HP StorageWorks ESL E-Series Tape Library users guide

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About this guide

This users guide provides information to help you:

- Operate the tape library.
- Relocate the tape library.
- Troubleshoot the tape library.

"About this guide" includes:

- the section called "Related documentation"
- the section called "Document conventions and symbols"
- the section called "HP technical support"

Related documentation

In addition to this guide, HP provides corresponding information:

- *HP StorageWorks ESL E-Series Tape Library site survey*
- *HP StorageWorks ESL E-Series unpacking and installation guide*
- *HP StorageWorks ESL E-Series Tape Library service manual*

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Medium blue text: the section called "Related documentation"	Cross-reference links and e-mail addresses
Medium blue, underlined text (http://www.hp.com)	Web site addresses
Bold font	• Key names • Text typed into a GUI element, such as into a box • GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
Italic font	Text emphasis
`Monospace font`	• File and directory names • System output • Code • Text typed at the command line
`Monospace, italic font`	• Code variables • Command-line variables
`Monospace, bold font`	Emphasis of file and directory names, system output, code, and text typed at the command line

⚠ **WARNING!**

Indicates that failure to follow directions could result in bodily harm or death.

△ **CAUTION:**

Indicates that failure to follow directions could result in damage to equipment or data.

📝 **IMPORTANT:**

Provides clarifying information or specific instructions.

📝 **NOTE:**

Provides additional information.

HP technical support

Telephone numbers for worldwide technical support are listed on the HP support web site: http://www.hp.com/support/.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign up online using the Subscriber's choice web site: http://www.hp.com/go/e-updates.

- Subscribing to this service provides you with e-mail updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.
- After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

HP-authorized reseller

For the name of your nearest HP-authorized reseller:

- In the United States, call 1-800-282-6672.
- Elsewhere, visit the HP web site: http://www.hp.com. Then click **Contact HP** to find locations and telephone numbers.

Helpful web sites

For other product information, see the following HP web sites:

- http://www.hp.com
- http://www.hp.com/go/storage
- http://www.hp.com/support/
- http://www.docs.hp.com

1 Library overview

This chapter describes both the ESL E-Series tape library and its components. The chapter consists of:

- the section called "Library components"
- the section called "Cross Linked libraries"
- the section called "Library storage locations and slot numbering"

Library components

The ESL E-Series tape library consists of the several major components, detailed in:

- the section called "Library cabinet"
- the section called "Operator control panel (OCP)"
- the section called "Library robotics"
- the section called "Tape drives"
- the section called "Load ports and magazines"
- the section called "Card cage and controllers"
- the section called "Interface Manager card"

Library cabinet

The cabinet houses all library components, including:

- Media picker
- Storage bins
- Control electronics
- Power supply and distribution equipment
- Tape drives
- Card cage with Fibre Channel (FC) interface controllers and robotics controller
- Interface Manager card

You can access these components through the front and back doors of the library cabinet.

Front panel

The front of the library cabinet (see Figure 1) provides the following:

- The front doors provide easy access to the media picker and the storage array.
- The viewing window makes it possible to visually monitor library operations.
- An Operator Control Panel (OCP) in the center of the door enables you to monitor and control library operations.
- Two configurable load ports allow easy insertion of cartridges, or removable magazines, without opening the library door.
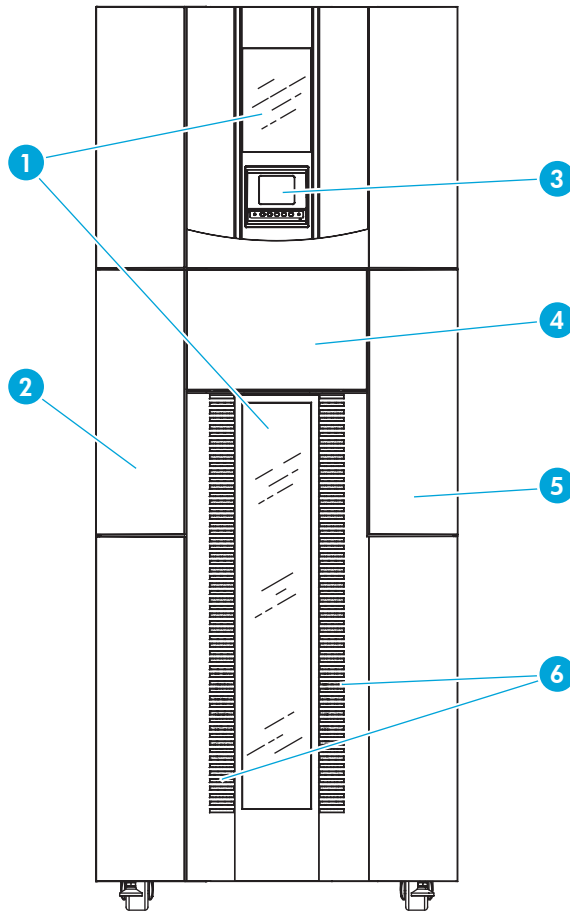
1	Viewing windows
2	Left load port
3	OCP
4	Laptop tray in closed position
5	Right load port
6	Ventilation and air filters

Figure 1 Library cabinet—front view

Back panel

The back of the library cabinet (see Figure 2) provides easy access to:

- Cooling fans
- Power, control, and data interfaces
- Tape drives
- Tape drive communication (cluster controller card and Interface Manager card)
- Card cage with FC interface controllers and a robotics controller card
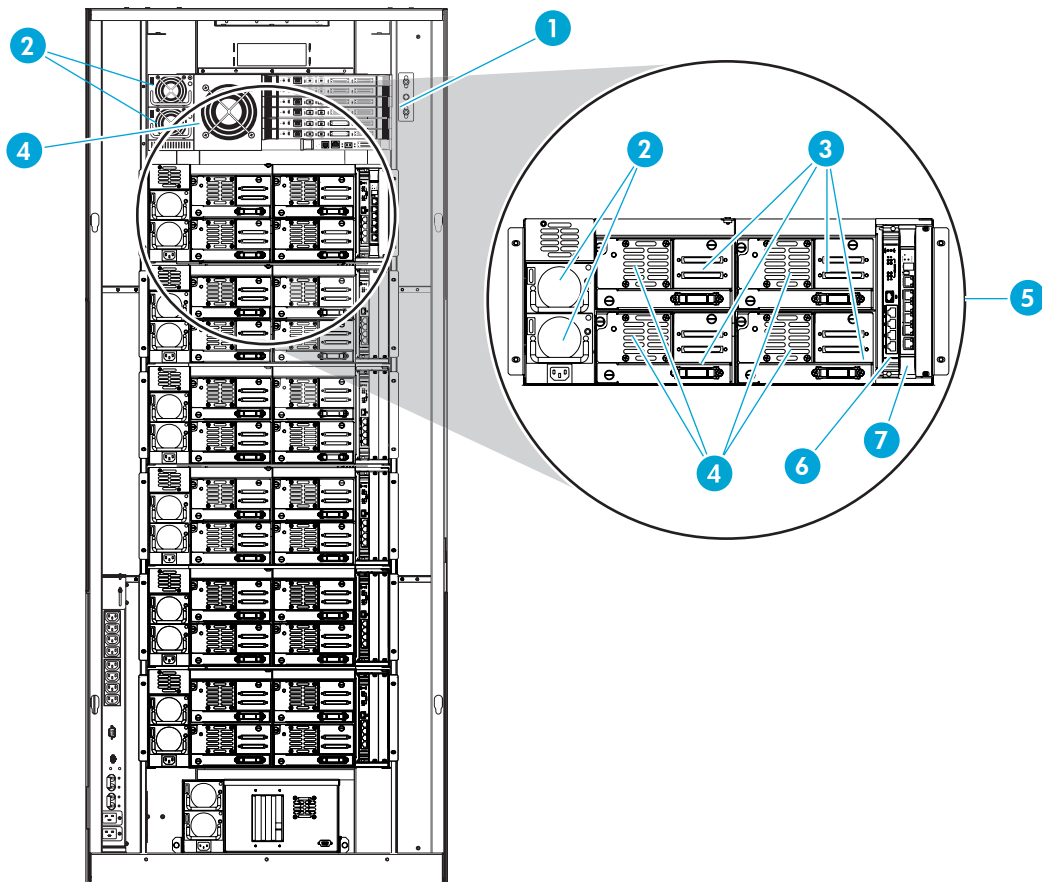
1	Card cage
2	Power supplies (2 per drive cluster and 2 per card cage)
3	Tape drives (up to 4 per drive cluster)
4	Cooling fans (1 per drive and 1 per card cage)
5	Cluster 0
6	Cluster controller card (1 per drive cluster)
7	Interface manager

Figure 2 Library cabinet—back panels

Operator control panel (OCP)

The OCP features a menu system for determining library status, configuring the library, and performing certain diagnostic functions (see Figure 3).

| 1 | OCP buttons |
| 2 | Green LED |
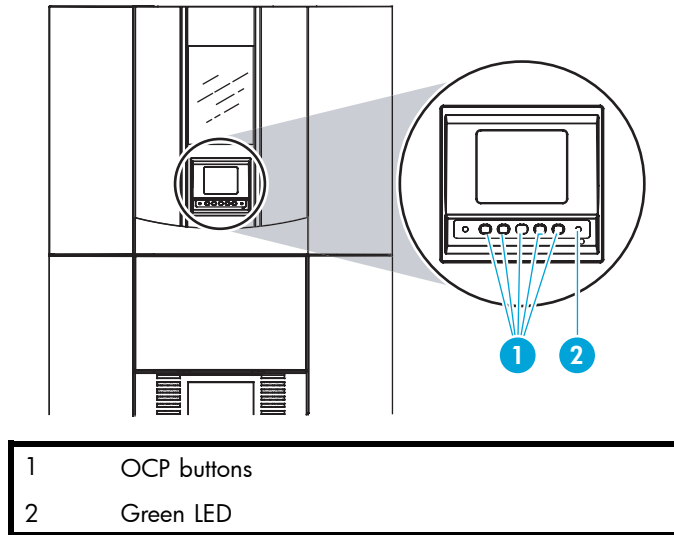
Figure 3 OCP initial screen

The OCP consists of the following features (see Table 2):

Table 2 OCP features

Feature	Description
OCP	The OCP displays library status information and allows you to access the library menus. These menus allow you to view or change the library settings, run demonstration programs, or run diagnostic tests. The OCP is discussed in *Using the OCP*.
OCP buttons	Use these buttons in combination with the OCP to scroll through screens and select options or commands. The functionality of these buttons changes depending on the currently displayed GUI screen.
LED indicator	The green LED lights when the library is fully operational and ready to accept host commands. It flashes while the library is transitioning from a READY state to a NOT READY state. The library will not be READY during power-on self-tests, when magazines are being released, or during access to certain menu items.

NOTE:

You can also perform diagnostics using HP StorageWorks Library and Tape Tools (L&TT), available from http://www.hp.com/support/tapetools. Additionally, you can configure the library and monitor library status using HP StorageWorks Command View TL that shipped with your product. For support information, visit http://www.hp.com/support/cvesl.

Library robotics

The library robotics consists of the main components identified in Figure 4.

1	Picker assembly
2	Vertical motor
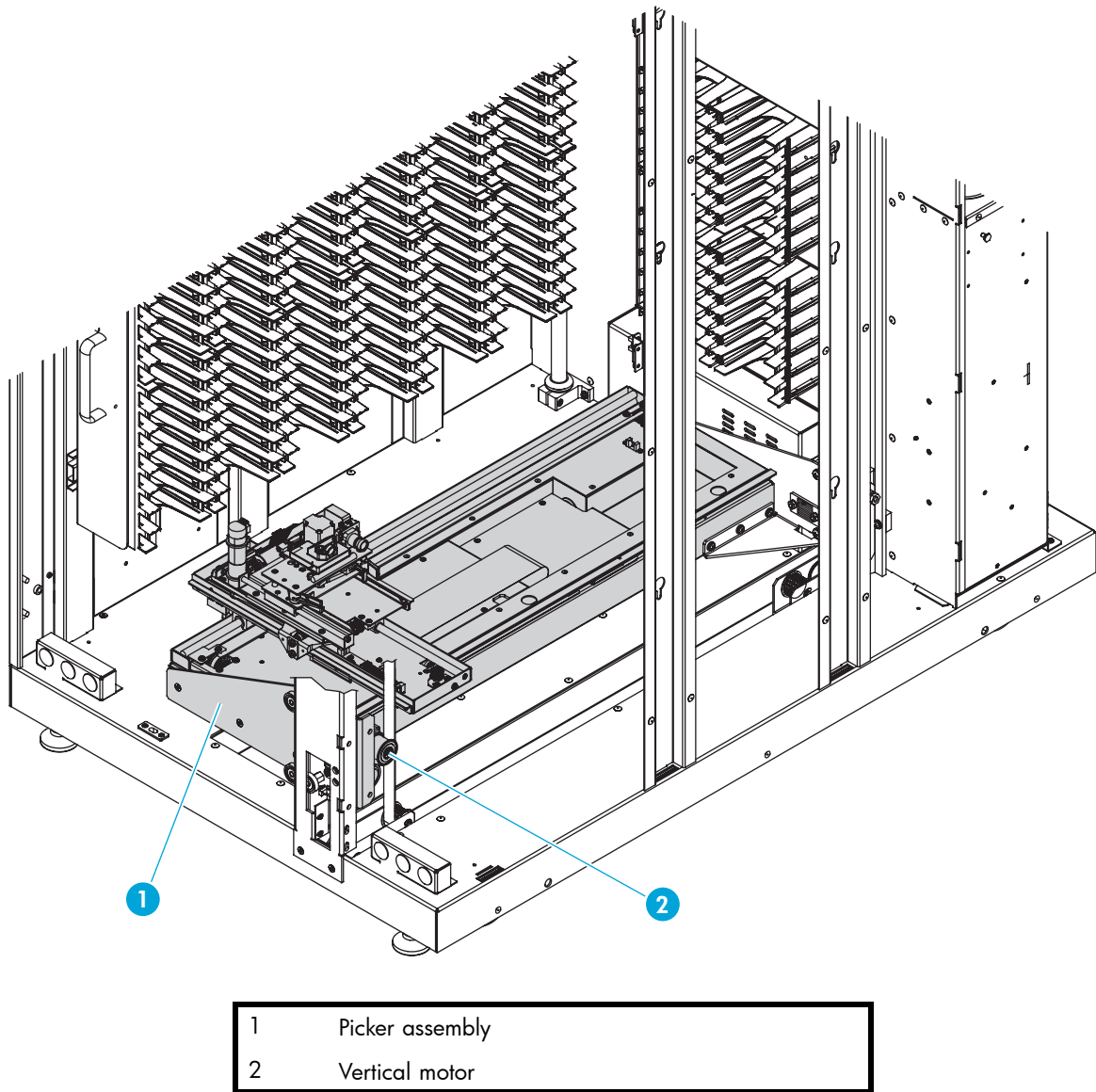
Figure 4 Library robotics

The vertical and horizontal motors move the library robotics into position to pick and place tape cartridges, and rotates the optical scanner 180° to allow the library robotics to pass cartridges between the side storage bins and the back storage bins or tape drives. The extension axis assembly extends the library robotics forward to make contact with the desired cartridge and then retracts the library robotics to remove the cartridge from a bin or drive.

The library robotics includes the optical scanner that reads bar code labels (7 characters for Super Digital Linear Tape (SDLT) and 8 characters for Ultrium). The scanner is used to maintain an inventory of the tape cartridges within the library. A full inventory occurs automatically whenever the library is powered on or when the doors have been opened. An inventory of just the load ports occurs when the load ports have been opened. Inventories can also be initiated from the host computer.

Although the library does not require tape cartridges to have bar code labels, properly labeled tape cartridges and full storage bins speed up the inventory process and greatly improve media management.

If you have more than 100 unlabeled tape cartridges, your library will hang during inventory or when you power on the library. When this happens, `Going on line` displays in the OCP.

Tape drives

The ESL E-Series tape library can hold up to 24 tape drives. When fewer than 24 drives are installed in the library, the tape drives must occupy consecutive drive clusters, beginning with drive cluster 0 (see Figure 2).

△ **CAUTION:**

It is critical to ensure that the media you use matches the format of your tape drive. Cleaning cartridges and formatted data cartridges are unique for each drive technology. Damage may occur if inappropriate media is used in tape drives.

Tape cartridges and cleaning cartridges are not included with the library, and must be ordered in addition to the library.

Cleaning cartridges

📝 **NOTE:**

By default, Autoclean is disabled. Ensure your application software supports this feature before enabling it.

If a drive experiences read/write errors when the Autoclean function is enabled, the library issues an error message stating that drive cleaning is required. Without user intervention, the media picker replaces the data cartridge with a cleaning cartridge. When the cleaning procedure finishes, the media picker returns the data cartridge to the drive.

📝 **NOTE:**

Ultrium cleaning cartridges have a 50-use limit, while SDLT cleaning cartridges have a 20-use limit. Once a cleaning cartridge has reached its use limit it must be replaced. If the drive continues to request cleaning after a cleaning cartridge has been loaded, replace the cleaning cartridge with a new one.

Ultrium 460, 460-FC, and 960 tape drives

The Ultrium tape drive is a high-performance streaming tape drive that uses Linear Tape-Open (LTO) technology.

- An Ultrium 460 or 460-FC tape drive is capable of storing up to 200 GB (native) of data per cartridge, and has a sustained data transfer rate of 30 MBps (108 GBph) (native).
- An Ultrium 960 tape drive is capable of storing up to 400 GB (native) of data per cartridge, and has a sustained data transfer rate of 80 MBps.

Access the *HP StorageWorks Ultrium Tape Drive users guide* from http://www.hp.com/support for more information about its features and capabilities.

SDLT 320 and 600 tape drives

The SDLT tape drive is a high-capacity, high-performance streaming tape drive that uses Laser Guided Magnetic Recording (LGMR) technology to maximize the amount of data that can be stored on a tape.

- An SDLT 320 tape drive is capable of storing up to 160 GB (native) of data per cartridge and has a sustained data transfer rate of 16 MBps (57.6 GBph).
- An SDLT 600 tape drive is capable of storing up to 300 GB (native) of data per cartridge and has a sustained data transfer rate of 36 MBps (115.2 GBph).

Access the *HP StorageWorks SDLT Tape Drive Reference Guide* from http://www.hp.com/support for more information about its features and capabilities.

Tape cartridges

📝 **NOTE:**

Tape cartridges are not included in the purchase of a tape library. Purchase tape cartridges separately.

Ultrium tape cartridges

Ultrium 460 and 460-FC tape drives both use the Ultrium 400 GB tape cartridges; Ultrium 960 tape drives use the Ultrium 800 GB tape cartridges.

📝 **NOTE:**

In addition to the information provided in this manual, see the documentation provided with your media for more information.

△ **CAUTION:**

Ultrium tape drives require special cleaning cartridges and data cartridges formatted specifically for HP Ultrium. To avoid damage to your tape drive, it is critical to use appropriate cleaning cartridges and properly formatted data cartridges.

Approved media has the Ultrium format trademark, which indicates the media has passed Ultrium format compliance testing (see Figure 5).

Figure 5 HP Ultrium format trademark

For best results, always use HP branded media and bar code labels. See the *HP StorageWorks Tape Libraries Media and Bar Code Labels* flyer for information on which media and bar code labels to use in your tape drives.

△ **CAUTION:**

Do not bulk erase Ultrium formatted cartridges. This destroys prerecorded servo information and makes the cartridge unusable.

Always visually inspect your tape cartridges when loading or removing them from your tape library. Taking a few minutes to check the condition of your cartridges lowers the risk of repeated failures and helps ensure uninterrupted backup.

△ **CAUTION:**

Always discard damaged tape cartridges. If a defective tape cartridge is loaded into a tape drive, it may damage the drive, potentially requiring drive replacement.

📝 **NOTE:**

For information on ordering tape cartridges and bar code labels, see the *HP StorageWorks Tape Libraries Media and Bar Code Labels* flyer that shipped with your library. You can also access this information at http://www.hp.com

SDLT 320 and 600 tape cartridges

📝 **NOTE:**

In addition to the information provided in this manual, see the documentation provided with your media for more information.

⚠ **CAUTION:**

SDLT tape drives require special cleaning cartridges and data cartridges formatted specifically for SDLT. To avoid damage to your tape drive, it is critical to use appropriate cleaning cartridges, and properly formatted data cartridges. Do not use DLT Tape I, DLT Tape II, DLT Tape III, or DLT Tape IIIXT data cartridges, or DLT cleaning cartridges with SDLT tape drives.

Make it a practice to visually inspect your tape cartridges when loading or removing them from your tape library. Taking a few minutes to check the condition of your cartridges will lower the risk of repeated failures and help ensure uninterrupted backup.

⚠ **CAUTION:**

Always discard damaged tape cartridges. If a defective tape cartridge is loaded into a tape drive it may damage the drive, potentially requiring drive replacement.

📝 **NOTE:**

For information on ordering tape cartridges and bar code labels, see the *HP StorageWorks Tape Libraries Media and Bar Code Labels* flyer that shipped with your library. You can also access this information at http://www.hp.com

Load ports and magazines

The load ports are mechanical devices in the front panel of the library that enable you to import or export tape cartridges to and from the library via three columns of tape cartridge magazines, two magazines per column, without interrupting library operations. Removable magazines are available for both the left and right load ports with either SDLT or LTO slots.

There are 2 tape cartridge magazines in the left load port, and 4 in the right (see Figure 6). The number of tape cartridges in these magazines differs between the SDLT and LTO libraries. To find the number of tape cartridges for any configuration, use the tables located in the section called "Library storage locations and slot numbering"

1	Left load port (16 SDLT or 18 Ultrium)
2	Right load port (32 SDLT or 36 Ultrium)
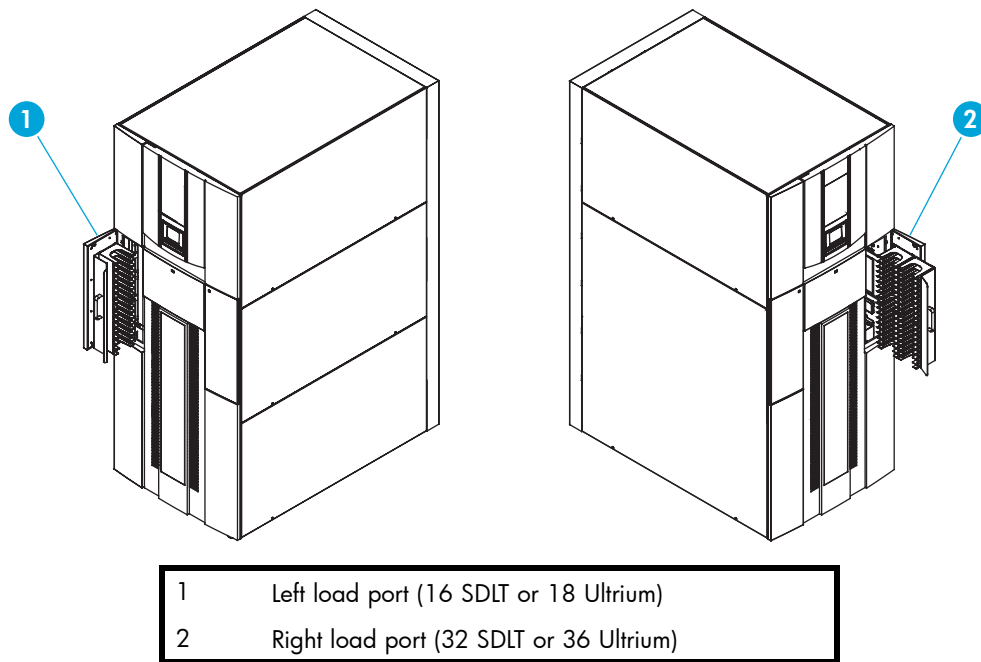
Figure 6 Load ports (left and right)

Card cage and controllers

The library card cage is located in the top of the library cabinet, above cluster 0. It houses up to six FC interface controllers (e2400-160) or native FC interface controllers (e2400-FC 2G), the library robotics controller (e1200-160), a fan, and two power supplies (see Figure 7).

1	e2400-FC 2GB FC interface controllers
2	e2400-160 FC interface controllers
3	Library robotics controller e1200-160
4	Card cage fan
5	Card cage power supplies
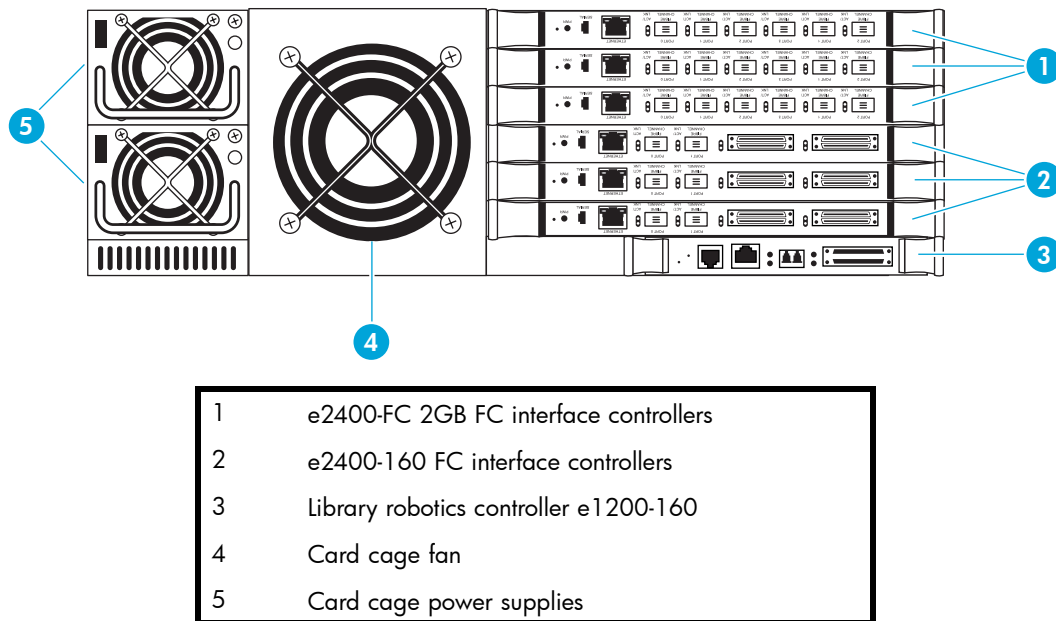
Figure 7 Card cage with controllers

e2400-160 FC and e2400-FC 2GB interface controllers

The FC interface controllers translates the Fibre Channel Protocol (FCP) to and from the SCSI protocol, if necessary. It transfers commands, data, and status information to and from FC controllers and FC and SCSI devices.

Supported devices include:

- Initiator devices – FC hosts
- Sequential access devices – tape drives
- Changer devices – tape libraries

The e2400-160 FC interface controller provides bidirectional connectivity for Ultra-3 SCSI buses in a Fibre Channel Switched Fabric (FC-SW) environment.

The e2400-FC 2GB interface controller provides fibre connectivity for native FC drives, such as the Ultrium 460-FC or 960 drive.

NOTE:

For information on installing the HP StorageWorks e2400-160 FC and e2400-FC 2GB interface controllers, see the *HP StorageWorks ESL E-Series tape library unpacking and installation guide*, or the documentation that shipped with the interface controller.

Figure 8 illustrates the I/O panel of the e2400-160 FC interface controller.

1	Reset button
2	Serial port
3	Ethernet port
4	FC port 1
5	FC port 2
6	SCSI bus port 0
7	SCSI bus port 1
8	SCSI bus port 2
9	SCSI bus port 3
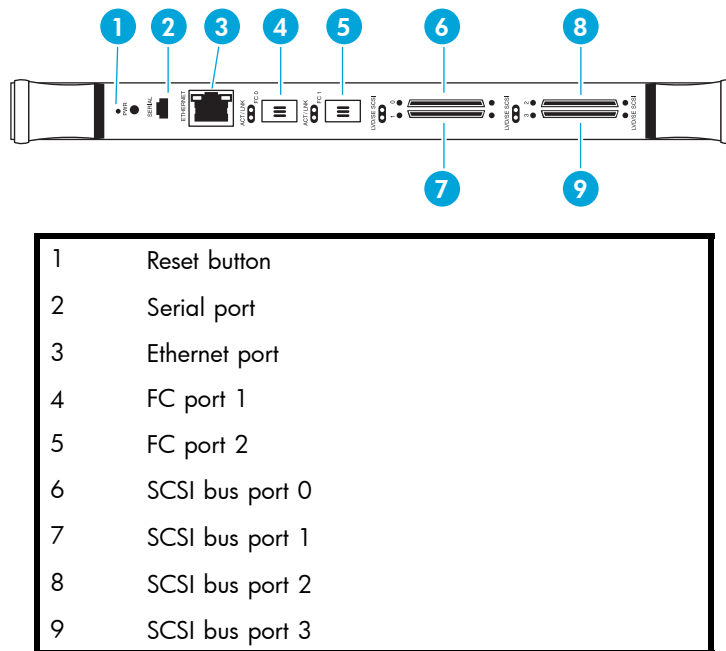
Figure 8 e2400-160 FC interface controller

Figure 9 illustrates the I/O panel of the e2400-FC 2GB interface controller.

1	Reset button
2	Serial port
3	Ethernet port
4	FC port 0 (external connection)
5	FC port 1 (external connection
6	Tape drive FC port 0 (internal connection)
7	Tape drive FC port 1 (internal connection)
8	Tape drive FC port 2 (internal connection)
9	Tape drive FC port 3 (internal connection)
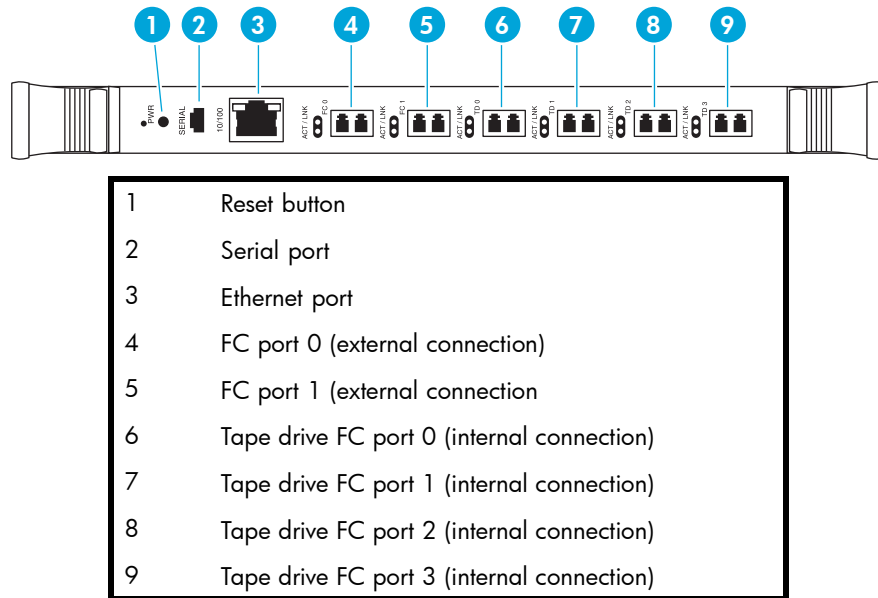
Figure 9 e2400-FC 2GB interface controller

Reset button

To force a manual reboot of the FC interface controller, use the reset button (see Figure 8 and Figure 9). Press the button with a pen or other small object. You can also select the Reboot menu option in the Command View TL, as described later in this manual.

△ CAUTION:

Using the Reset button during an ongoing data backup, restore, or other data transfer process, can result in a disruption of that process and a loss of data. Before selecting the Reset button, verify that no data is currently transferring through the FC interface controller by visually inspecting the Activity LEDs of all I/O ports on the FC interface controller.

Power indicator

The interface controller has one power LED.

- *Green* - Power has been applied to this module
- *Yellow* - Power-On-Self-Test (POST) in process or processor problems

Serial port

The interface controller is equipped with one serial port. See Figure 8 and Figure 9 for the location of the serial port.

✎ NOTE:

The serial port is an HP service port not intended for customer use on the ESL E-Series library.

Ethernet port

One Ethernet port with an LED indicator is included in the interface controller. See Figure 8 and Figure 9 for the location of the Ethernet port.

- *Activity* - Port activity
- *Link* - Valid Ethernet link

External FC ports

Two FC ports (for external connections) with LED indicators are found on the interface controller: Port F0 and Port F1. See Figure 8 and Figure 9 for the location of the FC ports.

- *Green* (ACT) - FC port activity
- *Green* (LINK) - Valid FC link

SCSI buses (e2400-160 FC interface controller only)

Four SCSI buses with LED indicators are included in the FC interface controller. See Figure 8 for the location of the SCSI buses.

- *Green* - SCSI bus activity on corresponding port

Internal FC ports (e2400-FC 2GB interface controller only)

The native FC interface controller has 6 native FC ports with LED indicators: 2 ports (FC0 and FC1) connect to the SAN; 4 ports (TD0 through TD3) connect to drives in the corresponding cluster. See Figure 9 for the location of these ports.

- *Green* (ACT) - FC port activity
- *Green* (LINK) - Valid FC link

LAN-free backup and restore

The e2400-160 FC and the e2400-FC 2GB interface controllers can enable LAN-free backup/restore to allow the bulk of data traffic to be moved from the LAN to the storage area network (SAN).

See Figure 10 for an illustration of this process.
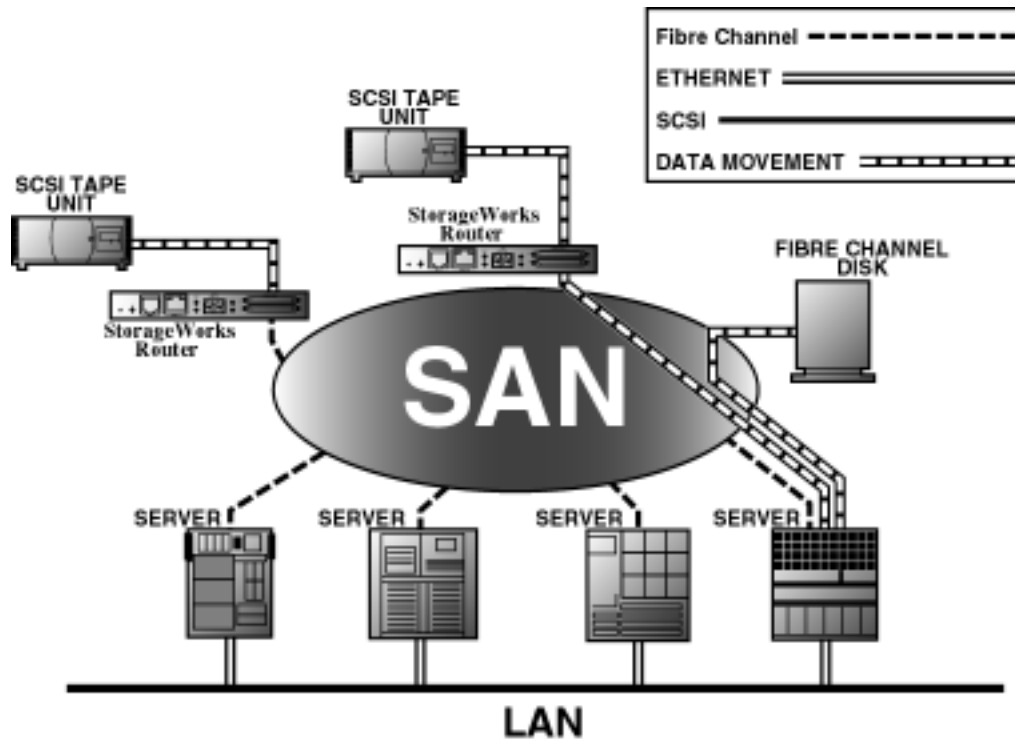
Figure 10 LAN-free backup and restore

SCSI over IP Protocol (SIPP)

Libraries can function in SIPP mode or non-SIPP mode, but not both. A library in SIPP mode looks the same as a library that is not in SIPP mode, except for the absence of the SCSI HBA and its cable, and the absence of any e1200–160 interface controllers. The mode is recognized when the library is powered-on.

If a library is equipped with SIPP functionality, it transports SCSI commands through the interface controller's FC port to the library's robotics controller Ethernet port. SIPP delivers the error handling and retry capabilities of a TCP/IP connection.

SIPP is compatible with e2400–260 and e2400–FC 2G interface controllers. It is not compatible with e1200–160 interface controllers. If there is more than one interface controller in the library, the "master" interface controller receives the move commands. The Interface Manager assigns as "IC SIPP Master" the first interface controller that it detects during the first boot of the library after SIPP is enabled. Use Command View TL to find out which IC is the IC SIPP Master.

Interface Manager card

The HP StorageWorks Interface Manager is a management card designed to consolidate and simplify the management of multiple FC interface controllers installed in the library. It also provides SAN-related diagnostics and management for library components including interface controllers, drives, and robotics. The Interface Manager card, in conjunction with HP StorageWorks Command View TL software, provides remote management of the library via a serial, telnet, or web-based GUI interface.

The Interface Manager card is located in drive cluster 0 to the right of the cluster controller card (see Figure 11).

1	Interface Manager card
2	Cluster controller card
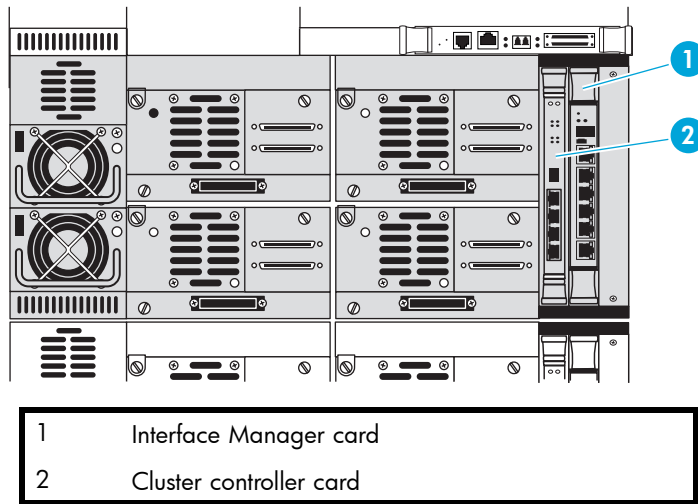
Figure 11 Interface Manager card

> **NOTE:**
> Additional advanced SAN security and management features are available via permanent software licenses. For more information, see the documentation that shipped with the Interface Manager and Command View TL software kit. Details are also available at http://www.hp.com/support/cvesl.
>
> Command View TL, provided with your library, is a utility that provides diagnostics and management by accessing devices through a LAN infrastructure. For more information on Command View TL, go to http://www.hp.com/support/cvesl.
>
> HP StorageWorks Library and Tape Tools (L&TT) is a diagnostic utility that can access devices across a FC infrastructure. For more information on L&TT, go to http://www.hp.com/support/tapetools.

The Interface Manager communicates with the management station over the LAN. The management station is a Microsoft® Windows-based PC (server) that hosts the Command View TL software. Ideally, the management station should have a static IP address and be dedicated for use with the Interface Manager and Command View TL software.

> **NOTE:**
> For information on using the Command View TL software, see the *HP StorageWorks Interface Manager and Command View TL user guide* that shipped with your library or visit http://www.hp.com/support/cvesl.

Any client machine on the LAN can communicate with the Interface Manager either through the GUI web interface, or through a Telnet command line interface (CLI). At a higher level, multiple libraries, each containing an Interface Manager card, can be connected to a single management station. Each Interface Manager card can communicate with only one management station, but the management station can communicate with multiple Interface Manager cards (see Figure 12).
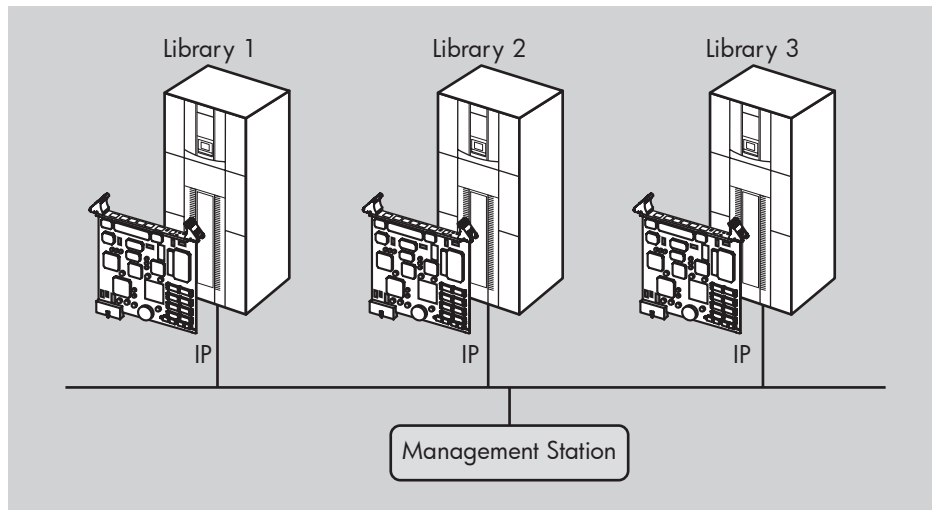
Figure 12 Multiple libraries connected to a single management station

> **NOTE:**
> HP recommends that you install Command View TL on a single dedicated server (management station) on the LAN. However, it is possible to install Command View TL on multiple servers. In this scenario, if one management station claims a library for management, then that same library cannot be managed by any other management station. A library can only be managed by one management station at a time.

Cross Linked libraries

A Cross Linked library is two or more library cabinets joined together by hardware, software, and firmware to function as a single high-capacity library. The Cross Link Kit connects a designated primary cabinet with another cabinet, which is called a secondary cabinet. The entire system is then referred to as a library. Specific differences between primary and secondary cabinets are explained in this section.

Cross Link cabinets functionality

The primary cabinet controls the robotics of the secondary cabinets. The primary cabinet functions much like a normal tape library, but it also retrieves data tapes from, sends data tapes to, and assigns storage locations in the secondary cabinets. To do this, the OCP of a primary cabinet has functionality in addition to that of a standalone library.

Secondary cabinets function mainly as storage units for the Cross Linked library. Their robotics are controlled by the primary cabinet. Secondary cabinets have very limited options on the OCP.

OCPs for all three types of cabinets (standalone, primary, and secondary) are presented in the section called "Operator control panel (OCP)".

> **NOTE:**
> In all other ways, the Cross Linked library has the same capabilities as a standalone system. Any differences in the operation of a Cross Linked library is noted in this guide.

System components

Cross Linked systems contain the following additional parts:

- Cross Link arm (CLM arm)
- Cross Link robotics controller (CLM robotics controller)

The CLM arm (see Figure 13) is used to send a shuttle between libraries. The shuttle carries a data tape cartridge so that it can be stored in a secondary cabinet or retrieved for use, as necessary.
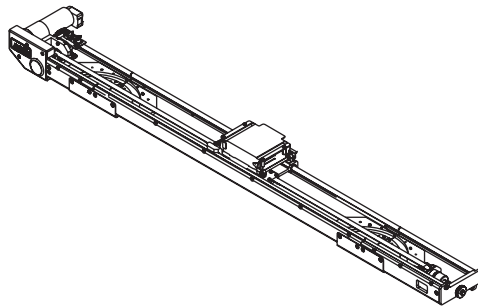
10667

Figure 13 CLM arm

The CLM robotics controller (see Figure 14) is located on the primary library only, just above the cabinet controller. In an individual library, this would be considered the number 5 drive bay. The controller contains the power supplies, CLM electronics PWA, and Ethernet hub for the CLM robotics. It supplies power to and controls the CLM.
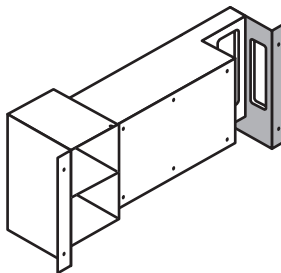
10664

Figure 14 CLM robotics controller

The CLM sensor board (see Figure 15) is located near the CLM motor assembly, at the far right of the CLM arm (in the primary cabinet) as you face the back of the libraries. It contains a spring loaded sensor assembly which detects the CLM shuttle when it is in the home position.
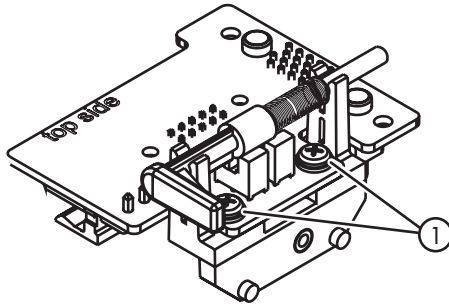
10665

1	#1 Phillips screws

Figure 15 CLM sensor board

The CLM motor assembly (see Figure 16) is located on the far right of the CLM arm as you face the back of the cabinets. The CLM arm runs along the top of the back of the cabinets. The CLM motor assembly is a single motor with a pulley that drives the CLM shuttle.
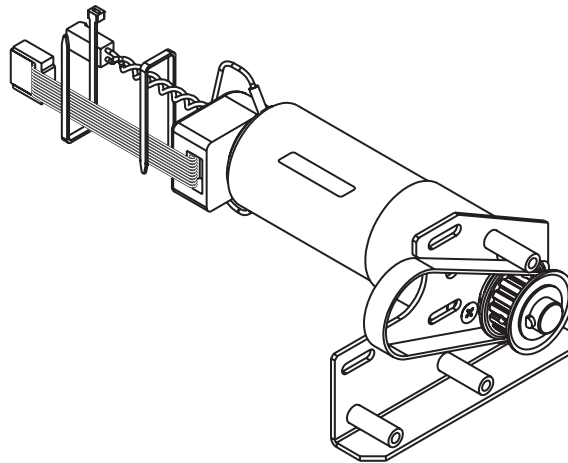
10636

Figure 16 CLM motor assembly

Library storage locations and slot numbering

The HP StorageWorks ESL E-Series tape library is an automated tape storage and retrieval library that may consist of up to 24 tape drives and up to 718 Ultrium tape cartridges, or 636 SDLT tape cartridges, or a combination of Ultrium and SDLT tape cartridges in a mixed-media system.

The library stores tape cartridges in the following locations:

- Left panels
- Right panels
- Back panels

To slide the slot panels out of the cabinet, press the slot panel latches down and pull the slot panel out of the cabinet (see Figure 17).
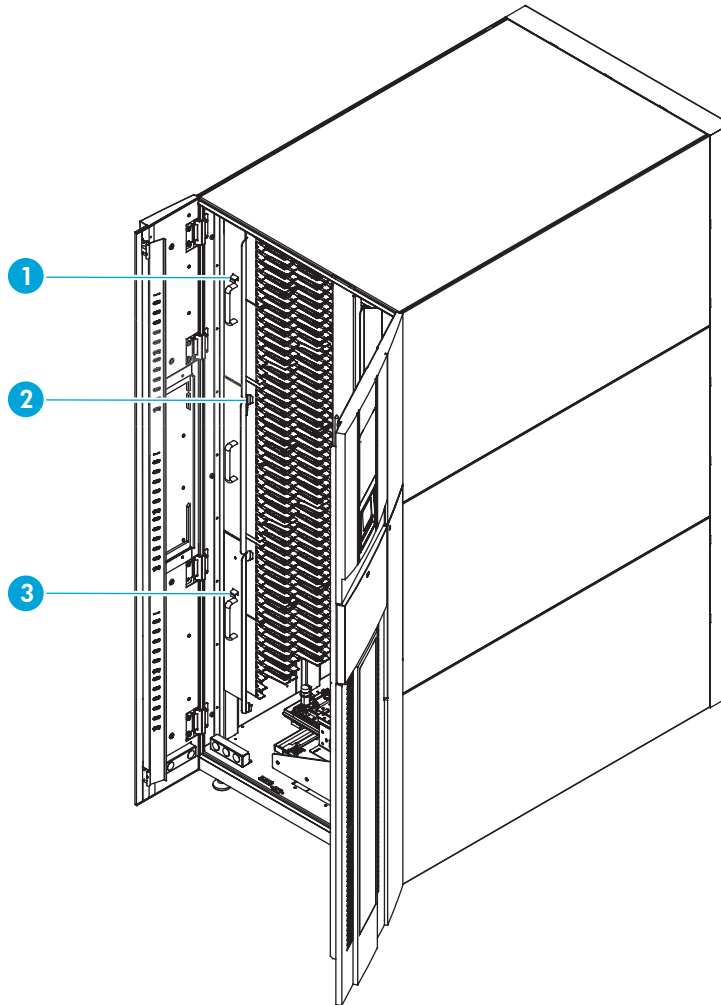
1	Upper load port panel latch
2	Middle load port panel latch
3	Lower load port panel latch

Figure 17 Sliding the slot panels out of the cabinet

Figure 18 shows the left panel bins. Begin with panel 1 and load top to bottom and left to right. Continue with panel 2 in the same manner, and finally, panel 3.
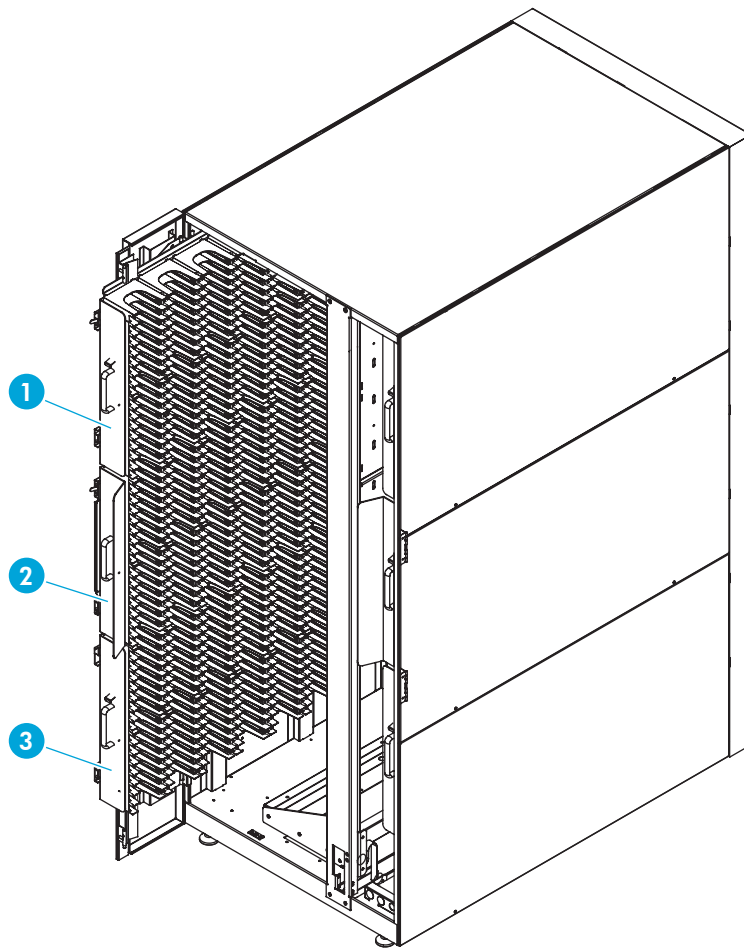
1	Panel 1
2	Panel 2
3	Panel 3

Figure 18 Bin shelf numbering, left panels

Figure 19 shows the right panel bins. Begin with panel 4 and load top to bottom and left to right. Continue with panel 5 in the same manner, and finally, panel 6.
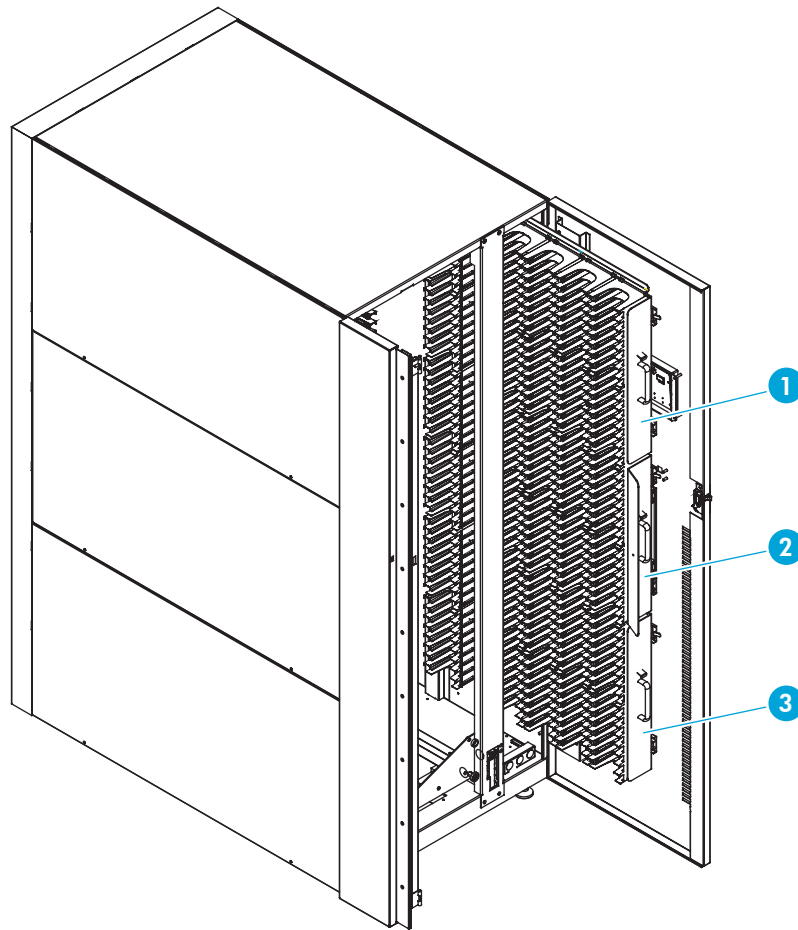
1	Panel 4
2	Panel 5
3	Panel 6

Figure 19 Bin shelf numbering, right panels

Figure 20 shows the back panel bins. Each column has seven slots. Begin at the top, with the panel corresponding to cluster 0, and load top to bottom and left to right. Continue loading each sequential cluster, top to bottom and left to right.

NOTE:

The number of slots located in the back panel varies with the number of drive clusters installed.
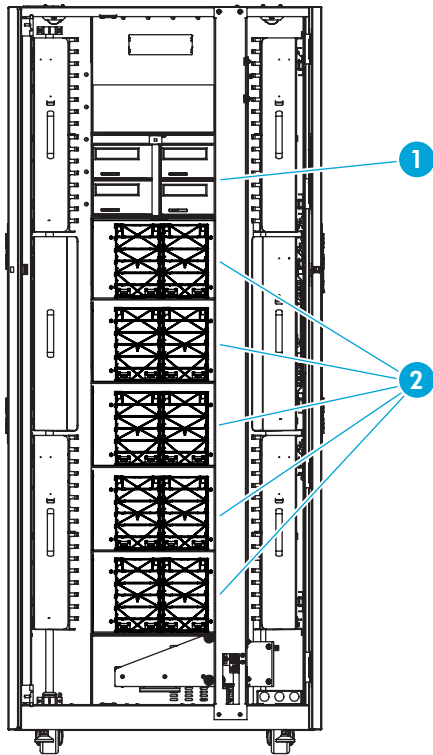
| 1 | Cluster 0 |
| 2 | Back panel bins |

Figure 20 Bin shelf numbering, back panel

📝 NOTE:

Upgrade capacity in ESL-E 322e and ESL-E 286e partial capacity units by adding one or more panels. For more information, see the *HP StorageWorks Interface Manager and Command View TL user guide* that shipped with your library or visit http://www.hp.com/support/cvesl.

Ultrium library

Table 3 shows storage capacity in Ultrium-only libraries with removable magazines.

Table 3 Ultrium library storage elements (removable magazines)

Number of drives	Load ports used	Load port capacity	User slots
1–4	0	0	712
1–4	Left only	16	696
1–4	Right only	32	680
1–4	Both	48	664
5–8	0	0	698
5–8	Left only	16	682
5–8	Right only	32	666
5–8	Both	48	650
9–12	0	0	684
9–12	Left only	16	668
9–12	Right only	32	652
9–12	Both	48	636
13–16	0	0	670
13–16	Left only	16	654
13–16	Right only	32	638
13–16	Both	48	622
17–20	0	0	656
17–20	Left only	16	640
17–20	Right only	32	624
17–20	Both	48	608
21-24	0	0	642
21-24	Left only	16	626
21-24	Right only	32	610
21-24	Both	48	594

NOTE:

Slots in enabled load ports cannot be used as data slots.

Table 4 shows storage capacity in Ultrium-only libraries with fixed magazines.

Table 4 Ultrium library storage elements (fixed magazines)

Number of drives	Load ports used	Load port capacity	User slots
1–4	0	0	718
1–4	Left only	18	700
1–4	Right only	36	682
1–4	Both	54	664
5–8	0	0	704
5–8	Left only	18	686
5–8	Right only	36	668
5–8	Both	54	650
9–12	0	0	690
9–12	Left only	18	672
9–12	Right only	36	654
9–12	Both	54	636
13–16	0	0	676
13–16	Left only	18	658
13–16	Right only	36	640
13–16	Both	54	622
17–20	0	0	662
17–20	Left only	18	644
17–20	Right only	36	626
17–20	Both	54	608
21-24	0	0	648
21-24	Left only	18	630
21-24	Right only	36	612
21-24	Both	54	594

NOTE:

Slots in enabled load ports cannot be used as data slots.

SDLT library

Table 5 shows storage capacity in an SDLT-only library with removable magazines.

Table 5 SDLT library storage elements (removable magazines)

Number of drives	Load ports used	Load port capacity	User slots
1–4	0	0	630
1–4	Left only	14	616
1–4	Right only	28	602
1–4	Both	42	588
5–8	0	0	618
5–8	Left only	14	604
5–8	Right only	28	590
5–8	Both	42	576
9–12	0	0	606
9–12	Left only	18	592
9–12	Right only	28	578
9–12	Both	42	564
13–16	0	0	594
13–16	Left only	18	580
13–16	Right only	28	566
13–16	Both	42	552
17–20	0	0	582
17–20	Left only	18	568
17–20	Right only	28	554
17–20	Both	42	540
21-24	0	0	570
21-24	Left only	18	556
21-24	Right only	28	542
21-24	Both	42	528

NOTE:

Slots in enabled load ports cannot be used as data slots.

Table 6 shows storage capacity in an SDLT-only library with fixed magazines.

Table 6 SDLT library storage elements (fixed magazines)

Number of drives	Load ports used	Load port capacity	User slots
1–4	0	0	636
1–4	Left only	16	620
1–4	Right only	32	604
1–4	Both	48	588
5–8	0	0	624
5–8	Left only	16	608
5–8	Right only	32	592
5–8	Both	48	576
9–12	0	0	612
9–12	Left only	16	596
9–12	Right only	32	580
9–12	Both	48	564
13–16	0	0	600
13–16	Left only	16	584
13–16	Right only	32	568
13–16	Both	48	552
17–20	0	0	588
17–20	Left only	16	572
17–20	Right only	32	556
17–20	Both	48	540
21-24	0	0	576
21-24	Left only	16	560
21-24	Right only	32	544
21-24	Both	48	528

NOTE:

Slots in enabled load ports cannot be used as data slots.

Mixed media library

An Ultrium or SDLT library at firmware level 2.0 or greater, can be converted into a mixed-media library by exchanging existing panel 1; panels 1 and 2; or panels 1, 2, and 3 for the type of media panel not yet in the library. Mixed-media libraries require library partitioning, with one media type per partition. See *HP StorageWorks Interface Manager and Command View TL users guide* to learn about and use library partitioning. Removable magazines are also required in a mixed-media library.

These requirements impact library operations in the following ways:

- If you convert panel 1 only to a new media type, neither load port can be used to insert or remove media from that panel. Because the left and right load ports are on panels 2 and 5, they must have the same media type as the rest of panels 2 and 5.
- If panels 1 and 2 (or 1, 2, and 3) are converted to a new media type, the left load port can be used to insert or remove media from the converted panels. The right load port is used to insert or remove media from the existing panels.
- The type of media added to your library is on the left side of the library only; therefore, the additional media type has only one column of load port capacity, and the existing media type has two columns of load port capacity.

These are important when determining the library storage capacity. Storage capacity in a mixed-media library depends on the quantity of panels exchanged, the location of media types you are using, whether the load ports are enabled, and the number of drives in the library.

NOTE:

In order to use mixed media, the library must be at firmware revision level 2.0 or greater. Update the firmware before installing mixed media in the library.

2 Library operations

This chapter describes the basic library operating procedures in:

- the section called "Taking ESD precautions"
- the section called "Preparing tape cartridges"
- the section called "Inserting tape cartridges"
- the section called "Closing the cabinet doors and access panels"
- the section called "Powering the library on and off"
- the section called "Using the OCP"
- the section called "Inserting tape cartridges into a fixed load port"
- the section called "Using removable magazines"

Taking ESD precautions

Components within the library contain static-sensitive parts. To prevent damage to these parts while performing installation, maintenance, or replacement procedures, observe the following precautions:

⚠ WARNING!

This product can only be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) fracturing resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

- Keep the cabinet turned off during all installation, maintenance, and replacement procedures.
- Keep the cabinet power cord connected to a grounded power outlet except when working with AC electrical components.

⚠ AVERTISSEMENT : ce produit ne peut être utilisé qu'avec un cordon d'alimentation approuvé par HP pour votre zone géographique. L'emploi d'un cordon d'alimentation non approuvé par HP peut avoir les conséquences suivantes : 1) non-conformité aux spécifications de sécurité du pays concerné ; 2) intensité admissible du conducteur insuffisante pouvant provoquer une surchauffe créant un risque de blessure ou d'endommagement du produit ; et 3) rupture pouvant exposer les contacts internes et créer un risque d'électrocution pour l'utilisateur. HP décline toute responsabilité en cas d'utilisation d'un cordon d'alimentation non approuvé.

⚠ VORSICHT: Dieses Produkt kann ausschließlich mit einem von HP für Ihre Region zugelassenen Netzkabel verwendet werden. Die Verwendung eines nicht von HP zugelassenen Netzkabels kann folgende Konsequenzen haben: 1) Nichteinhaltung der nationalen Sicherheitsbestimmungen, 2) Überschreiten der Strombelastbarkeit des Netzkabels, was zu einer Überhitzung und in der Folge zu Verletzungen und Sachschäden führen kann, 3) Stromschlaggefahr durch Kabelbruch und Freilegen der Adern. Für den Fall, dass ein nicht von HP zugelassenes Netzkabel verwendet wird, übernimmt HP keinerlei Haftung.

AVVERTENZA: Il presente prodotto può essere utilizzato esclusivamente con un cavo di alimentazione approvato da HP specifico per la regione geografica dell'utente. L'utilizzo di un cavo di alimentazione non approvato da HP potrebbe comportare: 1) la non conformità alle normative locali in materia di antinfortunistica; 2) l'insufficienza della capacità di amperaggio del conduttore con conseguente surriscaldamento e potenziali lesioni personali e/o danni alla proprietà; 3) la rottura del prodotto con conseguente esposizione dei contatti interni e potenziali lesioni da scosse. HP rifiuta ogni responsabilità in caso di utilizzo di un cavo di alimentazione non approvato da HP.

警告 ：本製品を使用する場合は、ご使用の地域で定められた HP 認定の電源コードを使用してください。HP が認定していない電源コードを使うと、以下の状態となる可能性があります。 1) ご使用の地域の安全な取り扱いに関する規定を満たさない。2) 導電体の電流容量が不十分だと、オーバーヒートし、けがや装置の損傷につながる。3) 破損の結果内部の接続個所がむき出しとなり、ユーザーが感電する危険がある。
HP 非認定電源コード使用時の問題に関して、 HP は一切の責任を負いかねます。

WAARSCHUWING: Dit product mag ALLEEN worden gebruikt met een netsnoer dat door HP is goedgekeurd voor gebruik in uw regio. Als u een netsnoer gebruikt dat niet door HP is goedgekeurd, kan dit ertoe leiden dat: 1) u niet voldoet aan de specifieke veiligheidsvoorschriften van uw land, 2) de aderdikte te klein is, waardoor oververhitting kan optreden met lichamelijk letsel en/of beschadiging van de apparatuur tot gevolg, en 3) het netsnoer breekt, waardoor de interne contacten bloot komen te liggen met het risico van letsel door elektrische schok. HP wijst alle aansprakelijkheid af als u een netsnoer gebruikt dat niet door HP is goedgekeurd.

ADVERTENCIA: este producto sólo puede utilizarse con un cable de alimentación aprobado por HP para su región geográfica específica. El uso de un cable de alimentación no aprobado por HP puede provocar lo siguiente: 1) el incumplimiento de requisitos de seguridad específicos del país; 2) insuficiente corriente permanente admisible de conductor que puede provocar un sobrecalentamiento y posibles lesiones personales o daños a la propiedad; y 3) una rotura que deje expuestos los contactos internos, lo que supone un peligro potencial de descarga eléctrica para el usuario. HP renuncia a toda responsabilidad en caso de utilizarse un cable de alimentación no aprobado por HP.

⚠ WARNING!

Avoid contact with the power supplies, EMI filter, and all other AC electrical components while the cabinet is connected to a power outlet.

AVERTISSEMENT : évitez tout contact avec les blocs d'alimentation, le filtre EMI et tous les autres composants électriques CA pendant que l'armoire est connectée à une prise de courant.

VORSICHT: Wenn der Schrank an das Stromnetz angeschlossen ist, dürfen keinesfalls Netzteile, EMI-Filter oder andere elektrische Komponenten berührt werden.

⚠ **AVVERTENZA:** Evitare il contatto con alimentatori, filtri EMI e qualsiasi altro componente elettrico AC quando il cabinet è collegato a una presa di corrente.

⚠ 警告：キャビネットが電源コンセントに接続している間は、電源、EMI フィルタ、およびその他すべての AC 電源装置に触らないようにしてください。

⚠ **WAARSCHUWING:** Raak de voedingseenheden, het EMI-filter en de andere elektrische onderdelen niet aan als kast is aangesloten op een stopcontact.

- Use an antistatic wrist strap when touching internal cabinet components. To use the wrist strap properly, place the band around your wrist and attach the clip to the cabinet frame. Keep the strap on until you are ready to close the cabinet doors.
- Keep static-sensitive parts in their shipping containers until ready for installation.
- Do not place static-sensitive parts on any metal surface. If you need to put down a static-sensitive part, place it inside its protective shipping bag or on a grounded antistatic mat.
- Avoid direct contact with static-sensitive parts. Avoid touching connectors and discrete components.
- Close cabinet door and access panel when not working on the cabinet.
- Be careful when installing the cabinet or handling components in dry climates or environments where cold weather heating is used. Environments such as these with lower relative humidity have greater potential to produce static electricity.

📓 NOTE:

In environments with high potential for static electricity, take additional precautions, such as the use of an antistatic smock or a grounded antistatic mat.

Preparing tape cartridges

⚠ CAUTION:

Handle tape cartridges with care. Do not drop or mishandle them, or place them near sources of electromagnetic interference. Rough handling can damage the cartridge, making it unusable and potentially hazardous to the tape drives.

Labeling tape cartridges

⚠ CAUTION:

The misuse and misunderstanding of bar code technology can result in backup and restore failures. To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, see the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from http://www.hp.com/support.

📓 NOTE:

For information on ordering tape cartridges and bar code labels, see the ordering sheet that shipped with your library.

Attaching a bar code label to each tape cartridge enables the library and application software to identify the cartridge quickly, thereby speeding up inventory time. Make it a practice to use bar code labels on your tape cartridges. Your host software may need to keep track of the following information and the associated bar code:

- Date of format or initialization
- Tape's media pool
- Data residing on the tape
- Age of the backup
- Errors encountered while using the tape (to determine if the tape is faulty)

📝 **NOTE:**

If you have more than 100 unlabeled tape cartridges, your library will hang during inventory or when you power on the library. When this happens, Going on line displays in the OCP.

Ultrium bar code labels

Ultrium cartridges have a recessed area located on the face of the cartridge next to the write-protect switch. Use this area for attaching the adhesive-backed bar code label (see Figure 21). Do not apply labels onto the cartridge except in this designated area.

△ **CAUTION:**

The bar code label should be applied as shown in Figure 24, with the alphanumeric portion facing the hub side of the cartridge. Never apply multiple labels onto a cartridge, because extra labels can cause the cartridge to jam inside a tape drive.
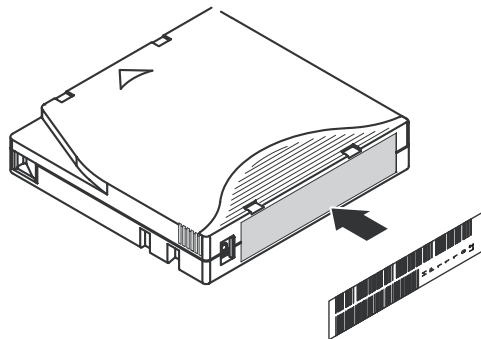
10116

Figure 21 Attaching an Ultrium bar code label

For successful operation of your tape library, place the bar code label *entirely* within the recessed area, ensuring that no part of the label is outside of it (see Figure 22).
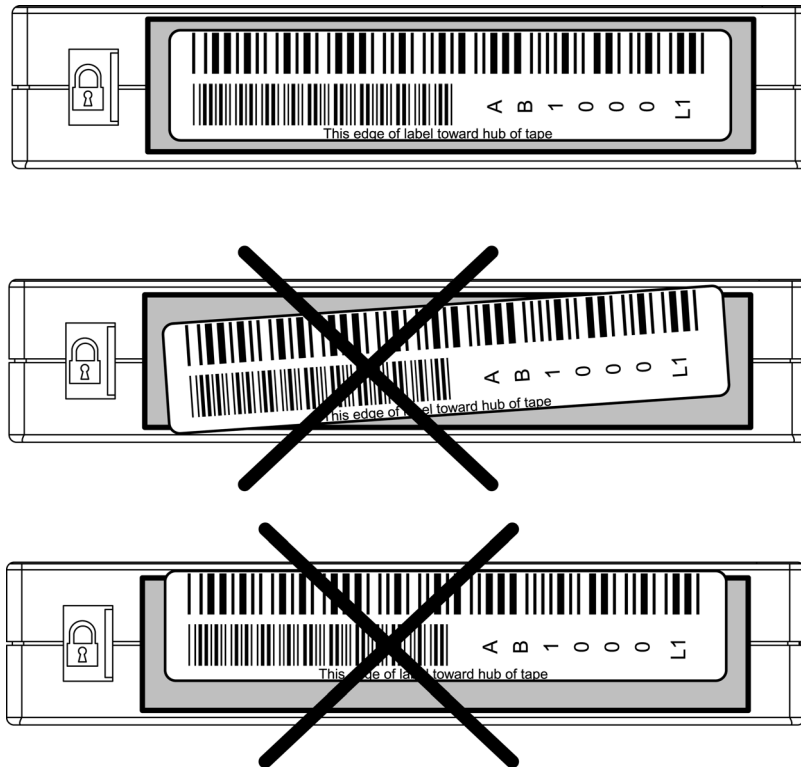
Figure 22 Proper Ultrium bar code label placement

SDLT bar code labels

SDLT cartridges have a front slide slot located on the face of the cartridge next to the write-protect switch (see Figure 23). Inserting the bar code label by sliding it into the slot.

⚠ CAUTION:

Do not apply labels to the top, bottom, sides, or back of the cartridge as this may cause damage to the tape drive, or interfere with reliable operation.
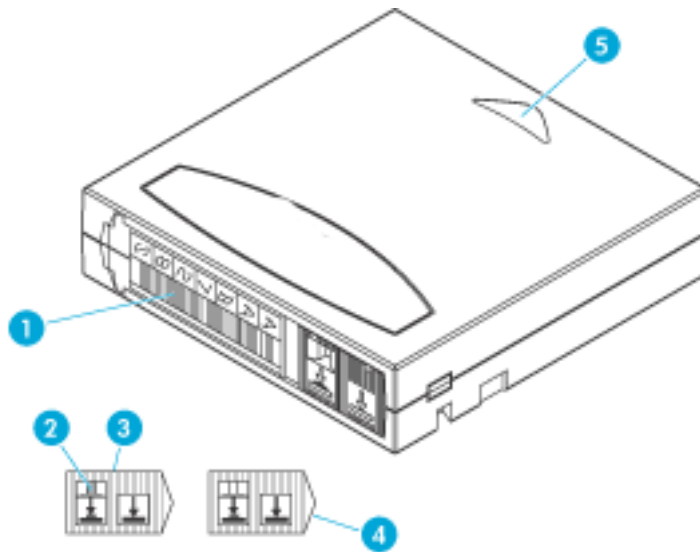
1	Barcode label
2	Orange window
3	Write-protect—slide left
4	Write enabled (default)—slide right
5	Insertion arrow

Figure 23 Inserting an SDLT bar code label

Media label identifiers

Be sure to use the proper bar code labels for your drive technology. Table 7 lists the identifier that is found at the end of 7- or 8-character SDLT and Ultrium bar code labels.

⚠ CAUTION:

To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, see the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from http://www.hp.com/support.

Table 7 Media label identifiers

Cartridge type	Density	Label identifier
SDLT	110/220 GB	S or S1
SDLT	160/320 GB	S or S2
SDLT 600	300/600 GB	2
Ultrium 230	100/200 GB	L1
Ultrium 460	200/400 GB	L2
Ultrium 960	400/800 GB	L3

Setting the write-protect switch

Each tape cartridge has a sliding write-protect switch. This switch determines whether new data can be written to the tape cartridge (write-enabled) or whether data on the tape cartridge is protected from being erased or overwritten (write-protected).

Write-protecting Ultrium tape cartridges

By moving the switch to the left (Figure 24), the tape cartridge is write-enabled. By moving the switch to the right, the tape cartridge is write-protected.
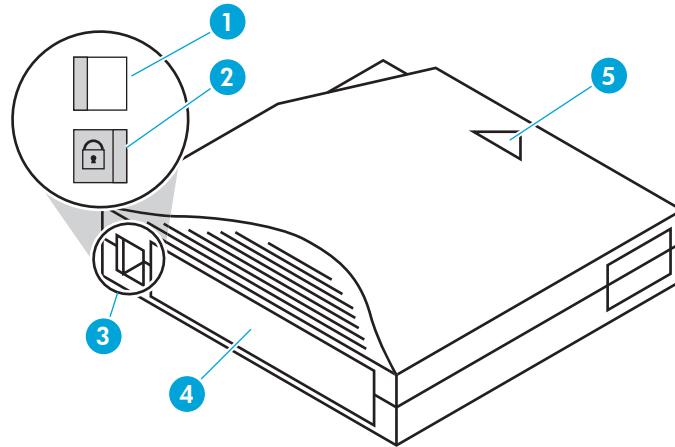
1	Write enabled
2	Write protected
3	Write protect switch
4	Bar code label
5	Insertion arrow

Figure 24 Write-protecting Ultrium tape cartridges

Write-protecting SDLT tape cartridges

By moving the switch to the left (Figure 25), the tape cartridge is write-protected (orange indicator is visible). By moving the switch to the right, the tape cartridge is write-enabled (orange indicator is not visible).
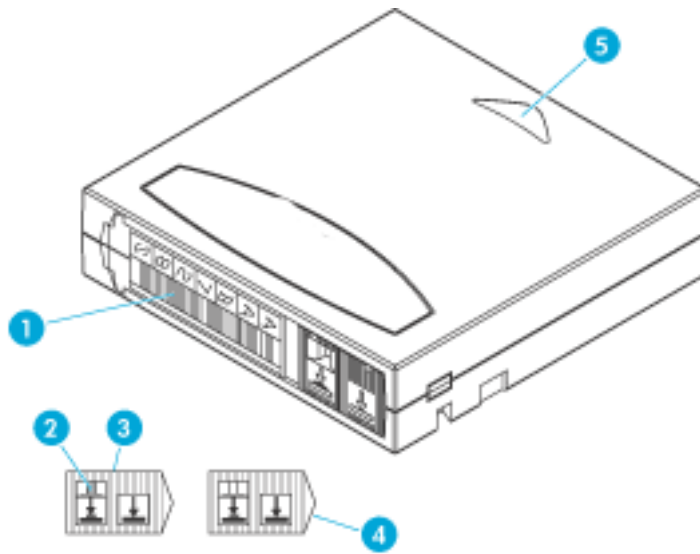
1	Barcode label
2	Orange window
3	Write-protect—slide left
4	Write enabled (default)—slide right
5	Insertion arrow

Figure 25 Write-protecting SDLT tape cartridges

Inserting tape cartridges

Load tape cartridges into the library starting with the left side panels, then the right side panels, and finally the back panel (see the section called "Library storage locations and slot numbering" for detailed installation procedures). Be sure all cartridges are properly positioned with the barcode facing you and fully seated in the bins.

△ CAUTION:

Handle tape cartridges with care. Do not drop or bang them, or place them near sources of electromagnetic interference. Rough handling can displace the tape leader, making the cartridge unusable and potentially hazardous to the tape drives.

Closing the cabinet doors and access panels

The library has one front door and one back door.

1. Close and lock the front door using the key provided in the accessory kit (see Figure 26).

📝 NOTE:

The laptop tray must be lowered to access the front door latch.

1	Power button
2	Front door latch
3	Laptop tray
4	Laptop latch
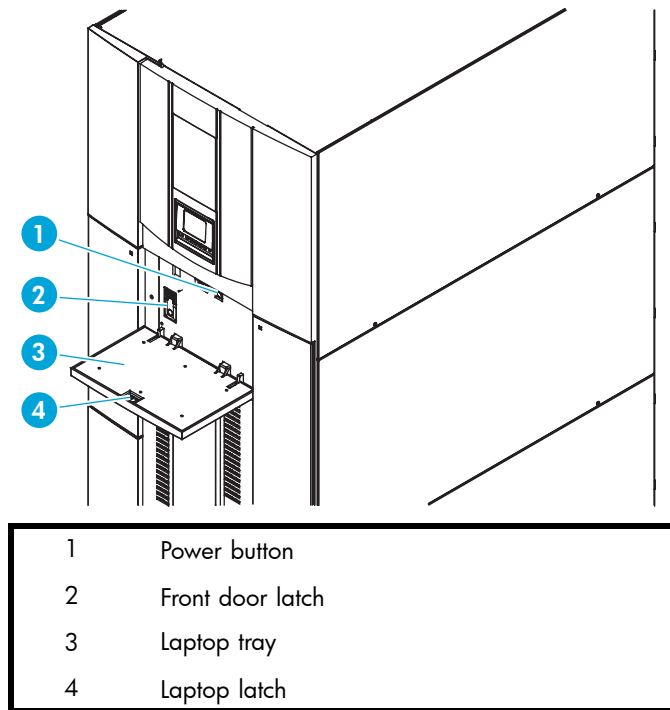
Figure 26 Closing the front door

2. Close and lock the back door using the key provided in the accessory kit (see Figure 27).

1	Back door
2	Back door latch
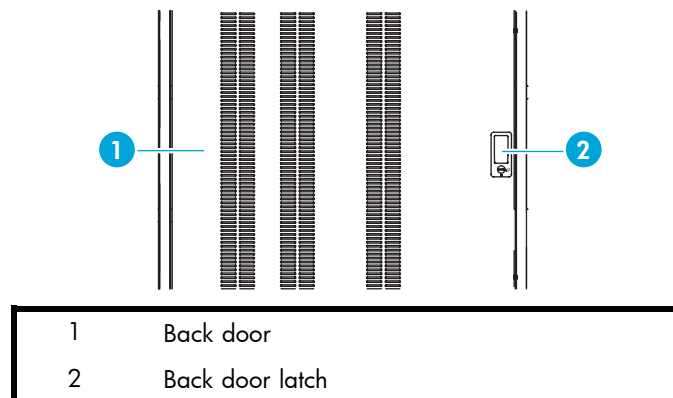
Figure 27 Closing the back door

Powering the library on and off

This discussion contains:

- the section called "Powering on the library"
- the section called "Placing the library on-line or off-line"
- the section called "Powering off the library"

Powering on the library

To power on the library:

1. Open the back door of the library cabinet and flip the breaker switches to the on position (right).

The breaker switches are on the power distribution unit located on the bottom right side of the library cabinet.

2. Verify that power cables are firmly in place.

3. Close all library doors.

4. Power on the power switch located behind the laptop tray (see Figure 26).

📝 NOTE:
The library requires several minutes to power on. Nothing displays on the OCP for the first few minutes of this process.

Placing the library on-line or off-line

To place the library on- or off-line:

1. With the library powered on, press the **Ops** button on the OCP to access the **Operations** screen.

2. Select **Cabinet** and use the Up and Down arrows to take the library off-line or place it on-line.

For more information on the **Operations** screen, see the section called "Operations screen".

Powering off the library

To power off the library:

1. Place the library off-line, see the section called "Placing the library on-line or off-line".

The library robotics completes any current commands and then stops.

2. Verify that the OCP display indicates "Off-line" from the **Operations** screen.

3. Verify that the media picker is empty.

4. Verify that no backups are in process.

5. Turn off the power switch located on the front of the library (see Figure 26).

6. Wait for the library to complete the shutdown process. (This usually takes 30 seconds, but may take up to two minutes.)

7. Open the back door of the library cabinet and flip the breaker switches to the off position (left). The breaker switches are on the power distribution unit located on the bottom left side of the library cabinet.

📝 NOTE:
When powering off the library, ensure that the two breaker switches on the power distribution unit are in the off (left) position.

Using the OCP

The OCP is located on the front of the library. The menus on the OCP allow you to obtain information about the library, execute library commands, and test library functions.

The status bar at the top of the OCP displays library status at all times, at the left of the bar. The status can be Online, Going Online, or Offline, followed by a warning level: OK, Warning, or Critical. In addition, when a library firmware upgrade is in progress, Upgrading FW is displayed on the right side of the status bar.

NOTE:

If the library reports a status of Warning or Critical, check the Health Status screen to see which component is causing that status. See the section called "Viewing library health status information" for details.

NOTE:

For Cross Linked systems, there will be different OCP menu options for the primary and secondary cabinets in the system. The sections below present information for a standalone library, the primary cabinet in a Cross Linked system, and the secondary cabinet in a Cross Linked system.

Before using the OCP to perform library functions, familiarize yourself with:

- the section called "Home screen"
- the section called "OCP buttons"

Home screen

The first screen the OCP displays after library initialization is the home screen. This screen displays library status and provides information on the IP address, number of bins, tape drives, ports, and date (see Figure 28, Figure 29, and Figure 30).
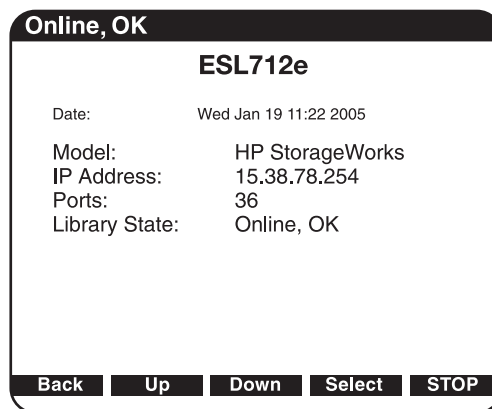
10646

Figure 28 Home screen on standalone library

```
Online, OK

        ESL712e (Master)

Date:              Wed Jan 19 11:22 2005

Model:             HP StorageWorks
IP Address:        15.38.78.254
Ports:             36
Library State:     Online, OK




 Back      Up      Down    Select    STOP
```
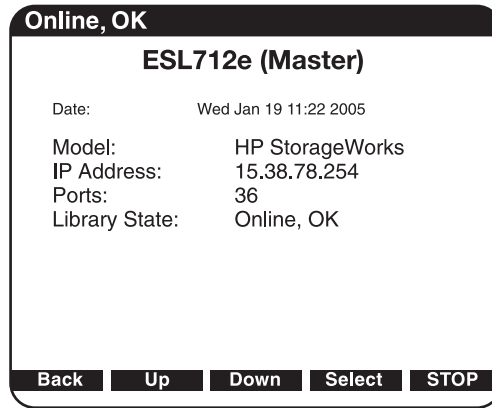
10642

Figure 29 Home screen on primary library


```
Online, OK

            ESL712e

Date:              Wed Jan 19 11:22 2005

Model:             HP StorageWorks
IP Address:        10.0.0.19
Ports:             36
Library State:     Online, OK




 Back      Up      Down    Select    STOP
```
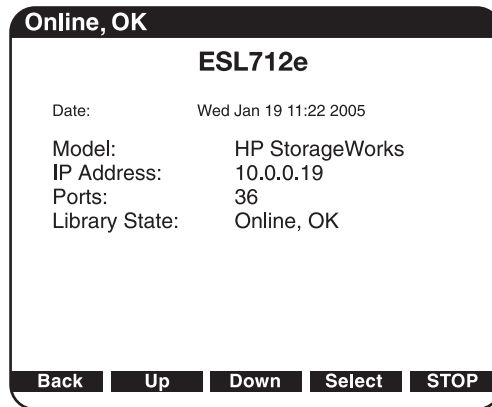
10666

Figure 30 Home screen on secondary library

OCP buttons

At the bottom of each OCP screen are up to five button labels. These labels indicate the functions of the five push buttons below the OCP. To select a function, press the push button directly below the button label on the OCP screen.

OCP components

The OCP allows you to perform various functions on the library. Table 8 provides a list of the OCP functionality available from the Home screen of a standalone library or the Primary cabinet of a Cross Linked library (see Figure 28).

Table 8 OCP components for a standalone library or the primary cabinet of a Cross Linked system

Screen	Displays	Options to view or select
Home	Status	Library Name, Date, Model Number, IP Address, Configured Slots, Configured Drives, Ports, Library State
Menu	Menu items	Library, Cabinet, Health Status, Setup, Service, Event Log

Screen	Displays	Options to view or select
Ports	Load Ports	Open Left Load Port, Open Right Load Port, Open Both Load Ports
Ops	Operations	Library (primary only) • Online • Offline Cabinet • Online • Offline • Inventory • Reboot • Details (standalone only) CLM (primary only) • Details • Reboot Move Media • Source Type • Source Position • Destination Type • Destination Position • Perform Move Now Drives All • Reset • Unthread • On • Off Drives On/Off • Details • Reset • Unthread • On • Off
Diags	Diagnostics	Robotics Self Test, Robotics to Home Position, Calibrate Cabinet, CLM Self Test (primary only), CLM to Home Position (primary only), Read Cabinet Serial Number, Read Cabinet IEEE Id, Read Cabinet Type, Sequential Slot Test, Sequential Drive Test, Random Test, Random Slot Test, Random Slot to Drive Test

Table 9 OCP components for a secondary cabinet of a Cross Linked system

Screen	Displays	Options to view or select
Home	Status	Library Name, Date, Model Number, IP Address, Slots, Drives, Ports, Library State
Menu	Menu items	Cabinet, Health Status, Setup, Event Log
Ports	Load Ports	Open Left Load Port, Open Right Load Port, Open Both Load Ports
Ops	Operations	Cabinet • Online • Offline • Inventory • Reboot Drives All • Reset • Unthread • On • Off Drives On/Off • Details • Reset • Unthread • On • Off
Diags	Diagnostics	Robotics Self Test, Robotics to Home Position, Calibrate Cabinet, Read Cabinet Serial Number, Read Cabinet IEEE Id, Read Cabinet Type

NOTE:

The **STOP** button located in the bottom right-hand portion of the OCP is available from every OCP screen. This button stops the cabinet robot from moving and takes the cabinet offline. To start the robotics and return the cabinet to the online state, press the **Start** button.

The following sections provide information on each function available from the library OCP:

- the section called "Menu screen"
- the section called "Load Ports screen"
- the section called "Operations screen"
- the section called "Diagnostics screen"
- the section called "Stop button"

Menu screen

The **Menu** screen provides access to contact and cabinet information, as well as providing a way to setup library information.

To access the **Menu** screen, press **Menu** from the **Home** screen. The OCP displays the Menu screen (see Figure 31):

```
┌─────────────────────────────────────┐
│ Online                              │
│                                     │
│              Menu                   │
│                                     │
│                                     │
│             Library                 │
│             Cabinet                 │
│              Setup                  │
│             Service                 │
│            Event Log                │
│                                     │
│                                     │
│                                     │
│                                     │
│  Back     Up    Down   Select  STOP │
└─────────────────────────────────────┘
```
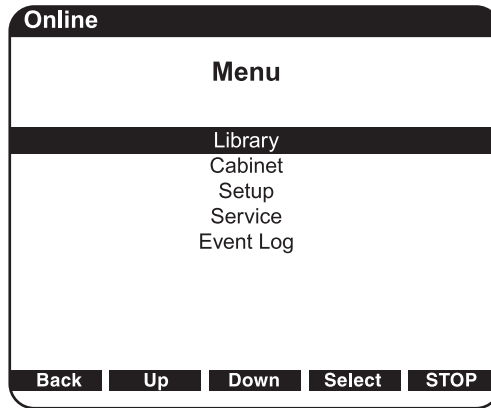
Figure 31 Menu screen

The **Menu** screen provides choices detailed in:

- the section called "Viewing library information (standalone libraries or primary cabinets only)" This is not available on secondary cabinets of Cross Linked systems
- the section called "Viewing cabinet information"
- the section called "Viewing library health status information"
- the section called "Viewing and editing setup information"
- Viewing the library service menu (for service personnel only)
- the section called "Viewing the event log"

Viewing library information (standalone libraries or primary cabinets only)

To view library information:

1. From the **Menu** screen, use the Up and Down arrows to highlight **Library**, then press **Select**.

   The **Library** screen displays (see Figure 32).

```
┌─────────────────────────────────────┐
│ Online OK                           │
│                                     │
│              Library                │
│                                     │
│   Software:          Version 3.00p  │
│                      Build 90       │
│   Cabinet Contr:     3.8.29         │
│   Cabinet Robot:     3.8.30         │
│   Serial Number:     US50341033     │
│   IEEE ID:           CO5984000200082│
│   Configured Drives: 11             │
│                                     │
│                                     │
│                                     │
│  Back                         STOP  │
└─────────────────────────────────────┘
```
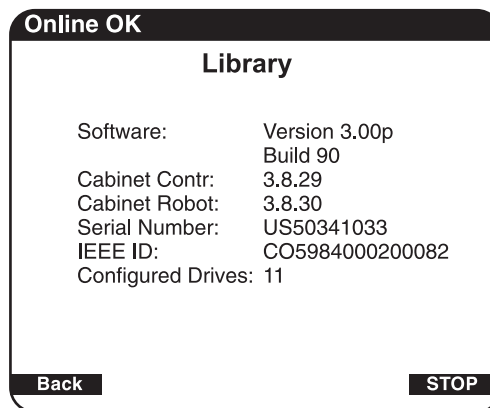
10640

Figure 32 Library screen

The **Library** screen displays the following information about the library:

- Software - software version currently loaded on the library
- Cabinet Contr - the firmware revision on the cabinet controller smart media
- Cabinet Robot - the firmware revision on the robotics controller smart media
- Serial Number - serial number of the library

- IEEE ID - internal network identification of the cabinet that includes the date of manufacture, product type, and serial number
- Drives - shows the total number of drives for all cabinets combined (primary cabinet only)
- Slots - shows the total number of slots for all cabinets combined (primary cabinet only)
- Ports - shows the total number of ports for all cabinets combined (primary cabinet only)

2. When you are finished viewing library information, press **Back** to return to the **Menu** screen.

Viewing cabinet information

To view library cabinet information:

1. From the **Menu** screen, use the Up and Down arrows to highlight **Cabinet**, then press **Select** to display the **Cabinet** screen (see Figure 33 or Figure 34):

```
Going Online, OK

              Cabinet

Model:          HP StorageWorks
                        ESL712E
Seial Number:   US50341033
IEEE:           0050840000200032
WWN:            50:05:08:40:44:01:84:00


                SDLT   LTO    Total    Unk
Slots:          260    306    574      0


    Back      Up      Down            STOP
```
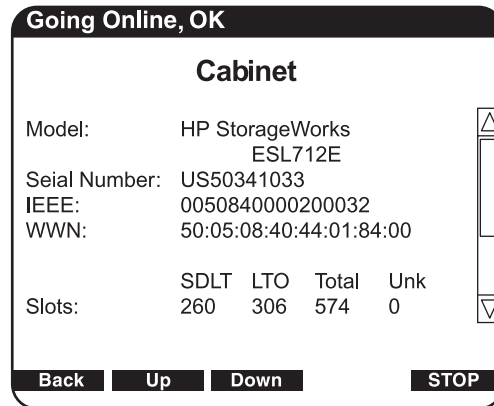
Figure 33 Cabinet screen on standalone library or primary cabinet

```
Going Online, OK

              Cabinet

Model:          HP StorageWorks
                        ESL712E
Seial Number:   US50341033
IEEE Number:    0050840000200032

                SDLT   LTO    Total    Unk
Slots:          260    306    574      0


    Back      Up      Down            STOP
```

10648
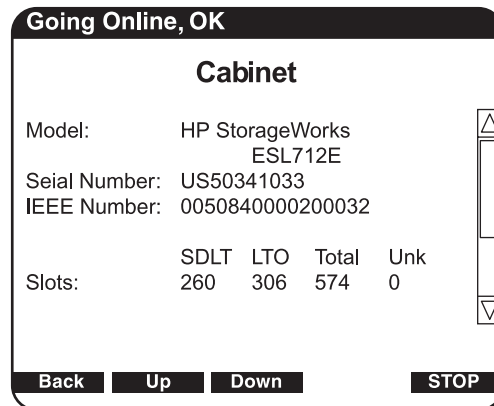
Figure 34 Cabinet screen on secondary cabinet

The **Cabinet** screen displays the following information about the library cabinet:

- Cabinet - name of the cabinet
- Model - model number of the cabinet
- Serial Number - serial number of the cabinet
- IEEE ID - internal network identification of the cabinet that includes the date of manufacture, product type, and serial number
- WWN - world wide name of the library (not present on secondary cabinet of a Cross Linked system)
- Slots - number of slots configured in the cabinet

- Drives - number of drives configured in the cabinet
- Load Ports - number of load port slots configured in the cabinet

2. When you are finished viewing cabinet information, press **Back** to return to the **Menu** screen.

Viewing library health status information

The **Health Status** screen captures current information about any errors present at the time **Health Status** is selected. Information about sensors with state of Down, Warning, or Critical is displayed, along with information on any drives with Load Error, Not communicating, Cleaning requested, or Cleaning required.

📝 NOTE:

Library status is continually displayed on the left side of the black bar at the top of the OCP. Possible status messages are: Online, OK; Online, Warning; and Online, Critical. When multiple errors exist, the most serious status is reported. The **Health Status** screen is useful when the status bar shows warning or critical status.

To view the health status of the library:

1. From the **Menu** screen, use the Up and Down arrows to highlight **Health Status** then press **Select**.
2. If you are performing this task from the primary cabinet of a Cross Linked system, select the appropriate Cabinet# from the list displayed.

   If there are no errors, the following **Health Status** screen displays (see Figure 35).
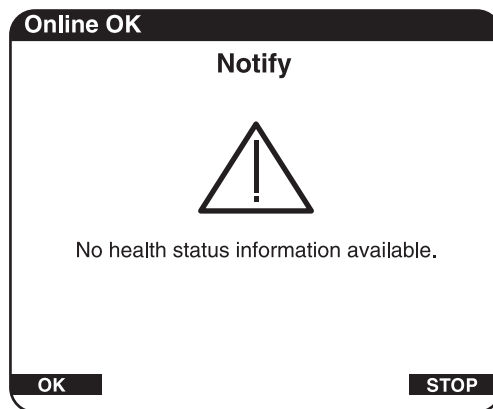
Figure 35 Health Status screen when no errors exist

   If there are errors, present, they will be listed on the screen.
3. When you are finished viewing the error information, press **Back** to return to the **Menu** screen.

📝 NOTE:

The **Health Status** information is not saved. When you exit this screen, the information is gone.

Viewing and editing setup information

To view or edit the setup information:

1. From the **Menu** screen, use the Up and Down arrows to highlight **Setup**, then press **Select**.
2. The library prompts you for your password. Enter the 6-digit password and wait for validation. The response may not be immediate.

NOTE:
The default password is 001122.

The **Setup** screen displays (see Figure 36 and Figure 37).
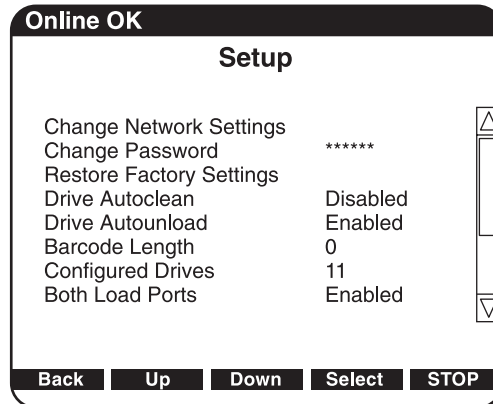
10641

Figure 36 Setup screen on standalone library or primary cabinet
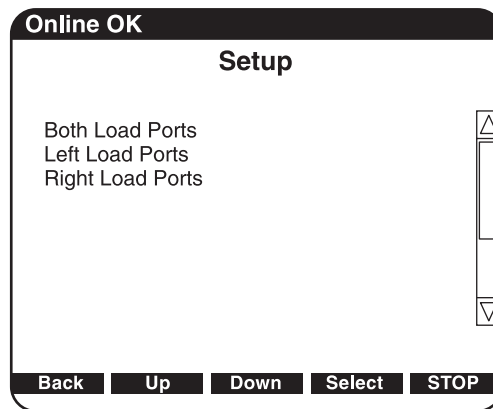
10649

Figure 37 Setup screen on secondary cabinets

The **Setup** screen displays the following information:

- Change Network Settings (not present on secondary cabinet of a Cross Linked system)
- Change Password (not present on secondary cabinet of a Cross Linked system)
- Restore Factory Settings (not present on secondary cabinet of a Cross Linked system)
- Drive Autoclean (not present on secondary cabinet of a Cross Linked system)
- Drive Autounload (not present on secondary cabinet of a Cross Linked system)
- Barcode Length (not present on secondary cabinet of a Cross Linked system)
- Configured Drive (not present on secondary cabinet of a Cross Linked system)
- Both Load Ports
- Left Load Port
- Right Load Port

3. To edit the setup information, use the Up and Down buttons to highlight the section and press **Select**.

- To change network settings, use the Up and Down buttons to select **Change Network Settings** and press **Select**. See the section called "Viewing and editing the network settings (standalone libraries or primary cabinets only)" to take the next steps.
- To change the password, use the Up and Down buttons to select **Change Password** and press **Select**. To change the password, enter a 6-digit password using the numbers provided on the OCP. Press **Select** to accept the new password. When prompted, re-enter the password to confirm.
- To restore factory settings, use the Up and Down buttons to select **Restore Factory Settings**, then press **Select**. When the confirmation screen displays, select **Yes** to begin the restoration.
- To enable autoclean, use the Up and Down buttons to select **Autoclean** and press **Select**. The default is disabled.
- To enable or disable autounload, use the Up and Down buttons to select **Autounload** and press **Select**, then use the Up and Down buttons to choose **Enable** or **Disable**, then press **Select**.
- To set the barcode length, use the Up and Down buttons to select **Barcode Length** and press **Select**. Next, use the Up and Down buttons to display the appropriate number (from 1 to 9, or back to 0), then press **Select**. Default barcode length is 0, which means that a barcode of any length will be accepted.
- To configure the number of tape drives in the cabinet, use the Up and Down arrows to select the number of drives and press **Select**.

△ CAUTION:

If you have a partially filled drive cluster, change the number of tape drives to reflect the number of installed drives. For example, a cluster with two drives will show as four drives total with two being inactive. Use the **Setup** menu to change Configured Drives to 2 instead of 24, which is the default. This helps avoid potential issues with your application software.

- To enable both load ports, use the Up and Down arrows to select **Both Load Ports**, then press **Select**. The default is disabled.
- To enable the left load port, use the Up and Down arrows to select **Left Load Port (##)**, then press **Select**. The default is disabled.
- To enable the right load port, use the Up and Down arrows to select **Right Load Port (##)**, then press **Select**. The default is disabled.
- When you are finished viewing/editing the setup information, press **Back** to return to the **Menu** screen.

Viewing and editing the network settings (standalone libraries or primary cabinets only)

To view or edit the network settings:

1. From the **Menu** screen, use the Up and Down arrows to highlight **Setup**, then press **Select**.

2. The library prompts you for your password. Enter the 6-digit password and wait for validation. The response may not be immediate.

NOTE:
The default password is 001122.

The **Setup** screen displays (see Figure 38).

```
┌──────────────────────────────────────┐
│ Online, OK                           │
│                                      │
│            Network Settings          │
│                                      │
│   IP Address        15.38.78.254     │
│   IP Subnet Mask    255.255.248.0    │
│   IP Gateway        15.38.72.1       │
│   DHCP              Disabled         │
│   Save Network Settings Now          │
│                                      │
│                                      │
│                                      │
│                                      │
│  Back     Up     Down   Select  STOP │
└──────────────────────────────────────┘
```
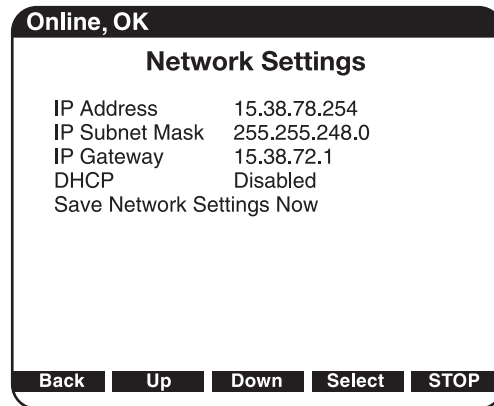
Figure 38 Network Settings screen on standalone libraries or primary cabinets

3. Use the Up and Down buttons to select **Change Network Settings** and press **Select**.

   The Setup screen displays the following information:

   - IP Address
   - IP Subnet Mask
   - IP Gateway
   - DHCP
   - Save Network Settings Now

4. To edit the Network Settings information, use the Up and Down buttons to highlight the section and press **Select**.

NOTE:
Setting the IP address requires one additional step. After pressing **Select**, power down from the Menu screen.

Viewing the event log

In some cases, HP telephone support will ask you to view the events log in order to prepare your service representative to assist you. To view the event log:

1. Press **Menu** from the **Home** screen.

2. Use the Down button to highlight **EVENT LOG**, then press **Select**.

3. Scroll through the events listed in the log (see Figure 39) using the Down button.

```
┌──────────────────────────────────────┐
│ Online, Warning                       │
│                                        │
│            Event Log                   │
│                                        │
│  * Aug 21 2004 11:17:49 warn AC1.5 Voltage │
│  threshold crossing sensor may need attention, │
│  status warning                        │
│  *Aug 21 2004 11:17:49 warn AC1 input Status │
│  sensor may need attention, status warning │
│  * Aug 21 2004 11:17:38 warn Drive Cluster 2 │
│  Bottom Cluster Power Supply Present sensor │
│  may need attention, status warning    │
│                                        │
│                                        │
│    Back      Up      Down        STOP  │
└──────────────────────────────────────┘
```
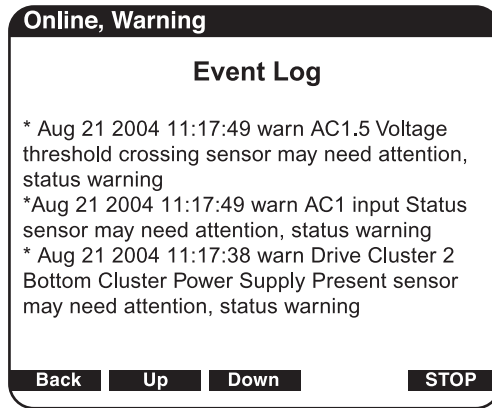
Figure 39 Event Log screen on all libraries and cabinets

The items are listed chronologically, with the most recent event listed first.

Load Ports screen

The **Load Ports** screen allows you to lock or unlock a load port. To access the **Load Ports** screen, press **Ports** from the **Home** screen. The OCP displays the **Load Ports** screen (see Figure 40).

```
┌──────────────────────────────────────┐
│ Online, OK                            │
│                                        │
│                                        │
│                                        │
│  Open Right Load Port   31 Empty      Closed │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│    Back      Up      Down    Select   STOP │
└──────────────────────────────────────┘
```
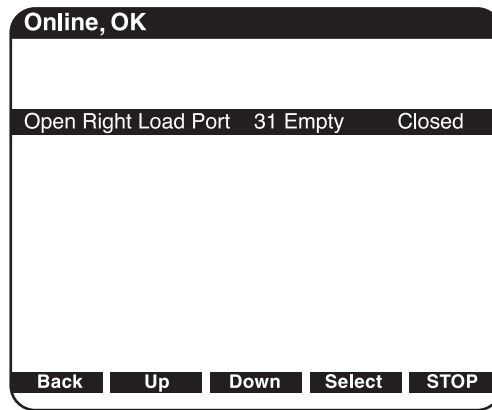
Figure 40 Load Ports screen on all libraries and cabinets

1. Use the Up and Down arrows to highlight the specific load port, then press **Select**.
2. Use the Up and Down arrows to choose **Open**, then press **Select**.

   A warning message appears to remind you to open the load port door.

   △ CAUTION:
   ───
   Ensure that the load port door is open so that the door's clip is not damaged when the load port ejects.
   ───

   Open the load port door and press **OK**. The load port moves forward.
3. Pull the load port towards you to access the removable magazines.
4. The OCP displays `Opening Left Load Port Done`, or `Opening Right Load Port Done`, depending on which port you selected.
5. Press **OK** to acknowledge that the load port is open.
6. When you are done, push the load port back into the cabinet until you hear it click into place.
7. Close the load port door.
8. When you are finished viewing the load port status, press **Back** to return to the Menu screen.

**NOTE:**

When a load port is opened and closed, the load port is inventoried.

Operations screen

The Operations screen allows you to view the status and issue commands to the cabinet and tape drives.

To access the Operations screen, press **Ops** from the **Home** screen. The Operations screen is displayed (see Figure 41 and Figure 42).
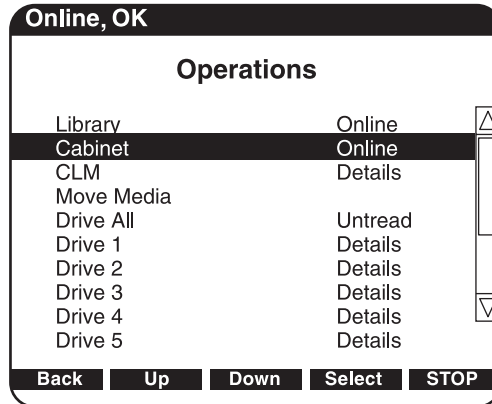
10643

Figure 41 Operations screen on standalone library or primary cabinet

The **Library** and **CLM** selections on the Operations screen appears only on a CLM library primary cabinet.
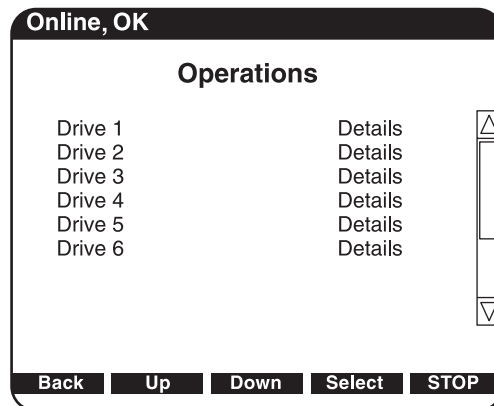
10650

Figure 42 Operations screen on secondary cabinet

To view or manage the operations information, use the Up and Down buttons to highlight the section and press **Select**.

- To toggle the cabinet between online and offline, use the Up and Down arrows to highlight **Cabinet**, then press **Select**. Use the Up and Down arrows to choose **Online** or **Offline**, then press **Select**.
- To view the CLM firmware revision number, use the Up and Down arrows to highlight **CLM**, then press **Select**. The firmware revision is displayed.
- To display details of each drive, use the Up and Down arrows to highlight **Drive #**, then press **Select**. Drive details are displayed.

Diagnostics screen

The **Diagnostics** screen allows you to perform the following diagnostic tests on the library (see Table 10).

NOTE:
The library must be off-line to run diagnostic testing.

Table 10 Diagnostic tests

Test	Description
Robotics Self Test	Checks for unrestricted motion of the library robotics.
Robotics to Home Position	Calibrates the library robotics and sets it to the bottom of the library with the optical sensor facing the back.
Calibrate Cabinet	Checks the position of all panels and columns, checks that the picker is aligned with the slots.
Read Cabinet Serial Number	Verifies that the serial number barcode can be read, then displays the serial number of the cabinet.
Read Cabinet IEEE Id	Verifies that the IEEE Id barcode can be read, then displays the IEEE Id of the cabinet.
Read Cabinet Type	Verifies that the cabinet type barcode can be read, then displays the cabinet type. • LTOHPF is an initial full LTO library. • LTOHPC indicates an initial capacity-on-demand LTO library. • LTO indicates an LTO library purchased before capacity-on-demand was introduced. • SDLTHPF indicates an initial full SDLT library. • SDLTHPC indicates an initial capacity-on-demand SDLT library. • SDLT indicates an SDLT library purchased before capacity-on-demand was introduced.
Sequential Slot Test (standalone or primary cabinets only)	Performs an inventory of the library, then checks each slot in the library, sequentially, to determine whether there is free movement of the tapes in and out of the slots.
Sequential Drive Test (standalone or primary cabinets only)	Performs an inventory of the library, then checks drives in the library, sequentially, to determine whether it is communicating properly with the drives.
Random Test (standalone or primary cabinets only)	Performs an inventory of the library, then randomly selects and runs one of the tests.
Random Slot Test (standalone or primary cabinets only)	Performs an inventory of the library, then checks a sampling of slots in the library, in random order, to determine whether there is free movement of the tapes in and out of the slots.
Random Slot to Drive Test (standalone or primary cabinets only)	Performs an inventory of the library, then checks a sampling of drives in the library, in random order, to determine whether it is communicating properly with the drives and whether there is free movement of the tapes into and out of the slots.

The Sequential Slot Test, Sequential Drive Test, Random Test, Random Slot Test, and Random Slot to Drive Test can be run from 1-500 times, or continuously until the test is manually ended. For each drive or slot test, running it once will check one drive or slot, whereas running it 100 times will check 100 drives or

slots. If tests are run more times than there are drives or slots, the library will test drives or slots multiple times until it has performed the requested number of tests.

For example, if a library has 25 full slots and a sequential slot test is set to run 50 times, the library will test slots 1-25, then begin at 1 again and test through 25. If you set the same library to run the sequential slot test 60 times, it will test 1-25, 1-25, then 1-10.

To access the Diagnostics screen, press **Diags** from the **Home** screen. The OCP displays the Diagnostics screen (see Figure 43 and Figure 44).

```
Online, OK


       Robotics Self Test
       Robotics to Home Position
       Calibrate Cabinet
       CLM Self Test
       CLM to Home Position
       Read Cabinet Serial Number
       Read Cabinet IEEEE Id
       Read Cabinet Type
       Sequential Slot Test
       Sequential Drive Test


   Back      Up      Down     Select    STOP
```
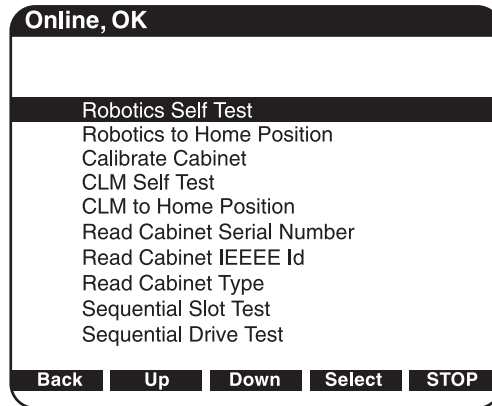
10644

Figure 43 Diagnostics screen on standalone library or primary cabinet

CLM-specific diagnostics tests are not available on a standalone library.

```
Online, OK


       Robotics Self Test
       Robotics to Home Position
       Calibrate Cabinet







   Back      Up      Down     Select    STOP
```
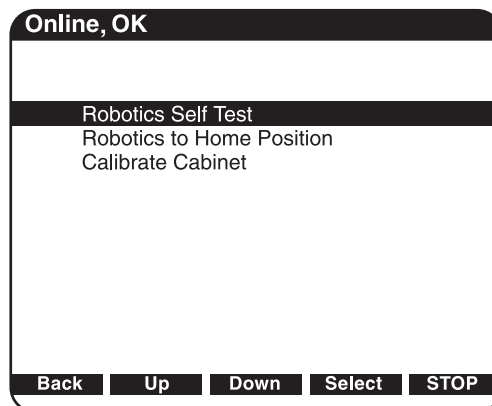
10651

Figure 44 Diagnostics screen on secondary cabinet

To perform a diagnostic test:

1. Take the library off-line.

   a. Press the **Ops** button on the OCP to access the Operations screen.
   b. Select **Cabinet**.
   c. Use the Up and Down arrows to take the library off-line.
   d. Press **Back** to return to the main screen.

2. Use the Up and Down arrows to select the diagnostic test to perform and press **Select**.

3. If you did not take the library off-line, the OCP displays a notification (see Figure 45).

```
┌─────────────────────────────────────┐
│ Online, OK                          │
│            Confirm                  │
│                                     │
│            Warning:                 │
│                                     │
│        The Library must be offline  │
│          for diagnostics tests.     │
│                                     │
│      Diagnostics tests may not return media │
│           to their original position. │
│                                     │
│            Continue?                │
│                                     │
│  ┌──────┬──────┐          ┌──────┐  │
│  │ Yes  │  No  │          │ STOP │  │
└─────────────────────────────────────┘
```
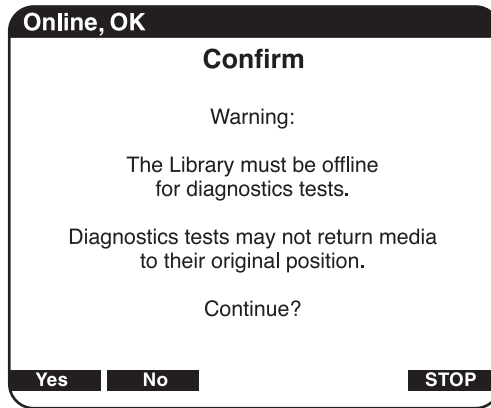
Figure 45 Diagnostics confirmation remaining offline

4. Select NO to take the library off-line, then run the test.

   The diagnostic test executes and the OCP displays a status screen indicating the test progress. When the test completes, the test result is shown next to the completed test.

5. When you are finished performing diagnostic tests, press **Back** to return to the **Menu** screen.

Stop button

The **STOP** button located in the bottom right portion of the OCP is available from every OCP screen. This button stops the cabinet robot from moving. To start the robotics, press the **Start** button.

Inserting tape cartridges into a fixed load port

With load ports enabled, tape cartridges are inserted into fixed magazines on the first column of the left panel and the first two columns of the right panel. Fixed magazines hold 18 Ultrium cartridges or 16 SDLT cartridges.

To insert a tape cartridge into a fixed magazine:

1. Prepare the tape cartridges to be inserted by affixing a bar code label and write-protecting or write-enabling each cartridge as desired.

   For more information about these procedures, see the section called "Inserting tape cartridges".

2. With the load port door open, place the tape cartridges in any available load magazine slot.

   The proper orientation for tape cartridge insertion is shown in the section called "Ultrium tape cartridges" and the section called "SDLT 320 and 600 tape cartridges".

3. Manually close the load port door by pushing the load port assembly into the cabinet. You will hear a click when it locks into position.

Using removable magazines

Removable magazines are used to import and export several tape cartridges at one time from the library without interrupting library operations. A removable magazine can hold 8 Ultrium tape cartridges, or 7 SDLT tape cartridges. A column can hold 2 removable magazines. Removable magazines can be used in the first column of the left load port, and the first two columns of the right load port.

Insert removable magazines

To use the removable magazines to load tape cartridges:

1. Prepare the tape cartridges by affixing a bar code label and write-protecting or write-enabling each cartridge as desired. See the section called "Inserting tape cartridges".

2. Load the tape cartridges into the removable magazine(s), using the same media type of tape cartridges and removable magazines (SDLT cartridges in an SDLT magazine; LTO cartridges in an LTO magazine). A removable magazine is labeled with its media type (see Figure 46).


| 1 | Removable magazine |
| 2 | Media type label |
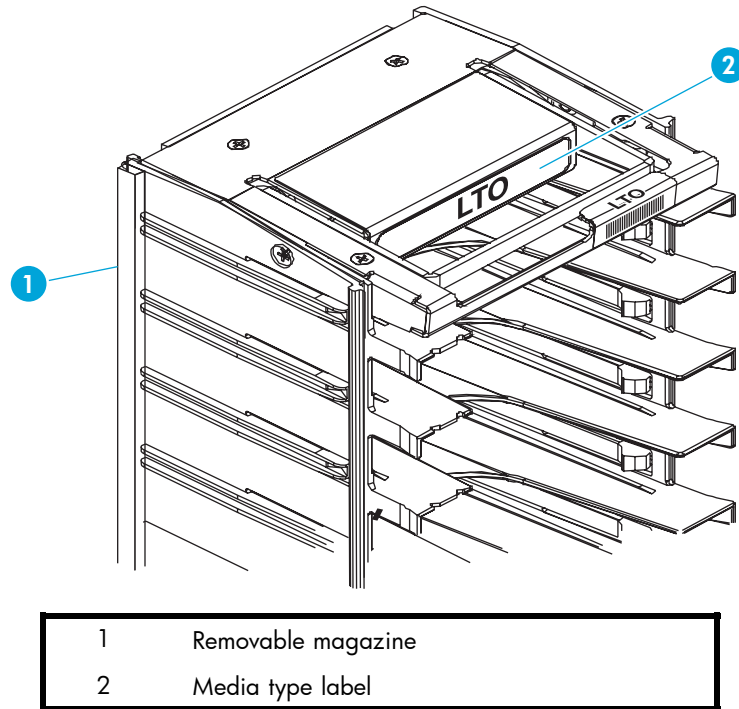
Figure 46 Identify the removable magazine media type

3. From the OCP, open the appropriate load port (right or left).

△ CAUTION:
Ensure that the load port door is open so that the door's clip is not damaged when the load port ejects.

a. From the Status screen, press **Ports**.
b. Use the Up and Down buttons to highlight the load port to open, then press **Select**.
c. When the curser highlights **Open**, press **Select**.

The display will show a note reminding you to open the load port door. If you have not opened the load port door, do so now.

d. Press **OK** to continue.

4. With the load port open, place the loaded removable magazine in the library.

a. Place the base of the removable magazine into an empty location on the panel (see Figure 47).
b. Push the top of the removable magazine against the panel until it snaps into place.
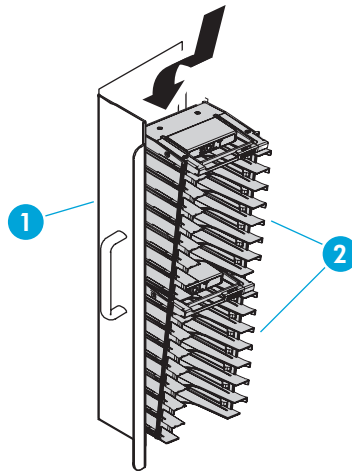
| 1 | Empty panel location |
| 2 | Removable magazine |

Figure 47 Insert the removable magazine

5. Manually close the load port door by pushing the load port assembly into the cabinet. You will hear a click when it locks into position.

Remove removable magazines

To remove the removable magazines from the library:

1. From the OCP, open the appropriate load port (right or left).

2. Open the appropriate load port door (right or left).

   a. From the Status screen, press **Ports**.
   b. Use the Up and Down buttons to highlight the load port to open, then press **Select**.
   c. When the curser highlights **Open**, press **Select**.

      The display will show a note reminding you to open the load port door. If you have not opened the load port door, do so now.
   d. Press OK to continue.

3. When the port is ejected, push down on the handle at the top of the removable magazine.

4. Pull the top of the removable magazine away from the panel.

5. Pull up on the handle at the top of the removable magazine and remove it from the panel.

NOTE:

You can safely carry a fully loaded removable magazine by the handle.

3 Maintenance and troubleshooting

This chapter describes problems you may encounter during the setup and operation of the library. Corrective information is provided to help you resolve the problems. The information is organized into:

- the section called "Start-up problems"
- the section called "OCP problems"
- the section called "Robotics problems"
- the section called "Operating problems"
- the section called "Tape drive problems"
- the section called "Interface Manager card problems"
- the section called "FC interface controller problems"
- the section called "Maintaining tape cartridges"
- the section called "Cleaning tape drives"

NOTE:

Also see Appendix D for information on values appearing in library error codes and the error log.

Start-up problems

This section describes corrective actions for problems which occur during start-up.

The library does not power on

Verify that:

- The power cord is connected to a grounded electrical outlet.
- The power distribution unit's two breaker switches are on (left rear corner of cabinet).
- The power supply switches are on.
- The power switch behind the service tray is on.

The library or tape drives are not detected by the Interface Manager or Command View TL software

- Verify cable connections and termination.
- Verify the cabling.
- Verify that the drives and library are powered on and ready.
- Ensure that the interface controllers are powered on and ready.

During initialization, the library reports "not ready"

- Determine the failure type by checking any previous error codes returned to the host computer, or by getting a library support ticket.
- Correct the cause of the error.

One or more tape drives fail to spin up during start-up

- Verify cable connections and termination.
- Make sure the OCP does not show the drive power as off.
- Check that the power supplies are switched on for that level (clusters 0 - 5).
- Check that the cluster controller is properly cabled and ready.

OCP problems

This section describes corrective actions for OCP problems.

The OCP is blank

- Confirm that power is on.
- Use Command View TL software or the Interface Manager's command line interface to check for errors on the OCP.

The OCP does not respond to buttons

- Use Command View TL software or the Interface Manager's command line interface to check for errors on the OCP.
- Contact an authorized field service engineer.

An error message is displayed

- Write down the details of the error message, including the SK, ASC, and ASCQ numeric values. Look up the code and try the suggested recovery procedures.
- Press OK to clear the message.

Robotics problems

This section describes corrective actions for robotics problems.

The robot does not move at power on

- Make sure all internal packing materials (foam pads, tie wraps, and shipping restraints) have been removed.
- Check the Stop button; make sure the library is on-line and not in the "stopped" mode.

The picker partially grips a tape cartridge

- Issue a Move Cartridge command using your application software to move the cartridge from the picker to an empty storage bin.
- If the problem continues, contact a field service engineer.

The barcode reader fails

- Verify that nothing obstructs the reader.
- Make sure that approved bar-code labels are being used and are correctly applied.
- Then, restart the library. If the problem continues, contact your service provider.

The robot times out or hangs

- Verify that nothing obstructs the robot.
- Recalibrate the library.
- Retry the operation. If it still fails, contact a field service engineer.

The robot fails during an operation

- Write down the details of the error message, including the SK, ASC, and ASCQ numeric values. Look up the code and try the suggested recovery procedures.
- Press OK to clear the message.

The robot drops a cartridge

- Open the doors. Retrieve the cartridge, orient it properly, and place the cartridge in an empty storage bin. (Do not try to place the cartridge in the picker.)
- Perform an inventory.

> **NOTE:**
> If the operator manually places a cartridge in an empty bin, he must then run an inventory so the library records the position of the manually-placed cartridge.

A cartridge is in the picker at start-up, when a move command is requested, or after a place command is executed

- If possible, initiate a Move Cartridge command from the picker to a storage slot using your application software.
- If the problem continues, contact a field service engineer.

The picker does not have a cartridge after completing a pick command

- Make sure a cartridge can be found in the source location.
- Perform an inventory.
- Retry the command. If the pick operation fails again, contact a field service engineer.

Operating problems

This section describes the corrective action for problems that occur during library operation.

The host computer cannot communicate with the library

- Verify that the host computer has been added to the secure manager via the Command View TL software, and has been given access to library components.
- Verify cable connections and termination.
- Verify that the FC port link LEDs show good status.
- Restart the host and the library.
- If the host and library still are not communicating, verify that there is not a zoning issue.

A tape cartridge (medium) is reported not present

- This indicates that the picker could not sense a tape cartridge in a particular storage bin, even though the inventory reports that it is present.
- Verify that the designated cartridge is present and properly seated. (For a tape drive, make sure the cartridge is completely unloaded.) Then, retry the command.
- Perform an inventory.
- If the error persists, contact a field service engineer.

A move command failed

- Check the source and destination. The source should hold the cartridge to be moved; the destination should be empty.
- Make sure the picker is empty and that there are no obstructions.
- Also, make sure the library is on-line and the Stop button is released.
- Retry the command.

A flash memory error is reported

Contact your service provider

A maximum temperature exceeded warning is displayed

- Turn off the library and allow it to cool down. Lower the room temperature, if possible, and increase ventilation around the library.
- The air filters may need to be changed.
- If the operating temperature is too high, the library automatically shuts down until the temperature drops.

Tape drive problems

This section describes the corrective action for problems with the tape drives.

The library is unable to communicate with a drive

This is indicated by a Drive Communication Time-out error

- Reseat the drive.
- Verify that the drive is set to On from the OCP.

The tape drive does not eject a cartridge

- Attempt the operation from the application software.
- Open the front door, and press and hold the eject button on the drive in question.
- Reset the drive from the OCP then attempt unload.
- If unsuccessful, power off the library, disconnect the FC cables, power the library back on, open the front door, and press and hold the eject button on the drive in question.

Interface Manager card problems

This section describes the status and network LEDs for the Interface Manager card.

Status LED diagnostic codes

Table 11 describes the meaning of the status indicator LEDs for the Interface Manager card.

Table 11 Status LED diagnostic codes

Red LED	Green LED	Description
On	Off	BIOS code failed to run.
Blinks 1x per 5 second interval	Off	Hardware POST failed. No firmware images are loaded.
Blinks 2x per 5 second interval	Off	No CompactFlash disk or valid boot sector image found. Be sure to transfer the memory module from the old card to the new card if the Interface Manager was replaced.
Blinks 3x per 5 second interval	Off	Specified firmware image files were not found. Neither the current nor the previous image was found.
Blinks 4x per 5 second interval	Off	Load or execute command failed (boot code remains at end of process). This indicates that load, decompress, or execution failed on both the current and previous image files.
Off	Blinks 1x per 5 second interval	Normal state. Load or execute command succeeded. Boot code successfully loaded, decompressed, and initiated execution of one of the image files.

Network link activity/speed LEDs

Table 12 describes network link activity and speed as indicated by the LEDs for the Interface Manager.

Table 12 Network link activity/speed LEDs

LED	Status	Description
Link Activity LED (left side of each Ethernet port)	Off	Port disconnected / no link
	On	Port connected to another Ethernet device
	Flashing	Data is being transmitted / received
Link Speed LED (right side of each Ethernet port)	On	Port is operating at 100 Mbps
	Off	Port is operating at 10 Mbps, or is not connected (see Link Activity LED)

Common Interface Manager issues

This section describes common symptoms relating to the Interface Manager card and how to resolve them.

Command View TL server does not detect the Interface Manager card

Bad network connection

- Verify that the Interface Manager card and the management station are correctly connected to the LAN.
- Use LEDs to troubleshoot Ethernet cabling.
- Ping the Interface Manager to verify network health.

Interface Manager card not powered on or in ready state

- Power on the library. Observe status and link LEDs.
- Interface Manager must be at firmware I120 or higher on an ESL E-series library.
- Interface Manager must be at firmware I130 or higher if connected to an e2400-FC 2G.

Incorrect IP address

Verify that the correct IP address of the Interface Manager card is entered in Command View TL.

- See the *HP StorageWorks ESL E-Series unpacking and installation guide* for information on obtaining the correct IP address using the OCP.
- Configure Command View TL with the correct IP address. See the *HP StorageWorks Interface Manager and Command View TL user guide* for information on adding a library or visit http://www.hp.com/support/cvesl.

Interface Manager card does not detect one or more FC interface controllers

Bad network connection

- Verify that the Interface Manager card is properly connected to the FC interface controllers and that the cables are good.
- Use LEDs to troubleshoot Ethernet cabling.
- See the *HP StorageWorks ESL E-Series unpacking and installation guide* for more information.

Incorrect interface controller, or controller has less than minimum required firmware

- Make sure that the e2400-160 interface controller has lettering to the side of the ports. If lettering is above or below the ports, then the wrong controller type was installed. Contact your service provider.

> **NOTE:**
> If you have the wrong controller type, it might still work if the firmware level is at least 5.3.06, the controller is set to DHCP, and its defaults are restored.

- Update the firmware to 5.3.06 or higher and restore defaults on the interface controller (e2400-160 or e1200-160)

Defective Interface Manager card or FC interface controller

- Observe status and link LEDs. Replace defective card or controller.

Interface Manager card does not detect drives or library

SCSI cables not connected properly

- Check cabling connections.

SCSI settings or termination not set properly

- Check the SCSI settings for the device.
- Check that the SCSI bus is properly terminated and ensure the terminator LEDs indicate a normal state (green).

Timing issues

- Reset the corresponding FC interface controller.

Drive not powered on or in ready state

- Make sure the drive isn't set to off.
- Troubleshoot the drive.

Command View TL does not run in the browser

Incompatible browser version or Java support not enabled

- Make sure you are using a minimum of Microsoft Internet Explorer v6.0 SP1 or later, or Netscape Navigator v6.2 or later.
- Make sure that Java support is enabled in the browser.

Java Runtime Environment (JRE) not installed

- Download and install the Java 2 Platform, Standard Edition v1.42 or later from http://wwws.sun.com/software/download/technologies.html.

Bad network connection or network down

- Check all physical network connections. If the connections are good, contact your network administrator.
- Ping the management station. If pinging fails and the IP address is correct, contact your network administrator.

Wrong IP address

- Check the IP address of the management station. On the management station, open a command shell and enter ipconfig. You must use this IP address (or the network name of the management station) in the URL to access Command View TL.

Management station not running, or Command View TL service not running on management station.

- Check to see if the management station is operational.
- Use the Services applet to verify that the Command View TL service is running on the management station. Click Start > Settings > Control Panel > Administrative Tools > Services.

FC interface controller problems

Most problems occur during the initial installation of the interface controller. Before proceeding with advanced troubleshooting techniques, verify all connections and review the configuration.

LED indicators

The LED indicators on the e2400-160 FC and e2400-FC 2GB interface controllers are useful for diagnosing various problems:

- **SCSI bus LEDs** (e2400-160 FC interface controller only) — indicate SCSI activity. These indicators are lit during power on, configuration, and when the unit is transferring data. If the SCSI indicator stays continually lit without any corresponding FC LED activity, it may indicate a problem with the SCSI bus configuration. Verify the SCSI bus configuration.
- **FC port LEDs** — indicate FC activity (ACT) and link (LNK) status. If the link LED does not light it may indicate a problem with a FC link. Verify the FC port configuration and cabling.
- **Ethernet LEDs** — indicate activity and link status. If one of these indicators does not light or stays continuously lit, it may indicate a problem with the network connection or cabling. Verify the network connection. The port must be connected to a 10/100BaseT Ethernet network to function properly.

See Figure 48 for LED locations and functions on the e2400-160 FC interface controller.

1	SCSI bus port 2 LED
2	SCSI bus port 3 LED
3	SCSI bus port 1 LED
4	SCSI bus port 0 LED
5	FC port 0 LED
6	FC port 1 LED
7	Ethernet port LED
8	Interface controller LED
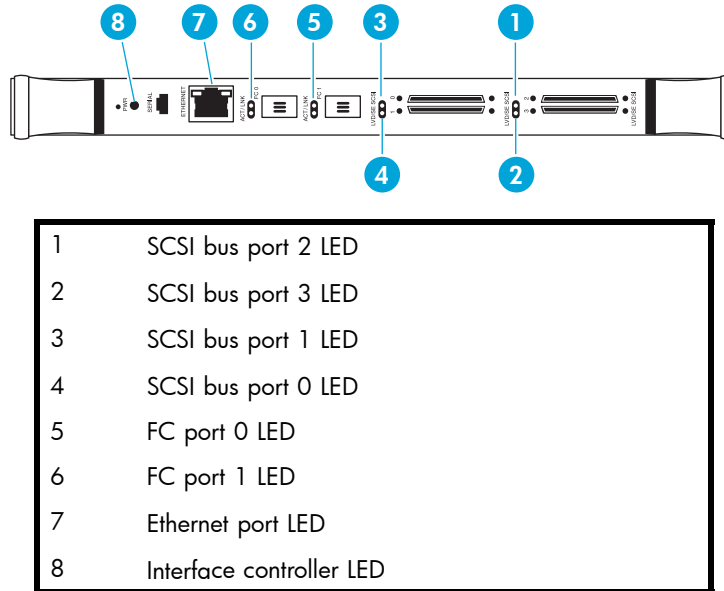
Figure 48 e2400-160 FC interface controller LEDs

See Figure 49 for LED locations and functions on the e2400-FC 2GB interface controller.

1	FC drive port TD3 LED
2	FC drive port TD2 LED
3	FC drive port TD1 LED
4	FC drive port TD0 LED
5	External port FC1 LED
6	External port FC0 LED
7	Ethernet port LED
8	Interface controller LED
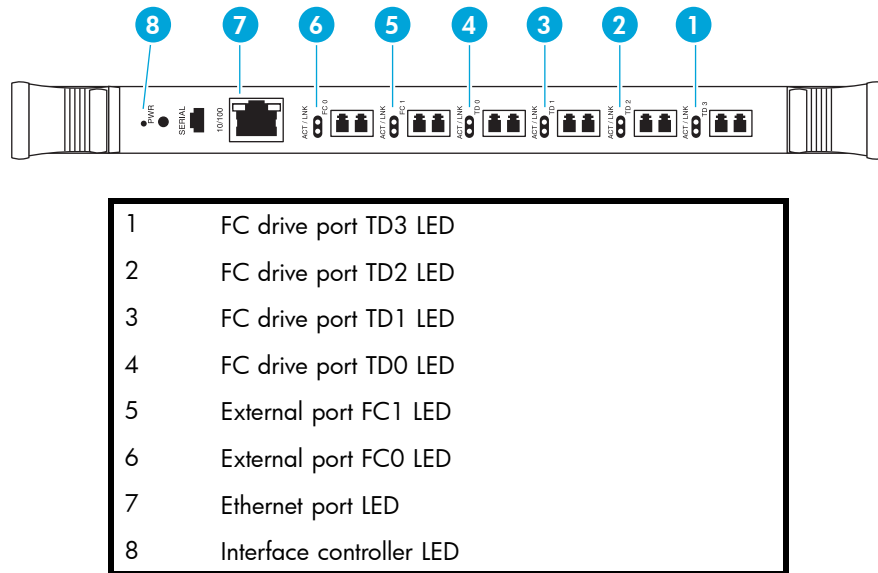
Figure 49 e2400-FC 2GB interface controller illustration

Basic troubleshooting

Simplify the installation by reducing it to the most basic configuration. Then, add elements one at a time, verifying the operation after each step.

Basic troubleshooting includes verifying the setup and the connections, including:

- Verifying SCSI bus configuration
- Verifying FC port connection
- Verifying FC and SCSI devices in Windows NT
- Verifying the interface controller configuration
- Verifying devices
- Verifying host configuration
- Verifying HBA device driver information
- Verifying serial port configuration

Each of these topics is discussed in the following sections.

Verifying SCSI bus configuration

Items to check include:

- **Termination** — Problems with termination can cause intermittent or hard failures. A SCSI bus must be terminated on both ends. Termination problems are common when both narrow and wide devices are on the same bus.
- **Bus Type** — On an LVD SCSI bus, SE and LVD devices can be connected to the same bus. However, if one SE device is detected during power on, communication to all devices converts to SE mode.
- **Device ID** — Each device on a SCSI bus must have a unique ID. Verify that configured IDs are not in use by other devices on the same SCSI bus.
- **Cabling** — Check SCSI cables to verify they are functional. Follow SCSI rules for total length, distance between devices, and stub length. Check and re-seat connections if necessary.
- **SCSI Devices** — Verify that the SCSI devices on a particular SCSI bus can be seen in the Configuration Menu of the FC interface controller. If the FC interface controller cannot see the devices, verify SCSI configuration, cabling, and termination.

Verifying FC port connection

If SCSI devices are recognized on the SCSI buses, but do not appear to the FC host, it may be that the FC link is not properly established. Most hubs and switches have link indicators showing link status. When the FC interface controller is connected and powered on, this link indicator should be solid. If it is not, check the cabling or connections.

One method of verifying link integrity when connected to a functional host involves disconnecting and then reconnecting the FC cable. This procedure should cause momentary activity of this indicator as the link reinitializes.

Additionally, verify that the cable type of the FC interface controller and the attached hub, HBA, or switch are of corresponding types. When using optical media, verify that the attached device is using non-OFC type optical devices.

> **NOTE:**
> By default, the FC port speed is set to 2 Gb/s. Changes to the FC port speed must be manually set, such as for 1 Gb/s. If set incorrectly and the FC interface controller is plugged into a Loop or Fabric, the unit may receive framing errors, which can be found in the trace logs, and the fiber link light will be off because of the incorrect FC link speed.

Verifying FC and SCSI devices in Windows NT

When mapping FC and SCSI devices, verify the FC and SCSI devices are recognized by the FC interface controller.

Windows NT may need to be rebooted with all SCSI devices and the FC interface controller powered on before recognizing the devices.

To verify the FC and SCSI devices:

1. Navigate to the Windows NT Control Panel, and select **SCSI Adapters**.
2. Double-click the FC HBA.

   The SCSI devices should be listed. If no devices are listed, verify the FC interface controller configuration, FC HBA configuration, and cabling. If devices are listed, verify the FC HBA mapping mode or the AL_PA addresses.

Verifying the interface controller configuration

Verify the following:

- The FC interface controller speed is set correctly
- The connection type is set correctly
- The host is added to Secure Manager and given permission to communicate with the library.

Verifying devices

HP recommends using Command View TL to verify that the devices are functional.

Verifying the host configuration

In some cases, the FC HBA or host device driver may not be working properly. Check the configuration of these elements.

It may be useful to check the release notes for the device driver to see if there are any specific issues or a required configuration. It may also be useful to ensure that the current version of the HBA driver is being used.

Older applications can have expectations about what constitutes a valid SCSI ID, and thus may not correctly handle certain mappings. This is not an issue for the operating system or most applications. However, some applications may exhibit difficulties addressing target IDs greater than 15 (16 and higher.) To resolve this situation in a direct attach configuration, configure the FC interface controller to use hard addressing and set the AL_PA to a value that the HBA will be able to map with an ID less than 16.

Verifying HBA device driver information

Review the HBA device driver *Readme.txt* file for configuration specifics. An HBA may require a different configuration. HBAs typically come with utility programs to view or change their configurations.

Verifying serial port configuration

If you are having problems connecting via the serial interface, verify the configuration of the terminal or terminal emulation program.

Table 13 Terminal configuration settings

Baud rate	Autobaud, 9600, 19200, 38400, 57600, 115200
Data Bits	8
Stop Bit	1
Parity	None
Flow Control	None or XON/XOFF

If problems persist, verify the cabling.

If a valid Ethernet IP address is configured, serial configuration settings can also be set via Telnet.

Maintaining tape cartridges

📝 **NOTE:**

In addition to the information provided in this manual, access the *HP StorageWorks SDLT Tape Drive Reference Guide,* and the *HP StorageWorks Ultrium Tape Drive users guide* from http://www.hp.com/support for more information.

For longer life of recorded or unrecorded tape cartridges:

- Do not carry cartridges loosely in a container that exposes them to unnecessary physical shock. Dropping or bumping cartridges may dislodge and damage internal components.
- Store tape cartridges vertically in their protective cases until needed. Store tape cartridges in a clean environment that duplicates the conditions of the room in which they will be used.
- Use tape cartridges in temperatures between 50°F to 104°F (10°C and 40°C).
- If a tape cartridge has been exposed to extreme heat or cold, stabilize the tape cartridge at room temperature for the same amount of time it was exposed for up to 24 hours.
- Keep cartridges out of direct sunlight and do not place tape cartridges near electromagnetic interference sources, such as terminals, motors, and video or X-ray equipment. Doing so may cause data on the tape cartridge to be altered or erased.
- Do not touch the tape medium or open the tape door unnecessarily. Dust and skin oils can contaminate the tape, impact performance, and cause damage.
- Store tape cartridges in a dust-free environment where the relative humidity is between 20 percent and 80 percent. For longer tape cartridge life, store the tape cartridge at 40 percent to 60 percent relative humidity.
- Use only HP qualified bar code labels. Apply them only in the designated areas of the tape cartridge, and do not apply more than one per cartridge.
- Follow guidelines provided by the tape cartridge manufacturer.

If a tape cartridge is dropped or damage is suspected, gently shake the tape cartridge:

- If it rattles, it is damaged. Restore the data on the tape cartridge if possible and discard the damaged tape cartridge.
- If it doesn't rattle, check the tape leader inside the cartridge. To do this, open the door on the rear of the tape cartridge by releasing the door lock. The tape leader should be visible at the top-left of the tape cartridge.

△ **CAUTION:**

Do not touch the tape leader or the tape medium. Dust or skin oils can contaminate the tape, impact performance, and cause damage.

Cleaning tape drives

Use the guidelines in the following sections to clean your tape drives.

Cleaning SDLT tape drives

Be aware of the following:

- Under normal conditions, the cleaning cartridge is effective for about 20 cleanings.
- SDLT tape drives typically do not need regular cleaning, as their design allows for minimal head contamination.
- Use the cleaning tape only if the library indicates that the drive needs cleaning.
- Use the cleaning tape more than once if a tape has severely contaminated the drive heads. If the problem persists after two cleanings, and the cleaning tape has not expired, contact your authorized service provider.

📝 NOTE:
Do not use a DLT, DLT1, or VS cleaning tape (almond in color) in an SDLT drive. SDLT cleaning tapes are gray and use a 7- or 8-character bar code label, CLNxxxS or CLNxxxS1.

To clean the tape heads:

1. Move a cleaning cartridge into the drive using your application software. The tape drive automatically loads the cartridge and cleans the heads.

   During the cleaning cycle the drive's green **Ready** LED flashes. At the end of the cleaning cycle, the drive ejects the cartridge.

2. Remove the cleaning cartridge from the drive.

Cleaning Ultrium tape drives

Be aware of the following:

- Ultrium tape drives have been developed to have a minimal cleaning requirement.
- An HP Ultrium Universal Cleaning Cartridge can be used up to 50 times. If you are using an older HP Ultrium cleaning cartridge, check the documentation that came with your media.

△ CAUTION:
Only use HP Ultrium Universal Cleaning Cartridges in Ultrium tape drives.

- If the cleaning cartridge is ejected immediately, then it has expired or is not an Ultrium cleaning cartridge. Discard it and use a new one.

To clean the tape heads:

1. Move a cleaning cartridge into the drive using your application software. The tape drive automatically loads the cartridge and cleans the heads. The cleaning cycle can take up to five minutes.

2. Move the cleaning cartridge back to the proper storage bin using your application software.

A Library characteristics

This appendix lists characteristics and specifications of the library. These characteristics and specifications are presented in:

- the section called "Physical specifications and requirements"
- the section called "Performance and reliability characteristics"
- the section called "Environmental specifications"

> **NOTE:**
> Tape drive and media specifications are described in the section called "Tape drives".

Physical specifications and requirements

Table 14 and Table 15 provide dimensions and other physical characteristics of the library unit.

Table 14 Physical characteristics

Library dimensions and weight	
Width	30 in. (76 cm)
Depth	48 in. (122 cm)
Footprint	30 x 48 in. (76 x 122 cm)
Height	75 in. (191 cm)
Weight	Fully loaded library: 1700 lbs. (771 kg)
	Drives: 13.5 lbs. (6.12 kg) each
	Cartridges: 7.7 oz. (2.18 kg) each
Tape drives and cartridges	
Tape Drives, Max. No.	Up to 24 tape drives
Cartridges, Max. No.	630 SDLT tapes / 712 Ultrium tapes

Table 15 Interfaces

Host to library interfaces	
Software	SCSI-2 medium changer command set
Power input	
Power cord	1 or 2 standard US C19 to NEMA L6–20P rated at 250 VAC and 16 amps
Host to tape drive interface	
Software	SCSI-2

NOTE:

For HP StorageWorks FC Interface Controller specifications, see the documentation that shipped with your controller.

Performance and reliability characteristics

Table 16 and Table 17 list performance and reliability characteristics of the library.

Table 16 Performance characteristics

Average swap time	18 to 20 seconds, consisting of two Move Medium commands
Inventory	Less than 3 minutes, fully loaded with labeled cartridges

Table 17 Reliability characteristics

MTBF	250,000 power-on hours
MSBF	1 million load/unload cycles
MTTR	Less than 30 minutes

NOTE:

Tape drive and media specifications are described in the section called "Tape drives".

Environmental specifications

Table 18 provides various library environmental specifications.

Table 18 Environmental specifications

Power environment		
Electrical inputs	Voltage	200 VAC to 240 VAC
	Rated frequency	50 / 60 Hz
	Rated current	8A
	Power consumption	VA max 1600W
	Electrical connection to power	IEC 320 C19 male connector inside back door
Climatic environment		
Temperature (operating)	Dry bulb	15ºC to 32ºC (59ºF to 90ºF)
	Wet bulb	25ºC (77ºF) maximum
	Thermal transition	11ºC per hour
Temperature (shipping and storage)	Dry Bulb	–40ºC to 66ºC (-40ºF to 151ºF)
	Wet bulb	46ºF (115ºF) maximum
	Thermal transition	30ºC (54ºF) per hour
Relative humidity	Operating	20% to 80%, non-condensing
	Shipping and storage	5% to 95%, non-condensing
Altitude	Operating	Sea level to 10,000 ft. (3,048 m)
	Shipping and storage	Sea level to 12,000 ft. (3657 m)
Heat dissipation, direct ESD	Operating	5500 BTU/hr (1400 KCal/hr or 1600 watts)
	Contact discharge	up to 4.0 kV to all external metal panels and doors
	Air discharge	up to 8.0 kV to the front GUI display
Sound power level	Operating	7.6 Bel
	Idle	7.8 Bel
Sound pressure at operator	Operating	5.5db

B Relocating the library

△ CAUTION:

HP strongly recommends that an HP authorized service representative relocate a library to another location.

This appendix explains how to relocate the library. As used in this appendix, the term *relocate* means either to ship the library or simply to move it to a nearby location (for example, from one area in a building to another).

📝 NOTE:

These instructions address relocating a standalone library. To relocate a Cross Linked (CLM) Library, you must remove the CLM components including the brackets that connect the cabinets together, and ensure that you have room for the entire system when selecting a new location. Otherwise, treat the cabinets as if each were a separate library that you are relocating.

The instructions in this appendix are divided into the following:

- the section called "Checking the new installation site"
- the section called "Preparing the library for relocation"
- the section called "Crating the library"
- the section called "Preparing the library for operation"

To ship the library or move it using a motor vehicle (for example, truck, or forklift), follow all of the instructions in this appendix.

To move the library to a new location within the same building or facility, follow all instructions in this appendix except for those found in the section called "Crating the library".

📝 NOTE:

These procedures require the original packing materials of the library. If you do not have the original packing materials, contact your support representative.

△ CAUTION:

Moving or shipping the library without proper packing materials can result in damage to library components.

Checking the new installation site

Check the new installation site for the library using the guidelines found in the *HP StorageWorks ESL E-Series Pre-Installation Site Survey Instructions*. Make sure the new location meets all applicable clearance, environmental, and power requirements.

Preparing the library for relocation

To prepare the library for relocation, refer to:

- the section called "Removing tape cartridges"
- the section called "Installing shipping restraints and packing"
- the section called "Disconnecting library cables"

△ CAUTION:
Always prepare the library for relocation before any move.

Removing tape cartridges

To remove tape cartridges:

1. Unload all tape cartridges from the tape drives using your application software.
2. Press **Stop** on the OCP to stop all library operation.

   This places the library off-line after the completion of any currently executing operations.
3. Power the library off.
4. Unlock and open both front doors.
5. Remove all tape cartridges from the library bins.
6. Carefully pack all tapes for shipment.

Installing shipping restraints and packing

To install internal shipping restraints:

1. Remove the six panel shipping restraints (three sets on each side) from their storage location on the lower cabinet frame (see Figure 50).
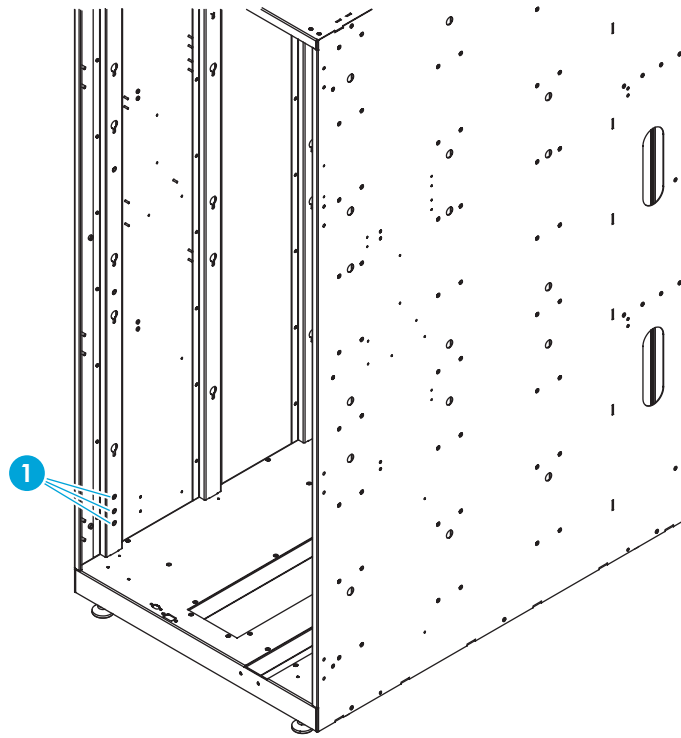
| 1 | Panel restraint storage location (left side shown) |

Figure 50 Retrieving the panel shipping restraints

2. Attach the six panel shipping restraints (three on each side) with a 7/16-in socket wrench (see Figure 51).
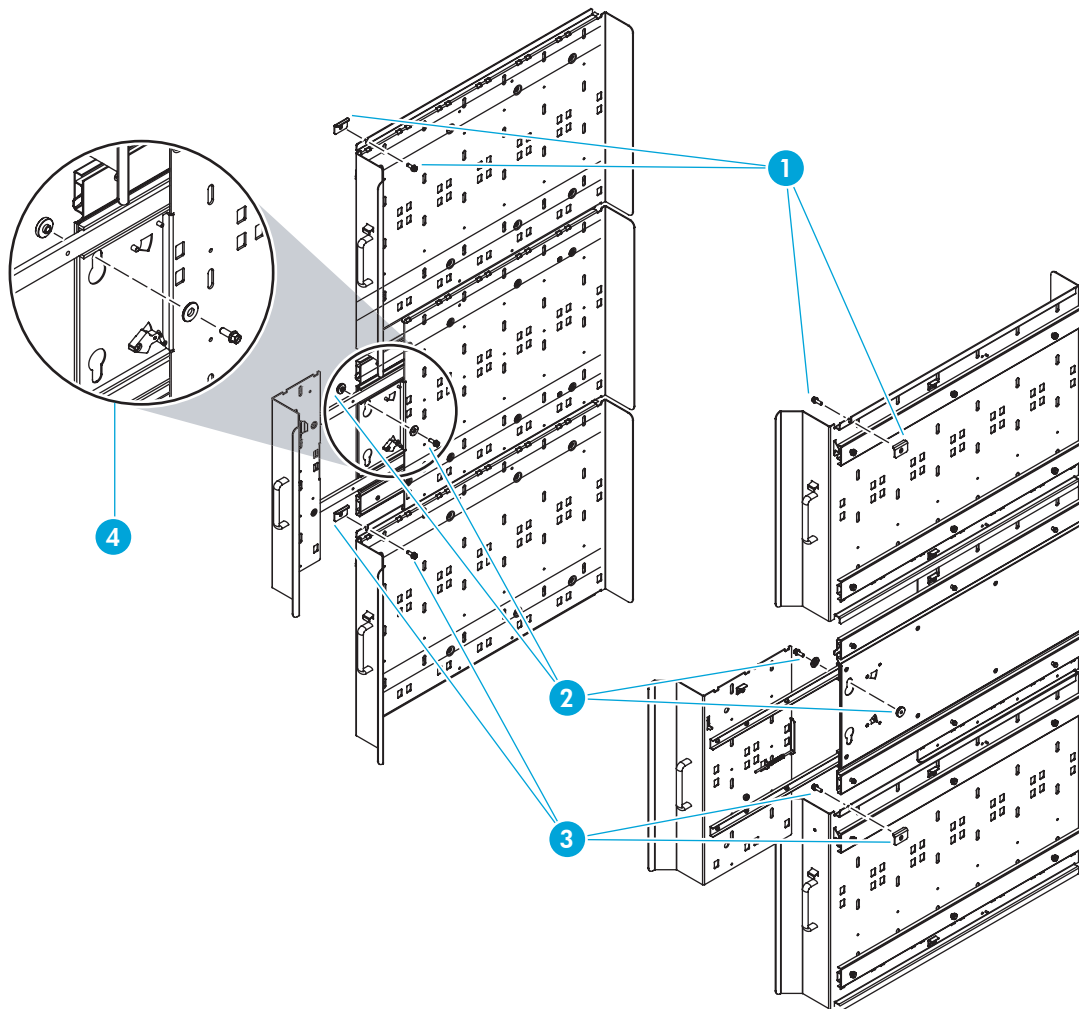
1	Upper shipping restraint
2	Middle shipping restraint
3	Lower shipping restraint
4	Load port latching mechanism

Figure 51 Attaching the panel shipping restraints

3. Remove the robot shipping restraints from their storage location under the left cartridge bin panel (see Figure 52).
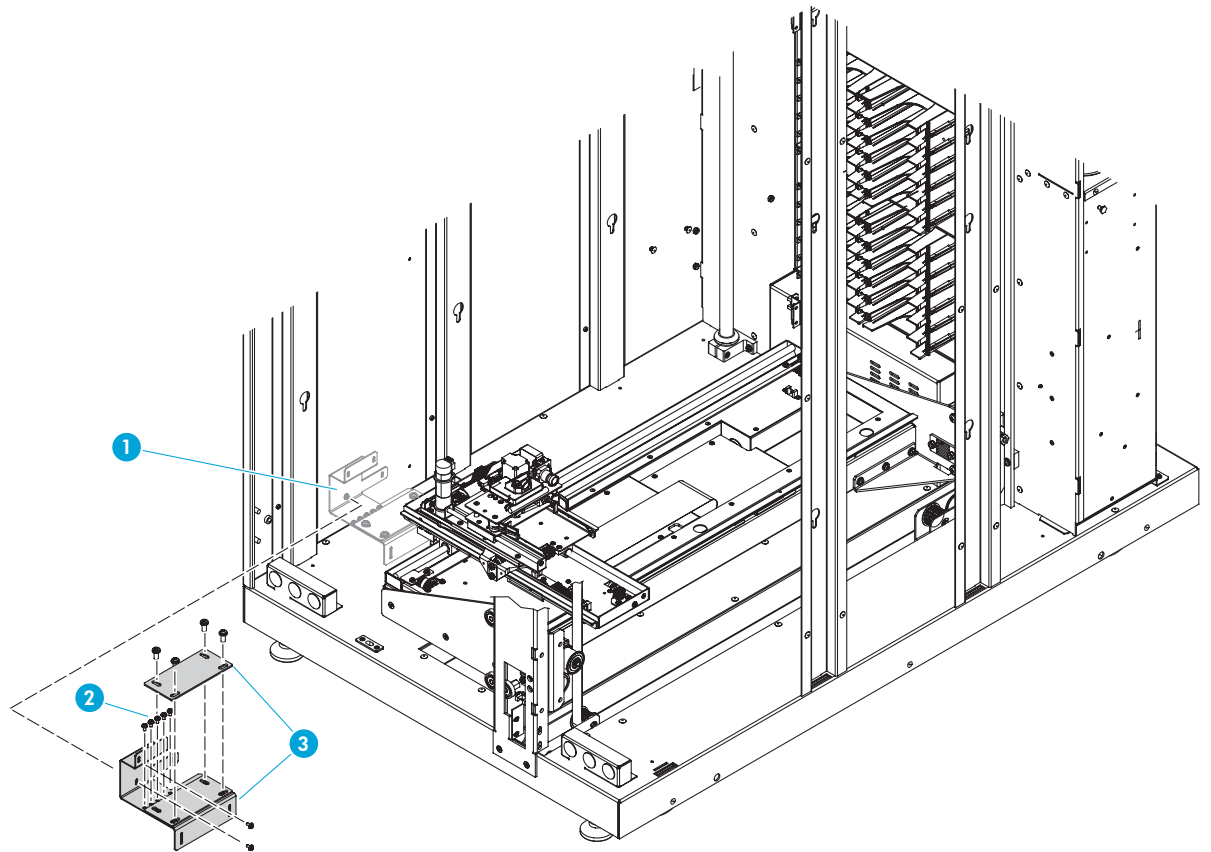
1	Shipping restraints in storage position
2	Spare Screws
3	Shipping restraints

Figure 52 Shipping restraints - storage location

4. If the picker is not in the far right position, gently move it along the horizontal carriage until it is as far front as possible.

5. Install the robotic shipping restraints (see Figure 53).
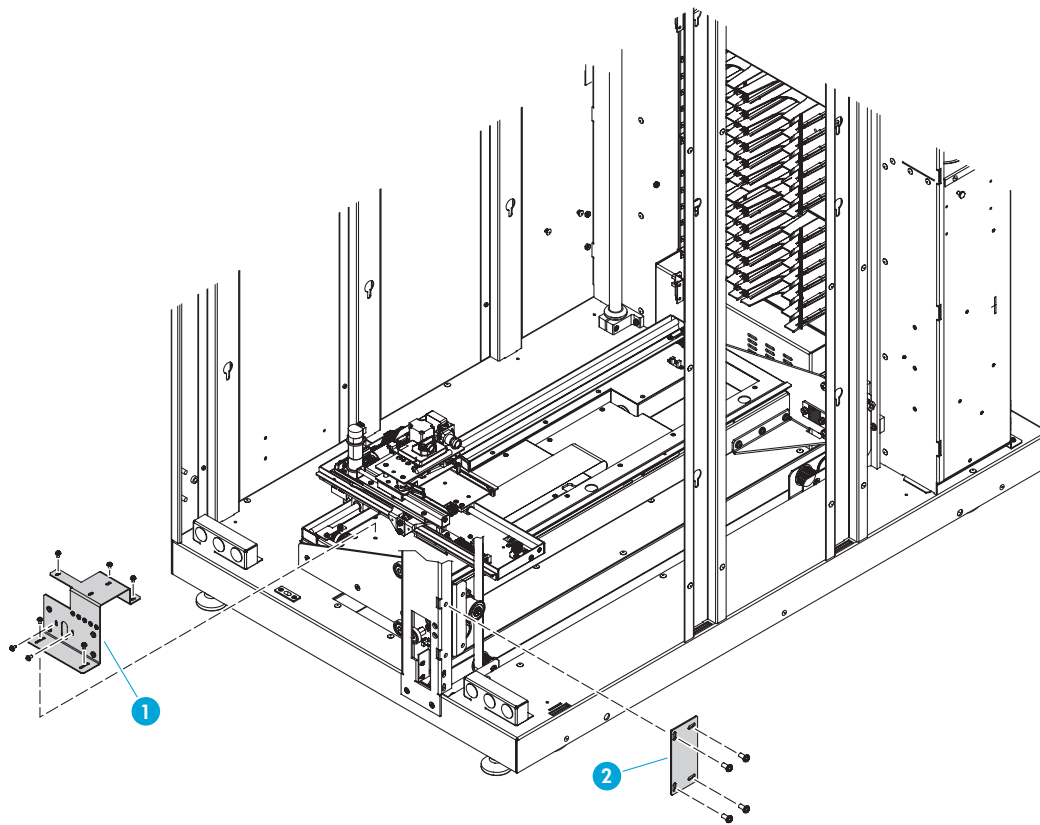
| 1 | Robot shipping restraint |
| 2 | Vertical axis shipping restraint |

Figure 53 Installing the robotic shipping restraint

6. Install the counterweight shipping restraint (see Figure 54).

1	Shipping restraint
2	Nuts
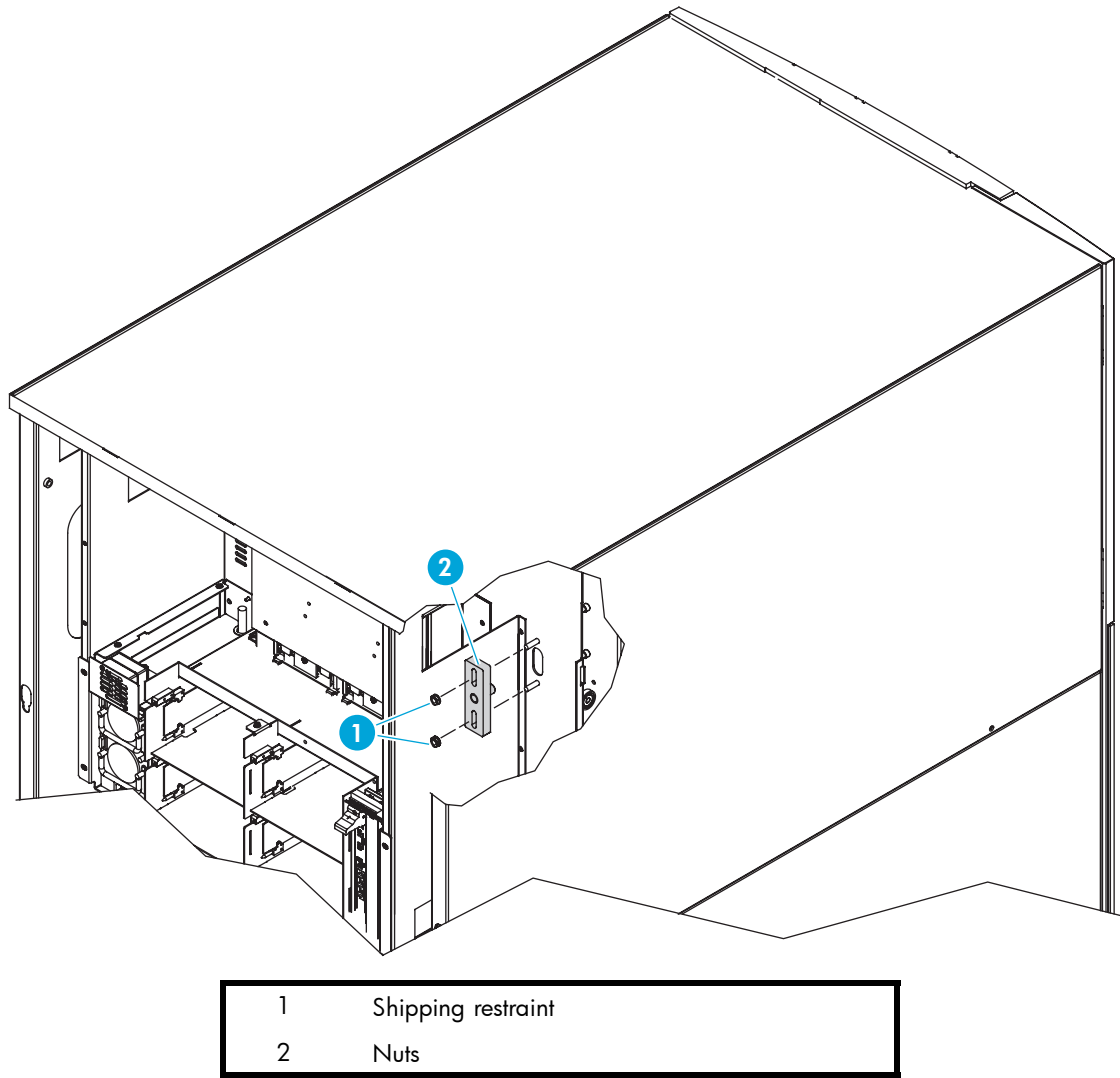
Figure 54 Installing the counterweight shipping restraint

7. Locate the two sheet metal pieces that form the internal library frame restraint and insert them as shown in Figure 55.

1	Bolt
2	Hex nuts
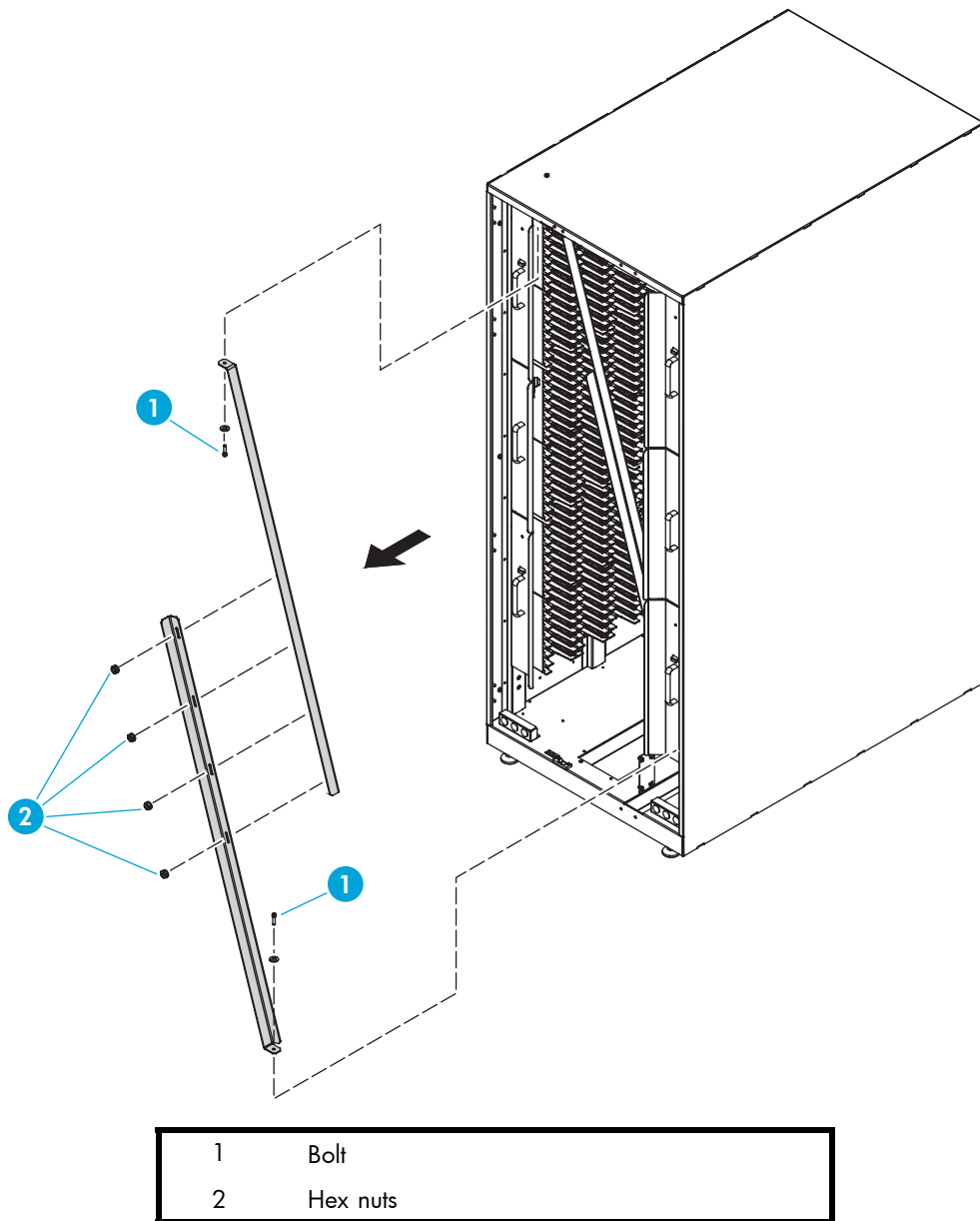
Figure 55 Installing the internal library frame restraint

8. Attach the two pieces together using four 1/4-inch hex nuts.

9. Secure the restraint to the frame with two 1/4-inch bolts, one at the top and one at the bottom of the library frame.

10. From the front of the library, add the foam to the Y-axis cover plate, to the left front door, and also to the back door frame (see Figure 56).

1	Foam on back of library
2	Foam on front of library
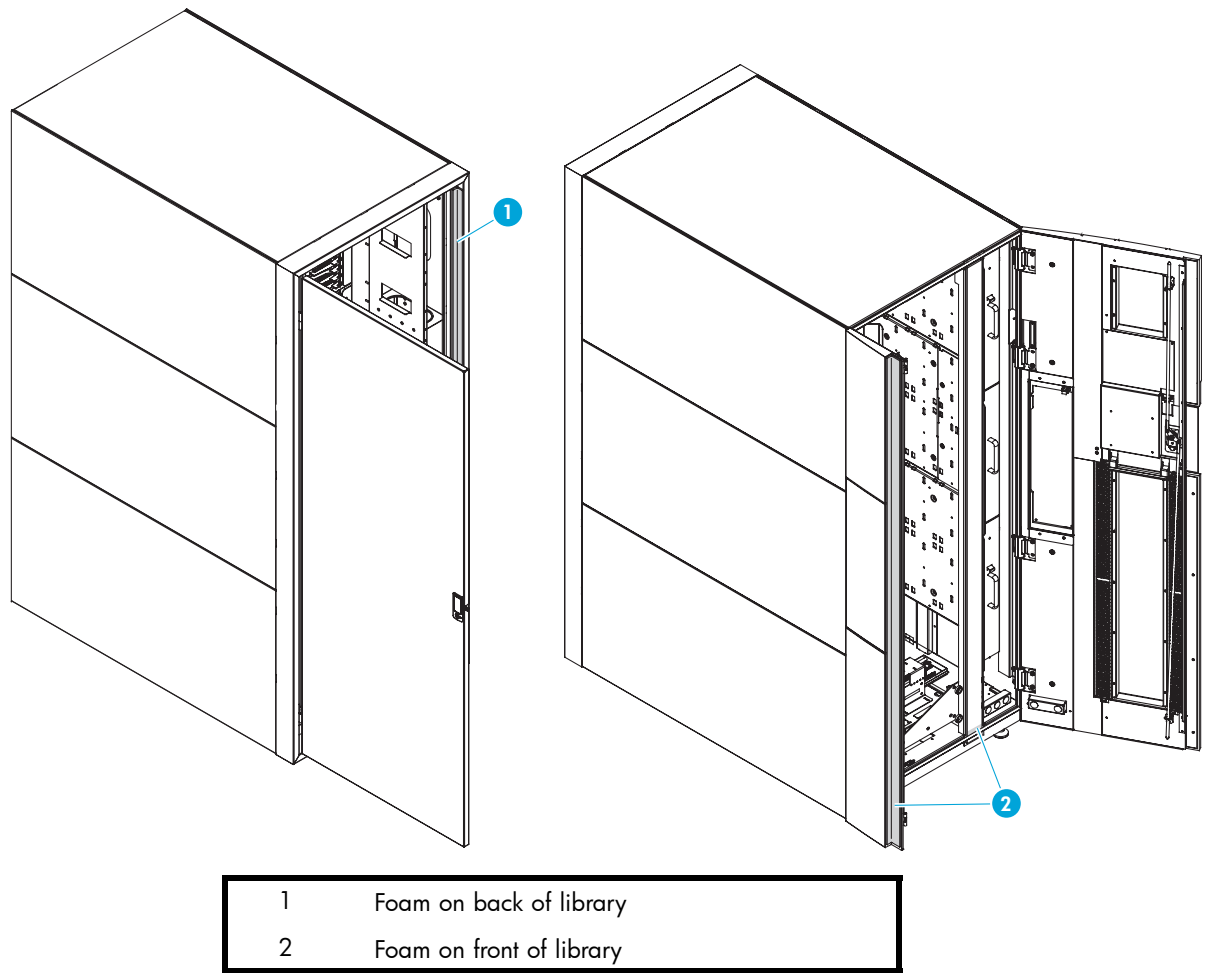
Figure 56 Adding the shipping foam inside the library

11. Close the library doors and add shipping foam to the bottom of the library perimeter (see Figure 57).

1	Foam
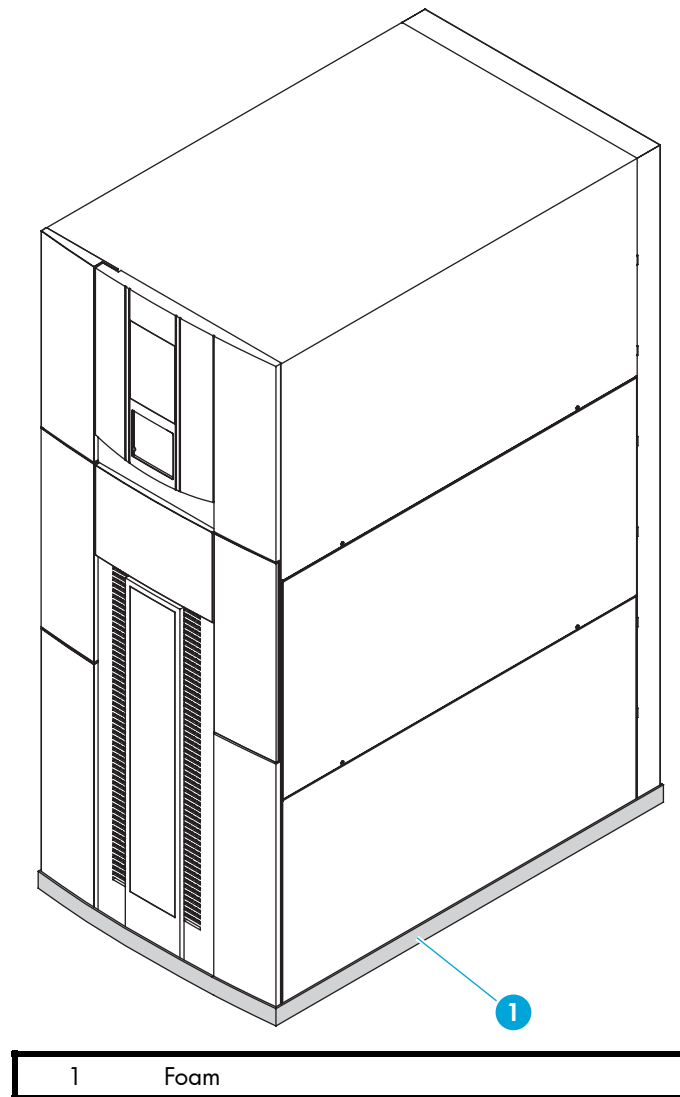
Figure 57 Adding the shipping foam to the library perimeter

Disconnecting library cables

To disconnect library cables:

1. Disconnect the FC cables connecting from the library to the host.
2. Disconnect the Ethernet cable connecting to the local network.
3. Disconnect the power cord from the library to its power source.
4. Pack the removed cables in with other library accessories.
5. Disconnect the following cables but leave them routed in the channel:

   • Drive cluster and card cage power cables
   • Drive cluster Ethernet cables
   • Drive cluster I2C cables
   • Drive SCSI cables (not present on Ultrium 460-FC or 960 drives)
   • Drive FC cables (not present on SCSI drives)
   • Cabinet controller SCSI cable
   • Robotics controller card (e1200-160) Ethernet cable

- e2400-160 or e2400-FC 2GB interface controller Ethernet cables
- Interface Manager card Ethernet cable

Crating the library

Use this section if you need to:

- Ship the library to the new site.
- Transport the library by forklift or similar means.

If you are moving the library within a facility, see the section called "Preparing the library for operation".

⚠ **WARNING!**

The library weighs approximately 1700 lb. (771 kg). Use at least two people to perform any steps that involve lifting or guiding the library.

⚠ **ADVERTENCIA:** El peso aproximado de la biblioteca es de 771 kg. Utilice como mínimo dos personas para llevar a cabo cualquiera de los pasos que impliquen la elevación o conducción de la biblioteca.

⚠ **VORSICHT:** Die Library wiegt ca. 771 kg (1.700 lb). Daher müssen alle Schritte, die das Anheben oder das Führen der Tape Library erfordern, von mindestens zwei Personen durchgeführt werden.

⚠ **AVVERTENZA:** La libreria pesa circa 771 KG. Utilizzare almeno due persone per eseguire qualsiasi operazione di sollevamento o di spostamento della libreria.

⚠ 警告 ： ライブラリの重さは約771Kg あります。ライブラリを持ち上げたり、移動したりする場合は、少なくとも 2 人以上で作業してください。

⚠ **WAARSCHUWING:** De library weegt ongeveer 771 kg. Als de library moet worden opgetild of voortbewogen, doet u dat dan altijd met twee personen.

To crate the library for a new site (see Figure 58).
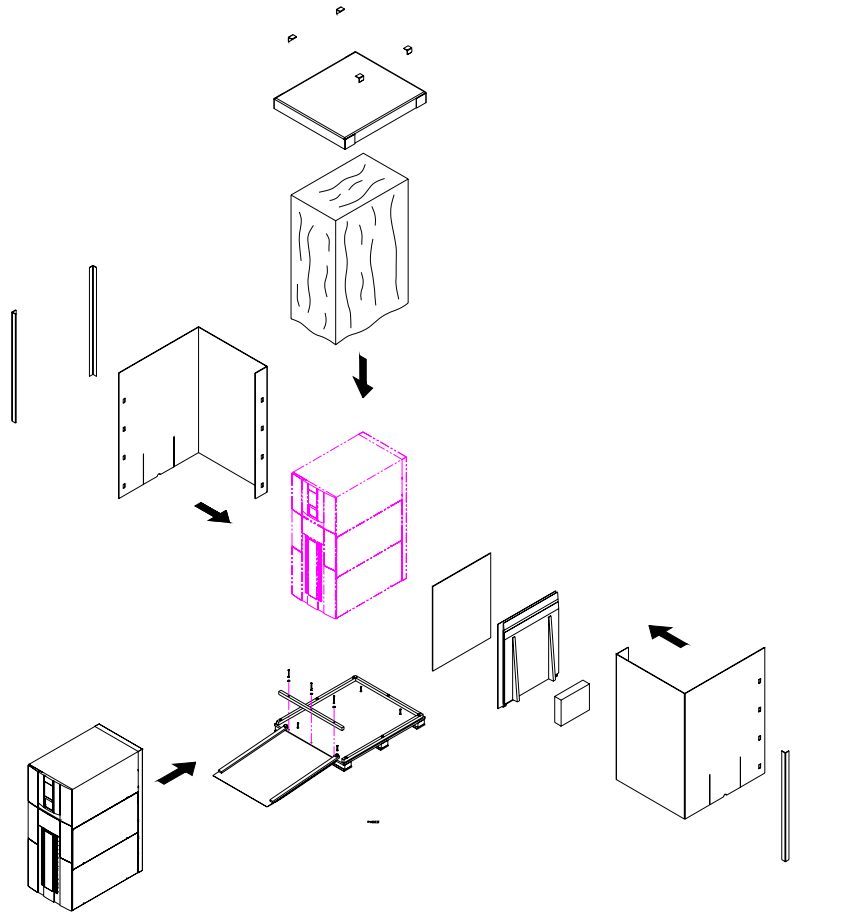
Figure 58 Crating the library

1. Prepare the shipping pallet for the library by attaching the ramp to the pallet.

2. Place the library on the pallet

   a. Raise the library support feet.
   b. With the help of at least one person, roll the library to a position in front of the pallet ramp.
   c. Roll the library onto the pallet.

3. Secure the library.

   a. Place the shipping bag over the library, and secure it into place.
   b. Use the four shipping bolts to secure the library to the pallet.
   c. Remove the ramp from the pallet and lean it against the side of the library with a cardboard sheet between the library and the ramp.

4. Place the accessory kits onto the pallet.

5. Place the foam cap over the library.

6. Wrap the cardboard crate around the library and fasten it using the plastic restraining clips.

7. Place the top onto the crate.

8. Secure the crate with two steel restraining bands.

Preparing the library for operation

After shipping or moving the library, see the *HP StorageWorks ESL E-Series pre-Installation site survey instructions*, the *HP StorageWorks ESL E-Series unpacking and installation guide*, and if needed, the *HP StorageWorks ESL E-Series Upgrade to Cross Link poster* to:

- Prepare the new installation site
- Receive the library
- Uncrate the library
- Position the library
- Install and configure the library

NOTE:

The ESL E-Series library must be unpacked and installed by authorized HP service personnel only.

C Regulatory statements

FCC statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Any changes or modifications made to this equipment may void your authority to operate this equipment.

Operation of this equipment in a residential area may cause interference in which case you, at your own expense, will be required to take whatever measures may be required to correct the interference.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

BSMI statement

Japan statement (VCCI)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準
に基づくクラスB情報技術装置です。この装置は、家庭環境で使用すること
を目的としていますが、この装置がラジオやテレビジョン受信機に近接して
使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

Japan statement (AC power cords)

製品には、同梱された電源コードをお使いください。
同梱された電源コードは、他の製品では使用出来ません。

Industry Canada (digital apparatus)

Reference: *Interference-Causing Equipment Standard*, ICES-003 Issue 2

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Reglément sur le matériel brouilleur du Canada.

CISPR-22 WARNING!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ACHTUNG!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmassnahmen verantwortlich ist.

ATTENTION!

Ceci est un produit de classe A. Dans un environment domestique, ce produit peut causer des interférences radioélectriques. Il appartient alors à l'utilisateur de prendre les mesures appropriées.

Notice for USA and CANADA only

If shipped to USA, use the UL LISTED power cord specified below for 200-240 V operation. If shipped to Canada, use the CSA CERTIFIED power cord specified below for 200-240 V operation.

- Plug Cap: NEMA twist-lock plug with ground pin (NEMA L6-20P configuration)
- Cord Type: SJT, three 12 AWG (3 x 2.50 mm^2) or 18 AWG (1.0 mm^2) wires
- Length Maximum: 15 feet (4.5m)
- Rating Minimum: 25 A, 125 V

ATTENTION

LIRE LA REMARQUE DANS LE MODE D'EMPLOI.

REMARQUE

CETTE REMARQUE NE CONCERNE QUE LES ÉTATS-UNIS ET LE CANADA.

En cas d'envoi aux États-Unis, utiliser le cordon d'alimentation CERTIFIÉ UL et convenant pour 200-240 V.

En cas d'envoi au Canada, utiliser le cordon d'alimentation CERTIFIÉ CSA et convenant pour 200-240 V.

- Fiche : Broches parallèles avec une broche de mise à la terre (configuration NEMA L6-20P)
- Cordon Type: SJT, trifilaire 12 AWG (3 x 2.50 mm^2) ou 18 AWG (1.0 mm^2)
- Longeur Maximum: 15 pieds (4.5m)
- Capacité Minimum: 25A, 125 V

Laser statement

Class 1 laser product

⚠ WARNING!

With all panels and enclosures in place, this product is rated as a Class I laser product. The bar code scanner inside this product, however, is a Class II laser. Avoid exposure to the laser light emitted from the bar code scanner. Do not stare into the beam.

⚠ WARNING!

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure.

Laser klasse 1

⚠ **VORSICHT:** Wenn alle Blenden und Speichereinheiten ordnungsgemäß eingebaut sind, ist dieses Produkt als Laserprodukt der Klasse I eingestuft. Bei dem Barcode-Scanner in diesem Produkt handelt es sich dagegen um einen Laser der Klasse II. Setzen Sie sich und andere nicht dem vom Barcode-Scanner emittierten Laserlicht aus. Schauen Sie nicht direkt in den Strahl.

Die in diesem Handbuch beschriebenen Bedienungs-, Einstellungs- und Verfahrenshinweise müssen befolgt werden, da es andernfalls zum Austritt gefährlicher Strahlung kommen kann.

Appareil à laser de classe 1

⚠ **AVERTISSEMENT :** Lorsque tous les panneaux et boîtiers sont en place, ce produit est classé dans la catégorie des produits laser de classe I. Le scanner de code-barres à l'intérieur de ce produit est toutefois un laser de classe II. Évitez toute exposition au rayonnement laser émis par le scanner de code-barres. Ne regardez pas directement le faisceau laser.

L'utilisation des commandes ou les réglages de performances des procédures autres que ceux spécifiés dans le présent document peuvent entraîner un risque d'exposition.

Producto láser de clase 1

⚠ **ADVERTENCIA:** Con todos los paneles y receptáculos en su ubicación, este producto es clasificado como producto láser de Clase I. Sin embargo, el escáner de código de barras que se encuentra de este producto es de Clase II. Evite la exposición a la fuente luminosa del láser que emite el escáner de código de barras. No mire al rayo.

El uso de controles o ajustes de procedimientos diferentes de los especificados en este documento pueden resultar en una exposición peligrosa.

Luokan 1 laserlaite

⚠ **ATTENZIONE:** Quando tutti i pannelli e i contenitori sono in posizione, questo prodotto è classificato come prodotto laser di Classe I. Lo scanner di codice a barre all'interno del prodotto, tuttavia, è un laser di Classe II. Evitare l'esposizione alla luce laser emessa dallo scanner del codice a barre. Non dirigere lo sguardo verso il raggio laser.

L'utilizzo di controlli, regolazioni o prestazioni di procedure diverse da quelle specificate qui può essere pericoloso.

Battery statement

⚠ WARNING!

This product contains a Lithium battery. The Panasonic BR1225 on the motherboard contains a Lithium battery. Lithium may be considered a hazardous material. Dispose of this battery in accordance with local, state, and federal laws.

LET OP

WAARSCHUWING: Dit product bevat een lithiumbatterij. De Panasonic BR1225 op het moederbord bevat een lithiumbatterij. Lithium kan worden beschouwd als chemisch afval. Deze batterij dient te worden verwerkt overeenkomstig de plaatselijke en/of landelijke wetgeving.

VAROITUS

VAROITUS Tässä tuotteessa on litiumparisto. Emolevyllä oleva Panasonic PR1225 sisältää litiumpariston. Litium saattaa olla luokiteltu vaaralliseksi aineeksi. Hävitä tämä paristo paikallisten lakien ja määräysten mukaisesti.

ATTENTION

AVERTISSEMENT : Ce produit contient une pile au lithium. Le Panasonic BR1225 sur la carte mère contient une pile au lithium. Le lithium est une matière potentiellement dangereuse. La mise au rebut de cette pile doit être conforme à la loi locale, nationale ou fédérale en vigueur.

ACHTUNG

VORSICHT: Dieses Produkt enthält einen Lithium-Akku. Der Panasonic BR1225 auf der Hauptplatine enthält einen Lithium-Akku. Lithium kann als gesundheitsschädlicher Stoff eingestuft sein. Entsorgen Sie diesen Akku entsprechend den vor Ort geltenden gesetzlichen Bestimmungen.

Attenzione

ATTENZIONE: Questo prodotto contiene una batteria al litio. La batteria Panasonic BR1225 della scheda madre è al litio. Il litio può essere considerato un materiale nocivo. Lo smaltimento della batteria deve avvenire in conformità alle leggi federali, statali e locali vigenti nel paese/regione di utilizzo.

PRECAUCIÓN

> ⚠ **ADVERTENCIA:** Este producto contiene una batería de litio. El producto Panasonic BR1225 de la placa base contiene una batería de litio. El litio puede ser considerado como un material peligroso. Deshágase de esta batería de acuerdo con todas las normas legislativas.

VARNING!

> ⚠ **VARNING!** Denna produkt innehåller ett litiumbatteri. Panasonic PR1225 på moderkortet innehåller ett litiumbatteri. Litium kan betraktas som ett miljöfarligt ämne. När batteriet förbrukats, ska de lagar som gäller för miljöfarligt avfall respekteras.

Waste Electrical and Electronic Equipment directive

Disposal of Waste Equipment by Users in Private Household in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service, or the shop where you purchased the product.

Verwijdering van afgedankte apparatuur door privé-gebruikers in de Europese Unie

Dit symbool op het product of de verpakking geeft aan dat dit product niet mag worden gedeponeerd bij het normale huishoudelijke afval. U bent zelf verantwoordelijk voor het inleveren van uw afgedankte apparatuur bij een inzamelingspunt voor het recyclen van oude elektrische en elektronische apparatuur. Door uw oude apparatuur apart aan te bieden en te recyclen, kunnen natuurlijke bronnen worden behouden en kan het materiaal worden hergebruikt op een manier waarmee de volksgezondheid en het milieu worden beschermd. Neem contact op met uw gemeente, het afvalinzamelingsbedrijf of de winkel waar u het product hebt gekocht voor meer informatie over inzamelingspunten waar u oude apparatuur kunt aanbieden voor recycling.

Laitteiden hävittäminen kotitalouksissa Euroopan unionin alueella

Jos tuotteessa tai sen pakkauksessa on tämä merkki, tuotetta ei saa hävittää kotitalousjätteiden mukana. Tällöin hävitettävä laite on toimitettava sähkölaitteiden ja elektronisten laitteiden kierrätyspisteeseen. Hävitettävien laitteiden erillinen käsittely ja kierrätys auttavat säästämään luonnonvaroja ja varmistamaan, että laite kierrätetään tavalla, joka estää terveyshaitat ja suojelee luontoa. Lisätietoja paikoista, joihin hävitettävät laitteet voi toimittaa kierrätettäväksi, saa ottamalla yhteyttä jätehuoltoon tai liikkeeseen, josta tuote on ostettu.

Élimination des appareils mis au rebut par les ménages dans l'Union européenne

Le symbole apposé sur ce produit ou sur son emballage indique que ce produit ne doit pas être jeté avec les déchets ménagers ordinaires. Il est de votre responsabilité de mettre au rebut vos appareils en les déposant dans les centres de collecte publique désignés pour le recyclage des équipements électriques et électroniques. La collecte et le recyclage de vos appareils mis au rebut indépendamment du reste des déchets contribue à la préservation des ressources naturelles et garantit que ces appareils seront recyclés dans le respect de la santé humaine et de l'environnement. Pour obtenir plus d'informations sur les centres de collecte et de recyclage des appareils mis au rebut, veuillez contacter les autorités locales de votre région, l es services de collecte des ordures ménagères ou le magasin dans lequel vous avez acheté ce produit.

Entsorgung von Altgeräten aus privaten Haushalten in der EU

Das Symbol auf dem Produkt oder seiner Verpackung weist darauf hin, dass das Produkt nicht über den normalen Hausmüll entsorgt werden darf. Benutzer sind verpflichtet, die Altgeräte an einer Rücknahmestelle für Elektro- und Elektronik-Altgeräte abzugeben.   Die getrennte Sammlung und ordnungsgemäße Entsorgung Ihrer Altgeräte trägt zur Erhaltung der natürlichen Ressourcen bei und garantiert eine Wiederverwertung, die die Gesundheit des Menschen und die Umwelt schützt. Informationen dazu, wo Sie Rücknahmestellen für Ihre Altgeräte finden, erhalten Sie bei Ihrer Stadtverwaltung, den örtlichen Müllentsorgungsbetrieben oder im Geschäft, in dem Sie das Gerät erworben haben.

Smaltimento delle apparecchiature da parte di privati nel territorio dell'Unione Europea

Questo simbolo presente sul prodotto o sulla sua confezione indica che il prodotto non può essere smaltito insieme ai rifiuti domestici. È responsabilità dell'utente smaltire le apparecchiature consegnandole presso un punto di raccolta designato al riciclo e allo smaltimento di apparecchiature elettriche ed elettroniche. La raccolta differenziata e il corretto riciclo delle apparecchiature da smaltire permette di proteggere la salute degli individui e l'ecosistema. Per ulteriori informazioni relative ai punti di raccolta delle apparecchiature, contattare l'ente locale per lo smaltimento dei rifiuti, oppure il negozio presso il quale è stato acquistato il prodotto.

Eliminación de residuos de equipos eléctricos y electrónicos por parte de usuarios particulares en la Unión Europea

Este símbolo en el producto o en su envase indica que no debe eliminarse junto con los desperdicios generales de la casa. Es responsabilidad del usuario eliminar los residuos de este tipo depositándolos en un "punto limpio" para el reciclado de residuos eléctricos y electrónicos. La recogida y el reciclado selectivos de los residuos de aparatos eléctricos en el momento de su eliminación contribuirá a conservar los recursos naturales y a garantizar el reciclado de estos residuos de forma que se proteja el medio ambiente y la salud. Para obtener más información sobre los puntos de recogida de residuos eléctricos y electrónicos para reciclado, póngase en contacto con su ayuntamiento, con el servicio de eliminación de residuos domésticos o con el establecimiento en el que adquirió el producto.

Bortskaffande av avfallsprodukter från användare i privathushåll inom Europeiska Unionen

Om den här symbolen visas på produkten eller förpackningen betyder det att produkten inte får slängas på samma ställe som hushållssopor. I stället är det ditt ansvar att bortskaffa avfallet genom att överlämna det till ett uppsamlingsställe avsett för återvinning av avfall från elektriska och elektroniska produkter. Separat insamling och återvinning av avfallet hjälper till att spara på våra naturresurser och gör att avfallet återvinns på ett sätt som skyddar människors hälsa och miljön. Kontakta ditt lokala kommunkontor, din närmsta återvinningsstation för hushållsavfall eller affären där du köpte produkten för att få mer information om var du kan lämna ditt avfall för återvinning.

Bortskaffelse af affald fra husstande i den Europæiske Union

Hvis produktet eller dets emballage er forsynet med dette symbol, angiver det, at produktet ikke må bortskaffes med andet almindeligt husholdningsaffald. I stedet er det dit ansvar at bortskaffe kasseret udstyr ved at aflevere det på den kommunale genbrugsstation, der forestår genvinding af kasseret elektrisk og elektronisk udstyr. Den centrale modtagelse og genvinding af kasseret udstyr i forbindelse med bortskaffelsen bidrager til bevarelse af naturlige ressourcer og sikrer, at udstyret genvindes på en måde, der beskytter både mennesker og miljø. Yderligere oplysninger om, hvor du kan aflevere kasseret udstyr til genvinding, kan du få hos kommunen, den lokale genbrugsstation eller i den butik, hvor du købte produktet.

Descarte de Lixo Elétrico na Comunidade Européia

Este símbolo encontrado no produto ou na embalagem indica que o produto não deve ser descartado no lixo doméstico comum. É responsabilidade do cliente descartar o material usado (lixo elétrico), encaminhando-o para um ponto de coleta para reciclagem. A coleta e a reciclagem seletivas desse tipo de lixo ajudarão a conservar as reservas naturais; sendo assim, a reciclagem será feita de uma forma segura, protegendo o ambiente e a saúde das pessoas. Para obter mais informações sobre locais que reciclam esse tipo de material, entre em contato com o escritório da HP em sua cidade, com o serviço de coleta de lixo ou com a loja em que o produto foi adquirido.

Likvidace zařízení soukromými domácími uživateli v Evropské unii

Tento symbol na produktu nebo balení označuje výrobek, který nesmí být vyhozen spolu s ostatním domácím odpadem. Povinností uživatele je předat takto označený odpad na předem určené sběrné místo pro recyklaci elektrických a elektronických zařízení. Okamžité třídění a recyklace odpadu pomůže uchovat přírodní prostředí a zajistí takový způsob recyklace, který ochrání zdraví a životní prostředí člověka. Další informace o možnostech odevzdání odpadu k recyklaci získáte na příslušném obecním nebo městském úřadě, od firmy zabývající se sběrem a svozem odpadu nebo v obchodě, kde jste produkt zakoupili.

Seadmete jäätmete kõrvaldamine eramajapidamistes Euroopa Liidus

See tootel või selle pakendil olev sümbol näitab, et kõnealust toodet ei tohi koos teiste majapidamisjäätmetega kõrvaldada. Teie kohus on oma seadmete jäätmed kõrvaldada, viies need elektri- ja elektroonikaseadmete jäätmete ringlussevõtmiseks selleks ettenähtud kogumispunkti. Seadmete jäätmete eraldi kogumine ja ringlussevõtmine kõrvaldamise ajal aitab kaitsta loodusvarasid ning tagada, et ringlussevõtmine toimub viisil, mis kaitseb inimeste tervist ning keskkonda. Lisateabe saamiseks selle kohta, kuhu oma seadmete jäätmed ringlussevõtmiseks viia, võtke palun ühendust oma kohaliku linnakantselei, majapidamisjäätmete kõrvaldamise teenistuse või kauplusega, kust Te toote ostsite.

Απόρριψη άχρηστου εξοπλισμού από χρήστες σε ιδιωτικά νοικοκυριά στην Ευρωπαϊκή Ένωση

Το σύμβολο αυτό στο προϊόν ή τη συσκευασία του υποδεικνύει ότι το συγκεκριμένο προϊόν δεν πρέπει να διατίθεται μαζί με τα άλλα οικιακά σας απορρίμματα. Αντίθετα, είναι δική σας ευθύνη να απορρίψετε τον άχρηστο εξοπλισμό σας παραδίδοντάς τον σε καθορισμένο σημείο συλλογής για την ανακύκλωση άχρηστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού. Η ξεχωριστή συλλογή και ανακύκλωση του άχρηστου εξοπλισμού σας κατά την απόρριψη θα συμβάλει στη διατήρηση των φυσικών πόρων και θα διασφαλίσει ότι η ανακύκλωση γίνεται με τρόπο που προστατεύει την ανθρώπινη υγεία και το περιβάλλον. Για περισσότερες πληροφορίες σχετικά με το πού μπορείτε να παραδώσετε τον άχρηστο εξοπλισμό σας για ανακύκλωση, επικοινωνήστε με το αρμόδιο τοπικό γραφείο, την τοπική υπηρεσία διάθεσης οικιακών απορριμμάτων ή το κατάστημα όπου αγοράσατε το προϊόν.

Készülékek magánháztartásban történő selejtezése az Európai Unió területén

A készüléken, illetve a készülék csomagolásán látható azonos szimbólum annak jelzésére szolgál, hogy a készülék a selejtezés során az egyéb háztartási hulladéktól eltérő módon kezelendő. A vásárló a hulladékká vált készüléket köteles a kijelölt gyűjtőhelyre szállítani az elektromos és elektronikai készülékek újrahasznosítása céljából. A hulladékká vált készülékek selejtezéskori begyűjtése és újrahasznosítása hozzájárul a természeti erőforrások megőrzéséhez, valamint biztosítja a selejtezett termékek környezetre és emberi egészségre nézve biztonságos feldolgozását. A begyűjtés pontos helyéről bővebb tájékoztatást a lakhelye szerint illetékes önkormányzattól, az illetékes szemételtakarító vállalattól, illetve a terméket elárusító helyen kaphat.

Nolietotu iekārtu iznīcināšanas noteikumi lietotājiem Eiropas Savienības privātajās mājsaimniecībās

Šāds simbols uz izstrādājuma vai uz tā iesaiņojuma norāda, ka šo izstrādājumu nedrīkst izmest kopā ar citiem sadzīves atkritumiem. Jūs atbildat par to, lai nolietotās iekārtas tiktu nodotas speciāli iekārtotos punktos, kas paredzēti izmantoto elektrisko un elektronisko iekārtu savākšanai otrreizējai pārstrādei. Atsevišķa nolietoto iekārtu savākšana un otrreizējā pārstrāde palīdzēs saglabāt dabas resursus un garantēs, ka šīs iekārtas tiks otrreizēji pārstrādātas tādā veidā, lai pasargātu vidi un cilvēku veselību. Lai uzzinātu, kur nolietotās iekārtas var izmest otrreizējai pārstrādei, jāvēršas savas dzīves vietas pašvaldībā, sadzīves atkritumu savākšanas dienestā vai veikalā, kurā izstrādājums tika nopirkts.

Vartotojų iš privačių namų ūkių įrangos atliekų šalinimas Europos Sąjungoje

Šis simbolis ant gaminio arba jo pakuotės rodo, kad šio gaminio šalinti kartu su kitomis namų ūkio atliekomis negalima. Šalintinas įrangos atliekas privalote pristatyti į specialią surinkimo vietą elektros ir elektroninės įrangos atliekoms perdirbti. Atskirai surenkamos ir perdirbamos šalintinos įrangos atliekos padės saugoti gamtinius išteklius ir užtikrinti, kad jos bus perdirbtos tokiu būdu, kuris nekenkia žmonių sveikatai ir aplinkai. Jeigu norite sužinoti daugiau apie tai, kur galima pristatyti perdirbtinas įrangos atliekas, kreipkitės į savo seniūniją, namų ūkio atliekų šalinimo tarnybą arba parduotuvę, kurioje įsigijote gaminį.

Pozbywanie się zużytego sprzętu przez użytkowników w prywatnych gospodarstwach domowych w Unii Europejskiej

Ten symbol na produkcie lub jego opakowaniu oznacza, że produktu nie wolno wyrzucać do zwykłych pojemników na śmieci. Obowiązkiem użytkownika jest przekazanie zużytego sprzętu do wyznaczonego punktu zbiórki w celu recyklingu odpadów powstałych ze sprzętu elektrycznego i elektronicznego. Osobna zbiórka oraz recykling zużytego sprzętu pomogą w ochronie zasobów naturalnych i zapewnią ponowne wprowadzenie go do obiegu w sposób chroniący zdrowie człowieka i środowisko. Aby uzyskać więcej informacji o tym, gdzie można przekazać zużyty sprzęt do recyklingu, należy się skontaktować z urzędem miasta, zakładem gospodarki odpadami lub sklepem, w którym zakupiono produkt.

Likvidácia vyradených zariadení v domácnostiach v Európskej únii

Symbol na výrobku alebo jeho balení označuje, že daný výrobok sa nesmie likvidovať s domovým odpadom. Povinnosťou spotrebiteľa je odovzdať vyradené zariadenie v zbernom mieste, ktoré je určené na recykláciu vyradených elektrických a elektronických zariadení. Separovaný zber a recyklácia vyradených zariadení prispieva k ochrane prírodných zdrojov a zabezpečuje, že recyklácia sa vykonáva spôsobom chrániacim ľudské zdravie a životné prostredie. Informácie o zberných miestach na recykláciu vyradených zariadení vám poskytne miestne zastupiteľstvo, spoločnosť zabezpečujúca odvoz domového odpadu alebo obchod, v ktorom ste si výrobok zakúpili.

Odstranjevanje odslužene opreme uporabnikov v zasebnih gospodinjstvih v Evropski uniji

Ta znak na izdelku ali njegovi embalaži pomeni, da izdelka ne smete odvreči med gospodinjske odpadke. Nasprotno, odsluženo opremo morate predati na zbirališče, pooblaščeno za recikliranje odslužene električne in elektronske opreme. Ločeno zbiranje in recikliranje odslužene opreme prispeva k ohranjanju naravnih virov in zagotavlja recikliranje te opreme na zdravju in okolju neškodljiv način. Za podrobnejše informacije o tem, kam lahko odpeljete odsluženo opremo na recikliranje, se obrnite na pristojni organ, komunalno službo ali trgovino, kjer ste izdelek kupili.

D Sense data values

This appendix lists sense data values and descriptions. These values appear in library error codes, as well as in the library error log.

Table 19 lists message information that can be sent from the tape library to the host computer. The table is sorted by the data in the sense key column and lists the following information:

- Sense Key
- Additional Sense Code (ASC)
- Additional Sense Code Qualifier (ASCQ)
- Message name, description, and (potential) recovery action
- Valid Interfaces

  SCSI (host computer) DIAG (diagnostic port/computer) Both = SCSI and DIAG port

Table 20 lists message information for hardware failures ASCQ values. The table is sorted by the ASCQ column and lists the following information:

- ASCQ
- Message name, description and (potential) recovery action

Message name and description may contain abbreviations as follows:

- LU = Logical Unit
- REQ'D = Required
- DEV = Device
- DIAG = Diagnostics
- NVRAM = Nonvolatile RAM
- A/D = Analog-to-Digital

Table 19 Sense data values (hexadecimal)

Sense key	ASC	ASCQ	Message name / description
0	00	00	NO ADDITIONAL SENSE INFORMATION No recovery necessary.
2	04	00	LU IS NOT READY, CAUSE NOT REPORTABLE Internal error. Retry command.
2	04	01	LOGICAL UNIT IN PROCESS OF BECOMING READY Wait for library unit to complete initialization.
2	04	02	LOGICAL UNIT INIT REQUIRED Element status or calibration unknown. • Run the Calibrate Cabinet Test from the OCP Diagnostics menu. • Inventory the cabinet.
2	04	03	LU IS NOT READY, MANUAL INTERVENTION REQ'D Initialization failed. Determine failure type by checking any previous error code returned to host. Reinitialize element status through backup package or command line interface.

Sense key	ASC	ASCQ	Message name / description
2	80	00	DOOR IS OPENED INVENTORY MAY HAVE BEEN CORRUPTED Close door and retry command. If the system is on-line, it executes its initialization procedure.
2	80	01	DRIVE CLEAN REQUIRED. A tape drive requires cleaning.
2	80	07	SYSTEM IS STOPPED The **STOP** button on the control panel was pressed. Press the **STOP** button again to start the library.
2	80	09	LOGICAL UNIT IS TURNED OFF-LINE Through the **Operations** menu on the OCP, bring the library on-line.
2	3B	11	MAGAZINE NOT ACCESSIBLE The tape cartridge magazine can not be accessed.
2	3B	12	MAGAZINE NOT PRESENT The tape cartridge magazine is not present.
2	5A	01	OPERATOR MEDIUM REMOVAL REQUEST Indicates that an element contains a cleaning cartridge that is "used-up" and the library is unable to export the cleaning cartridge. Manually unload the tape. The load port door is open, so import/export elements can not be accessed.
3	52	00	DRIVE REPORTING MEDIA ERROR The tape drive is indicating that it has detected a problem with the media. • The tape in question should be removed from the library and discarded. • Check drive logs for more information.
4	44	00	INTERNAL FAILURE
4	80	11	MOTOR POWER FAILURE Indicates motor powered off for a reason not otherwise reported. Check the cabinet controller and the umbilical. Check the 55V LED on the picker to determine whether this is the motor that failed. Verify that the doors are closed. Check the door sensors.
4	80	23	BAR CODE SCANNER FAILURE Bar code scanner has failed. Run the Robotics to Home Position test from the OCP. Run Calibrate Cabinet Test from the OCP and inventory the cabinet.
4	80	0A	CONFIGURATION SETTINGS CORRUPTED Reconfigure the library. Run the Calibrate Cabinet Test from the OCP.
4	80	0F	LOW POWER ERROR Check power connections and power supplies.
4	81	See Table 20	PICKER HARDWARE FAILURE • Remove any obstructions. • Run the Robotics Self Test from the OCP.

Sense key	ASC	ASCQ	Message name / description
4	82	See Table 20	ROTARY HARDWARE FAILURE • Remove any obstructions. • Run the Robotics Self Test from the OCP.
4	83	See Table 20	EXTENSION HARDWARE FAILURE • Remove any obstructions. • Run the Robotics Self Test from the OCP.
4	84	See Table 20	VERTICAL HARDWARE FAILURE • Remove any obstructions. • Run the Robotics Self Test from the OCP.
4	85	See Table 20	HORIZONTAL HARDWARE FAILURE • Remove any obstructions. • Run the Robotics Self Test from the OCP.
4	87	See Table 20	DEPTH HARDWARE FAILURE • Remove any obstructions. • Run the Robotics Self Test from the OCP.
4	88	00	WARNING SAFE TEMPERATURE EXCEEDED This is a warning that the temperature in the library exceeds the normal operational temperature 40°C (104°F).
4	88	01	MAXIMUM TEMPERATURE EXCEEDED The robot in the overheated cabinet turns off and remains off until the temperature returns to an acceptable level. For LTO, the acceptable level is 52°C (127°F); for SDLT, the acceptable level is 49°C (120°F). • Check whether the air filters need to be replaced. • Check for fan failure. • Lower the ambient temperature.
4	89	00–FF	VISION HARDWARE FAILURE Vision internal failure.
4	8A	02	CALIBRATION FAILURE Check slots, cartridges, targets, and all internal elements. Verify that the panels are properly seated and that doors are closed.
4	8B	See Table 20	CLM HARDWARE FAILURE CLM failure.
4	8C	06	LOAD PORT DOOR OPEN Load port door unlocked but failed to open.
4	8E	02	SCSI UPGRADE TRANSFER FAILED A data transfer error or a data storage error was received during the firmware upgrade.

Sense key	ASC	ASCQ	Message name / description
4	8E	03	CABINET CONTROLLER UNABLE TO UPLOAD Unable to upload firmware to the cabinet controller. • Retry the download. • Check cable connections. • Replace Smart Media and retry.
4	8E	04	ROBOTICS CONTROLLER UNABLE TO UPLOAD Unable to upload firmware to the robotic controller. Verify that the firmware image is correct and attempt to update again.
4	F2	00	I2C BUS COMMUNICATION FAILURE Unable to communicate with the drive cluster. • Check I2C cable connection on the drive cluster. • Check that the cluster is powered on. • Check the LED status of the cluster controller.
4	F3	02	DRIVE COMMUNICATION TIMEOUT The library is unable to communicate with a drive. • Check the I2C cable, the cluster controller, and the cluster backplane board. • Check that the drive is properly seated in the bay. • Swap the drive for a known-good drive and retry. • Reseat SCSI cabling and termination.
4	F3	20	DRIVE UNLOAD FAILED OR TIMED OUT The command to the drive to unload the tape failed to complete or timed out. Retry the unload command. If it fails again, manually attempt to eject the tape.
4	F3	21	DRIVE EJECT FAILED OR TIMED OUT The command to the drive to eject a tape failed to complete or time out. Retry the unload command. If it fails again, manually attempt to eject the tape.
4	F3	22	DRIVE LOAD FAILED OR TIMED OUT The command to the drive to load a tape failed to complete or timed out. Check drive logs for more information.
4	F3	23	DRIVE THREAD FAILED OR TIMED OUT The command to the drive to thread a tape failed or timed out. Check drive logs for more information.
5	04	07	DRIVE FW UPDATE IN PROGRESS The drive can not perform indicated request because it is in the process of updating it's firmware. Wait until the firmware update is complete, then retry the operation.
5	20	00	INVALID COMMAND OPERATION CODE • Verify the host command format. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.

Sense key	ASC	ASCQ	Message name / description
5	21	01	INVALID ELEMENT ADDRESS • Check Mode Sense data for correct element addresses. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	24	00	INVALID FIELD IN COMMAND DATA BLOCK • Ensure all reserve fields are set to zero. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	25	00	LOGICAL UNIT IS NOT SUPPORTED • Verify the logical unit field specified in the command contains a legitimate logical unit number. • Check cabling to logical unit. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	26	00	INVALID FIELD IN PARAMETER LIST • Verify Mode Select page fields. • Verify that fields comply with command format described in this guide. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	26	02	PARAMETER VALUE INVALID • Verify Mode Select page fields. • Verify that fields comply with command format described in this guide. This response is also returned for commands issued to the diagnostic interface of the library if an invalid parameter is sent. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	30	03	CLEANING CARTRIDGE INSTALLED A cleaning cartridge cannot be removed from a drive because it is being used in a cleaning operation. A cartridge cannot be placed into the drive because the drive is being cleaned. A cartridge cannot be placed into an empty storage element because it is reserved for a cleaning cartridge that is currently in use in a drive cleaning operation.
5	39	00	SAVING PARAMETERS NOT SUPPORTED • Verify Save Parameter field in the Mode Select page complies with the command format described in this guide. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.

Sense key	ASC	ASCQ	Message name / description
5	53	02	MEDIUM REMOVAL PREVENTED Prevent Medium Removal command was executed and command was received to export cartridge. Retry move command using your application software.
5	80	01	TRANSFER FULL - COMMAND CAN NOT BE EXECUTED Picker has cartridge in it. • Move cartridge to empty storage element using your application software. Retry command. • As a last resort, manually remove the tape from the picker.
5	80	22	ELEMENT CONTENTS UNKNOWN The contents of an element address are unknown. Re-inventory the library.
5	81	C0	TRANSPORT FULL The picker contains a cartridge. • Issue a command to retrieve the cartridge from the picker and place it in either a bin or a tape drive. • As a last resort, manually remove the tape from the picker.
5	81	E0	PICKER INVALID START CONDITION Picker hardware condition is unknown. Run the Robotics to Home Position test from the OCP.
5	81	F0	PICKER INVALID COMMAND Picker hardware commanded to position out of system mechanical limits. Run the Robotics to Home Position test from the OCP.
5	82	E0	ROTARY INVALID START CONDITION Rotary hardware condition is unknown. Run the Robotics to Home Position test from the OCP.
5	82	F0	ROTARY INVALID COMMAND Rotary axis was commanded to a position out of its legal range. This is an internal code failure. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	83	E0	EXTENSION INVALID START CONDITION Extension hardware condition is unknown. Run the Robotics to Home Position test from the OCP.
5	83	F0	EXTENSION INVALID COMMAND Extension hardware was commanded to a position out of the systems mechanical limits. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	84	E0	VERTICAL INVALID START CONDITION Vertical hardware condition is unknown. Run the Robotics to Home Position test from the OCP.

Sense key	ASC	ASCQ	Message name / description
5	84	F0	VERTICAL INVALID COMMAND Vertical hardware commanded to position out of system mechanical limits. • Run the Robotics to Home Position test from the OCP. • If the problem persists, calibrate the library. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	85	E0	HORIZONTAL INVALID START CONDITION Horizontal hardware condition is unknown. Run the Robotics to Home Position test from the OCP.
5	85	F0	HORIZONTAL INVALID COMMAND Horizontal hardware commanded to position out of system mechanical limits. • Run the Robotics to Home Position test from the OCP. • If the problem persists, calibrate the library. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	87	F0	DEPTH INVALID START CONDITION Depth hardware condition is unknown. Run the Robotics to Home Position test from the OCP.
5	87	F0	DEPTH INVALID COMMAND Depth hardware commanded to position out of system mechanical limits. • Run the Robotics to Home Position test from the OCP. • If the problem persists, calibrate the library. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	1A	00	PARAMETER LIST LENGTH ERROR Invalid parameter list length field specified by command. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	2C	00	COMMAND SEQUENCE ERROR (read of unwritten echo buffer)
5	3A	00	MEDIUM NOT PRESENT The inventory indicated that a cartridge was in this bin but no cartridge was sensed by the picker when it attempted to pick it. It may also indicate that the tape is not ready to be picked from the drive because the tape is not fully unloaded. • Retry the command. • Check for proper seating of the cartridge.

Sense key	ASC	ASCQ	Message name / description
5	3B	0D	MEDIUM DESTINATION ELEMENT FULL Destination element address already contains a cartridge. • Re-inventory the cabinet and retry the move command using your application software. • If the problem recurs, run the Robotics to Home Position test followed by a cabinet inventory, and retry the move command using your application software.
5	3B	0E	MEDIUM SOURCE ELEMENT EMPTY Source element address does not contain a cartridge. • Re-inventory the cabinet and retry move command using your application software. • If the problem recurs, run the Robotics to Home Position test followed by a cabinet inventory, and retry the move command using your application software.
5	4E	00	OVERLAPPED COMMANDS ATTEMPTED Due to a second command being sent from the same host before a previous command has completed, the previous command has been aborted. This may also occur when executing off-line commands via the control panel and DIAG port simultaneously. • Verify that the host software application is supported, has up-to-date patches, and is correctly configured. • Verify that the library and its components have the current firmware.
5	8A	02	UNCALIBRATED POSITION System requires calibration. Run the Calibrate Cabinet test from the OCP.
5	8B	E0	CLM INVALID START CONDITION CLM hardware condition is unknown. Run the Robotics to Home Position test.
5	8B	F0	CLM INVALID COMMAND CLM hardware commanded to position out of system mechanical limits. • Run the Robotics to Home Position test. • If the problem persists, calibrate the library.
6	2B	01	IMPORT OR EXPORT ELEMENT ACCESSED Load port door has been closed.
6	29	00	POWER-ON, RESET OR BUS DEVICE RESET OCCURRED Informational message. The host user should assume the inventory may have changed, and should ask the library for that information again.
6	29	01	POWER-ON RESET OCCURRED. Informational message. The host user should assume the inventory may have changed, and should ask the library for that information again.
6	29	02	BUS RESET OCCURRED. Informational message. The host user should assume the inventory may have changed, and should ask the library for that information again.
6	29	03	BUS DEVICE RESET OCCURRED Informational message. The host user should assume the inventory may have changed, and should ask the library for that information again.

Sense key	ASC	ASCQ	Message name / description
6	29	04	INTERNAL DEVICE RESET OCCURRED Informational message. The host user should assume the inventory may have changed, and should ask the library for that information again.
6	80	00	DOOR WAS OPENED INVENTORY MAY HAVE BEEN CORRUPTED Close door and retry command after inventory is complete.
6	80	07	SYSTEM **STOP** BUTTON WAS PRESSED The **STOP** button on the control panel was pressed. Press the **STOP** button again to start the cabinet. Retry command.
6	80	09	LOGICAL UNIT TURNED ON-LINE Through the menu options, bring the library on-line. This message is informational only; no action is required.
6	80	09	LOGICAL UNIT TAKEN OFFLINE Library was taken off-line through the remote web management or OCP.
6	80	0E	DATA TRANSFER CHANGED A drive has been inserted/removed into the system. Use "Read Element Status" to determine status of drives.
6	2A	01	MODE PARAMETERS CHANGED Mode parameters may have changed due to another host issuing a Mode Select command.
6	3B	13	MAGAZINE INSERTED A tape cartridge magazine has been inserted.
B	08	00	LOGICAL UNIT COMMUNICATION FAILURE Check cables. Ensure library unit is powered on. Retry command.
B	08	01	LIBRARY COMMUNICATION TIME-OUT Internal communications not responding. Retry command. Check the following internal cable connections: Ethernet cable, umbilical cable, robotics controller, cabinet controller.
B	30	00	INCOMPATIBLE MEDIA An attempt was made to move media to a destination element that is incapable of receiving it. Make sure you are using the correct media and that it is labeled with the correct barcode.
B	43	00	SCSI MESSAGE ERROR Detected message error in message processing on the SCSI BUS. • Verify termination. • Verify SCSI cable connections. • Check host status. • Restart system.
B	47	00	SCSI PARITY ERROR SCSI Parity Error detected. • Verify termination. • Verify SCSI cable connections and cable length. • Check host status. • Restart the system.

Sense key	ASC	ASCQ	Message name / description
B	48	00	INITIATOR DETECTED ERROR MESSAGE RECEIVED
B	80	01	TRANSFER FULL - AT END OF PLACE Picker has cartridge in it at end of a place operation (Move Medium with a target other than the Transfer). • Move cartridge to empty storage element using your application software. Retry command. • As a last resort, manually remove the tape from the robotics.
B	80	06	TRANSFER EMPTY - COMMAND ABORTED Picker does not contain cartridge at end of pick portion of the Move Medium command.
B	80	10	LOAD RETRY FAILED Library was unable to successfully load and thread the drive, even after retries. • Check drive alignment. • Make sure the correct media for the drive is being used. • If cartridge loads in another drive successfully, the original drive may have failed.
B	80	0B	COMMAND ABORTED BY USER Informational message. No action is necessary.
B	80	0D	CARTRIDGE PARTIALLY GRIPPED • Issue a Move Medium command using your application software to move the cartridge from the transfer element to an empty storage element. • If necessary, manually clear the media, recalibrate, then inventory the library.
B	88	C0	TRANSPORT FULL The CLM contains a cartridge. Issue a command to retrieve the cartridge from the CLM and place it in either a bin or a tape drive.
B	8C	01	LOAD PORT LATCH FAILURE The load port door was unlocked, but did not leave its current position before time-out (30 seconds). This may be due to the door being stuck, or in the case of a close operation, the operator not moving the door.
B	8F	00	LIBRARY UNIT COMMAND TIMED OUT Verify that communications to library still exists by issuing another command.
-none-	30	03	CLEANING CARTRIDGE INSTALLED Indicates that the element contains a cleaning cartridge that is not "used-up." This is returned with the element status data, which has no sense key.
-none-	80	01	DRIVE REQUIRES CLEANING Tape drive indicates that drive needs cleaning. Clean the tape drive. This is returned with element status data, which has no sense key.

Table 20 Hardware failure ASCQ values

ASCQ	Description
00-0F	OTHER Hardware internal failure. Call Technical Support.
10-1F	ENCODER/MOTOR Check the motor/encoder connector.
20-2F	HOME SENSOR/FLAG Home sensor/flag failure. Check home sensor connector and flag.
30-3F	MECHANICAL POSITION ERROR Hardware did not reach desired position. The axis path could be obstructed. Determine the cause of the obstruction. Retry command. If the failure recurs, run self-test.
40-4F	TIMEOUT Hardware did not reach desired position. The axis rail lubrication may be insufficient. The axis belt may be too tight. The motor pulley may be loose. Retry the command. If the failure reoccurs, then run selftest.
50-5F	OVER CONTROL The hardware is obstructed. Determine the cause of the obstruction. Retry the command. If the failure reoccurs, then run selftest.
60-6F	FPGA FAILURE Robotics FPGA has failed. Call Technical Support.
70-7F	POSITIONAL DRIFT The hardware home position is drifting. Call Technical Support.
80-8F	MAPPING FAILURE Scanner was unable to detect optical target during calibration.
90-9F	FORCE ERROR While pushing a cartridge into a bin or drive, the extension axis never made contact with any object.
A0-AF	SENSOR FAILURE A sensor transition did not occur as expected or an extra transition occurred during calibration, inventory or pick/place. Retry the command. If the failure recurs, contact Technical Support.
B0-BF	ELECTRONICS NOT PRESENT Electronics necessary for hardware to function is not present. Install necessary hardware.

E Event reporting

The library is capable of reporting a variety of events that occur within the cabinet. An event is defined as any occurrence of interest to you, the user, that may require your attention and possible intervention. These events are reported through the OCP and in library support tickets. Find more information on the events by generating a support ticket with Command View or L&TT. Events classified as informational might not be displayed.

Library events are broken up into the following sections:

- the section called "Critical events"
- the section called "Warning events"
- the section called "Information events"

> **NOTE:**
>
> This information is the same as that presented in the *HP StorageWorks ESL-Series Tape Library users guide.*

Critical events

Critical events indicate that a failure has occurred in the cabinet. The user must intervene to return the cabinet to operation.

> **NOTE:**
>
> The "$" in the table below are variables and are filled in at run-time.

Table 21 lists the critical events provided by the library.

Table 21 Critical events

Event ID	Critical events
0x1a0	$name sensor in cabinet $framename needs attention, value $value
0x1a1	$name sensor needs attention, status $status
0x1a2	Tape inventory failed
0x1a3	Tape Alert Flag 4 for drive $drive - Media
0x1a4	Tape Alert Flag 5 for drive $drive - Read Failure
0x1a5	Tape Alert Flag 6 for drive $drive - Write Failure
0x1a6	Tape Alert Flag 9 for drive $drive - Write Protect
0x1a7	Tape Alert Flag 13 for drive $drive - Recoverable Snapped Tape
0x1a8	Tape Alert Flag 14 for drive $drive - Unrecoverable Snapped Tape
0x1a9	Tape Alert Flag 16 for drive $drive - Forced Eject
0x1aa	Tape Alert Flag 20 for drive $drive - Clean Now
0x1ab	Tape Alert Flag 22 for drive $drive - Expired Cleaning Media
0x1ac	Tape Alert Flag 23 for drive $drive - Invalid Cleaning Cartridge

Event ID	Critical events
0x1ad	Tape Alert Flag 30 for drive $drive - Hardware A (Reset Needed)
0x1ae	Tape Alert Flag 31 for drive $drive - Hardware B (Power Cycle Needed)
0x1af	Tape Alert Flag 33 for drive $drive - Eject Media
0x1b0	Tape Alert Flag 38 for drive $drive - Predictive Failure
0x1b1	Diagnostic command $cmd command failed
0x1b2	Unable to get medium changer statistics
0x1b3	Maximum temperature exceeded
0x1b4	Drive update for drive $drive
0x1b5	Unexpected Drive Power Off for drive $drive
0x1b6	Unexpected Drive Not Present for drive $drive
0x1b7	Library communication time-out
0x1b8	Incompatible media
0x1b9	Transfer full - at end of place
0x1ba	Load retry failed
0x1bb	Cartridge partially gripped
0x1bc	Low power error
0x1bd	Motor power failure
0x1be	Bar code decoder communication failure
0x1bf	Picker timeout
0x1c0	Picker open failure
0x1c1	Picker close failure
0x1c2	Unable to pick cartridge
0x1c3	Rotary timeout
0x1c4	Rotary front failed
0x1c5	Rotary back failure
0x1c6	Rotary home not found
0x1c7	Rotary axis internal failure
0x1c8	Rotary invalid command
0x1c9	Transport full
0x1ca	Diagnostics command $cmd failed for CLM
0x1cf	Extension invalid command
0x1d0	Error positioning CLM during CLM discovery to cabinet position $position
0x1d1	Inventory error for CLM element during CLM discovery in cabinet $framename
0x1d2	Inventory data error for CLM element during CLM discovery in cabinet $framename
0x1d3	Home picker error during tape move recovery in cabinet $framename

Event ID	Critical events
0x1d5	Picker is unable to determine what tape is in the picker during tape move recovery in cabinet $framename
0x1d6	Cabinet barcode reader failed to read library identification data
0x1d7	Error positioning cabinet robot to CLM slot
0x1d8	No CLM frame number found for frame $framename
0x1e2	Warning safe temperature exceeded
0x1e3	Load port latch failure
0x1e4	$panelname $name sensor needs attention, value $value
0x1e5	Drive $drivenumber, $name sensor needs attention, value $value
0x1e7	Transfer empty - command aborted
0x1eb	Logical unit communication failure
0x1ec	Rotary invalid start condition
0x1ed	Extension invalid start condition
0x1ee	Drive load failed or timed out
0x1ef	Depth hardware failure
0x1f0	Vision hardware failure
0x1f2	CLM invalid start condition
0x1f3	CLM invalid command
0x1f4	Transport full
0x1f5	Load port door open
0x1f6	Cabinet controller unable to upload
0x1f7	Robotic controller unable to upload
0x1f8	Library unit timed out
0x1f9	Drive communication timeout
0x1fa	Drive unload failed or timed out
0x1fb	Drive eject failed or timed out
0x1fc	Drive thread failed or timed out
0x1fd	Tape move failed
0x1fe	Internal failure
0x1ff	Picker hardware failure
0x200	Picker hardware failure of encodor/motor
0x201	Picker hardware failure of home sensor/flag
0x202	Picker hardware failure - mechanical position error
0x203	Picker hardware failure - timeout
0x204	Picker hardware failure - obstruction
0x205	Picker hardware failure - FPGA failure
0x206	Picker hardware failure - positional drift

Event ID	Critical events
0x207	Picker hardware failure - mapping failure
0x208	Picker hardware failure - force error
0x209	Picker hardware failure - sensor failure
0x20a	Picker hardware failure - electronics not present
0x20b	Extension hardware failure
0x20c	Extension hardware failure of encodor/motor
0x20d	Extension hardware failure of home sensor/flag
0x20e	Extension hardware failure - mechanical position error
0x20f	Extension hardware failure - timeout
0x210	Extension hardware failure - obstruction
0x211	Extension hardware failure - FPGA failure
0x212	Extension hardware failure - positional drift
0x213	Extension hardware failure - mapping failure
0x214	Extension hardware failure - force error
0x215	Extension hardware failure - sensor failure
0x216	Extension hardware failure - electronics not present
0x217	Vertical hardware failure
0x218	Vertical hardware failure of encodor/motor
0x220	Vertical hardware failure of home sensor/flag
0x221	Vertical hardware failure - mechanical position error
0x222	Vertical hardware failure - timeout
0x223	Vertical hardware failure - obstruction
0x224	Vertical hardware failure - FPGA failure
0x2c2	Parse error
0x2c3	Missing HBA for partition $partition
0xb01	CLM $name sensor needs attention, status $status

Warning events

Warning events indicate that a possible error condition exists within the cabinet. These events give the user a chance to check the cabinet before a failure occurs.

📝 NOTE:

The "$" in the table below are variables and are filled in at run-time.

Table 22 lists the warning events provided by the library.

Table 22 Warning events

Event ID	Warning events
0x150	Tape move failed
0x151	Tape inventory failed
0x152	$name sensor may need attention, value $value
0x153	$name sensor may need attention, status $status
0x154	Tape Alert Flag 1 for drive $drive - Read Warning
0x155	Tape Alert Flag 2 for drive $drive - Write Warning
0x156	Tape Alert Flag 3 for drive $drive - Hard Error
0x157	Tape Alert Flag 7 for drive $drive - Media Life
0x158	Tape Alert Flag 8 for drive $drive - Not Data Grade
0x159	Tape Alert Flag 15 for drive $drive - Memory in Cartridge Failure
0x15a	Tape Alert Flag 17 for drive $drive - Read Only Format
0x15b	Tape Alert Flag 18 for drive $drive - Tape Directory Corrupted
0x15c	Tape Alert Flag 21 for drive $drive - Clean Periodic
0x15d	Tape Alert Flag 29 for drive $drive - Drive Maintenance
0x15e	Tape Alert Flag 32 for drive $drive - Interface
0x15f	Tape Alert Flag 34 for drive $drive - Download Fault
0x160	Tape Alert Flag 35 for drive $drive - Drive Humidity
0x161	Tape Alert Flag 36 for drive $drive - Drive Temperature
0x162	Tape Alert Flag 37 for drive $drive - Drive Voltage
0x163	Tape Alert Flag 39 for drive $drive - Diagnostics Required
0x164	Error setting SCSI ID for drive $drive
0x165	Cabinet front door open
0x166	Diagnostic command $cmd command failed
0x167	Fibre drive configuration failed for drive $drive
0x168	Unable to get medium changer statistics
0x169	NVRAM corrupted
0x170	Drive update for drive $drive
0x171	Logical unit init required
0x172	Logical unit is not ready
0x173	Operator medium removal request
0x174	Door is opened
0x175	Transfer full - command can not be executed
0x176	System is stopped
0x177	Logical unit is turned off-line
0x179	$panelname $name sensor may need attention, value $value
0x17A	Drive $drivenumber, $name sensor may need attention, value $value

Event ID	Warning events
0x17B	Logical unit is not ready
0x17c	Cabinet failed to go online
0x17d	Failed to connect to robot
0x17e	Cleaning cartridge expired in drive $drive
0x17f	Drive cleaning timeout for drive $drive
0x180	No cleaning cartridge found in the library for drive $drive
0x181	Duplicate barcode detected
0x182	Duplicate barcode $barcode detected in cabinets $origframename and $dupframename
0x183	Cabinet $framekey $panelname status is $updatetype
0x184	Medium magazine is not accessible
0x198	Tape in picker forcabinet $framename
0x199	Picker inventory failed for cabinet $framename
0x19b	CLM $name sensor may need attention, status $status
0x19c	Diagnostic command $cmd command failed for CLM
0x19d	Tape in CLM for cabinet $framename
0x19e	Panel change detected during robot reconnect for cabinet $framename
0x19f	Drive $drive unload failed because Prevent Media Removal set
0x1d4	Tape in picker for cabinet $framename - CLM still initializing
0x2b2	Upload image failed
0x354	FC Bridge firmware upload failed
0x653	Slave cabinet $framename $firmwaretype firmware upgrade started
0x654	Slave cabinet $framename $firmwaretype firmware upgrade failed
0x655	System improperly shutdown
0x656	FC Bridge Firmware upgrade, $ip, failed
0xc00	Cabinet $framename failed to go online
0xc01	System failed to go online

Information events

Informational events are for user information only and do not require any intervention on the cabinet, such as replacing components or updating software.

NOTE:
The "$" in the table below are variables and are filled in at run-time.

Table 23 lists the information events provided by the library.

Table 23 Information events

Event ID	Information event
0x100	Cabinet $cabinetnumber front door closed
0x101	Cabinet $cabinetnumber front door open, slow mode
0x102	Cabinet $cabinetnumber $name $value
0x103	$panelname opened
0x104	$panelname closed
0x105	$name sensor status update, value $value
0x106	$name sensor status update, status $status
0x107	Picker acquired for inventory
0x108	Tape inventory progressing
0x109	Acquiring picker for inventory
0x10a	Tape move completed successfully
0x10b	Tape inventory completed successfully
0x10c	Mode parameters for cabinet changed
0x10d	Mode parameters for partition changed
0x10e	Cabinet has been stopped
0x10f	Cabinet has been started
0x110	Cabinet is now offline
0x111	Drive $drive is added to configured drives count
0x112	Cabinet state change to online
0x113	OEM has changed.
0x114	Partition state change to online
0x115	Cabinet state change to going online
0x116	Drive $drive added
0x117	Drive $drive removed
0x118	Drive $drive power on
0x119	Drive $drive power off
0x11a	Drive $drive is communicating
0x11b	Drive $drive is not communicating
0x11c	Cartridge update received for drive $drive
0x11d	Cartridge thread update for drive $drive
0x11e	Cartridge thread update for drive $drive
0x11f	Cartridge ejected from drive $drive
0x120	Partition prevent / allow changed
0x121	Load port $loadport
0x122	Cabinet $framename added
0x123	Cabinet $framename assigned CLM number $framenumberassigned

Event ID	Information event
0x124	Tape Alert Flag 10 for drive $drive - No Removal
0x125	Tape Alert Flag 11 for drive $drive - Cleaning Media
0x126	Tape Alert Flag 12 for drive $drive - Unsupported Format
0x127	$panelname opened
0x128	$panelname closed
0x129	Tape inventory homed grippers
0x12A	Diagnostic command $cmd completed successfully
0x12B	Unable to get medium changer statistics
0x12C	Drive update for drive $drive
0x12D	Tape inserted into drive $drive
0x12E	Homing grippers during inventory
0x12F	Command aborted by user
0x130	Diagnostic command $cmd command failed
0x131	Drive firmware update in progress
0x132	Medium not present
0x133	Medium destination element full
0x134	Medium source element empty
0x135	Element contents unknown
0x136	Vertical invalid command
0x137	Horizontal invalid command
0x138	Uncalibrated position
0x139	$panelname, sensor $name status update, value $value
0x13A	Drive $drivenumber, sensor $name status update, value $value
0x13B	Invalid element address
0x13C	SCSI ID set for drive $drive
0x13e	Drive reporting media error
0x13f	Medium removal prevented
0x140	Drive requires cleaning
0x141	Transport full
0x142	Picker invalid start condition
0x143	Picker invalid command
0x144	Horizontal invalid start condition
0x145	Vertical invalid start condition
0x146	Depth invalid start condition
0x147	Depth invalid command
0x148	Cleaning cartridge installed
0x149	Lost power to robot

Event ID	Information event
0x14A	Tape engaged in drive $drive
0x14B	SCSI ID set for partition $part
0x14d	Cabinet $framekey door open during initialization
0x14e	No additional sense information
0x14f	Cabinet $framekey $panelname status is $updatetype
0x16a	The cabinet controller process was restarted
0x16b	The COD setting was changed
0x16c	The configured number of bins changed.
0x16d	User Partition $partname added/modified
0x16e	Partition $partname deleted
0x16f	Tape move progressed
0x2a0	SCSI event
0x2a1	Abort SCSI command
0x2a2	Invalid CDB received
0x2a3	Upload library firmware image started
0x2a4	Parse error
0x302	Added new user
0x303	Updated user
0x304	Removed user
0x305	Added new SNMP community
0x306	Updated SNMP community
0x307	Removed SNMP community
0x308	Added new trap destination
0x309	Updated trap destination
0x30a	Removed trap destination
0x30b	Updated date and time
0x30c	Updated IP address
0x30d	Updated subnet mask
0x30e	Updated hostname
0x30f	Updated domain
0x310	Updated default gateway
0x311	Updated email server
0x312	Updated DNS address
0x313	Library Name changed
0x314	Library shutdown requested from remote GUI
0x315	Library reboot requested from remote GUI
0x316	Contract number updated

Event ID	Information event
0x317	Upload configuration file complete
0x318	Upgrade firmware complete
0x319	OCP password reset
0x31A	Bad status received for cabinet controller command
0x31B	Upload firmware file complete
0x31C	Library option $liboption modified
0x31D	Partition settings activated
0x31E	All partitions deleted
0x31F	Successfully aborted System Test
0x320	Attempt to abort System Test failed
0x321	Started uploading firmware image $imagename
0x322	Started uploading FC Bridge firmware $imagename
0x323	Started system test $startsystest on $name
0x400	Updated OCP Password
0x401	Updated Subnet Mask
0x402	Updated Default Gateway
0x403	Updated IP address
0x404	Begin LoadPort unload
0x405	End LoadPort unload
0x406	Library shutdown requested from OCP
0x407	Library reboot requested from OCP
0x408	HP Interface Manager Present
0x409	Library Database Factory Settings Restored
0x410	Library Vendor Defaulted to Quantum
0x411	Updated DHCP setting
0x500	System Test Started
0x501	System Test Completed
0x502	System Test Aborted
0x600	Library reboot/shutdown via hardware switch
0x601	Network configuration set via setup shell
0x602	Web admin account changed
0x603	Web admin account created
0x604	Updated date and time
0x605	Firmware upgrade completed
0x606	Date and time zone have been changed
0x607	Firmware upgrade started
0x608	Firmware upgrade of slave cabinet $framename completed

Event ID	Information event
0x609	FC Bridge Firmware upgrade, $ip, completed
0xa00	$panelname $name sensor status update, status $status
0xa02	CLM $name sensor status update, status $status
0xa03	The cabinet controller process was shut down
0xa04	Diagnostic command $cmd completed successfully for CLM
0xa05	Diagnostic command $cmd command failed for CLM
0xa06	Cabinet $framename state is $onlinestate with no user intervention needed
0xa07	Cabinet $framename state is $onlinestate with homing of picker needed
0xa08	Cabinet $framename state is $onlinestate with user intervention needed
0xa09	System state is $onlinestate with $onlinestate with no user intervention needed
0xa0a	System state is $onlinestate with $onlinestate with homing of picker needed
0xa0b	System state is $onlinestate with $onlinestate with user intervention needed
0xa0c	Partition $partname state is $onlinestate with no user intervention needed
0xa0d	Partition $partname state is $onlinestate with homing of picker needed
0xa0e	Partition $partname state is $onlinestate with user intervention needed
0xa0f	Test unit ready status for partition $partname changed to $tursense
0xa10	Drive reset initiated in cabinet $framename for drive $drive
0xa11	Drive reset failed in cabinet $framename for drive $drive
0xa12	CLM is communicating
0xa13	Lost communication with CLM
0xa14	CLM reboot initiated
0xa15	The cabinet controller process was started

Glossary

ASC	The Additional Sense Code is part of the SCSI-2 specification. The additional sense code (ASC) field indicates further information related to the error or exception condition reported in the sense key field.
ASCQ	Additional Sense Code Qualifier is part of the SCSI-2 specification. The additional sense code qualifier (ASCQ) indicates detailed information related to the additional sense code.
Autoclean	A user-defined mode made on the touch screen GUI by which the library automatically performs drive cleaning tasks.
Bit	The basic unit of data in a binary numbering system (binary digit), represented by a 0 or a 1. Eight bits equals one byte.
Byte	The basic unit of computer memory which is large enough to hold one character.
Calibrate	A process used by the library robotics to determine the exact position of storage, data transfer, and import/export elements.
Check Condition status	This is part of the SCSI-2 specification. It is notification from the library back to the host that the host needs to check the status of the library. It can indicate a normal state change such as a door closed, or an error such as a move failure.
CISPR 22	This standard describes the emissions testing methods and test limits for information technology equipment, such as computers, office machines, or telecommunications equipment connected to low - voltage power main networks (<600V). It does not apply to equipment whose primary function is radio transmission or reception as defined by the International Telecommunications Union (ITU) Radio Regulations. The object of the standard is to establish uniform requirements for the conducted and radiated disturbance levels of the equipment covered by the standard. Disturbance limits are established for Class A and Class B equipment, and measurement methods, operating conditions, and interpretation of results are addressed.
Class A digital device	Class A equipment is intended for Commercial installation.
Class I laser product	Class 1 lasers are products where the power of the laser beam produced (the accessible emission) is always below the Maximum Permissible Exposure value. Therefore, for Class 1 lasers the output power is below the level at which it is believed eye damage will occur. Exposure to the beam of a Class 1 laser will not result in eye injury. Class 1 lasers may therefore be considered eye safe.
Class II laser product	Class 2 lasers are limited to a maximum output power of 1 mW. A person receiving an eye exposure from a Class 2 laser, either accidentally or as a result of someone else's deliberate action (misuse) will be protected from injury by their natural blink reflex. This is a natural involuntary response which causes the individual to blink and avert their head thereby terminating the eye exposure.
Cross Linked (CLM) library	A Cross Linked library comprises two or more standalone libraries that function as a single system. Additional hardware and specific firmware is required to form a CLM library.
Elements	SCSI designation for any device or bin in the library that can hold a cartridge. SCSI elements include storage bins, tape drives, load port bins, and the picker.

EMI	Electro-Magnetic Interference refers to unwanted electrical noise present on a power line. This noise may leak from the power lines and affect equipment that isn't even connected to the power line. Such leakage is called a magnetic field. Magnetic fields are formed when unwanted noise voltages give rise to noise currents. Such noise signals may adversely affect electronic equipment and cause intermittent data problems.
ESD	Electrostatic Discharge
Host	The device or devices to which the library is connected.
IEC	The International Electrotechnical Commission is based in Geneva, Switzerland.
Load port	A port used to add a small number of tapes to the library without interrupting library functions.
LTO-2	Linear Tape-Open is a tape drive specification backed by HP, IBM and Seagate. Ultrium 460 tape drives (LTO-2) are HP's second generation of LTO tape drives.
LTO-3	Linear Tape-Open is a tape drive specification backed by HP, IBM and Seagate. Ultrium 960 tape drives (LTO-3) are HP's third generation of LTO tape drives.
LVD	Low Voltage Differential or LVD is a type of electrical signaling for parallel SCSI and can reach distances up to 12 meters. All SCSI HP Ultrium 460 tape drives are LVD devices. SDLT tape drives can be LVD or HVD devices.
MSBF	Mean Swaps Before Failure
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NEMA	National Electrical Manufacturers Association
Network interface Card (NIC)	A NIC is a device that handles communication between a device and other devices on a network.
NVRAM	Non-Volatile Random Access Memory is a type of memory that retains its contents when power is turned off. One type of NVRAM is SRAM that is made non-volatile by connecting it to a constant power source such as a battery. Another type of NVRAM uses EEPROM chips to save its contents when power is turned off. In this case, NVRAM is composed of a combination of SRAM and EEPROM chips.
PCI	The PCI bus typically runs at speeds of 33 MHz or 66 MHz and is usually 32 bits wide. This means that it passes 32 bits of data simultaneously as if down 32 separate wires. Some of the most recent computers include wider 64-bit PCI buses, and already certain very high-end video capture cards offer improved performance if connected to a 64-bit PCI bus.
Picker	A mechanical component of the extension axis assembly (robotics) which grips and holds a tape cartridge in transit.
Robotics	As used in the context of automated tape libraries; the X-axis, Y-axis, and Z-axis mechanical assemblies inside the library used to move tape cartridges.
RS-232C	Short for Recommended Standard-232C, a standard interface approved by the Electronic Industries Association (EIA) for connecting serial devices. This standard is for asynchronous transfer between computer equipment and accessories. Data is transmitted bit by bit in a serial fashion. The RS-232 standard defines the function and use of all 25 pins of a DB-25 type connector.
SCSI	Small Computer System Interface. An American National Standards Institute (ANSI) communications standard for attaching peripheral equipment to computers.

SCSI ID	A unique address (0 to 15) assigned to each device on a SCSI bus.
SCSI over IP Protocol (SIPP)	SIPP allows a library to transport SCSI commands through the IC's FC port to the robotics controller's Ethernet port. In a library with multiple ICs, a designated IC (the SIPP Master) receives and implements robot commands from the host.
SCSI-2	A second generation SCSI interface which includes command sets for magnetic and optical disks, tapes, printers, processors, CD-ROMs, scanners, medium changers, and communication devices.
SDLT	Super Digital Linear Tape is a Quantum tape drive and tape cartridge specification offered in three ranges of capacity and transfer rates for workgroup, mid-range, and enterprise needs.
SIPP	*See also* SCSI over IP Protocol
SNMP	Short for Simple Network Management Protocol, a set of protocols for managing complex networks.
Take-up leader	The ring at the beginning of a tape in a cartridge.
Tape drive controllers	A device that controls the transfer of data from a host to a tape drive and vice versa.
Terabyte	A unit of measure for digital data equal to approximately 1,000 gigabytes, or 1,099,511,627,776 bytes.
Terminator	Special electrical resistors (terminators) are installed in the SCSI devices at each end of the SCSI bus and are not installed in other devices on the bus. The SCSI bus must be properly terminated at both ends so that commands and data can be transmitted to and from all devices on the bus.
Ultrium	*See also* LTO-2.

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