Must have used `vgexport` to export metadata file	Import metadata file for volume that already has data on it
	cdimport	Import a CD that already has data on it

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Step	Command or Utility	Description
3B	**For libraries without a mailbox:**	
	mediamove utility	Move media from drive to slot.
	volloc -n	Mark the volume “Online” in the AMASS database
3C	**StorageTek Redwood tape drives only:**	
	tapelength	Enter the length of tape in the AMASS database
4	volformat **NOTE:** Not valid for CD-ROMs	Format the volume **NOTE:** If you are using a standalone drive, format the volume from the Standalone Operator Interface that was run with the `sysop` command. For information on this interface, see the "Interface to Standalone Drives" chapter.
5	volstat	Mark the volume “Active” in the AMASS database • Active = allows AMASS to read and/or write to media.

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Load Media into Multislot Mailbox

Step	Command	Description
	For libraries with multislot mailboxes:	
1	bulkinlet *volumegroup*	Assign volumes to a specified volume group in a SCSI-attached, multislot mailbox device
2	bulkinlet `-e` *volumenumber*	Reload **existing** volumes through the multislot mailbox in a SCSI-attached device Volumes are marked Online in the AMASS database.

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Unload Media - Multislot Mailbox

Step	Command or Utility	Description
1	voloutlet	Unload media from mailbox
2	volloc	Mark the volume “Offline” in the AMASS database Offline = media is out of storage device
2A	**For libraries without a mailbox:**	
	mediamove utility	Move media from slot to drive
	volloc -o	Mark the volume “Offline” in the AMASS database
3	volstat	Mark the volume “Inactive” in the AMASS database Inactive = AMASS *cannot* read and/or write to media

Prepare Media for Network Devices

For detailed information on the commands in the following tables, refer to the Command Reference chapter in *Managing the AMASS File System*.

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Load and Initialize New Media

The following table summarizes the AMASS commands required to load and initialize media managed by AMASS in a network-attached storage system.

Step	Command	Description
1	bulkinlet*	Create an entry in the AMASS database and mark specified volumes “Online” in the AMASS database Online = media is in storage device For tracking purposes, AMASS gives each media a unique volume number.
2	vollabel	Enter the preprinted barcode label in the AMASS database
A	**Importing Media:**	
	vgimport **NOTE:** Must have used `vgexport` to export metadata file	Import metadata file for volume that already has data on it
B	**StorageTek Redwood tape drives only:**	
	tapelength	Enter the length of tape in the AMASS database
3	volformat **NOTE:** Not valid for CD-ROMs	Format the volumes **NOTE:** If you are using a standalone drive, format the volume from the Standalone Operator Interface that was run with the `sysop` command. For information on this interface, see the "Interface to Standalone Drives" chapter.

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Step	Command	Description
4	volstat	Mark the volumes “Active” in the AMASS database Active = allows AMASS to read and/or write to media

***** Otherwise, use the `bulkload` command if you: (1) Already have media residing in the library. Typically, this happens when you install AMASS at a site that already has volumes in an existing library. (2) Load media manually, without using the mailbox.

Unload Media

Step	Command	Description
1	bulkoutlet See following **NOTE**.	Unload media through mailbox. Mark specified volumes “Offline” in the AMASS database. Offline = media is *out* of storage device
2	volstat	Mark the volumes “Inactive” in the AMASS database. Inactive = AMASS *cannot* read and/or write to media

NOTE: To unload just one piece of media through the mailbox and mark it “Offline” in the AMASS database, you can also use the `voloutlet` command.

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Useful Tools

Command or Utility	Description	More Information
vollist Command	Lists volumes and their status. Slot addresses appear in the “POS” field	For detailed information on the commands, refer to the Command Reference chapter in *Managing the AMASS File System*.
init_element Utility	Determines which home storage slots and drives contain media	For detailed information on the utilities, refer to the Utility Reference chapter in *Managing the AMASS File System*.
medialist Utility	Displays the status of all the library elements, such as drive, mailbox, transport, and home storage slot numbers Slot addresses appear as a line item, displayed as, “`SLOT A03 EMPTY`,” for example.	

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Library List

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ADIC

The following table lists the supported Advanced Digital Information Corporation (ADIC) models for tape media:

ADIC Scalar for Tape†	Caveats
Scalar Series: • 100 • 218* • 220 • 224 • 448* • 458 • 480	• * Use the `volloc` command and `mediamove` utility to load and unload media in these libraries. • Scalar 100: The mailbox must be configured for “Storage”, not “Import/Export.” • If a Sony AIT drive is connected to an ADIC Scalar 480 library, make sure the Configuration Menu on the front panel is set to “Use Sony AIT.”
Scalar 1000*	AMASS supports AIT, DLT, and 3590 media in this library. **NOTE**: If this library has an attached AMU, AMASS manages the library using DAS (Distributed AML Server). For information, see “Using DAS as a Library Interface” on page 2-13.
Scalar 10K	For newest information about the Scalar 10K, refer to the Release Notes.
FastStor 7	Uses a single DLT drive. Therefore, AMASS commands that require two drives, for example, `volcopy`, are not supported for this library.

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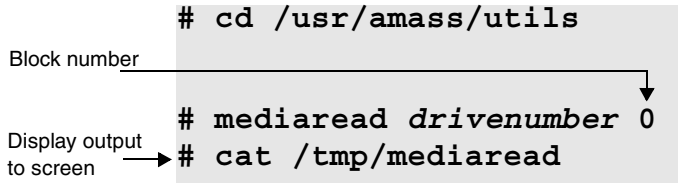
ADIC Scalar for Tape†	Caveats
FastStor 22	You must configure the library as 22 slots with one Import/Export slot. To create this configuration with the “Diagnostic Menu” on the front panel, use the “CFG SLOTS” function. Access the Diagnostic Menu by pressing and holding first the NEXT button and then the MODE button for about 5 seconds.
† If a power outage, hang, or reboot occurs, power off the ADIC libraries, power on the ADIC libraries, and then run the AMASS `init_element` utility.	

Element Addressing

Because ADIC does not support source storage element addressing, the AMASS `medialist` utility cannot identify the home storage slot for volumes in a drive.

To identify and return media from a drive to its home storage slot, perform the following steps:

Step 1. Use the `mediaread` utility to read the slot number from the label as shown below and display the output to the screen:



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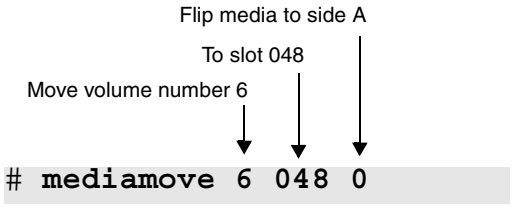
Output similar to the following example is displayed on the screen:

```
_AFS3❍048SALES3555¬||6SGI000000033-97062010304MDT#
```

Step 2. Use the `mediamove` utility to move the media from the drive to its correct home storage slot.



For information on this utility, refer to the Utility Reference chapter in *Managing the AMASS File System*.

Disable Drive Cleaning on Scalar 1000

AMASS does not support automatic drive cleaning on the Scalar 1000 with firmware older than level 2.10. Consequently, the Cleaning Mode must be disabled as follows:

Step 1. Enter the Main menu by pressing the Escape button on the operator panel.

Step 2. Scroll the Main menu using the following navigation buttons; or .

Step 3. Select the Setup menu by pressing the Enter button.

Step 4. Scroll the Setup menu using the navigation buttons, and select the Cleaning menu by pressing Enter.

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Step 5. Scroll the Cleaning menu using the navigation buttons, and select the Drives dialog box by pressing Enter.

Step 6. Determine if the first line in the box shows that automatic drive cleaning is disabled. If "Auto Clean: N", then no further action is required.

If "Auto Clean: N", then press the Escape button until you reach the Status Display menu (the initial screen).

However, if the first line shows that automatic drive cleaning is enabled, "Auto Clean: Y", change the Y to an N with the navigation buttons.

Move to the "ACCEPT:N" part of the screen by pressing Enter, and change the N to a Y with the navigation buttons.

Step 7. Save the changed cleaning state by pressing Enter.

Step 8. Press Escape until you reach the Status Display menu (the initial screen).

Making Scalar 1000 Operational

The Scalar 1000 cannot inform the AMU of its status. Therefore, if a Scalar 1000 has been taken offline, return the library to an operational state by performing the following steps:

The AMU polls the Scalar 1000 at regular intervals to determine the operational status.

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The Scalar 1000 is taken OFFLINE-NOT READY perhaps because a door is open. The AMU automatically stops polling the AML/S whenever the library is offline.

Step 1. Close the door, or take the appropriate steps to get the library to the ONLINE READY state.

Step 2. Inventory the Scalar 1000 to ensure that only valid database information is uploaded.

Although the Scalar 1000 becomes operational, the AMU cannot initiate polling.

Step 3. Run the `HOME` command from the AMU to establish communication with the Scalar 1000.

Step 4. Activate polling by running the `STATUS` command with the appropriate option to select the correct robot.

After the Scalar 1000 is online, the database is automatically uploaded.

Note

If the Scalar 1000 is not inventoried in Step 1., the AMU database will contain invalid status information. Consequently, you must erase the AMU database and then recreate the database to clear this condition. **(**When changing the AMU configuration or database, stop the communication between the AMU and the Scalar 1000.)

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Load and Unload Tape

Use the `volloc` command and `mediamove` utility to load and unload media in the libraries; exceptions are noted below. For instructions, see "Prepare Media for Network Devices" on page 1-11. For information on this utility, refer to the Utility Reference chapter in *Managing the AMASS File System*.

Load Tape into Scalar

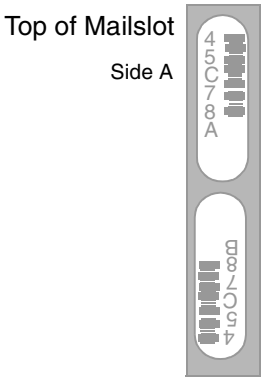
For instruction on preparing media for use by AMASS, see either:

"Prepare Media for SCSI Devices" on Page 1-8.

"Load Media into Multislot Mailbox" on Page 1-10.

Step 1. Load media using the `volinlet` command.

Step 2. Load media into the mailslot so the barcode for side A is nearest to the top.



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Unload Tape

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library moves the volume to the mailbox.

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ADIC

Supported ADIC storage devices include both network-attached and SCSI-attached libraries.

Network-attached

The following table lists supported network-attached models for tape and optical media:

ADIC Models	Caveats
• AML/2 • AML/E • AML/J	AMASS manages these libraries using DAS (Distributed AML Server) on the OS/2 PC. For information, see "Using DAS as a Library Interface" on page 2-13.
S10K	

Load Tape

For instruction on preparing media for use by AMASS, see "Prepare Media for Network Devices" on page 1-11.

Step 1. Use the `bulkload` command if your library already contains volumes that the library interface knows about but AMASS does not.

Otherwise, use the `bulkinlet` command. Both commands perform the following tasks:

- Loads multiple volumes

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- Creates an entry in the AMASS database and populates the entry with a unique volume number (assigned by AMASS), a preprinted barcode, and a volume group assignment
- Marks the volumes Online

For specific command options,refer to the Command Reference chapter in *Managing the AMASS File System*.

Step 2. Determine the volume placement. Loading media into the mailslot (known as the EIF on the AML) depends on whether volumes are placed vertically or horizontally.

- For horizontal placement—place the media into the mailslot so the barcode for side A is closest to the right.

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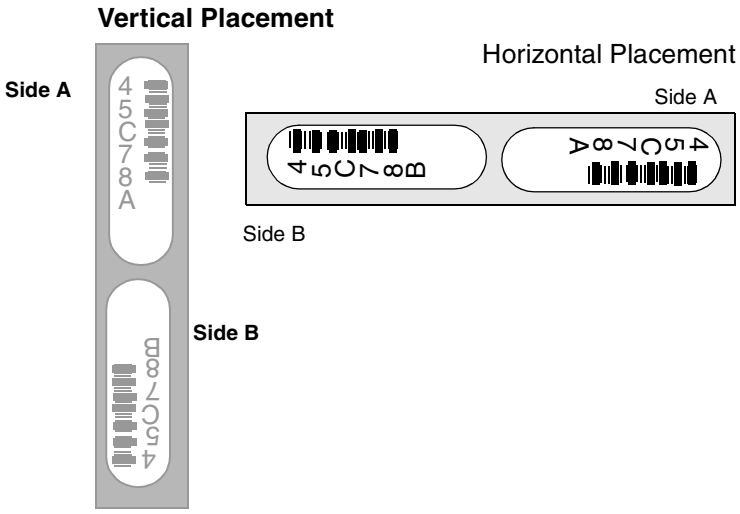
- For vertical placement—place the media into the mailslot so the barcode for side A is nearest to the top.



Unload Tape

Outlet media only when media does not reside in the mailboxes.

Step 1. Use the `bulkoutlet` command to unload and mark the volume Offline in the AMASS database.

Note
If you specify more volumes with the `bulkoutlet` command than the number of available mailboxes, AMASS waits until all mailboxes are cleared before continuing.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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Using DAS as a Library Interface

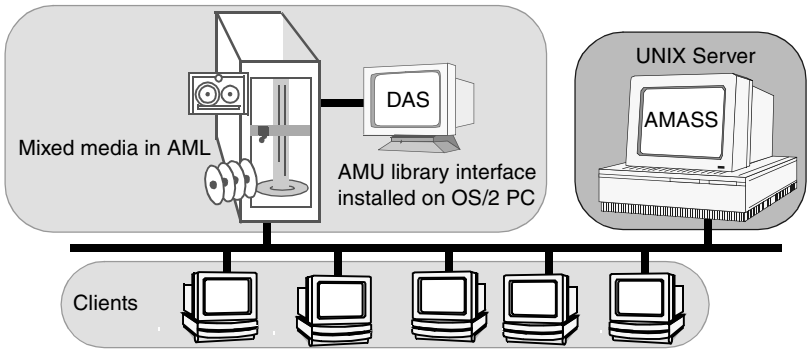
AMASS manages the AML through Distributed AML Server (DAS). DAS is an ADIC software product with both client and server components.

- The server component is installed on the Archive Management Unit (AMU).
- The client component is embedded in the AMASS software and is installed when you install AMASS.

Support for Mixed Media

AMASS supports mixed media in a network-attached AML using DAS. During the AMASS installation, configure each different media type with its own authorization string for the two *logical* libraries. For example, if your AML contains both DLT and 3590 media, configure AMASS with two authorization strings. For installation script information, refer to Mixed Media in *Installing AMASS*.

.



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Configure AMASS as a DAS Client

AMASS must be identified as a DAS client. This requires that tasks be performed on both the UNIX server and on the OS/2 PC. See the following instructions:

On the AMASS UNIX Server

The steps to configure AMASS as a DAS client on the UNIX server follows.

AMASS uses the configured JUKEBOX numbers from the installation script to generate default ranges for the EIF (eject and insert mailboxes) IDs. For example:

- JUKEBOX #1 uses E**01** and I**01**
- JUKEBOX #2 uses E**02** and I**02**
- JUKEBOX #10 uses E**10** and I**10**

Step 1. To change these defaults, modify the `/usr/amass/.juke/eif_file_`*jukebox-number* file.

Step 2. Restart AMASS after modifying the `.juke` files.

On the AMU OS/2 PC

The steps to configure AMASS as a DAS client on the OS/2 PC follows.

Step 1. Set both the EIF and home storage slots to `AMU Dynamic`.

Step 2. Configure the following information found in the `\das\etc\config` file:

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- Enter the AMASS client name. To generate this client name, run the following command on the UNIX server where AMASS is installed:

```
# echo "amass`uname -n | awk
-F. '{print $1}' `"

client_name = amassrockies
```

- Enter the address for AMASS. This address is located in the `/etc/hosts` file on the UNIX server, where AMASS is installed.

```
# /etc/hosts

ip_address = 192.168.30.211
```

- The remaining options for the AMASS client should always be defined as follows:

```
requests =          complete

                    avc
options =
                    dismount

volumes =           ALL

drives =            ALL

inserts =           ALL

ejects =            ALL

                    ALL
scratchpools =
                    DEFAULT
```


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AMASS Must Manage Shared Drives

If more than one client (besides AMASS) is sharing a drive through DAS, the drives must be allocated to AMASS for the `install_tests` script to successfully complete.

- To determine which client currently has the drive, select an OS/2 window on the PC, change to the `DAS\bin` directory, and use the following command option.

```
cd \DAS\bin

DASADMIN listd
```

- To allocate the management of the drive to AMASS, run the `DASADMIN` command with the `DOWN` option and then use the `UP` option with the specified AMASS drive name and client name. In our example below, the AMASS client name is `amassrockies` and the drive name is `Optical01`.

```
DASADMIN allocd Optical01 DOWN client2name

DASADMIN allocd Optical01 UP amassrockies
```

Automated Drive Cleaning

To use automated drive cleaning by AMASS, disable DAS drive cleaning in the `\das\etc\config` file by commenting out any cleaning-related configuration information. For information on automated drive cleaning, refer to "driveclean" in the Command Reference chapter in *Managing the AMASS File System*.

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Ampex

The following table lists the supported models for tape media:

Ampex for Tape	Caveats
DST Models: • 412 • 712 • 812	• For successful operation by AMASS, the drives in these libraries must be in sequential order. For example, you cannot have drives 1, 2, and 4. They must be in sequential order; 1, 2, 3, 4. • If the drives are not at full capacity, the `mediamove` and `medialist` utilities will not work correctly.

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ASACA

Supported ASACA libraries include the following models for tape media.

Tape Storage

The following table lists the supported models for tape media:

ASACA for Tape	Caveats
• V-120 • V-240	• The `mediamove` utility will move media from a drive to a home storage slot and from one home storage slot to another. Use the library's command for handling the mailslot door. • If the `medialist` utility returns "UNKNOWN" instead of indicating a slot is either FULL or EMPTY, run the `init_element` utility to update the library's database and then rerun `medialist`.
• D-360 • D-480	
• N-300 • N-540	

Configure on AMASS

Solaris only: If you are using the isp SCSI bus adapter, disable the `wide transfer` parameter in the SCSI passthrough driver AAPjuke's configuration file. For instructions, refer to the `/usr/kernel/drv/juke.conf` file after installing AMASS.

Load and Unload Tape

Step 1. Inactivate the AMASS system with the `amassstat` command before adding or removing media to prevent the transport mechanism from moving.

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Step 2. Use the `mediamove` utility to load and unload media. For information on this utility, refer to the Utility Reference chapter in *Managing the AMASS File System*. and see "Prepare Media for SCSI Devices" on Page 1-8.

To manually open the door of the library, refer to your specific library manual.

DVD Storage

The following table lists the supported models for DVD-RAM media:

ASACA for DVD
• AM-250 • AM-750 • AM-1450

Note
ONLY two-sided DVD-RAM media are supported

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ATL

The following table lists the supported Automated Tape Library (ATL) products for tape media:

ATL for Tape	
520 Series: - 2/28 - 2/52 - 4/52	2640 Series: - 3/2640 - 6/176 - 9/88
StorLink Series: - 3/528 - 6/528 - 9/440 - 18/176	7100 Series: - 2/68 - 4/68 - 7/68 - 2/100 - 4/100 - 7/100

Load Tape in 520 Series

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Load media using the `volinlet` command.

> **Note**
>
> This command is **valid only** for media entered in the top slot, even though the library has four mailboxes.

Step 2. Press <OPEN> and insert the media.

Step 3. Press <CLOSE> to close the mailbox.

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Step 4. Respond `yes` to the prompt after the library is online.

Unload Tape

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

Load Tape in StorLink, 2640, 7100

Note

7100 7/68 and 7/100 only: From the control panel, disable "Auto Inventory."

If you fail to disable this parameter, AMASS returns `"an internal error"` message when you attempt to load media. And, if you view the status of elements in the library with the AMASS `medialist` utility, it returns a `0x2/0x4/0x2` sense code error.

For instruction on preparing media for use by AMASS, see "Load Media into Multislot Mailbox" on Page 1-10.

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on Page 1-8.

Step 1. Push the green button to open the mailbox. Insert the media, and close the port.

Step 2. Respond `yes` to the prompt.

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Unload Tape

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library moves the volume to the mailbox.

Overheating on 2/52

Overheating affects the operation of this library in the following ways:

Temperature	Result	SCSI Sense Code
86.0 F	Warning message appears. Behavior of the library is unpredictable.	6 88 01
96.8 F	AMASS functions are disabled. For example, the `medialist` utility fails.	4 88 01

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Breece Hill Technologies

The following table lists the supported models for tape media:

BHT for Tape		
Q Series: - 2.15 - 7 - 47		QS Series: - 70 - 140 - 210

Configure AMASS for Q Series

Configure the parameters on AMASS for the Q Series as shown below:

AMASS Parameter	Value
MINLTIME	30
MAXLTIME	300

Magazine Positions on Q7

The magazine positions on the Q7 carousel are logically numbered 0 through 3 (corresponding to home storage slots beginning with A through D, respectively).

Note

Although the home storage slots in the magazine are logically numbered from 0 through 6, AMASS references the slots from 1 through 7.

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Load Tape in Q7

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Load media using the `volinlet` command.

Step 2. Slide the mailbox door open after the "`Door Unlocked`" message displays on the control panel.

Step 3. Insert media into the correct magazine home storage slot. Slide the mailbox door closed.

To lock the mailbox door, press <MENU> on the control panel. The library may reinitialize itself at this point.

Step 4. Respond `yes` to the prompt.

Unload Tape from Q7

Step 1. Use the `voloutlet` command to unload media.

The library moves the correct magazine to the mailbox.

Step 2. Slide the mailbox door open after the "`Door Unlocked`" message displays.

Step 3. Remove the exposed magazine from the library. Slide the mailbox door closed.

To lock the mailbox door, press <MENU> on the control panel. The library may reinitialize itself at this point.

Step 4. Respond `yes` to the prompt.

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BHT Q47

The following table shows the relationships between the physical numbers of the home storage slots and the AMASS slot numbering system.

When you open the front door of the library, there is a four-sided carousel with a top half consisting of four, removable seven-slot magazines and a bottom half of four sets of eight fixed slots. Each side of the carousel has a number label on it, ranging from zero through three.

The following table lists the home storage slot numbers:

Q47 Slot Number	Slot Address, Minimum Configuration
Magazine Slots	
Side 0, Magazine Slots 0 - 6	A01 - A07
Side 1, Magazine Slots 0 - 6	A08 - A14
Side 2, Magazine Slots 0 - 6	A15 - A21
Side 3, Magazine Slots 0 - 6	A22 - A28
Fixed Slots	
Side 0, Fixed Slots 0 - 7	A29 - A36
Side 1, Fixed Slots 0 - 7	A37 - A44
Side 2, Fixed Slots 0 - 7	A45 - A52
Side 3, Fixed Slots 0 - 7	A53 - A60

Load and Unload Tape in Q47

For instruction on preparing media for use by AMASS, see “Prepare Media for SCSI Devices” on page 1-8.

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Step 1. Determine the correct step to perform; for magazine slots or fixed slots. See the following steps:

Step 2. **For magazine slots:** Use the front panel of the library and the AMASS `mediamove` utility.

Step 3. **For fixed slots:** Open the front door and turn the carousel to the desired side.

Configure QS Series

The following configuration is done from the touch screen located on the front of the QS Series library:

Library Parameter	Value
Library configuration	Mode 1
First import and export magazine	Import only
Second import and export magazine	Export only

Load and Unload Tape in QS

Step 1. Load media using the `volinlet` command.

The library moves the volume to its home storage slot.

Step 2. Unload media using the `voloutlet` command.

Step 3. Remove the media after the library has moved the volume to the mailbox.

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COMPAQ/DEC

The following table lists the supported Compaq Computer Corporation (formerly Digital Equipment Corporation) models for tape media:

Compaq/DEC for Tape
DS Series: - TL893 - TL895 - TL896

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DISC

Supported DISC libraries include models for both optical and CD media.

Optical Storage

The following table lists the supported models for optical media:

DISC for Optical*	Caveats
D Series: • 20 • 40 • 150-U Orion • 245 Orion • 280-U Orion • 525 Orion • 525-U Orion • 1050 Orion	The number of home storage slots depends on the number of installed drives. To determine the number of storage slots, use the number that displays during the installation process. Slot addresses usually start at “001” and increase sequentially until the total number equals the number displayed during installation.
U = upgradable	

Load Optical

For instruction on preparing media for use by AMASS, see “Prepare Media for SCSI Devices” on page 1-8.

Step 1. Load media using the `volinlet` command.

Step 2. Wait for prompt then open the mailbox door and insert media with side A facing left.

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After you respond `yes` to the prompt, the library moves the media to its home storage slot.

Unload Optical

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

CD Storage

The following table lists the supported models for CD media:

DISC for CD
D Series: - 210-U1 - 300-1 - 300-U1 - 420-U1 - 600-2 - 630-1 - 1260-2

Load CD

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

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Unload CD

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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Hewlett Packard

Supported H-P storage devices include both optical and tape libraries.

Optical Storage

The following table lists the supported models for optical media:

H-P Optical		
SureStore FX Series: (2.6 GB) - 40 - 80 - 160 - 200 - 330 - 600	SureStore EX Series: (5.2 GB) - 80 - 125 - 160 - 320 - 400 - 660 - 1200	SureStore MX Series: (9.1 GB) - 220 - 300 - 600 - 700 - 1200 - 2200

Load Optical in FX-600

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Load media using the `volinlet` command.

Step 2. Push <LOAD> on the front panel of the library and insert media with side A up.

NOTE: After about 20 seconds, the door automatically closes.

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If successful, the front panel displays a `"Load Slot xx -- DO NOT press ENTER"` message.

NOTE: However, if unsuccessful, the library may load the volume in a home storage slot different from the position you entered.

If this happens, use the `mediamove` utility to move the volume to the correct home storage slot.

For information on this utility, refer to the Utility Reference chapter in *Managing the AMASS File System*.

Unload Optical

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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Tape Storage

The following table lists the supported models for tape media:

H-P for Tape	
SureStore DLT 15-slot Series: - 4115 - 4215 - 4228 - 4448 - 7115 - 7215 - 7448	SureStore E Series: - E 3/30 - E 6/100 - E 10/558 - E 20/700

Load Tape

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

After you insert media with side A up, the library moves the media to its home storage slot.

Unload Tape

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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IBM

Supported IBM storage devices include both network-attached and SCSI-attached libraries.

Network-attached Tape Storage

The following table lists the supported network-attached models for tape media:

IBM for Tape	Caveats
3494	• AMASS supports one tower with a maximum of two drives in the tower. • **NOTE**: AMASS manages this library using LMCPD. See "Using LMCPD as Library Interface" on Page 2-34. • Because the IBM 3494 has native drive cleaning capabilities, automated drive cleaning by AMASS is not applicable. To schedule drive cleaning, refer to your IBM documentation.

Using LMCPD as Library Interface

Identify AMASS as a client to the IBM 3494 with the LMCPD software on the PC. A summary of configuration steps follows:

Step 1. Using the LMCPD GUI, select commands›LAN options→Add LAN host. A menu similar to what is shown in the following illustration appears:

```
Host alias                _________________
(optional):
```


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```
Host IP address:  _________________
Host Name:        _________________
```

Step 2. Enter a valid IP address and host name for AMASS.

Step 3. Press <OK> to save the information.

For specific information on installing and configuring LMCPD library interface, refer to your IBM documentation.

Load Tape

For instruction on preparing media for use by AMASS, see "Prepare Media for Network Devices" on page 1-11.

Step 1. Use the `bulkload` command if your library already contains volumes that the library interface knows about but AMASS does not.

Otherwise, use the `bulkinlet` command. Both commands perform the following tasks:

- Loads multiple volumes
- Creates an entry in the AMASS database and populates the entry with a unique volume number (assigned by AMASS), a preprinted barcode, and a volume group assignment
- Marks the volumes Online

For specific command options, refer to the Command Reference chapter in *Managing the AMASS File System*.

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Step 2. Place media into the mailbox with the barcode facing the picker and close the sliding door. The picker scans the volumes in the mailboxes and moves the volumes to their home storage slots. Make sure this completes before going to the next step.

Unload Tape

Outlet media only when media does not reside in the mailbox.

Step 1. Use the `bulkoutlet` command to unload and mark the volume Offline in the AMASS database.

NOTE: If you specify more volumes with the `bulkoutlet` command than the number of available mailslots, AMASS waits until all mailslots are cleared before continuing.

Step 2. Remove the media after the library has moved each volume from its home storage slot to the mailbox.

ADIC has found the following situations typically cause AMASS to hang when you try to remove media or cause an error that indicates hardware intervention is required:

- The I/O port has not closed; manually close it.
- See if a cleaning cycle has started on the same drive that AMASS is attempting to dismount.

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Power Outage

If the IBM 3494 experiences a temporary power outage, but the server has not gone down, the following error message **may** display in `syslog`.

If it does not appear, it will appear after you enter the stop command in Step 2:

```
Jukebox 1 LMCPD Server is not
active, please start.
```

Step 1. Enter the following to recycle the Library Manager Control Point Daemon (LMCPD) after power is restored to the hardware:

```
# sh /etc/init.d/ibm3494 stop

# sh /etc/init.d/ibm3494 start
```

After the `lmcpd` daemon starts, the following message appears in `syslog`:

```
IBM Automated Tape Library Daemon
Loaded
```

Step 2. Rerun the AMASS command, if one was in progress.

If you were using the `bulkinlet` command when the library lost power:

- Remove the media from the port
- Close the port

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- Reinsert the media into the port
- Run the `bulkinlet` command again

SCSI-attached Optical Storage

The following table lists the supported SCSI-attached models for optical media:

IBM for Optical
3995 Series: - C60 - C62 - C64 - C66 - C68

Load Optical

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

After you insert media with side A up, the library moves the media to its home storage slot.

Unload Optical

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the media to the mailbox.

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SCSI-attached Tape Storage

The following table lists the supported SCSI-attached models for tape media:

IBM for Tape	Caveats
Magstar MP: 3570 C Series	• Supported: Base configuration, which is Random Mode • Not supported: Stacker Mode and Multi-host Mode • Drive cleaning is performed by the library, not AMASS **NOTE**: On the MP 3570, slot 1 is the mailbox; therefore, slot 19 in the library appears as slot 20 on AMASS output.
Magstar MP: 3575 L Series	• Supported: dual picker • Not supported: Multi-host Mode • Drive cleaning is performed by the library, not AMASS **NOTE**: During AMASS installation, the 3575 libraries use LUN (logical unit number) 1.

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IDE

The following table lists the supported models for optical media:

IDE for Optical	Caveats
Multi Series: • 7220 • 8034 • 8734	Because these libraries are responsible for ejecting the media from the drives as part of a media move operation, enable the Changer Ejects option. For instructions on enabling this option, refer to the hardware manual for your specific IDE model.

Load Optical

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

After you insert media with the nonopening or label end first, side A up, the library moves the media to its home storage slot.

Unload Optical

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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Kodak

The following table lists the supported models for optical media:

Kodak for Optical
ADL Series: - 556 - 5160

Load Optical

The inlet procedures are the same for all models.

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

After you insert media, the library moves the media to its home storage slot.

Unload Optical

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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Maxoptix

The following table lists the supported models for optical media:

Maxoptix for Optical	Caveats
MX Series: • 520* • 540* • 5258	* When using the AMASS `mediamove` utility, wait until the library beeps before placing a platter in the mailslot.
MX Series: • 620 • 640 • 6126 • 6202 • 6278	AMASS supports a maximum of two Maxoptix T6-5200 drives.

Load Optical

For instruction on preparing media for use by AMASS, see “Prepare Media for SCSI Devices” on page 1-8.

Load media using the `volinlet` command.

Unload Optical

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

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NOTE: **MX520 and MX540 only:** Press <UP> to move the platter into the mailslot when the LED on the library so instructs.

Step 2. Remove the media from the mailbox.

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MountainGate

The following table lists the supported MountainGate (formerly Metrum) models for tape media.

MountainGate for Tape	
• D-360 • D-480 • D-900	• N-300 • N-540

Configure AMASS

Step 1. Configure the parameters for this device as shown in the following table:

Parameter	Value
MINLTIME	10
MAXLTIME	300

Step 2. Attach the MountainGate to any TTY port on the AMASS server.

Step 3. Write down the port number. The script asks you to enter this TTY port. _____

Step 4. Select from the following additional platform-specific instructions; AIX, IRIX, and Solaris:

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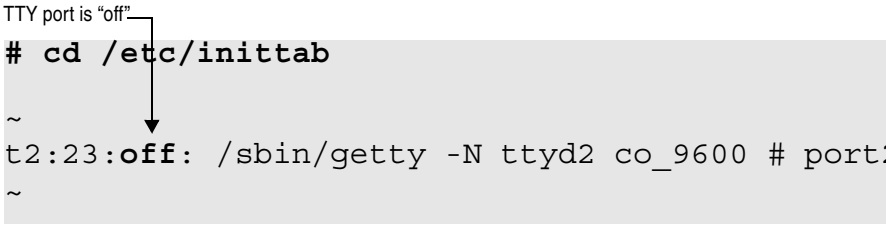
AIX only: If the library configured in AMASS is connected to a TTY port, disable the getty on that port—if it is not already—by entering the following command

```
# smit chgtty
```

When the `smit` menu appears, select the following:

Field	Value
TTY Device	select appropriate device
Under Change/Show TTY Program:	
Name of initial program to run	[]
Enable Program	OFF

IRIX only: If the library configured in AMASS is connected to a TTY port, disable the getty on that port—if it is not already—by editing the `/etc/inittab` file. Find the statement referencing the TTY port where the library is connected and make sure the word `off` is in the first field. For example, if the library is connected to TTY port `2`, the entry would be as shown as follows:



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Solaris only: If the library configured in AMASS is connected to a TTY port, disable the `ttymon` getty on that port—if it is not already—by using the `admintool/serial port manager`. For information on using this tool, refer to your Sun administration manual.

Solaris only: If you are using the isp SCSI bus adapter, disable the `wide transfer` parameter in the SCSI passthrough driver AAPjuke's configuration file. For instructions, refer to the `/usr/kernel/drv/juke.conf` file.

Load and Unload Tape

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Inactivate the AMASS system with the `amassstat` command before adding or removing media to prevent the transport mechanism from moving.

Step 2. Load and unload media by manually opening the door of the library. For a description of the door operations, refer to your specific library manual.

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Pioneer

The following table lists the supported models for CD media:

Pioneer for CD
DRM Series: • 1004X • 5004X

Load CD

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Move the transport to the mailbox with the AMASS mediamove utility.

For information on this utility, refer to the Utility Reference chapter in *Managing the AMASS File System*.

Step 2. Insert media into the mailbox with the AMASS `volinlet` command.

Step 3. Move media from the transport to a home storage slot with the AMASS `mediamove` utility.

Unload CD

Outlet media only when media does not reside in the mailbox.

Step 1. Move media from the home storage slot to the transport with the AMASS `mediamove` utility.

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Step 2. Move the transport to the mailbox with the AMASS `mediamove` utility.

Step 3. Remove media with the AMASS `voloutlet` command.

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Plasmon-LMS

The following table lists the supported models for optical media:

Plasmon for Optical	
680 Series: - RF20J - RF46J - RF92J - RF138J - RF240J	694 Series: - RF20J - RF26J
695 Series: - RF22J - RF30J - RF60J - RF120J - RF180J - RF300J	LMS Series: - LF-6600 - LF-6602
1800 Series: - ASM-123W - ASM-149W	G Series - G164 - G238 - G638

Load Optical

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Load media using the `volinlet` command.

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Step 2. Open the mailbox by pressing the button on the right side of the front panel.

Step 3. Insert media into the home storage slot with the nonlabel end first, side A up.

Unload Optical

Step 1. Enable the "Changer Ejects" option (because the library unloads media from the drive.).

For instructions on enabling this option, refer to the hardware manual for your specific model.

Step 2. Unload media using the `voloutlet` command.

Step 3. Remove the volume from the drive.

Step 4. Close the mailbox by pressing the right hand button again.

Step 5. Press <RETURN> when prompted by the library.

Configure G Series

To successfully work with AMASS, configure the following parameters in the *Change Options* submenu of the *Setup Library* menu:

- Changer Ejects: No
- Wait on Load: No
- Open on Export: No
- Address Scheme: 1
- Enable Mail Slot: Yes

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- Enable Magazine: Yes

Configure LF Model

To successfully work with AMASS, configure the following parameters on the LMS library:

Library Parameter	Value
Autoload	MRU
Load SW	Disabled

LF Firmware

The following firmware levels (and earlier) require an upgrade from Plasmon LMS:

Firmware	Level		Firmware	Level
DPC	350729		RWSB	450816
RWSA	450816		WOODI	050728

Configure AMASS for LF

During the AMASS installation process when the script asks for the SCSI addresses, the Plasmon LMS autochanger consists of one target ID, which is the drive target ID.

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Sony

Supported Sony storage devices include optical, CD, and tape models.

Optical Storage

The following table lists the supported models for optical media:

Sony for Optical	Caveats
OSL Series: • 2500 • 10000 • 15000	AMASS supports a maximum of 2 drives.
• 25000	AMASS supports a maximum of 4 drives.
WDA Series: • E-330	AMASS supports one drive. Therefore AMASS commands that require two drives, for example, `volcopy`, are not valid for this library.
• E-930	AMASS supports a maximum of 4 drives.

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SCSI Addresses for WDA Series

Use the following table for specific SCSI address requirements when configuring AMASS:

WDA Series	SCSI Address
E-330	• One target ID for the library • One target ID for each drive in the library For specific information about SCSI addresses, refer to either the *Sony WDA-330 Writable Disk Auto Changer User's Guide* or to the *Sony WDA-610 Specifications and Operating Instructions* manual.
E-930	• One target ID • Each drive is identified by the LUN assigned to it For specific information about SCSI addresses, refer to the *Sony WDA-930 Writable Disk Auto Changer User's Guide*.

Load Optical

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Step 1. Load media using the `volinlet` command.

Step 2. Insert media into the mailbox, A side up.

NOTE: **WDA E-330** and **E-930 only**:
Push <IN> and insert the media, side A up, into the port to open the inlet port. The library moves the media to its home storage slot.

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Unload Optical

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

CD Storage

The following table lists the supported models for CD media:

Sony for CD
CDL Series: - 2100 - 2200

Load CD

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

Unload CD

Outlet media only when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved the volume to the mailbox.

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Tape Storage

The following table lists the supported models for tape media:

Sony for Tape	Caveats
DMS Series: • B9 • B35 • 24	
• PetaSite 8400	**NOTE**: AMASS does not support the Sony ADI-1150 drive.
• PetaSite 8800	

Load Tape on DMS Libraries w/o Mailbox

Step 1. Press <Door Open> on the upper left corner of the DMS library.

Step 2. Create an entry in the File System Database by using the `volnew` *slot volumelabel jukeboxnumber* command.

AMASS assigns the media a unique volume number.

Step 3. Mark the media online in the Database by using `volloc -n` *volnumber.*

Step 4. Close the door on the DMS library.

Unload Tape

Step 1. Take the media offline by using `volloc -o` *volnumber.*

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Step 2. Press <Door Open> on the upper left corner of the DMS library.

Step 3. Take the volume out of the mailbox.

Step 4. Close the door on the DMS library.

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Storage Technology

Supported Storage Technology storage devices include both network-attached and SCSI-attached libraries.

Network- attached Tape Storage

The following table lists the supported network-attached models for tape media:

StorageTek Network-attached for Tape	Caveats
• Silo ACS 4400 • PowderHorn ACS 9310 • WolfCreek ACS 9360	AMASS manages all these libraries using Automatic Cartridge System Library Software (ACSLS) for StorageTek. See "Using ACSLS as a Library Interface" on Page 2-59.

Load Tape in Network-attached Libraries

For instruction on preparing media for use by AMASS, see "Prepare Media for Network Devices" on page 1-11.

Step 1. Use the `bulkload` command if your library already contains volumes that the library interface knows about but AMASS does not.

Otherwise, use the `bulkinlet` command. Both commands perform the following tasks:

- Loads multiple volumes

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- Creates an entry in the AMASS database and populates the entry with a unique volume number (assigned by AMASS), a preprinted barcode, and a volume group assignment
- Marks the volumes Online

For specific command options, refer to the Command Reference chapter in *Managing the AMASS File System*.

Step 2. Place media into the mailbox with the barcode facing the picker and close the sliding door.

The picker scans the volumes in the mailboxes and moves the volumes to their home storage slots. Make sure this completes before going to the next step.

Unload Tape

Outlet media only when media does not reside in the mailbox.

Step 1. Use the `bulkoutlet` command to unload and mark the volume Offline in the AMASS database.

NOTE: If you specify more volumes with the `bulkoutlet` command than the number of available mailslots, AMASS waits until all mailslots are cleared before continuing.

Step 2. Remove the media after the library has moved each volume from its home storage slot to the mailbox.

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Using ACSLS as a Library Interface

AMASS manages the Storage Technology libraries through Automatic Cartridge System Library Software (ACSLS).

For specific information on installing and configuring ACSLS, refer to your StorageTek documentation.

AMASS-specific information is described in the following section.

Note
Beginning with AMASS Version 4.11, two separate StorageTek libraries that have two separate ACSLS hosts are supported.

Support for Mixed Media

AMASS supports mixed media in a network-attached ACS using ACSLS. During the AMASS installation, configure each different media type with its own authorization string for the two *logical* libraries.

For example, if your ACS contains both DLT and 3590 media, configure AMASS with two authorization strings.

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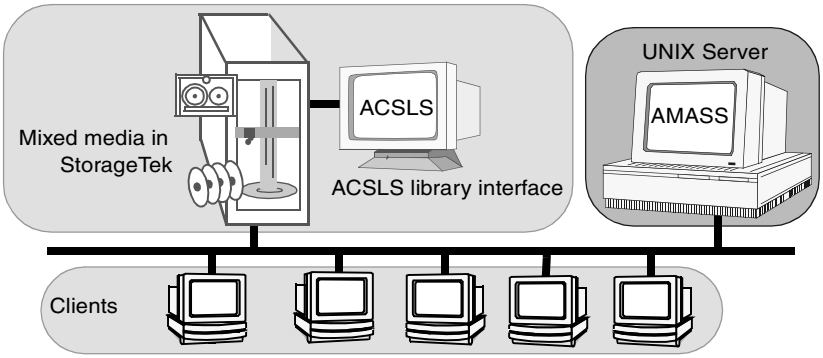
For installation script information, refer to “Mixed Media” in *Installing AMASS*.



Client Requests

The ACSLS accepts network-wide requests from the respective CSC client software running on various client machines.

This client software is implemented via an ssi daemon process started from a special startup script (usually /etc/init.d/stk_N, where N is the library number, which is also linked with /etc/rc2.d/S49stk).

This script must successfully be run before the AMASS startup, and it must be successfully executed by the Amass installation process during the Amass installation. Otherwise, the install will fail.

After a successful startup, the `ps -ef` command lists an entry similar to the following:

```
root 9445 1 0 date time /usr/bin/ssi_daemon
9443 60004 23
```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If you receive an error similar to the message shown below it indicates the `ssi` daemon did not start:

```
cl_ipc_write: Sending message to socket
60004 failed on "Connection refused"
```

SCSI-attached Tape Storage

The following table lists the supported SCSI-attached models for tape media:

StorageTek SCSI-attached for Tape	Caveats
Timberwolf Series: • 9710 • 9714 • 9730 • 9738 • 9740	Because the Timberwolf and L Series libraries have native drive cleaning capabilities, automated drive cleaning by AMASS is not applicable. To schedule drive cleaning, refer to your StorageTek documentation. **NOTE**: These are SCSI-attached libraries; therefore, AMASS does not support mixed media.
L Series: • L180 • L700	

Load Tape in SCSI-attached Libraries

For instruction on preparing media for use by AMASS, see "Prepare Media for SCSI Devices" on page 1-8.

Load media using the `volinlet` command.

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Unload Tape

Outlet media when media does not reside in the mailbox.

Step 1. Unload media using the `voloutlet` command.

Step 2. Remove the media after the library has moved each volume from its home storage slot to the mailbox.

Restrict Media Ranges

Prior to running `install_tests` or starting AMASS, restrict the media ranges used by AMASS by editing the `/usr/amass/.juke/media_file_`*libname* file.

Automatic CAP Mode

When the cartridge access port (CAP) is in "`set cap mode automatic 0,0,0`", this allows the ACSLS software to physically move media in and out of the library.

To synchronize the media locations with the AMASS File System Database, use the AMASS `bulkload` command afterwards:

- Using `bulkload -s 0` will synchronize the AMASS database with the actual contents of the library by adding all new tapes found in the library to the database. Existing media in the database will not have their volume group assignments changed. But newly added media will not be assigned to any volume group.
- After using either `bulkoutlet` or `voloutlet`, the media is moved to the CAP. Open the CAP door and remove the media from the door cell. After the door has been closed, the voloutlet command successfully terminates.

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Manual CAP Mode

When the cartridge access port (CAP) is in "`set cap mode manual 0,0,0`", the ACSLS does not support the AMASS `bulkinlet` or `volinlet` commands. However, the `bulkoutlet` or `voloutlet` commands work as described above.

CAP Priorities

If the AMASS `init_element` utility fails and displays an `"I/O STATION is in use"` error, change one of the CAP IDs so that one CAP has priority over the other. To change CAP ID priorities, perform the following steps:

Step 1. Use the ACSLS Server Software's `accsa cmd_proc` interface to change priorities. For information, refer to your StorageTek documentation.

Step 2. Run `set cap` to process these changes.

CAP IDs

To change the CAP IDs of the mailbox for a specific jukebox, edit the `/cap_file_`*jukeboxnumber* file, which is created the first time AMASS attempts to use the library. To edit this file, perform following steps:

Step 1. Edit the following file to change the CAP IDs of the mailbox:

```
# vi
/usr/amass/.juke/cap_file_jukeboxnumber
```


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Caution

To avoid unexpected results, edit this file carefully!

Although this file lists all CAP identifiers separated by white space, the volumes that you request to load and eject occur through the **first** CAP listed in this file. This is called the priority CAP.

Step 2. Restart AMASS to process these changes after modifying the `.juke` files.

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3

Drive List

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NOTES

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Ampex Tape

The following table lists the supported tape drive models:

DST Tape Drives	Caveats
Model 312	• AMASS supports: - A single volume partition, only - Tape block size configured with the `volformat` command applicable for this drive For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • AMASS does **not** support: - Simultaneous dual hosts (Therefore, disable SCSI Port B with the toggle switch on the back panel.) - Automatic drive cleaning - Compression - Tape streaming

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Tip

For optimizing performance with AMASS installed on an SGI Origin 200 or 2000 follow the instructions below:

1) Make sure the device being used for cache has a total bandwidth of at least 26 Mbytes/sec. (a RAID-3 or RAID-5 stripe is suggested).

2) After running the `installamass` script per instructions, run `/usr/amass/sys/config_prod -o` as described in Appendix D "Optional Parameters" in *Installing and Configuring AMASS*.

2A) Set the MAXIOSZ to **`4096`**.

2B) Enable `CFG_OPT_AIO`.

3) When formatting volumes, use the `volformat -b 128k` command to set a 128K byte block size. For example: **`volformat -b 128k 2.`**

Using an Origin 2000, running IRIX Version 6.4, and a Ciprico 6500 RimFire RAID array, ADIC tests saw an average throughput to a DST 312 tape drive of about 12 Mbytes/sec. with file sizes ranging from 100MB to 1GB.

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ATG Optical

The following table lists the supported optical drive models:

ATG Optical Drives
• 9001 • 9001S

Configure ATG

The ATG drive requires special configuration requirements. The following options and values must be configured—from the front panel—to successfully operate with AMASS.

For detailed configuration instructions, refer to your *ATG User's Manual.*

Option	Value
Autoload	OFF
BLKCHK	ON
SCSI	2
STR REL	ON
SYSTEM	2
TIME OUT	OFF

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Hewlett Packard Optical

The following table lists the supported optical drive models:

H-P Optical Drives	
C1113 F/M	• C1716A • C1716M
C1113J-5200EX	• C1716C Corsair I • C1716T Corsair II
C1113 J-8X	

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Hitachi GF-2050 DVD

The following table lists the supported DVD drive models:

Hitachi DVD Drives	Caveats
GF-2050	Drives must be installed starting with drive bay 1 and continuing in sequence.

The default spinup delay for this drive is 90 seconds. If errors are encountered during spinup, the media will be reloaded three times as the default. To modify these defaults, change the following environmental variables:

AMASS_SPINUP_DELAY - override default spinup delay

AMASS_RELOAD_RETRIES - specify the number of times to reload media if encountering errors during spinup.

The environmental variables can be added to the /usr/amass/tools/amass_start script as follows:

AMASS_SPINUP_DELAY=90

AMASS_RELOAD_RETRIES=3

export AMASS_SPINUP_RDELAY

export AMASS_RELOAD_RETRIES

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IBM

Tape

The following table lists the supported tape drive models:

Tape Drives	Caveats
• 3590B1A • 3590B1A-Ultra SCSI	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS*. **NOTE**: Although automatic drive cleaning by AMASS is supported on these drives, automatic drive cleaning by AMASS on this drive installed in an IBM 3494 is not supported because the library has its own internal drive cleaning capabilities.

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Tape Drives	Caveats
3590E1A	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS.* **NOTE**: Although automatic drive cleaning by AMASS is supported on these drives, automatic drive cleaning by AMASS on this drive installed in an IBM 3494 is not supported because the library has its own internal drive cleaning capabilities. • 3590B1A-written and 3590B1A-ultra-written tapes are READONLY in this drive. • The native capacity of tapes is 20GB; the compressed capacity is 60GB. AMASS assumes a compressed capacity of 2:1 so the capacity displayed by the `vollist` command after a `volformat` shows 38145MB.

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Tape Drives	Caveats
Magstar MP 3570	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS*. • Automatic drive cleaning by AMASS is supported on this drive.
3580 Ultrium (LTO)	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS*. • The native capacity of tapes is 100GB; the compressed capacity is greater than 200GB. AMASS assumes a compressed capacity of 2:1 so the capacity displayed by the `vollist` command after a `volformat` shows 199,999MB.

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Optical

The following table lists the supported optical drive models:

IBM Optical Drives		
0632-ACA		0632-CHX
0632-CCA		• 0632-C4A • 0632-C4B • 0632-C4D
0632-CHC		

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Kodak Optical

The following table lists the supported optical drive models:

Kodak Optical Drives
6800

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Maxoptix Optical

The following table lists the supported optical drive models:

Optical Drives	Caveats
Star Series, 8x optical: • Model T6-5200 (5.2GB) • Model T5-2600 (2.6GB)	AMASS supports these drives for read/write MO as well as for WORM.

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Panasonic

Optical

The following table lists the supported optical drive models:

Panasonic Optical Drives
• LF-J 7010 • LF 7300

DVD

The following table lists the supported DVD drive models:

Panasonic DVD Drives	Caveats
• LF-D100 • LF-D200	Drives must be installed starting with drive bay 1 and continuing in sequence.

Note
ONLY two-sided DVD-RAM media are supported

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Pioneer

Optical

The following table lists the supported optical drive models:

Pioneer Optical Drives		
DEC 70001		• DEC TZ 87 • DEC TZ 88

CD

The following table lists the supported CD drive models:

Pioneer CD Drives		
• CD-504X • CD-604X		• DR-124X • DR-504X

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Plasmon-LMS Optical

The following table lists the supported optical drive models:

Plasmon LMS Optical Drives (formerly Philips-LMS)		
• LD 4100 • LD 6100		TD 3610

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Quantum Tape

The following table lists the supported tape drive models:

Quantum Tape Drives	Caveats
DLT Series: - 7000 - 8000	Compression and tape block size configured with the `volformat` command are applicable for these drives. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS*. **NOTE**: Although automatic drive cleaning by AMASS is supported on these drives, automatic drive cleaning on this drive installed in a StorageTek 97xx library is not supported because the library has its own internal drive cleaning capabilities.

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Sony

Optical

The following table lists the supported optical drive models:

Sony Optical Drives	Caveats
• WDD-600 • WDD-610 • WDD-930-01 • WDD-931	
• SMO-C501 • SMO-E511	
• SMO-F521 • SMO-F541 • SMO-F544 • SMO-F551 • SMO-F561	
SMO-F541/W1	For media information, see “Tri-Function Drive” on Page 3-19.
SMO-F551-8X	To load an optical platter, use the AMASS `volinlet` command. To open the mailbox, press the right most button on the front panel. Insert the volume, side A up. To close the mailbox, press the right most button again. To unload a platter, use the AMASS `voloutlet` command.

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Tri-Function Drive

The Sony SMO-F541/W1 is a Tri-Function drive because it is capable of using the following three types of media:

- MO (Magneto Optical) is rewritable optical.
- Ablative™ is an IBM term for the technology used to create WORM media. Ablative technology actually “burns” the write into the media thus ensuring that the media is Write-Once Ready-Many (WORM). Currently available from IBM P/N 99F8517.
- CCW (Continuous Composite WORM) is the generic term for the technology used to create WORM media.

CD

The following table lists the supported CD drive models:

Sony CD Drives	Caveats
• CDU-924S • CDU-926S	
CDU-76S	AMASS does not support Recording Mode, only Read Mode.

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Tape

The following table lists the supported tape drive models:

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Sony Tape Drives	Caveats
Advanced Intelligent Tape-1 (AIT-1) Models: • SDX-300C • SDX-310C	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Automatic drive cleaning by AMASS is supported on this drive. Although these drives have built-in head cleaning ability, if you begin to have drive fail problems, use the AMASS `driveclean` command as an initial first step in troubleshooting a failure. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • AMASS supports: - SCSI-2 SE Fast/Wide. - AIT media with a MIC (memory in cassette) chip. With this chip, AMASS supports: High Speed Search as well as Fast Load and Unload Times. • AMASS does not support multiple partitioning. **NOTE**: The 8mm media designation DAS displays for ADIC AML libraries must be used for AIT media. • If the drive shows the media as write protected but really is not, slide the write protection tab to SAFE then back again to REC. • A “fresh-from-the-package” AIT volume takes about 45 to 60 seconds to load. However, after data has been written on the tape and the MIC chip is initialized, the media takes about 12 seconds to load. Similarly, unloading falls from about 40 seconds to 15 seconds. • If a Sony AIT drive is connected to an ADIC Scalar 480 library, make sure the Configuration Menu on the front panel is set to “Use Sony AIT.”

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Sony Tape Drives	Caveats
Sony Advanced Intelligent Tape-2 (AIT-2) Series: • Model SDX-500	• This drive is an SE/LVD SCSI device, Therefore, it can only be attached to either a single-ended bus or to an LVD (low voltage differential) bus. • AMASS does not support a library that contains both AIT-1 and AIT-2 drives because both drives will behave as an AIT-1. **NOTE**: The 8mm media designation DAS displays for ADIC AML libraries must be used for AIT media. • If a Sony AIT drive is connected to an ADIC Scalar 480 library, make sure the Configuration Menu on the front panel is set to “Use Sony AIT.”
• GY-2120 (DTF-1)	• Tape block size configured with the `volformat` command is applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Automatic drive cleaning by AMASS is supported on this drive.
• Sony GY-8240 (DTF-2)	• With support for the Fast Load option. **NOTE:** Although supported by ADIC, ADIC has experienced reliability issues with DTF-2 drives during the AMASS port and test effort.

Factory Settings

To successfully work with AMASS, use the factory default settings on your AIT drives. If you change the dip switch settings, you will receive SCSI error messages for your AIT drive, and AMASS will be unable to use the drive.

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- **SDX-300C Advanced Intelligent Tape (AIT-1):** Use the original factory default dip switch settings (on the bottom of the drive) for your AIT drives, **not** the settings for your host operating system as described in the "UNIX Compatibility Guide." The 'Sony standard shipped from the factory' settings are illustrated in the "UNIX Compatibility Guide" (Revision 10 10/06/98).
- **SDX-500 (AIT-2):** Use the original factory default dip switch settings for your AIT-2 drives, **not** the settings for your host operating system as described in "SDX-500 Series Installation Manual" Version 1.0.

Configure GY-2120

To correctly operate with AMASS, perform the following tasks on the GY-2120 drive:

- Put all eight dip switches, which are located in the back of the unit, in the OFF position.
- Set the 3-position (SCSI/ON/OFF) COMP switch on the front access panel to the SCSI position.
- Although the drive can be set to enable and disable compression, the AMASS volformat command (where you can enable and disable compression) will override this drive setting.

Recovery Messages

When changing media in the drives, the following AMASS recovery messages may occasionally appear for these DTF drives. Typically, these messages are generated if volumes are improperly unloaded, perhaps in response to a power failure.

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NOTE: The messages should be ignored although the **recovery time could be as long as 45 minutes**:

```
"668: Volume is being recovered.
"669: Recover process has completed."
```


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Storage Technology Tape

The following table lists the supported tape drive models:

StorageTek Tape Drives	Caveats
Redwood SD-3	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System.* • Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS.* • See "Define Tape Length for Redwood SD-3" on Page 3-26.
TimberLine 9490-E	Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System.*

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StorageTek Tape Drives	Caveats
• 9840 • 9940	• Compression and tape block size configured with the `volformat` command are applicable for this drive. For command information, refer to the Command Reference chapter in *Managing the AMASS File System*. • Tape streaming configured with the `config_prod -o` script is supported for this drive. For script information, refer to the *Optional Parameters* appendix in *Installing AMASS.* **NOTE**: Although automatic drive cleaning by AMASS is supported on this drive, automatic drive cleaning by AMASS on the STK 9840 installed in a StorageTek 97xx library is not supported because the library has its own internal drive cleaning capabilities.

Define Tape Length for Redwood SD-3

The StorageTek Redwood SD-3 drive uses a SCSI 1 board. Because there is no way for a SCSI 1 board to determine the length of mounted tape, use the AMASS `tapelength` command to define the length to the AMASS database.

Note
The `tapelength` command must be used prior to formatting the volume.

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For specific information on this command, refer to the Command Reference chapter in *Managing the AMASS File System*.

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Toshiba CD

The following table lists the supported CD drive models:

Toshiba CD Drives
350-XM

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4

Interface to Standalone Drives

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Interface Defined

The Standalone Operator Interface was automatically installed when you installed AMASS and is located in the `/usr/amass/bin` directory. Specify this directory in the system administrator's login `PATH` variable.

NOTE: The user must be `amass`.

The interface gives full read-access and write-access to media in one or more standalone drives that must be daisy-chained to a library. AMASS considers multiple standalone drives as one virtual library.

Use this interface for the following tasks:

- All management operations for the AMASS file system.

  NOTE: Do not use the UNIX `abort` command with the Standalone Operator Interface to stop the AMASS `volcopy` process.

- I/O requests.
- Back up the AMASS File System Database with the `amassbackup` command.

  NOTE: You cannot restore the AMASS Database with the Standalone Operator Interface.

How to Run the Interface

Run the interface from:

- Standard shell tool window

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- Basic ASCII terminal

Normally, the interface is run from one window or terminal while AMASS is run from another window or terminal.

To run the Standalone Operator Interface, follow the steps below:

Step 1. Log in as **amass**.

Step 2. Enter the following command:

```
# sysop
```

Step 3. Load a volume into a specific drive per instructions from the interface prompt. The prompt always specifies a volume number, a volume side, and the volume label.

For example, if a request requires you to load side A of volume number 2, text similar to the following appears:

```
***** OPERATOR LOAD VOLUME REQUEST *****
Please load              VOLUME NUMBER 2,
                                   SIDE A,
                       LABEL datavolume 2
into JUKEBOX #2 DRIVE #1 after VOLUME has
been loaded, press return
or IF INCORRECT VOLUME enter eject
or TO ABORT REQUEST enter abort
Press RETURN when LOADED:
```

Step 4. Use <Control-C> to exit the interface.

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