



XLS Series of Tape Libraries

# User's Guide

Document No. 501603 Rev. 07-01-19

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### Notices

Qualstar products are covered by one or more of the following patents: 6,271,982; 6,560,061; and 7,181,313. Other patents pending.

Qualstar equipment is manufactured from new parts, or new and used parts. In some cases, Qualstar equipment may not be new and may have been previously installed. Regardless, Qualstar's warranty terms apply unless the equipment is specifically identified by Qualstar as "used" or "refurbished."

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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Shielded cables are required for this device to comply with FCC Rules. Use shielded cables when connecting this device to others.

## European Union Directive 89/336/EEC and Standard EN55022 (Electromagnetic Compatibility)

### CAUTION

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.

## European Directive on Waste Electrical and Electronic Equipment (WEEE)



Qualstar encourages its customers to use current recycling practices in order to reduce the burden that waste electronic products place on the environment.

If you are retiring a fully functional tape library, you are encouraged to transfer the functional unit to a new user, thereby extending the useful life of the tape library. The manufacture of all products requires the consumption of energy. By extending the life of the tape library, energy is conserved.

In accordance with environmental directives that are being implemented in many countries (refer to the European Directive on Waste Electrical and Electronic Equipment - WEEE), Qualstar provides customers with [“End of Life Instructions”](#) that identify the process for recycling the materials and components that make up a Qualstar tape library.

## End of Life Instructions

### Tools required

- #1 and #2 Phillips screwdrivers
- T20 Torx head screwdriver
- Hex head (Allen) wrench/driver set
- 1/4-inch hex nut driver

### Disassembly procedure

1. Remove the door(s).
2. Remove the front panel.
3. Remove the external side panels.
4. Remove the internal subassemblies.

### Items recyclable using conventional methods

- **Aluminum:** Front panel, exterior side and rear panels, robotics, cartridge and drive bays, carousel and shroud panels
- **Stainless steel:** Robot guides
- **Steel:** Frames, fasteners
- **Plastic:** Windows, cartridge magazines, tape cassettes
- **Copper:** Internal wiring, motors, SCSI cables
- **Paper:** Manuals

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### **Items requiring special disposal due to lead-based solder**

- **Printed circuit boards:** Controller card, miscellaneous small printed circuit boards

### **Items that may have salvage or resale value**

- Tape drives
- EMI line power filter

## **Reduction of Hazardous Substances (RoHS)**

Qualstar is committed to the implementation of RoHS (Restriction of the use of certain hazardous substances in electrical and electronic equipment) in accordance with the European Directive. The for compliance date is July 1, 2006, at which time Qualstar will certify that its Tape Library products are compliant with the RoHS standard. With the exception of Lead Based Solder, Qualstar will certify that its products are free of all other substances listed in the Directive.

Qualstar Tape Libraries fall under the category of "Information Technology Storage Array Systems" for which the RoHS Directive provides for a lead solder exemption. Insofar as lead free solders are new to the electronics industry and no quality or reliability data is available, Qualstar will invoke the lead based solder exemption until such time as industry data verifies that lead free solders are capable of meeting or exceeding the documented reliability and quality standards achieved with lead based solders. Until such time as Qualstar replaces lead based solder with lead free solder, effected subassemblies must be disposed of appropriately.

## **Technical Support**

The best source for service-related information is your system reseller. Alternately, you can reach the Qualstar Technical Support Department at:

**Qualstar Corporation**  
1267 Flynn Road  
Camarillo, CA 93012

**Monday - Friday 7:00 A.M. to 4:00 P.M. PST**

Phone: (805) 416-7055

Toll Free: (877) 886-2758

E-mail: [support@qualstar.com](mailto:support@qualstar.com)

E-mail: [sales@qualstar.com](mailto:sales@qualstar.com)

[www.qualstar.com](http://www.qualstar.com)

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**Notes:**

# 1

# About This Manual

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This manual is intended for anyone administering or operating the Qualstar® XLS Library. It provides instructions for using the library on a day-to-day basis.

This manual provides information about using the XLS library after it has been installed and configured. For information about installing the library hardware and defining and creating logical libraries, refer to the *XLS Library Installation Manual*.

**Important:** Although Qualstar has made every effort to ensure the accuracy of the information contained in this manual, no guarantee is expressed or implied that the manual is error free. Qualstar reserves the right to make changes at any time without prior notification.

## 1.1 How This Manual Is Organized

[Table 1-1](#) shows the organization of this manual.

Part	Chapter	Includes...
<a href="#">Part I: “Getting Started”</a>	<a href="#">Chapter 2, “About the XLS Library”</a>	Introduction to the XLS library and its major components and options
	<a href="#">Chapter 3, “Using X-Link”</a>	Instructions for logging into X-Link, navigating through the application, and logging out
	<a href="#">Chapter 4, “Managing Users and Groups”</a>	Instructions for creating, viewing, editing, copying, and deleting user groups and users

**Table 1-1** Information included in the *XLS Library User’s Guide*

Part	Chapter	Includes...
<a href="#">Part II: “Working with Logical Libraries”</a>	<a href="#">Chapter 5, “Managing Logical Libraries”</a>	Introductory information about logical libraries, an explanation of the logical library summary, and instructions for the following tasks: <ul style="list-style-type: none"> <li>• Taking a logical library offline</li> <li>• Bringing a logical library online</li> <li>• Viewing and editing a logical library’s configuration</li> <li>• Deleting a logical library</li> </ul>
	<a href="#">Chapter 6, “Managing Cartridges in a Logical Library”</a>	Instructions for the following tasks: <ul style="list-style-type: none"> <li>• Viewing the cartridge inventory</li> <li>• Using the I/O ports</li> <li>• Moving cartridges within a logical library</li> </ul>
	<a href="#">Chapter 7, “Managing Tape Drives in a Logical Library”</a>	Instructions for the following tasks: <ul style="list-style-type: none"> <li>• Viewing information about the tape drives in a logical library</li> <li>• Cleaning a tape drive</li> <li>• Loading and unloading tape drives and ejecting cartridges</li> </ul>
<a href="#">Part III: “Working with the Physical Library”</a>	<a href="#">Chapter 8, “Managing the Physical Library”</a>	Instructions for the following tasks: <ul style="list-style-type: none"> <li>• Putting the XLS in physical mode</li> <li>• Putting the XLS in logical mode</li> <li>• Shutting down the physical library</li> </ul>
	<a href="#">Chapter 9, “Managing the Library’s Configuration”</a>	Instructions for viewing, editing, and downloading the physical library’s configuration
	<a href="#">Chapter 10, “Managing the Library’s Settings and Policies”</a>	Instructions for viewing and editing the library’s settings and policies
	<a href="#">Chapter 11, “Managing Cartridges in the Physical Library”</a>	Instructions for using the I/O ports and doors to import and export cartridges and for moving cartridges within the physical library
	<a href="#">Chapter 12, “Managing Tape Drives in the Physical Library”</a>	Instructions for the following tasks: <ul style="list-style-type: none"> <li>• Viewing tape drive information in the physical library</li> <li>• Loading and unloading tape drives, ejecting cartridges, and cleaning tape drives</li> </ul>
	<a href="#">Chapter 13, “Managing Events”</a>	Instructions for viewing and deleting library events
	<a href="#">Chapter 15, “Viewing Library Hardware”</a>	Information about the LEDs and instructions for viewing information about the Library Resource Module (LRM), the Media Expansion Module (MEM), and the tape drives
<a href="#">Chapter 16, “Preventive Maintenance”</a>	Instructions for cleaning the library, inspecting the interior, and replacing the air filters	

**Table 1-1** Information included in the *XLS Library User’s Guide* (continued)

Part	Chapter	Includes...
<a href="#">Part IV: “Reference”</a>	<a href="#">Appendix A, “Library Addresses”</a>	Information about the physical addresses for XLS tape drive and cartridge locations
	<a href="#">Appendix B, “Replacing a Tape Drive”</a>	Instructions for replacing a tape drive
	<a href="#">“Glossary”</a>	Definitions of the specialized terminology used in this manual
	<a href="#">“Index”</a>	Alphabetized quick reference for specific topics and terms

**Table 1-1** Information included in the *XLS Library User’s Guide* (continued)

## 1.2 Conventions Used in This Manual

This section lists the terminology, typographic, and organizational conventions used in this manual.

### 1.2.1 Terminology

For clarity and compliance with the SCSI standard, the library control interface of the XLS is referred to as the *medium changer*. Note that the medium changer is different than the *handler*, which is simply the robotic mechanism within the XLS that picks and places the cartridges.

Refer to the [“Glossary”](#) for the definitions of other specialized terminology.

### 1.2.2 Typographic Conventions

This manual uses the following typographic conventions:

- For X-Link, options that can be selected are shown in **bold face**. For example:
  - Select **Online Logical Library**
- For X-Link, names of buttons that can be pressed are shown in **bold face**. For example:
  - Press **Done**
  - Press **Unlock Doors**
- For X-Link, names of fields or drop-down lists are shown in **bold face**. For example:
  - **Column** and **Row** drop-down lists

- Specialized terminology is introduced in *italic face*. For example:
  - Each physical library can be partitioned into one or more *logical libraries*.

### 1.2.3 Safety Notices

This manual may include four types of notices.

#### Warnings and Caution Notices

To avoid personal injury, damage to the equipment, or loss of data, closely follow the operating instructions and maintenance procedures described in this manual. Pay special attention to the information in Warning and Caution notices, as described below:

#### **WARNING!**

Personal injury may result if you do not fully comply with the handling, operating, or service instructions found in a Warning notice.

#### **CAUTION**

Equipment damage or loss of data may result if you do not fully comply with the handling, operating, or service instructions found in a Caution notice.

#### Important Notices and Notes

Important notices and notes provide additional information and tips, as described below:

**Important:** Important notices provide tips for completing a procedure or information that is essential to the understanding of a topic.

**Note:** Notes provide additional information related to the topic being discussed.

## 1.3 For More Information

This section provides information about related manuals and how to contact Qualstar.

### 1.3.1 Related Manuals

For more information about the XLS library, refer to the manuals in [Table 1-2](#), which are available in Adobe Acrobat PDF format on the XLS system controller.

Refer to...	Part number	For...
<i>XLS-820500, XLS-832700 and XLS-8161100 Library Product Specification</i>	501600	Detailed specifications for the XLS-820500, XLS-832700 and XLS-8161100 libraries
<i>XLS-812300 Library Product Specification</i>	501700	Detailed specifications for the XLS-812300 library
<i>XLS Library Site Planning Guide</i>	501604	Information for preparing a site for XLS installation
<i>XLS Library Installation Manual</i>	501601	Information and detailed instructions for installing the library
<i>XLS Library Interface Manual</i>	501611	Information application developers need to create device drivers or to modify software applications to control the library
<i>XLS Library Technical Service Manual</i>	501610	Information authorized service personnel need to replace library components  <b>Note:</b> The Qualstar XLS Library is a sophisticated, state-of-the art computer peripheral. It must be serviced by authorized service technicians who are experienced with the operation and maintenance of tape libraries and who have read the <i>XLS Technical Service Manual</i> .

**Table 1-2** Related manuals

## Accessing the Online Manuals

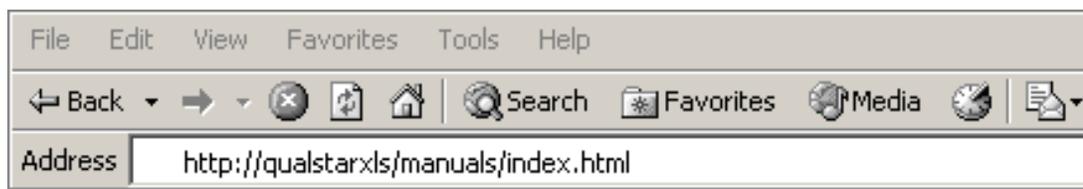
**Important:** You cannot access the online manuals from the touch screen. To access the PDF files for the manuals, you must connect the XLS to a standalone or networked computer that has Adobe Acrobat or Adobe Reader installed.

To access and download the manuals, follow these steps:

1. Follow the instructions in the *XLS Library Installation Manual* to connect the library to a standalone computer or Ethernet network.

## 1.3 For More Information

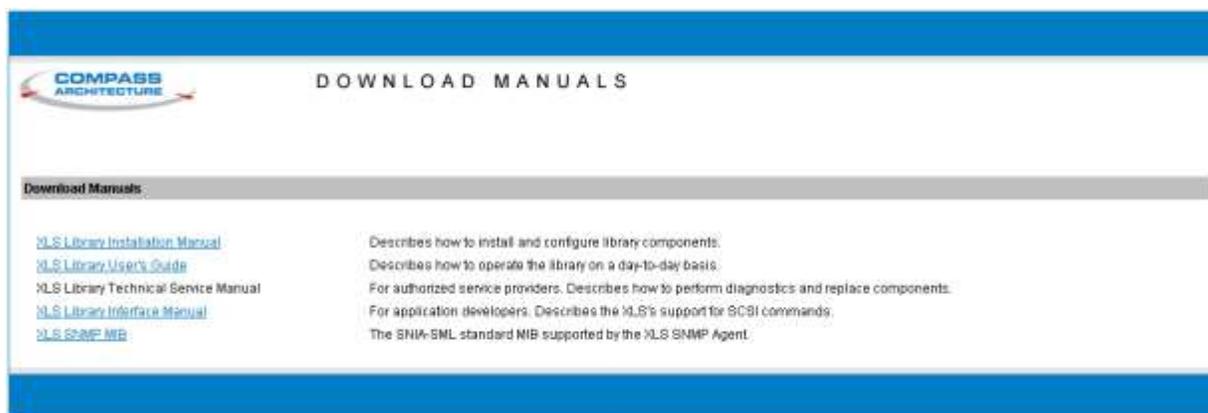
2. Open any of the supported Internet browsers on an attached computer.
3. In the address field for the browser, type **<http://qualstarxls/manuals/index.html>**, where *qualstarxls* is the default name for the physical library. See [Figure 1-1](#).



**Figure 1-1** Accessing the online manuals (Internet Explorer shown)

**Important:** If you have changed the name for the physical library, be sure to use the new name instead of *qualstarxls*.

4. Press **Enter**. The Download Manuals page opens, as shown in [Figure 1-2](#).



**Figure 1-2** Download Manuals page

5. Select the manual you are interested in. Assuming that Adobe Acrobat or Acrobat Reader is installed on your system, the PDF file opens. See [Figure 1-3](#).

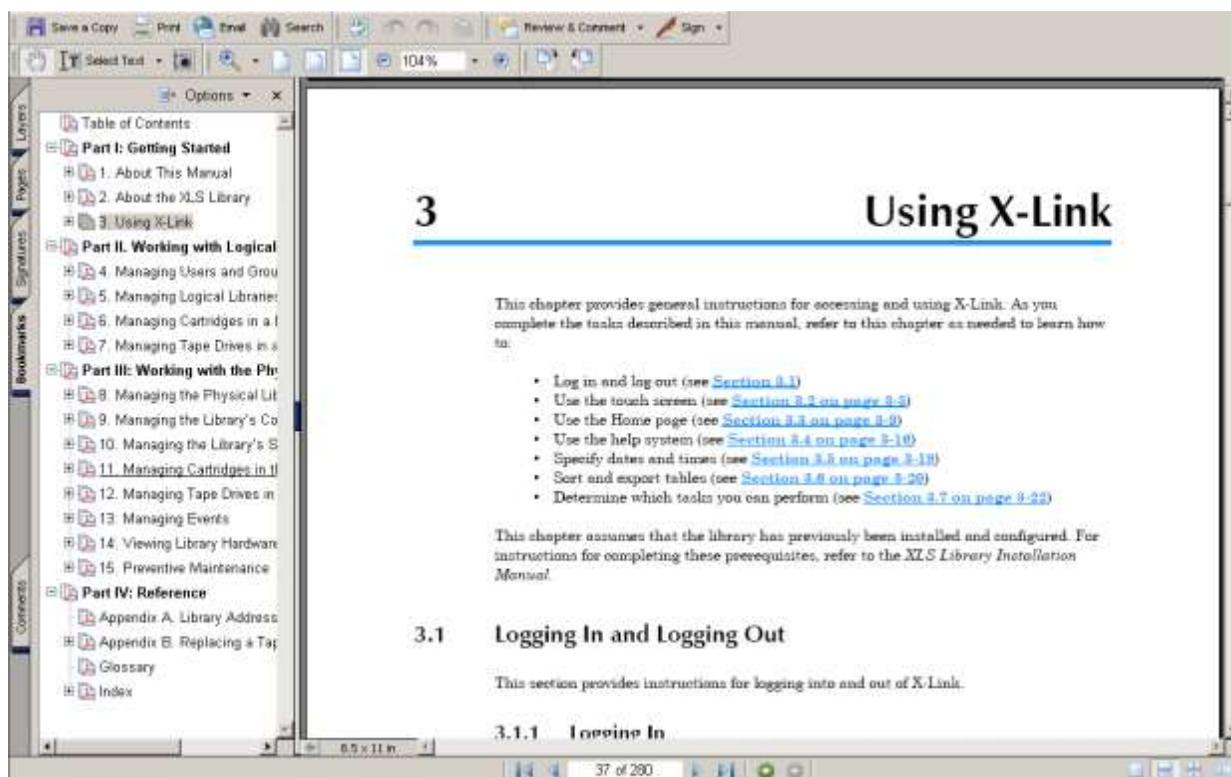


Figure 1-3 PDF file of example manual opened in browser window

## 1.3.2 Contacting Qualstar

If you have questions about the XLS library, contact an authorized reseller or Qualstar Technical Support.

Qualstar Corporation  
1267 Flynn Road  
Camarillo, CA 93012

**Monday - Friday 7:00 AM to 4:00 PM PST**

Phone: (805) 416-7055

Toll Free: (877) 886-2758

**After hours**

Phone: (805) 583-7744

option 4

E-mail: [support@qualstar.com](mailto:support@qualstar.com)

E-mail: [sales@qualstar.com](mailto:sales@qualstar.com)

[www.qualstar.com](http://www.qualstar.com)

# 2

# About the XLS Library

---

This chapter provides an introduction to the Qualstar XLS Library. It describes the major components of the Library Resource Module (LRM) and the Media Expansion Module (MEM).

## 2.1 Product Overview

The Qualstar XLS family of enterprise-class tape libraries combines an efficient design with an intelligent system architecture. XLS libraries are designed to accommodate customer storage needs now and in the future.

Shown in [Figure 2-1 on page 2-2](#), the XLS uses two building blocks: the Library Resource Module (LRM) and the Media Expansion Module (MEM). The LRM is a fully featured unit that contains the control electronics, the power system, the robotic handler, the tape drives, the I/O ports, and a variable number of cartridge slots. The optional MEM is a rotary tape carousel that derives its power, control, and cartridge handling from an attached LRM.

Because tape drive and cartridge storage areas within the LRM are interchangeable, the XLS offers an extremely wide range of cartridge-to-drive ratios.

A system controller within the LRM oversees the operation of the robotics, tape drives, and power supplies of all interconnected units. It also hosts the X-Link library management interface, which can be accessed locally using the touch screen or remotely across a LAN or the Internet. Remote management is also supported over Ethernet using SNMP.

Resources in the XLS can be subdivided into as many as eight independent logical library partitions, with each partition controlled across its own host connection. Initial interface offerings include parallel SCSI and Fibre Channel.

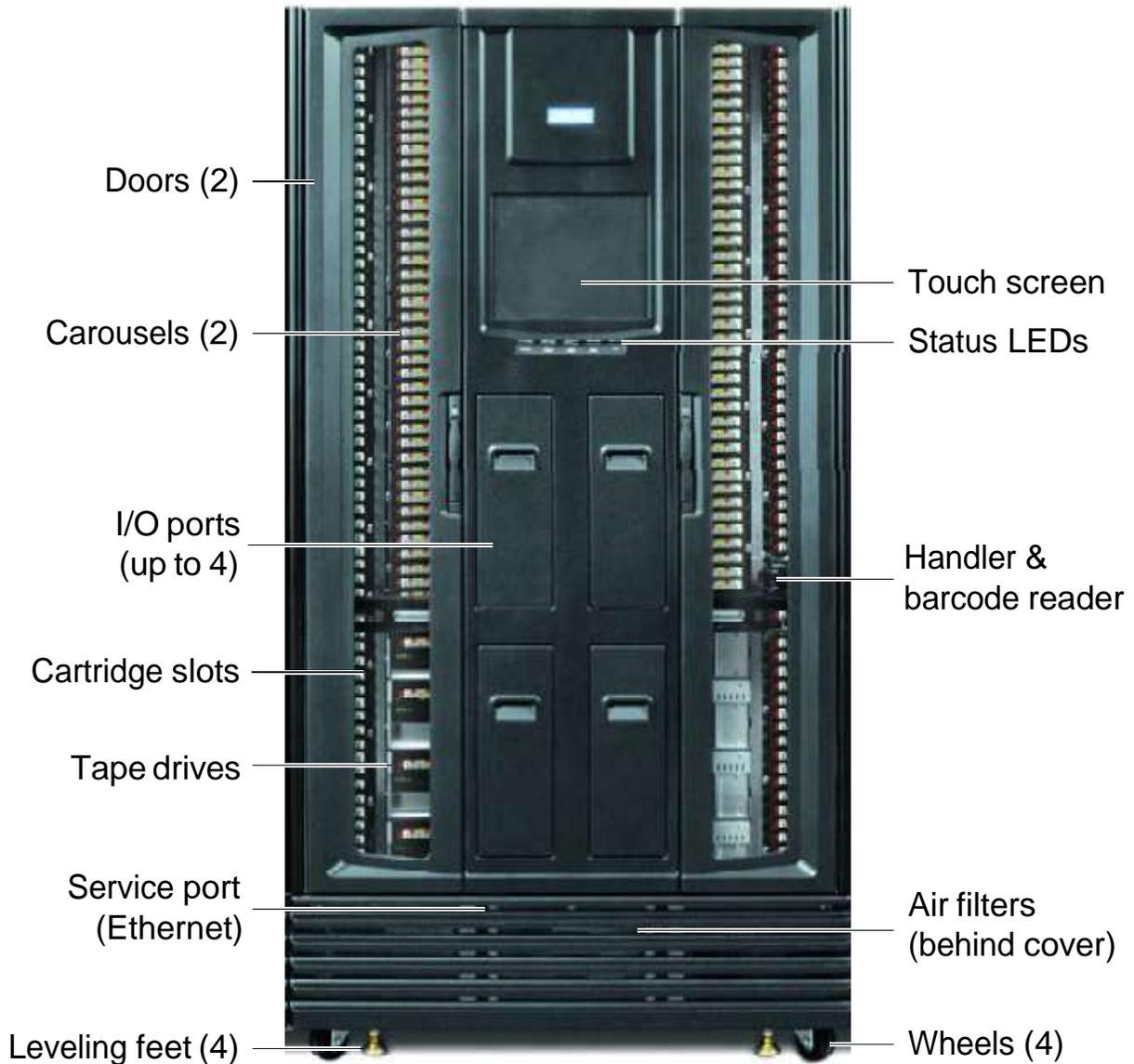
Access to the control functions of the XLS is protected by user names and passwords.



**Figure 2-1** LRM with two MEMs (XLS-832700 shown with two XLS8900's)

### 2.1.1 XLS-8161100

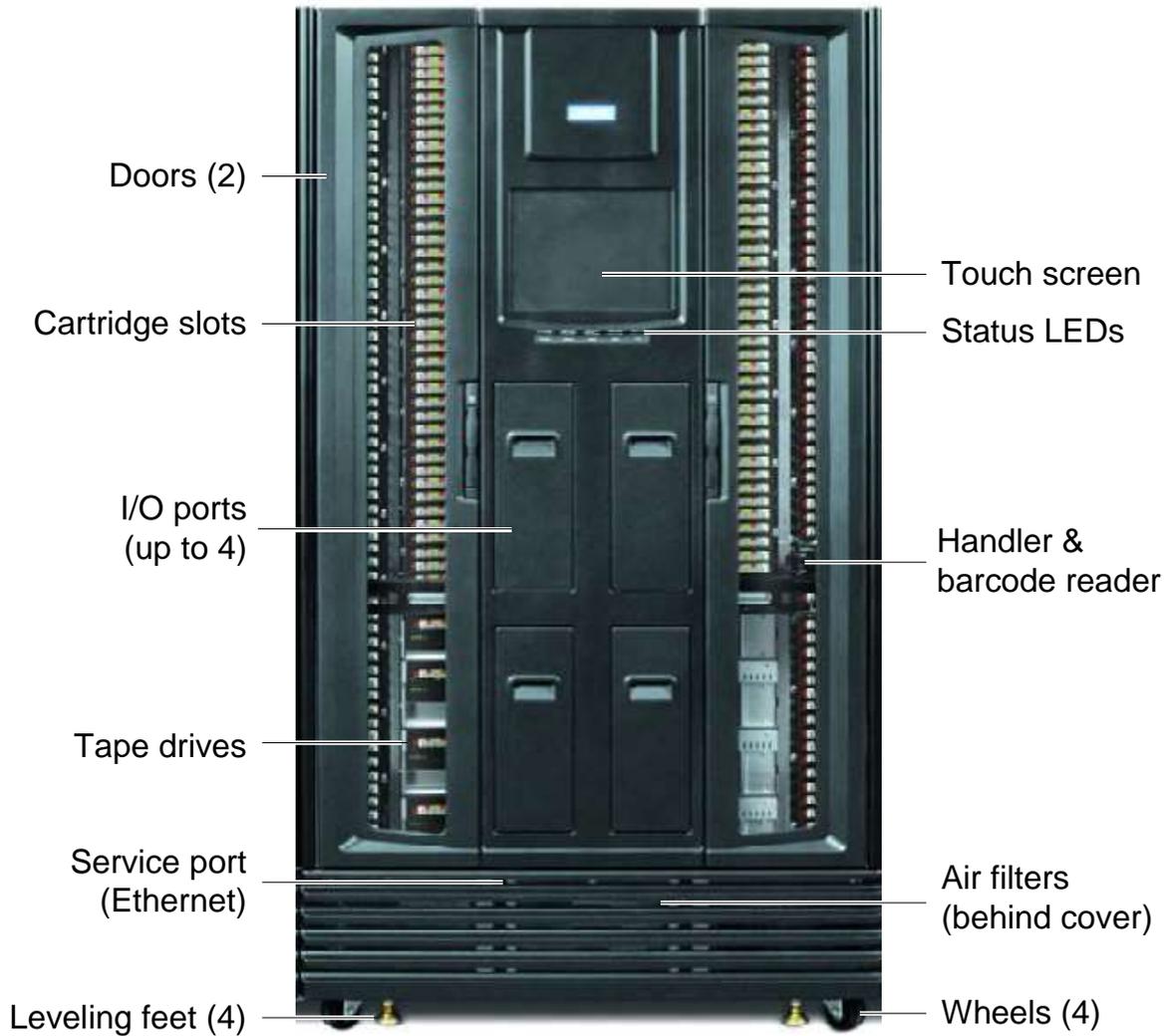
Shown in [Figure 2-2](#), the XLS-8161100 accommodates up to 16 tape drives, up to 1,066 cartridges, and up to four, 10-slot I/O ports. As an option, one or two Media Expansion Modules (MEMs) can be installed on the sides of the XLS-8161100. See [Section 2.3 on page 2-24](#) for more information.



**Figure 2-2** Front view of the XLS-8161100

### 2.1.2 XLS-832700

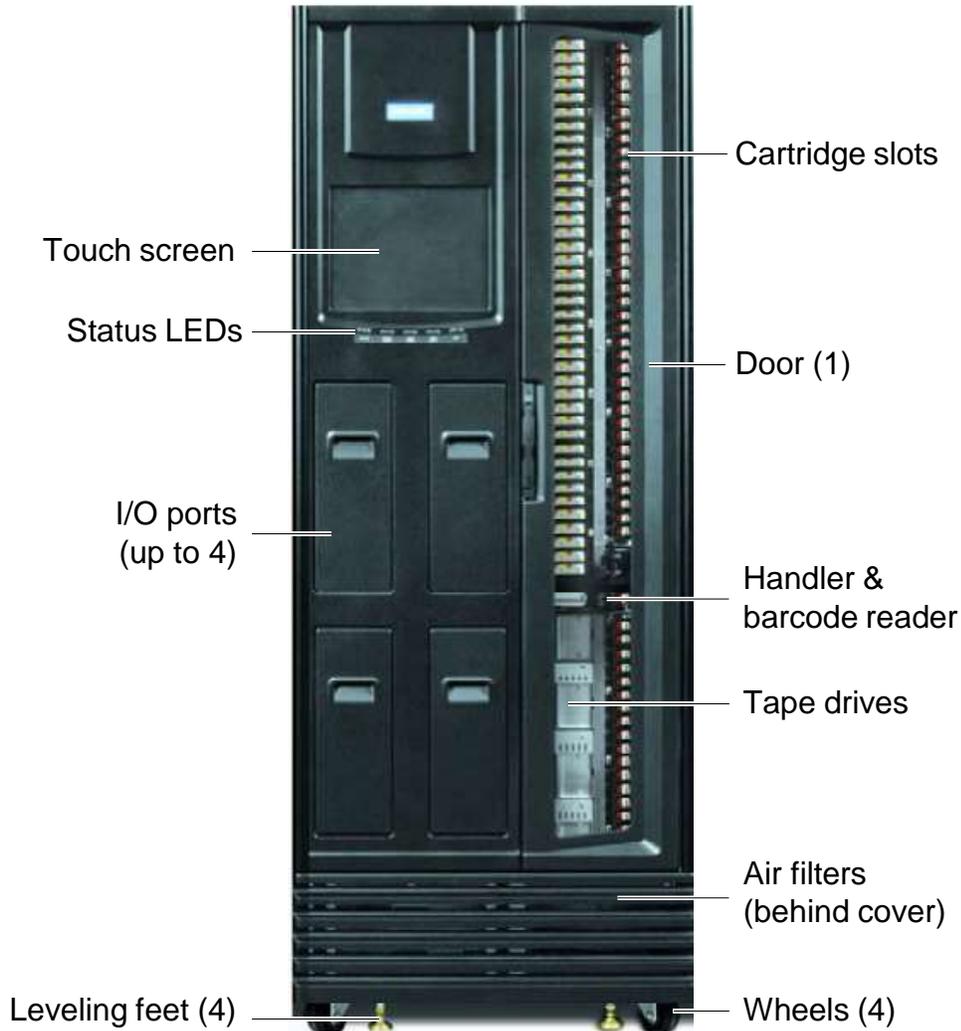
Shown in [Figure 2-3](#), the XLS-832700 accommodates up to 32 tape drives, up to 655 cartridges, and up to four, 10-slot I/O ports. As an option, one or two Media Expansion Modules (MEMs) can be installed on the sides of the XLS-832700. See [Section 2.3 on page 2-24](#) for more information.



**Figure 2-3** Front view of the XLS-832700

### 2.1.3 XLS-820500

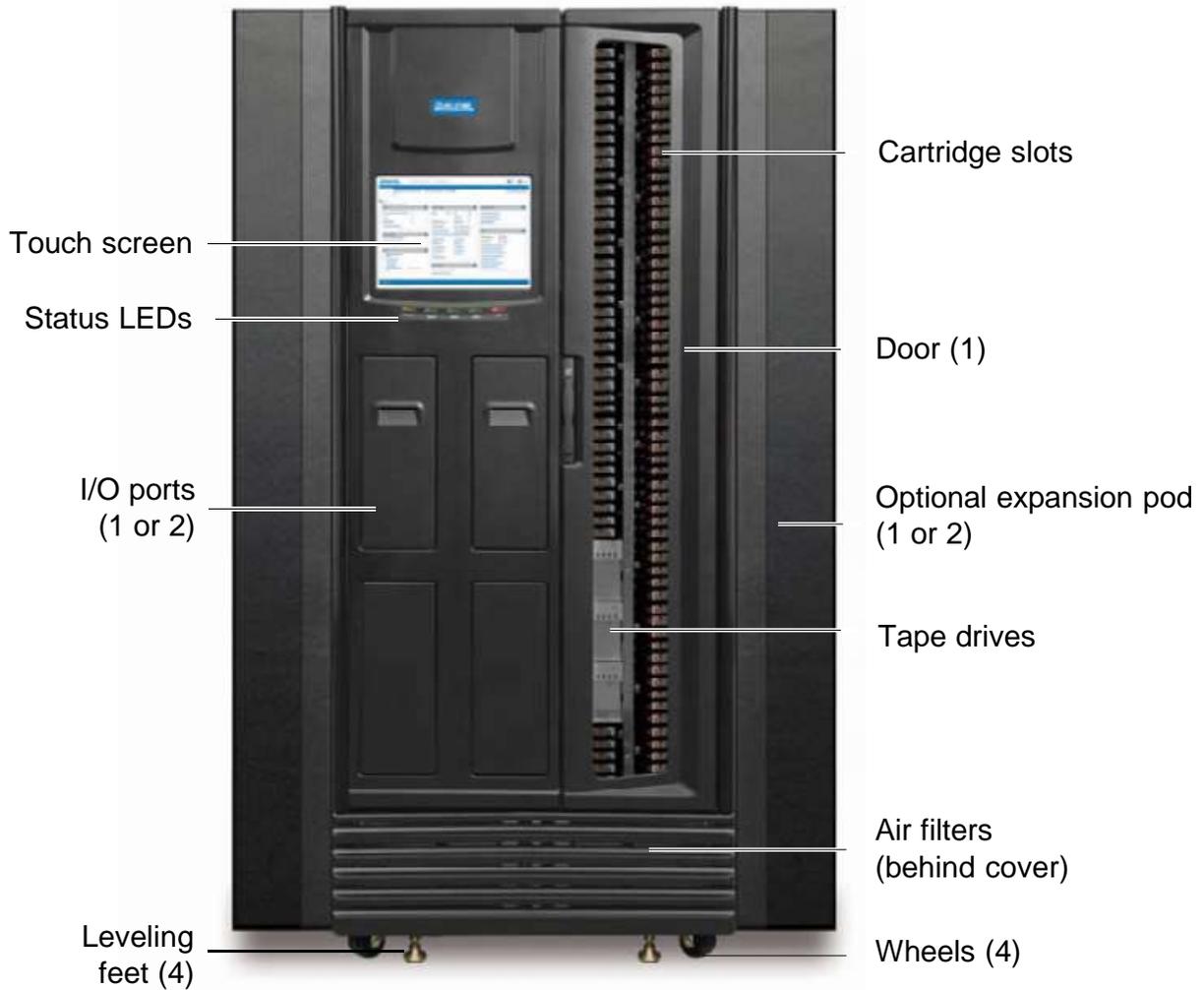
Shown in [Figure 2-4](#), the XLS-820500 accommodates up to 20 tape drives, up to 465 cartridges, and up to four I/O ports. As an option, one or two Media Expansion Modules (MEMs) can be installed on the sides of the XLS-820500. See [Section 2.3 on page 2-24](#) for more information.



**Figure 2-4** Front view of the XLS-820500

### 2.1.4 XLS-812300

Shown in [Figure 2-5](#), the XLS-812300 accommodates up to 12 tape drives, up to 295 cartridges, and up to two, 10-slot I/O ports. As an option, expansion pods can be installed on either side of the library, with each expansion pod adding 120 cartridge slots.

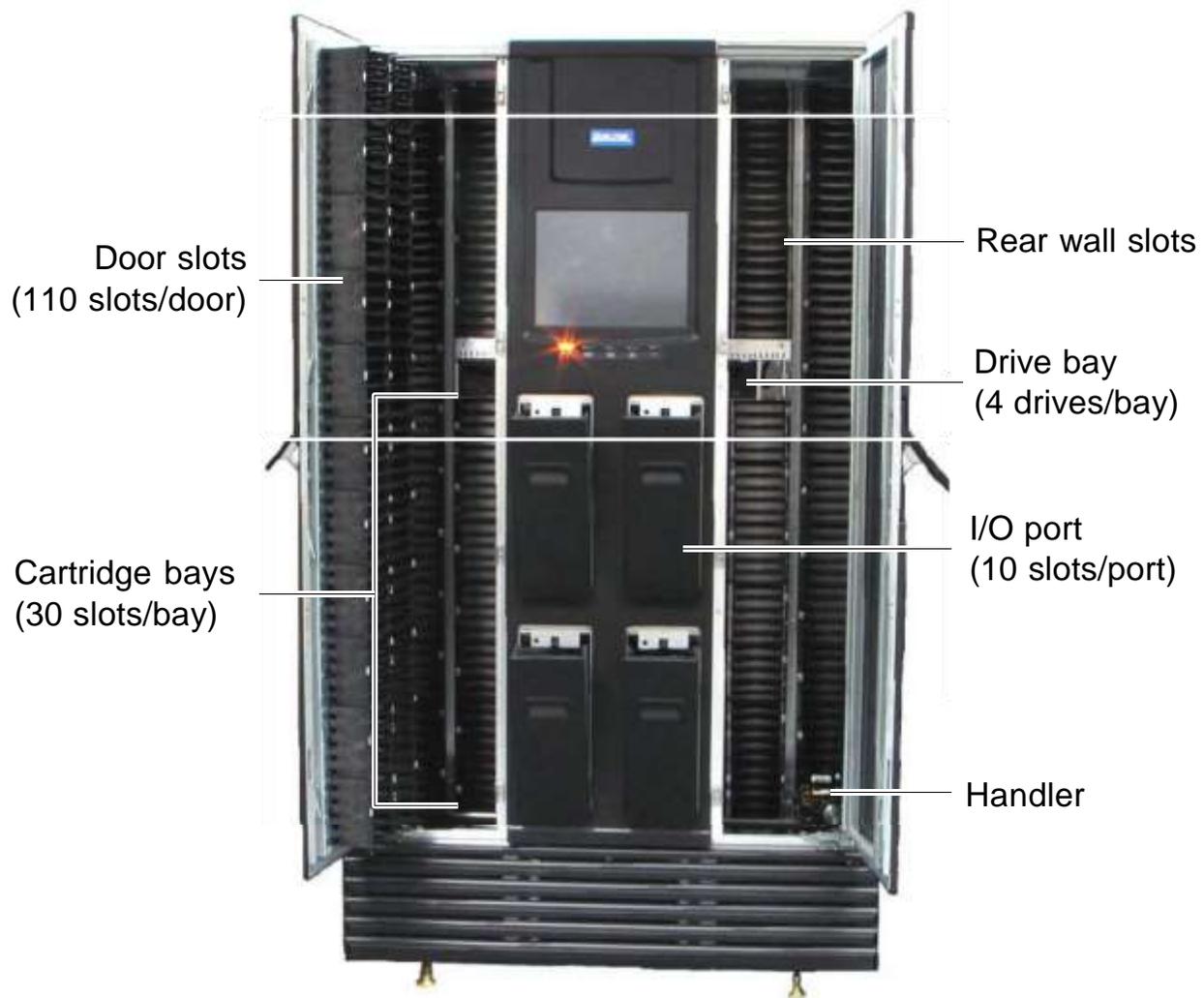


**Figure 2-5** Front view of the XLS-812300 with two optional expansion pods

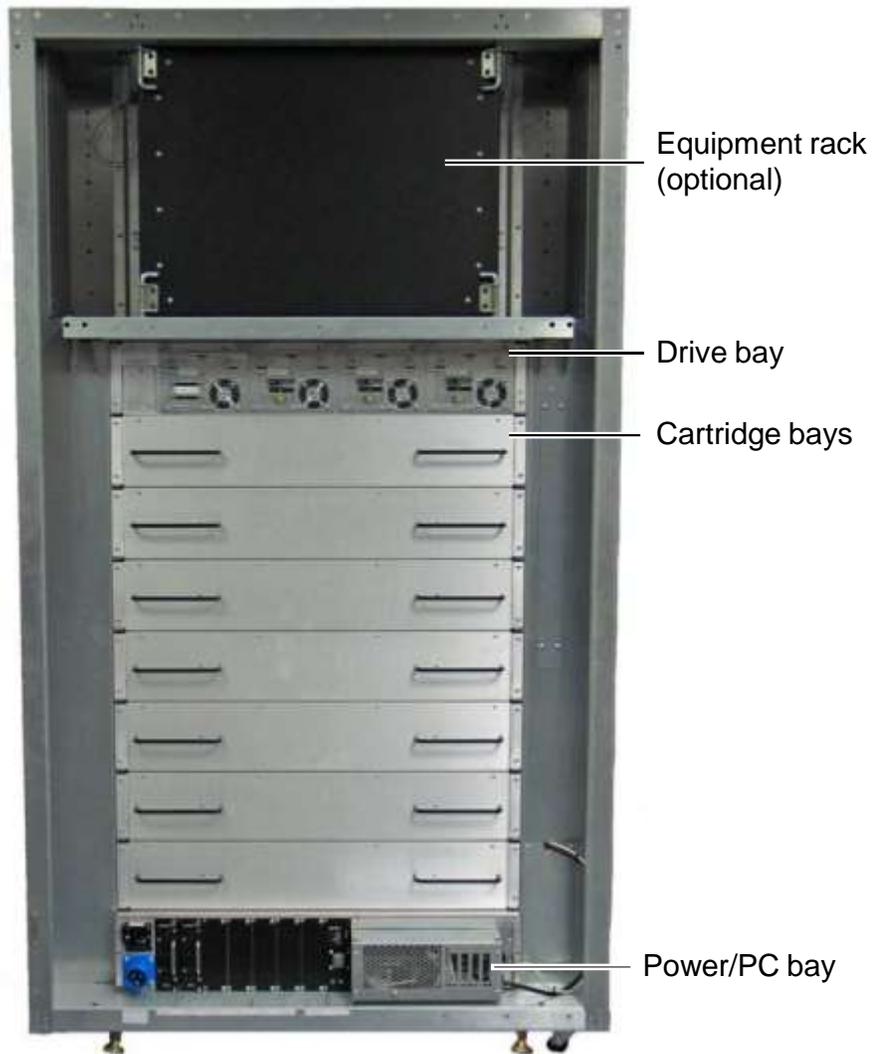
## 2.2 Library Resource Module (LRM)

[Figure 2-6](#) shows the inside of the LRM, while [Figure 2-7 on page 2-8](#) shows the back of the LRM. The LRM contains the following components and features:

- Power/PC bay, which includes the power system and the system controller (see [Section 2.2.1 on page 2-8](#))
- Touch screen and LEDs (see [Section 2.2.2 on page 2-12](#))
- Robotic Handler and barcode reader (see [Section 2.2.3 on page 2-14](#))
- Tape drives (see [Section 2.2.4 on page 2-16](#))
- I/O ports (see [Section 2.2.5 on page 2-18](#))
- Cartridge slots (see [Section 2.2.6 on page 2-20](#))
- Doors and light curtain sensors (see [Section 2.2.7 on page 2-22](#))
- Optional equipment rack (see [Section 2.2.8 on page 2-23](#))



**Figure 2-6** Inside view of the LRM (XLS-832700 shown)



**Figure 2-7** Rear view of the LRM (XLS-832700 shown)

### 2.2.1 Power/PC Bay

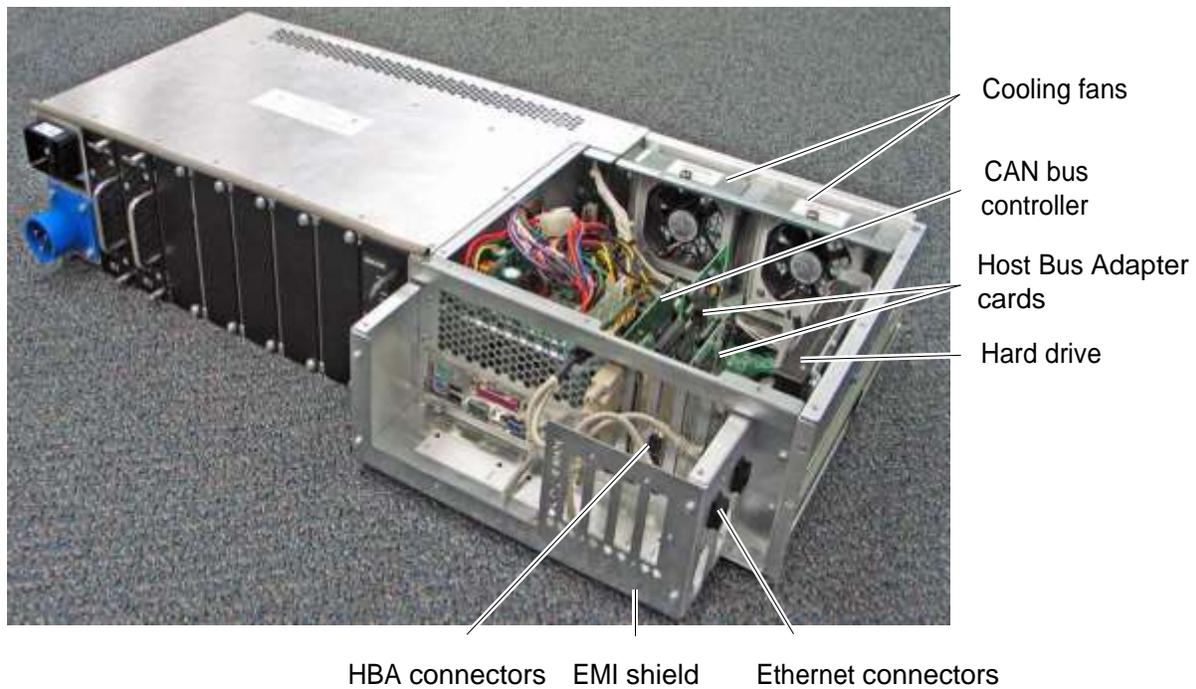
[Figure 2-7](#) shows the location of the power/PC bay at the rear of the LRM. The power/PC bay houses the power components and the system controller. The entire bay slides in and out of the LRM for servicing.

## System Controller

Shown in [Figure 2-8](#), the system controller occupies the right side of the power/PC bay and consists of a Linux-based computer that controls the library. The system controller:

- Controls the operation of the distributed control boards (DCBs)
- Manages all communications between the XLS and the host applications
- Maintains an up-to-date cartridge inventory
- Hosts the X-Link management interface
- Provides a control interface to the tape drives for configuration and servicing

The system controller slides in and out of the LRM to allow easy access to the host bus adapter cards (HBAs) and cooling fans.



**Figure 2-8** System controller components in the power/PC bay

System controller components include the following:

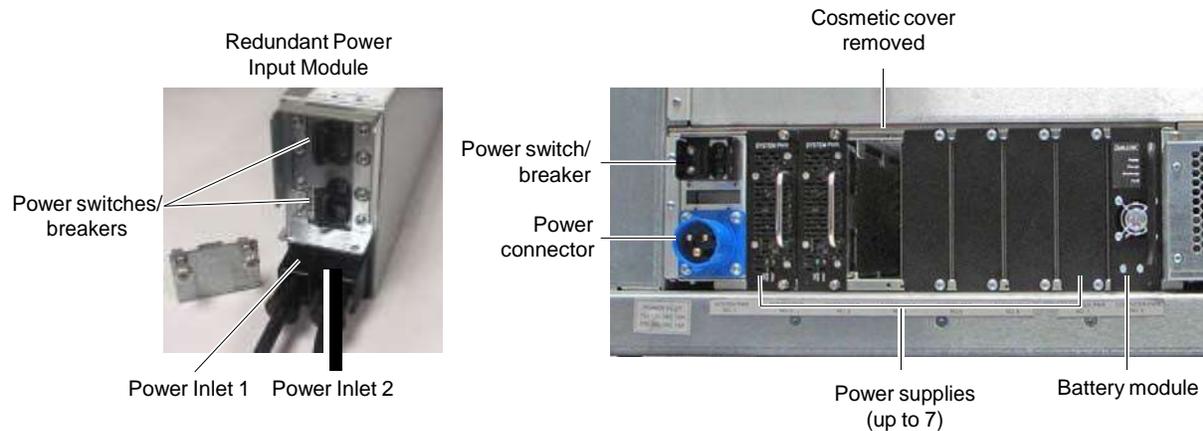
- **Host bus adapter cards.** The system controller includes expansion slots for up to four host bus adapter cards (HBAs). Each HBA has two ports, allowing the medium changer interface in the XLS to be concurrently connected to up to eight independent host computers. The XLS supports SCSI and Fibre Channel HBAs.

**Important:** The HBAs in the system controller manage the XLS's medium changer interface only; they do not control or communicate with the tape drives or move data.

- **Ethernet connectors.** The system controller includes two Ethernet connectors for communication across 10/100 Base-T Ethernet networks. One of the Ethernet connectors allows the XLS to be connected to a customer network for remote managing and monitoring of XLS functions; the other Ethernet connector (service port) allows the XLS to be connected directly to a laptop or other standalone computer for local configuration and service operations.
- **Cooling fans.** Two cooling fans at the back of the system controller draw air in through the air filter cover and air filters on the front of the LRM and ventilate it out through the back. (Individual fans are also included in each tape drive assembly and power supply module.) The cooling fans and air filters are easily changed without interrupting XLS operations.

## Power System

[Figure 2-9](#) shows the power components accessible from the rear of an LRM. In addition to the standard power connection provided on the library there is a redundant power input module available that allows the library to be connected to two independent power sources, providing a redundant power source in the event one of the power sources should fail. The unit powers the load from the first power input normally. The unit switches to the second power input if the first has failed..



**Figure 2-9** Power bay components

XLS power components include the following:

- **Main power disconnect switch.** The standard single disconnect switch for the library is a 20-amp circuit breaker. When this switch is shut off, all XLS functions (except any rack-mounted equipment) are immediately powered down.
- **Main power disconnect switches for redundant power input module.** The redundant power input module has two power switches that must be shut off before the XLS will power down.
- **AC power connector.** The power connector is a single-phase, 100 to 240 volt service connection. A single North American or international power cord is provided to power both the LRM and any attached MEMs.
- **AC power connectors for redundant power input module.** The redundant power input module is supplied with two North American or international power cords to power both the LRM and any attached MEMs.
- **Power supplies.** Two to seven removable power supply modules provide power to all components within the LRM, the tape drives, and any attached MEMs. N+1 power redundancy is standard, meaning that if one fails, the others will handle the load until the failed supply is replaced. Power module status is monitored by X-Link and alerts are issued if necessary.

- **Battery module.** The battery module provides emergency power to safely shut down the XLS if the AC power fails. It is not an uninterruptible power supply. If AC power fails, the library immediately shuts off power to the tape drives, parks the handler at the bottom of the cabinet, and commences an orderly shut down of the remaining systems. The library is non-functional from the moment the AC fails. If power returns before the shutdown is complete, the library completes the shutdown, then restarts.

**Note:** The battery module does not provide adequate power to protect the tape drives. For this reason, Qualstar recommends connecting the XLS to an external UPS.

### 2.2.2 Touch Screen and LEDs

Shown in [Figure 2-10](#), each LRM includes a touch screen, used to display the X-Link Management Interface, and five LEDs.



**Figure 2-10** Touch screen and status LEDs (X-Link log-in screen displayed)

#### Touch Screen

The 15-inch LCD touch screen on the front of the LRM allows for local control and monitoring of library operations. The browser-based X-Link interface can be accessed locally from the touch screen or remotely by using one of the Ethernet connectors to attach the XLS to a LAN or the Internet. The interface and available functions are the same regardless of how they are accessed.

Permission to access X-Link is maintained and configured by an administrator. Access is password protected.

## X-Link Home Page

Shown in [Figure 2-11 on page 2-14](#), the X-Link Home page provides information for about library status as well as a summary of each logical library partition. It also provides an access point to the following library management tasks:

- **Logical library tasks**, including modifying and monitoring the resources (cartridges, tape drives, and I/O ports) assigned to each logical library partition, editing administrator information, and monitoring events.
- **Physical library tasks**, including viewing hardware status, moving cartridges, managing tape drives, locking and unlocking doors, and shutting down the library.
- **Configuration tasks**, including managing administrator and network connection information.
- **User and user group tasks**, including adding and modifying information about library users and setting up permissions for different user groups.
- **Settings and policies tasks**, including managing e-mail, SNMP, and event log settings.
- **Event tasks**, including viewing the library's event log.
- **Service tasks**, including performing diagnostics, uploading and installing firmware and other files, and performing audits

The screenshot shows the X-LINK HOME interface. At the top, there is a navigation bar with 'QUALSTAR' and 'X-LINK INTERFACE' logos, along with 'Help' and 'Logout' buttons. Below this is a 'Refresh' button. The main header area includes 'COMPASS ARCHITECTURE' and 'X-LINK HOME' text, with a user ID 'alsgamma XLS-832700 0134217575X' and a 'Change Touch Screen Option' link. The 'Logical Mode' section contains links for 'Logical Library View', 'Service View', 'Administrator View', 'Show All', and 'Create Custom View', along with the date 'Mon Mar 05 03:13:22 MST 2007' and an 'Autorefresh' checkbox.

The 'Logical Libraries' section features a status bar: 'Status: All Libraries Online, All Libraries Ready', 'Doors: All Closed, Locked', 'I/O Ports: All Closed', and 'Drives Offline: 0'. It also shows 'Event Counts (All Libraries)' with 'Fatal: 1' and 'Critical: 6', and 'Last 24 Hours: 391'. Below this are tabs for 'Logical Mode', 'Physical Mode', 'Lock Doors', and 'Unlock Doors'.

Logical Library	Status	Events	Tapes	Storage	Tape Drives	I/O Ports	Status
Name		Fatal / Critical / L24	Total	Slots / Tapes	Drives / Tapes	Offline	Slots / Tapes
(Unassigned)			0	0	0 (0)	0	0
Empty	Online / Ready	0 / 0 / 0	0	0	0	0	None
Engineering	Online / Ready	0 / 0 / 22	8	1 / 1	1 / 1 (2)	0	20 / 8
Marketing	Online / Ready	0 / 0 / 0	0	10 / 0	0 / 0 (5)	0	0
MyBankCustomerData	Online / Ready	0 / 3 / 242	75	2341 / 75	0 / 0 (2)	0	0
Small	Online / Ready	0 / 0 / 0	0	197 / 0	0 / 0 (0)	0	0

Export options:  CSV |  Excel |  PDF

The bottom section is divided into 'Media and Tape Drives' and 'Administration and Configuration'. 'Media and Tape Drives' includes links for 'View Open I/O Pod', 'View Open I/O Pod', 'View Inventory', 'Move Media', 'Import Media', and 'Export Media'. 'Administration and Configuration' includes links for 'Event Log', 'Offline Logical Library', 'Online Logical Library', 'Library Specifications', 'Contact Information', 'Administrator Information', 'Create a New Library', and 'Delete Logical Library'.

Figure 2-11 X-link Home page (Logical Libraries View selected)

A context-sensitive, searchable help system is available from every page and provides detailed information about each option.

## LEDs

Located directly below the touch screen, the five status LEDs indicate the library's operational status at a glance. See [Figure 15-1 on page 15-1](#). In addition to the front panel LEDs, status LEDs are included on the back of each tape drive assembly and each power supply.

### 2.2.3 Robotic Handler and Barcode Reader

Shown in [Figure 2-12 on page 2-15](#), the robotic tape handler within each LRM can access cartridges anywhere on the front wall or the back wall. It can also access slots on the rotating carousel of an attached MEM. The handler is controlled by the medium

changer interface and shared by all host software applications on a first-come, first-served basis.



**Figure 2-12** Robotic handler (shown reaching into an attached MEM)

## Gripper Assembly

The gripper assembly is the part of the handler that actually picks and places the cartridges in the storage slots and tape drives. The gripper moves along four axes, as follows:

- The *X-axis* is the horizontal axis.
- The *Y-axis* is the vertical axis.
- The *Theta-axis* is the rotating axis that allows the gripper assembly to reach cartridge slots on the front, back, and sides of the cabinet.
- The *Z-axis* is the in-and-out axis. The fingers on the gripper assembly are opened and closed using a solenoid and use a sensor to determine if they are open or closed.

## Barcode Reader

Located on the gripper assembly, the barcode reader performs two types of scans:

- **Fiducial scan.** *Fiducials* are the black and white triangles mounted on either side of every cartridge magazine (see [Figure 2-13 on page 2-16](#)). There is also a

fiducial located on the tape drive calibration cartridge, which is stored in one of the five reserved slots.



**Figure 2-13** Cartridge magazine with two fiducials

During a *fiducial scan*, the handler moves up and down and across the cartridge slots and I/O ports until the barcode reader detects the fiducials. It also inserts the calibration cartridge into each tape drive. Once all the fiducials have been detected, the library can calculate the exact position of every storage slot and tape drive in a process known as *calibration*. Fiducial scans and calibration are required only when the library is installed or when certain service procedures are performed.

- **Inventory scan.** During an *inventory scan*, the barcode reader scans each slot to determine which ones contain cartridges. It also scans the barcode labels on the cartridges to establish and maintain its cartridge inventory. The system controller stores the cartridge inventory in a database and makes it available to the host applications.

Barcode labels must conform to the ANSI/AIM BCI-1995, Uniform Symbol Specification (USS-39). Detailed specifications for XLS barcodes and labels can be found in Qualstar Product Information Note 040, “Barcode Label Information and Specifications.” To obtain this document, go to [www.qualstar.com](http://www.qualstar.com) and click on the Support tab. Pre-printed barcode labels, which are both human- and machine-readable, are available from a number of sources.

### 2.2.4 Tape Drives

The XLS-832700 can accommodate up to 32 tape drive assemblies in one to eight drive bays, the XLS-820500 can accommodate up to 20 tape drive assemblies in one to five drive bays, the XLS-8161100 can accommodate up to 16 tape drive assemblies in one to four drive bays, and the XLS-812300 can accommodate up to 12 tape drive assemblies in one to three drive bays.

## Tape Drive Assemblies

Shown in [Figure 2-14](#), an XLS tape drive assembly consists of an LTO tape drive enclosed in a drive carrier.



**Figure 2-14** Fibre Channel tape drive assembly (rear view)

The drive carrier provides regulated and switched power to the tape drive and a cooling fan. SCSI tape drive assemblies include dual SCSI HD68 connectors and a single status LED, while Fibre Channel tape drive assemblies include a duplex LC multi-mode Fibre Channel receptacle and three LEDs.

The XLS communicates with each tape drive within the drive carrier and can monitor tape drive status, set target IDs, receive tape drive alerts, and so on.

Depending on the capabilities of the application software being used, the Fibre Channel tape drive assemblies can be hot swapped. That is, you can remove and replace tape drive assemblies without powering down the library. The library automatically detects the presence of a new tape drive.

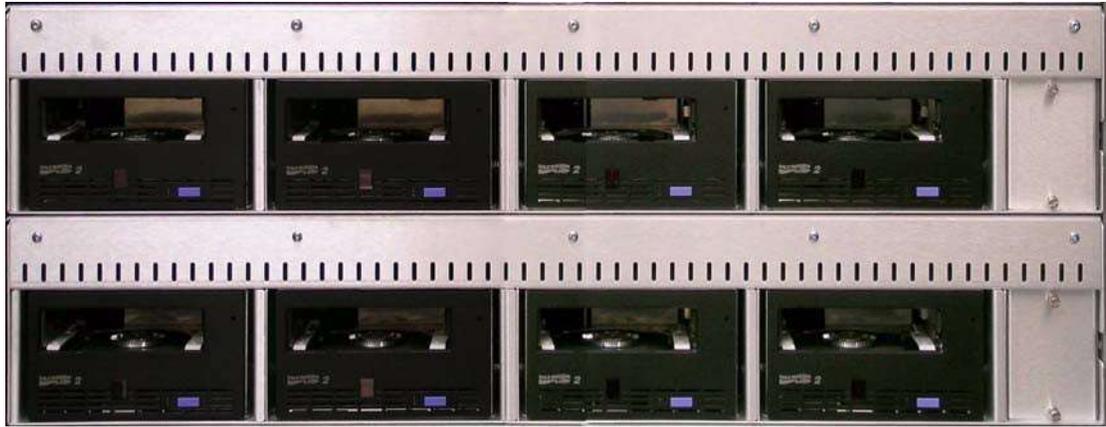
LTO tape drive assemblies with either SCSI or Fibre Channel interfaces are currently available. Other drives may be supported in the future. Refer to [Qualstar Product Information Note 014](#), “Supported Tape Drives,” for an up-to-date list of supported tape drives (go to [www.qualstar.com](http://www.qualstar.com) and click on the Support tab).

### CAUTION

To avoid damaging the equipment and voiding your warranty, do not attempt to remove the tape drives from the drive carriers. The tape drives used in the XLS must be installed into drive carriers at the factory.

## Drive Bays

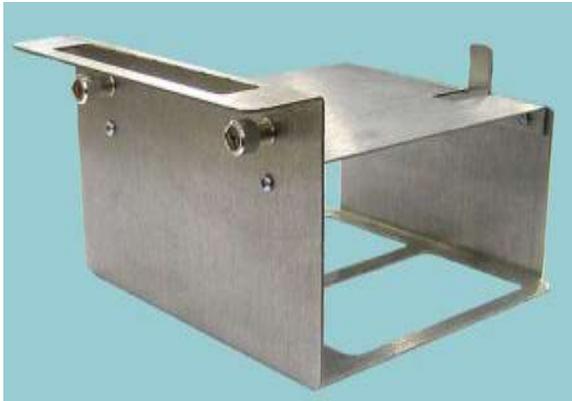
[Figure 2-15](#) shows the front view of two drive bays. Each drive bay can hold up to four tape drive assemblies, which are installed from the rear of the LRM.



**Figure 2-15** Two drive bays (front panel removed)

Depending on the XLS model, the library can be equipped with up to eight drive bays. A drive bay, which holds four tape drives, can be exchanged with a cartridge bay, which holds 30 cartridges, and vice versa.

For safety reasons, four tape drive or drive filler assemblies (see [Figure 2-16](#)) must be installed in each drive bay in order for the library to operate. If the library detects that one of the positions is empty, it disables the handler until another tape drive or drive filler assembly is installed.



**Figure 2-16** Drive filler assembly

### 2.2.5 I/O Ports

As shown in [Figure 2-17 on page 2-19](#), I/O ports on the front of the LRM allow cartridges to be imported or exported without opening the door(s) and interrupting XLS

operations. Each I/O port holds 10 cartridges in a removable magazine. Depending on the model, the XLS can include one, two, or four I/O ports. For each I/O port that is not installed, the library includes 10 additional cartridge storage slots, called *fixed port assemblies*.

Access to the I/O ports is controlled by the application software and X-Link.



**Figure 2-17** I/O port (XLS-832700 shown)

Each I/O port uses a removable magazine suitable for long-term storage. See [Figure 2-18](#).



**Figure 2-18** I/O port magazine

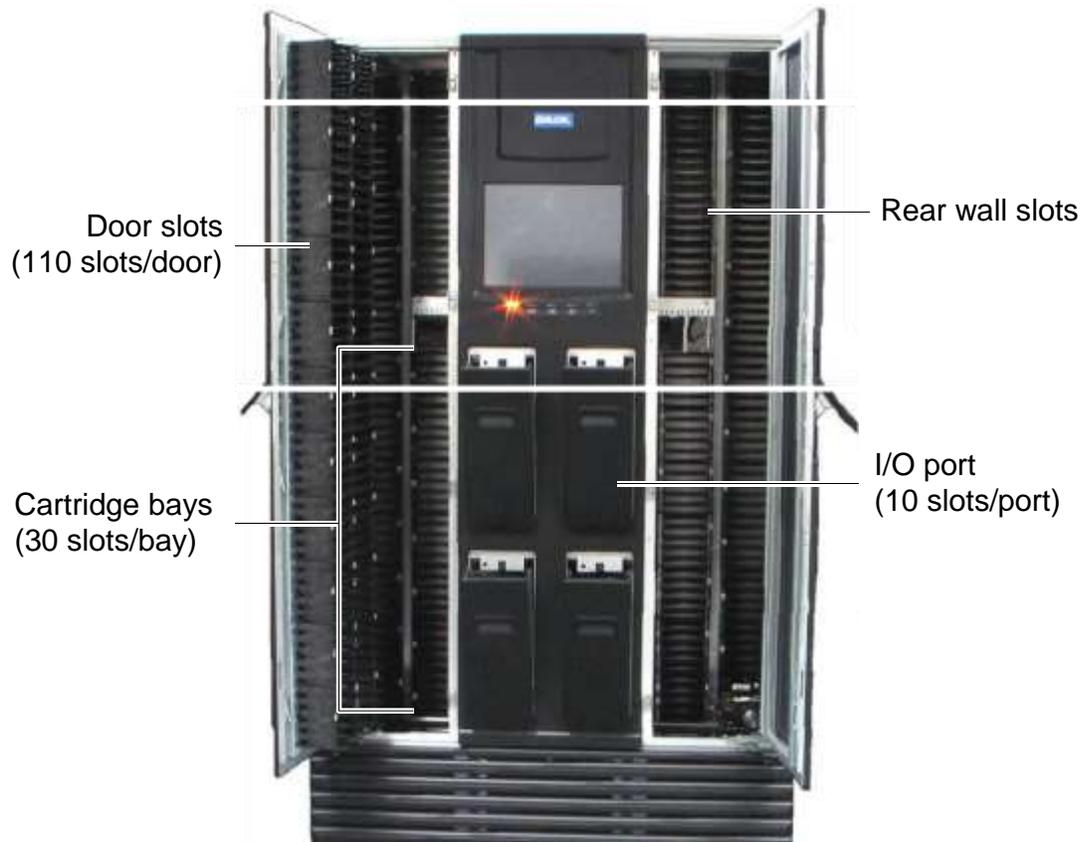
## 2.2.6 Cartridge Slots

[Table 2-1](#) lists the cartridge capacities of each XLS model. [Figure 2-19 on page 2-21](#) shows the cartridge slot locations for the XLS-832700.

Location	Number of Cartridge Slots			
	XLS-8161100	XLS-832700	XLS-820500	XLS-812300
Cartridge bays	up to 90 (3 bays)	up to 210 (7 bays)	up to 120 (4 bays)	up to 60 (2 bays)
Rear wall slots <sup>1</sup>	66	265	205	205
Carousel slots	630	<i>not available</i>	<i>not available</i>	<i>not available</i>
Door slots	0, 110, or 220	0, 110, or 220	0 or 110	<i>not available</i>
Fixed port slots	up to 30 (assumes only one I/O port is installed)	up to 30 (assumes only one I/O port is installed)	up to 30 (assumes only one I/O port is installed)	up to 30 (assumes only one I/O port is installed)
Total slots	up to 1066	up to 655	up to 465	up to 295
Each MEM adds <sup>1</sup>	XLS-85000 adds 535	XLS-85000 adds 535	XLS-85000 adds 535	XLS-85000 adds 535
	XLS-89000 adds 1075	XLS-89000 adds 1075	XLS-89000 adds 1075	
Each expansion pod adds	<i>not available</i>	<i>not available</i>	<i>not available</i>	120

1. Numbers do not include the 5 reserved slots.

**Table 2-1** Available cartridge slots



**Figure 2-19** Cartridge slots in the XLS-832700 (fixed port slots not shown)



**Figure 2-20** Cartridge bay

## 2.2.7 Doors, Locks, Light Curtain Sensors, and Door-Opened Sensors

### Doors

The XLS-8161100 and XLS-832700 have two doors, while the XLS-820500 and XLS-812300 have one door. The XLS-89000 MEM has two doors, while the XLS-85000 has a single door. All doors have windows for viewing robot operations; the front windows in the LRM are blocked if the optional door slots are installed. There are also smaller viewing windows on the side panels.

### Door Locks

All doors include key locks. Electronic locks are optional. When the electronic locks are installed, a user name and password are required to unlock the doors. With electronic locks, pending operations are completed and the handler is parked in a safe location before the doors are unlocked.

### Light Curtain Assembly

The *light curtain*, also known as the “Inventor Sentry,” consists of a series of infrared emitters and detectors arrayed throughout the XLS. The emitters project small beams of infrared light that is not visible to the naked eye toward corresponding detectors.

The curtain of light formed by the emitters and detectors allows the XLS to precisely monitor all areas within the LRM and MEM cabinets, as follows:

- The beams of light at the rear of the cabinet can detect whether a cartridge is protruding from a slot. If the door(s) are closed and one of these beams of light is broken, the XLS prevents the handler from moving to avoid hitting a protruding cartridge.
- The beams of light curtain at the front of the cabinet can detect when someone reaches into the cabinet. If a door is open and one of these beams of light is broken, the XLS detects and logs a potential inventory violation and automatically scans the cartridges and drives in the affected area as soon as all doors are closed.

### Door-Opened Sensors

Each door includes a door-opened sensor to protect the integrity of the cartridge inventory. The sensor detects if the door was opened while the library power is off, thus reducing the time required to recover from a power-off event.

When the power is reapplied, the XLS checks the state of the door-opened sensors and performs one of the following actions:

- If a sensor indicates that a door was opened while the power was off, the XLS scans all cartridge locations before becoming ready.
- If the sensors indicate that the doors were not opened while the power was off, the XLS bypasses the inventory scan, thus minimizing the time to become ready.

The sensors will function for at least 24 hours after a power outage.

### 2.2.8 Equipment Rack

Shown in [Figure 2-21](#), the LRM includes space in the back for an optional EIA 19-inch equipment rack installed in a vertical orientation (equipment installed on its side). The rack can accommodate equipment up to 26 inches deep (66 cm). Installed equipment could include a Fibre Channel switch or other ancillary equipment.

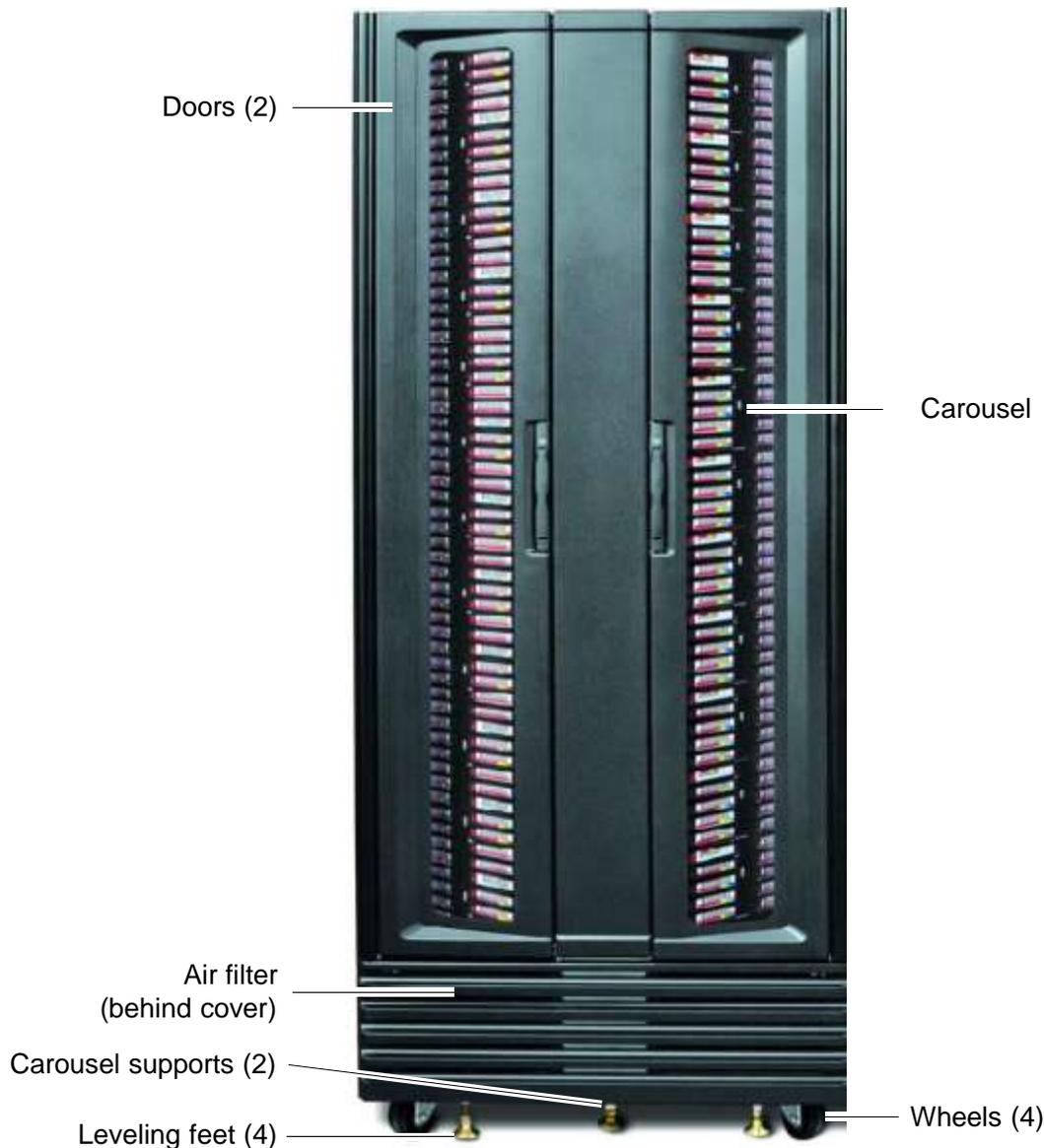
Two versions of the rack option are available. The 6U rack (10.5-inches) resides entirely within the LRM cabinet. The 8U (14-inches) rack protrudes 3.5 inches beyond the rear of the LRM cabinet. A 15-amp power strip with six grounded outlets and circuit breaker is supplied with either equipment rack. This power strip must be connected to an external power source.



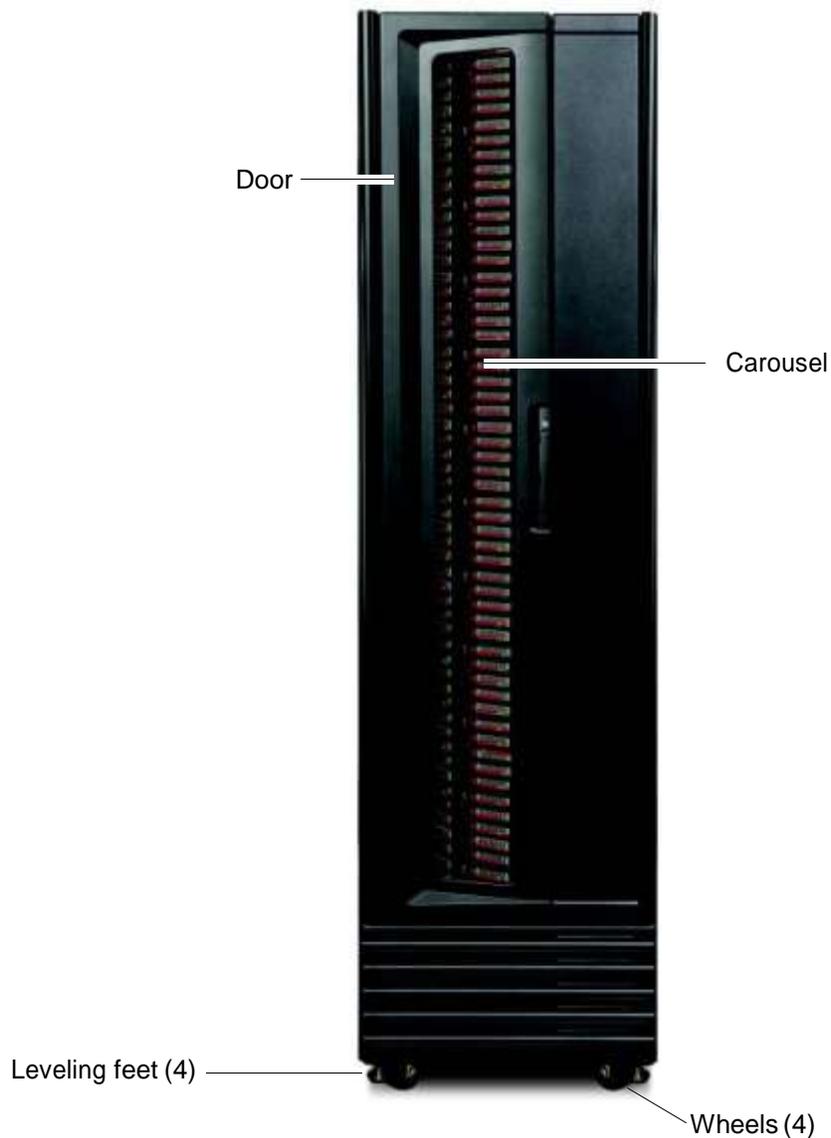
**Figure 2-21** Equipment rack option (6U rack shown in XLS-832700)

## 2.3 Media Expansion Module (MEM)

The LRMs can be expanded by adding one or two MEMs, shown in [Figure 2-22](#) and [Figure 2-23 on page 2-25](#). The XLS-89000 can accommodate 1,075 cartridges, while the XLS-85000 can store 535 cartridges. The XLS-8161100, XLS-832700 and the XLS-820500 can be expanded by adding one or two of either the XLS-89000 or XLS-85000 MEMs while the XLS-812300 may be expanded by adding one or two of the XLS-85000 MEMs. A single MEM can also be shared between two LRMs, and groups of LRMs and MEMs can be linked together to form even larger systems. The high-density design can provide over 100 tapes per square foot of floor space.



**Figure 2-22** Front view of the XLS-89000 Media Expansion Module (MEM)



**Figure 2-23** Front view of an XLS85000 Media Expansion Module (MEM)

A MEM derives its power and control from an attached LRM. The carousel can rotate in either direction and the handler from an attached LRM can reach into a MEM to pick, place, and scan the barcode of any cartridge.

Like the LRM, a MEM includes the following features:

- Air filters behind the front grille of the XLS-89000
- One or two doors with windows, key locks, and optional electronic locks
- Inventory Sentry feature
- Door-opened sensors

**Notes:**

This chapter provides general instructions for accessing and using X-Link. As you complete the tasks described in this manual, refer to this chapter as needed to learn how to:

- Log in and log out (see [Section 3.1](#))
- Use the touch screen (see [Section 3.2 on page 3-5](#))
- Use the Home page (see [Section 3.3 on page 3-9](#))
- Use the help system (see [Section 3.4 on page 3-17](#))
- Specify dates and times (see [Section 3.5 on page 3-19](#))
- Sort and export tables (see [Section 3.6 on page 3-20](#))
- Determine which tasks you can perform (see [Section 3.7 on page 3-22](#))

This chapter assumes that the library has previously been installed and configured. For instructions for completing these prerequisites, refer to the *XLS Library Installation Manual*.

## 3.1 Logging In and Logging Out

This section provides instructions for logging into and out of X-Link.

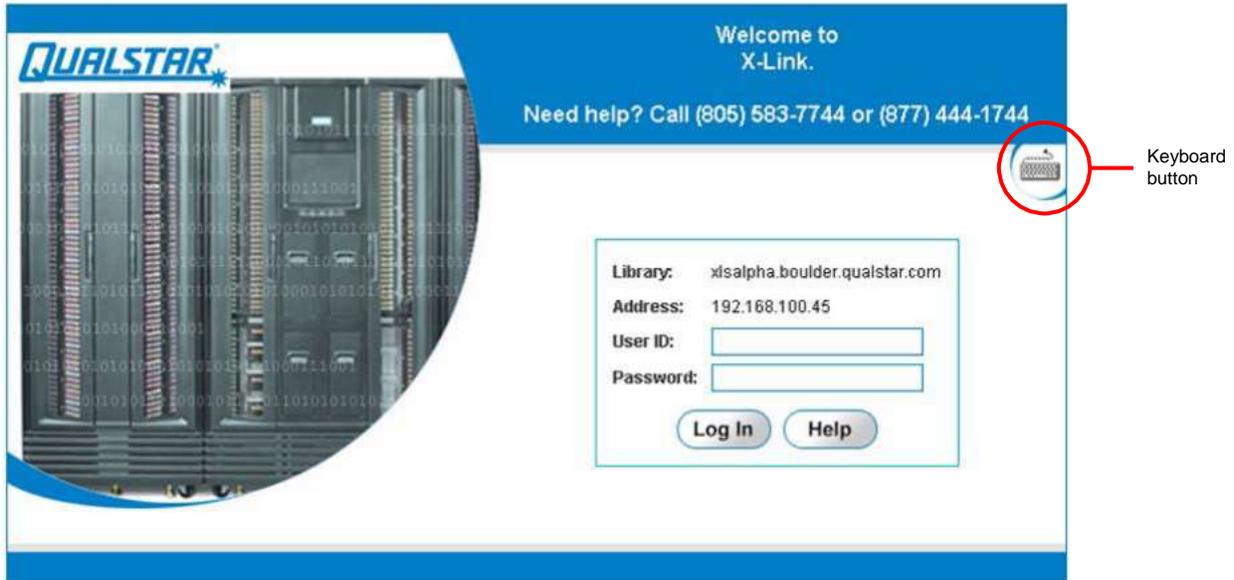
### 3.1.1 Logging In

You can log into the library remotely, using an Internet browser on a computer attached to the library, or locally, using the touch screen.

**Before you begin:** Before logging in:

- Contact the XLS administrator to obtain a user ID and password.
- If you will log into the XLS from a stand-alone computer or across an Ethernet network, confirm the following:
  - The XLS has already been connected to the computer or network. For instructions, refer to the *XLS Library Installation Manual*.
  - The Internet browser has already been configured to communicate with the XLS, and the log-in page is displayed (see [Figure 3-1 on page 3-2](#)). For instructions, refer to the *XLS Library Installation Manual*.

**Procedure:** [Figure 3-1](#) shows the X-Link log-in page.

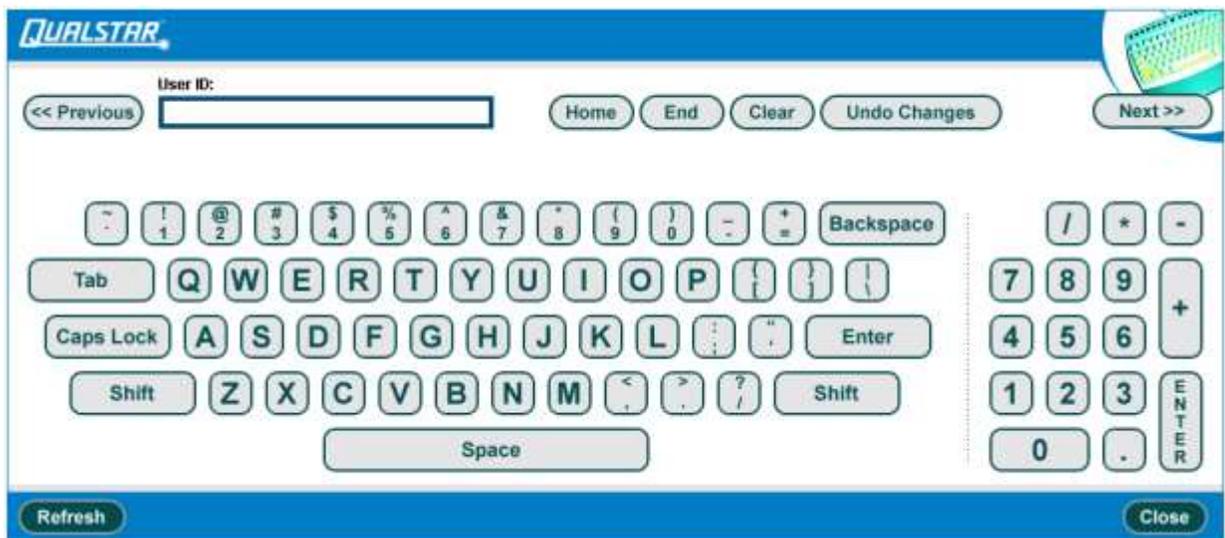


**Figure 3-1** Log-in page

To log into X-Link, follow these steps:

1. If you are using the touch screen, press the keyboard button located on the right side of the log-in page to access the virtual keyboard, shown in [Figure 3-2](#).

Note that a stylus has been included with the accessory kit that can be used to control the touch screen. Please be sure to only use the orange colored tip of the stylus on the touch screen as shown in [Figure 3-7 on page 3-6](#).



**Figure 3-2** Virtual keyboard

2. Type your user ID in the **User ID** field.
3. If you are using the touch screen, press **Next** on the virtual keyboard to display the Password field.
4. Type your password in the Password field.
5. If you are using the touch screen, press **Close** on the virtual keyboard to return to the log-in page.
6. Press **Log In**. The X-Link Home page opens, as shown in [Figure 3-3](#).

The screenshot shows the X-Link Home page with the following components:

- Header:** QUALSTAR logo, X-LINK INTERFACE, Help, Logout, Refresh button.
- Navigation:** COMPASS ARCHITECTURE logo, X-LINK HOME, user ID: alsgamma XLS-832700 0134217575X, Change Touch Screen Option.
- Logical Mode:** Logical Library View (selected), Service Menu, Administrator View, Show All, Create Custom View, Mon Mar 05 03:13:22 MST 2007, Autorefresh checkbox.
- Logical Libraries Section:**
  - Status: All Libraries Online, All Libraries Ready
  - Doors: All Closed, Locked | I/O Ports: All Closed | Drives Offline: 0
  - Event Counts (All Libraries): Total: 1, Critical: 5, Last 24 Hours: 381
  - Buttons: Lock Doors, Unlock Doors
  - Table of Logical Libraries (see below)
  - Export options: CSV, Excel, XML
- Media and Tape Drives:** View Open I/O Port, Move Media, Tape Drives, Import Media, View Inventory, Export Media
- Administration and Configuration:** Event Log, Offline Logical Library, Online Logical Library, Library Specifications, Contact Information, Administrator Information, News, Create a New Library, Delete Logical Library
- Footer:** Refresh button, Copyright © 2004 - 2007 Qualstar Corporation. All Rights Reserved.

Logical Library	Name	Status	Events		Tapes	Storage		Tape Drives		I/O Ports		Status
			Total	Critical / L24		Total	Slots / Tapes	Drives / Tapes	Offline	Slots / Tapes		
(Unassigned)			0 / 0 / 0		0	0	0 / 0	0 / 0	0	0	0	None
<input checked="" type="radio"/>	Empty	Online / Ready	0 / 0 / 0		0	0	0 / 0	0 / 0	0	0	0	None
<input type="radio"/>	Engineering	Online / Ready	0 / 0 / 22		0	1 / 1	1 / 1	0 / 0	0	20 / 6		Error
<input type="radio"/>	Marketing	Online / Ready	0 / 0 / 0		0	10 / 0	0 / 0	0 / 0	0	0	0	None
<input type="radio"/>	MyBankCustomerData	Online / Ready	0 / 3 / 242		75	2381 / 75	0 / 0	0 / 0	0	0	0	None
<input type="radio"/>	Small	Online / Ready	0 / 0 / 0		0	197 / 0	0 / 0	0 / 0	0	0	0	None

Figure 3-3 X-Link Home page (Logical Libraries View selected)

### 3.1.2 Logging Out

A logout button appears in the upper right corner of every page (see [Figure 3-4](#)).



Figure 3-4 Logout button

To log out of X-Link, press **Logout**. The log-out page opens, as shown in [Figure 3-5](#).



Figure 3-5 Log-out page

### 3.1.3 Session Timeout

For security reasons, inactive users are automatically logged out of X-Link. If you have been logged out, the page shown in [Figure 3-6](#) opens. Press **Log In** to return to the log-in page.



**Figure 3-6** Session timeout page

**Note:** If you find you are being logged out frequently, contact the XLS administrator. The administrator can increase the *session time-out value* on the View/Edit Policies page. See [Section 10.5 on page 10-5](#).

## 3.2 Using the Touch Screen

This section describes how to use the touch screen.

**Important:** You can perform XLS functions locally, using the touch screen, or remotely, using the keyboard of a computer connected to one of the Ethernet ports. Although the instructions in this manual are written for someone using a standard keyboard and mouse, they can be adapted easily for use with the touch screen. Refer to this section to learn how.

Note that a stylus has been included with the accessory kit that can be used to control the touch screen. Please be sure to only use the orange colored tip of the stylus on the touch screen as shown in [Figure 3-7](#).



**Figure 3-7** Touch screen stylus

### 3.2.1 Entering Text

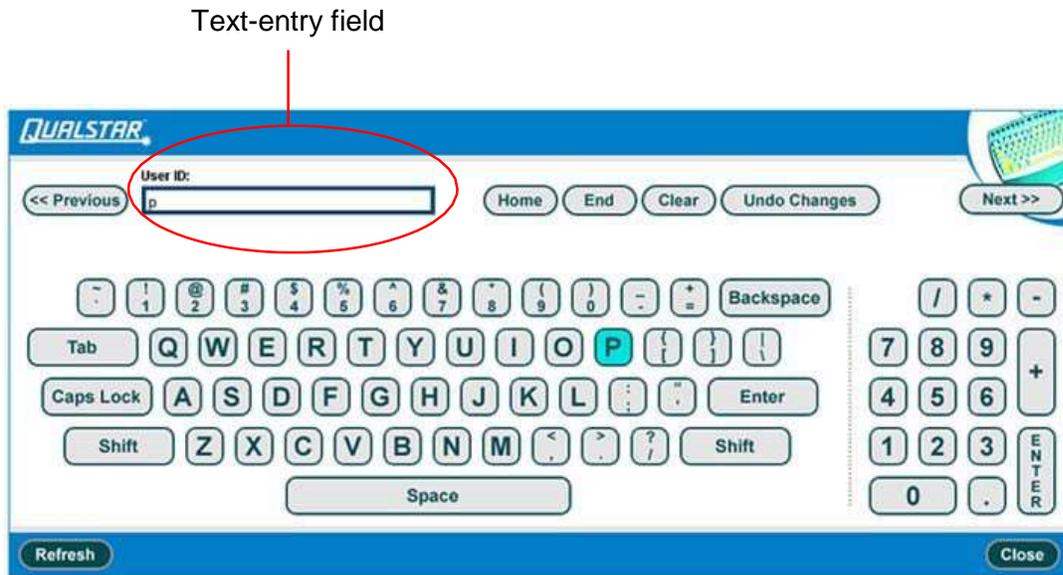
As shown in [Figure 3-8](#), pages that require text entry include a keyboard button in the upper right corner.



**Figure 3-8** Keyboard button on log-in page

If you are using the touch screen, follow these steps to enter text:

1. Press the keyboard button to open the virtual keyboard (see [Figure 3-9](#)). When it opens, the virtual keyboard displays the first text-entry field for the page.



**Figure 3-9** Virtual keyboard

2. Press the appropriate keys to enter text in the first text-entry field.
3. Press **Next** to store the value for the first field and to display the next field.
4. Continue entering text until information has been stored for all fields.
5. Press **Close** to save all fields and close the virtual keyboard.

[Table 3-1](#) lists the function keys on the virtual keyboard. You can use these keys to enter and edit values.

Function key	What it does
Previous	Stores the current value and displays the previous field. If no previous field exists, the last field on the page is displayed.
Next	Stores the current value and presents the next field. If no next field exists, the first field on the page is displayed.
Home	Moves the cursor to the beginning of the field.
End	Moves the cursor to the end of the field.

**Table 3-1** Function keys on the virtual keyboard

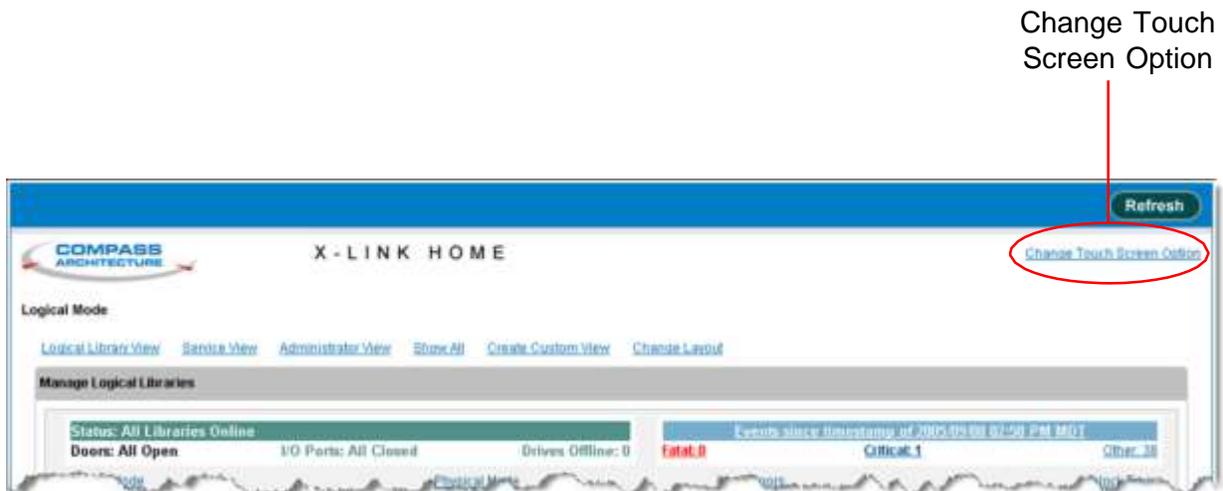
Function key	What it does
Clear	Clears the current field.
Undo Changes	Resets the field's value to the previously entered value.
Refresh	Refreshes the keyboard's text entry field. If you change pages without closing the virtual keyboard, you may need to refresh the keyboard to synchronize it with the new page.
Close	Stores the current value and closes the virtual keyboard.

**Table 3-1** Function keys on the virtual keyboard (*continued*)

### 3.2.2 Changing the Size of the Display

To make it easier to enter text and select options from the touch screen, you can change the size of the touch-screen display and controls. Follow these steps:

1. From the upper right of any page, press **Home** to return to the Home page.
2. Locate the **Change Touch Screen Option**, as shown in [Figure 3-10](#).



**Figure 3-10** Change Touch Screen Option on the Home page

3. Select **Change Touch Screen Option**. The Change Touch Screen Option page opens, as shown in [Figure 3-11](#).



**Figure 3-11** Change Touch Screen Option page

4. To optimize X-Link for touch-screen use, select **Optimize user interface for touch-screen devices**. The following controls are changed:
  - Links display in a larger font, making them easier to select
  - A virtual keyboard is provided for entering text
  - Check boxes and radio buttons are larger
5. Press **Save Changes** to save the setting and exit the page.

**Important:** Any changes you make to the content of the Home page are “remembered” by the Internet browser. For this reason, if you access X-Link using a different browser, the content and layout of the Home page may be different.

### 3.3 Using the Home Page

This section describes how to use the Home page. It provides information on the following tasks:

- Accessing the Home page (see [Section 3.3.1 on page 3-10](#))

- Accessing Home page portlets (see [Section 3.3.2 on page 3-11](#))
- Customizing the Home page (see [Section 3.3.3 on page 3-13](#))
- Refreshing the display (see [Section 3.3.4 on page 3-16](#))

#### 3.3.1 Accessing the Home Page

A Home button appears in the upper right corner of every page (see [Figure 3-12](#)).



Figure 3-12 Home button

To display the Home page, press **Home**. The X-Link Home page opens, as shown in [Figure 3-13](#).

The screenshot shows the X-Link Home page with the following details:

- Header:** COMPASS ARCHITECTURE logo, X-LINK HOME title, and system ID: xlgamma XLS-832700 0134217575X.
- Logical Mode:** Logical Library View (selected), Service View, Administrator View, Show All, Create Custom View.
- System Status:** Status: All Libraries Online, All Libraries Ready; Booms: All Closed, Locked; I/O Ports: All Closed; Drives Offline: 0.
- Event Counts (All Libraries):** Fatal: 1, Critical: 6, Last 24 Hours: 391.
- Logical Libraries Table:**

Logical Library Name	Status	Events: Fatal / Critical / L24	Tapes: Total	Storage: Slots / Tapes	Drive Drives: Drives / Tapes	Offline	I/O Ports: Slots / Tapes	Status
(Unassigned)			0	0	0 (1)		0	
Empty	Online / Ready	0 / 0 / 0	0	0	0	0	0	None
Engineering	Online / Ready	0 / 0 / 27	0	1 / 1	1 / 1 (2)	0	20 / 6	Error
Marketing	Online / Ready	0 / 0 / 0	0	10 / 0	0 / 0 (2)	0	0	None
MyBankCustomerData	Online / Ready	0 / 3 / 262	25	2361 / 75	0 / 0 (2)	0	0	None
Email	Online / Ready	0 / 0 / 0	0	107 / 0	0 / 0 (1)	0	0	None
- Navigation:** Media and Tape Drives, Administration and Configuration.

**Figure 3-13** X-Link Home page (Logical Library View selected)

The following information is displayed at the top of the Home page:

- A unique descriptor for the library, including the physical library name (for example, qualstarxls), the model (for example, XLS-832700), and the 10-digit serial number (for example, 0134217575X).
- The date and time on the library's internal clock.

### 3.3.2 Accessing Home Page Portlets

The X-Link Home page provides access to a number of specialized content areas, called *portlets*. Each portlet contains related information and options. For example, information about the logical libraries is contained in the Logical Libraries portlet, while information about users and user groups is contained in the Users & Groups portlet.

To view all available portlets, following these steps:

1. From the upper right of any page, press **Home** to return to the Home page.
2. Locate the view options, as shown in [Figure 3-14 on page 3-12](#).

### 3.3 Using the Home Page



Figure 3-14 View options on the Home page

3. Select **Show All**. The Home page shown in [Figure 3-15](#) opens.

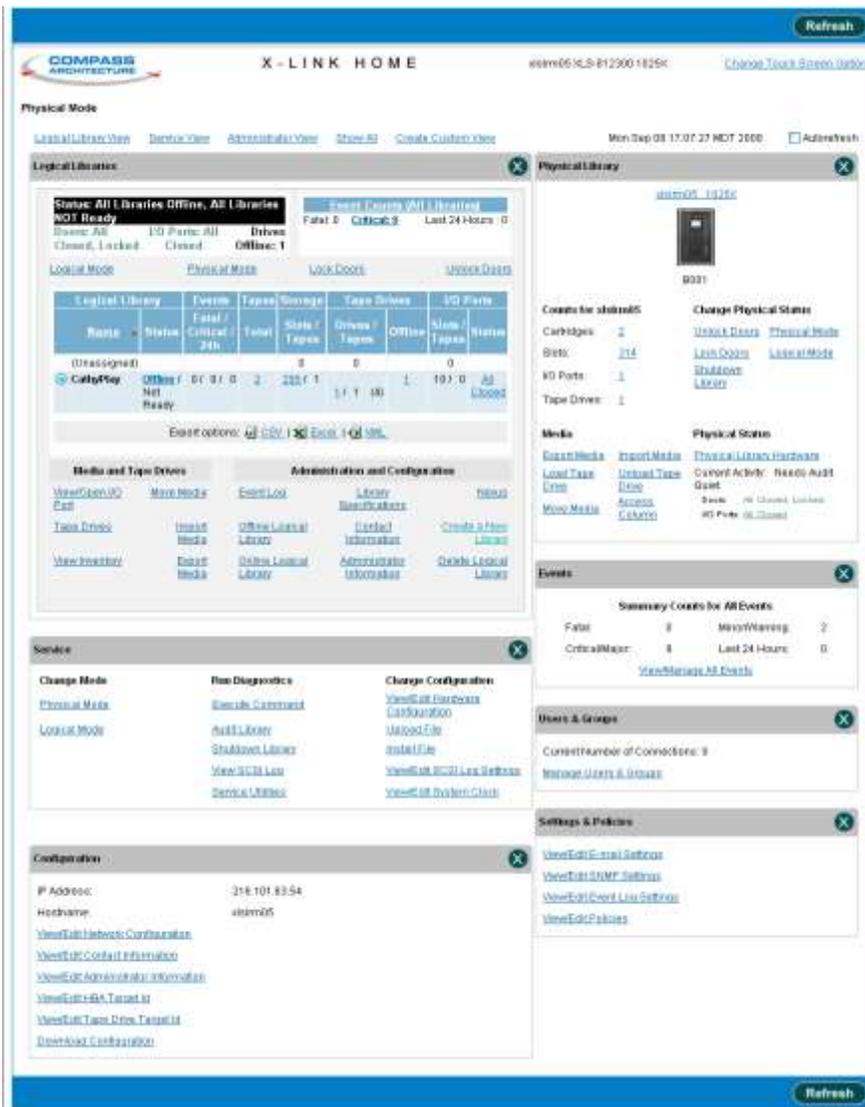


Figure 3-15 X-Link Home page (Show All selected)

[Table 3-2](#) describes the information and options on each portlet.

Portlet	Contains information and options for...
Logical Libraries	Managing the logical library partitions, including names, statuses, events, and assigned resources (tape drives, cartridges, and I/O ports)
Physical Library	Managing the physical library, including changing the operating mode and managing tape drives, I/O ports, cartridges, and events
Events	Managing events
Settings & Policies	Viewing and changing the library's settings and policies
Configuration	Viewing and changing the library's configuration
Users & Groups	Managing users and user groups
Service	Performing diagnostics and service procedures on the library

**Table 3-2** Portlets available from the X-Link Home page

### 3.3.3 Customizing the Home Page

Portlets provide an easy way to customize the content and appearance of the X-Link Home page to serve each user's specific needs. Depending on your role in using X-Link, you can customize the Home page as follows:

- You can select one of the view options to show a pre-selected grouping of portlets on the Home page. See [“Choosing the Content of the Home Page” on page 3-14](#).
- You can select **Create Custom View** to specify exactly which portlets are displayed on the Home page and the order in which they are displayed. See [“Using the Create Custom View Option” on page 3-14](#).
- You can close individual portlets. For more information, see [“Closing Home Page Portlets” on page 3-16](#).

**Important:** Any changes you make to the content of the Home page are “remembered” by the Internet browser. For this reason, if you access X-Link using a different browser, the content and layout of the Home page may be different.

## Choosing the Content of the Home Page

To customize the content of the Home page, follow these steps:

1. From the upper right of any page, press **Home** to return to the Home page.
2. Locate the view options at the top of the Home page, as shown in [Figure 3-14 on page 3-12](#).
3. Select the appropriate view option, as described in [Table 3-3](#).

View Option	Select this option to...
Logical Library View	Access the Logical Libraries portlet, which includes information required for managing the logical libraries. This is the default Home page view
Service View	Access the Service portlet, the Events portlet, and the Physical Library portlet
Administrator View	Access the Settings & Policies portlet, the Users & Groups portlet, and the Configuration portlet
Show All	Access all available portlets
Create Custom View	Determine exactly which of the available portlets are displayed (see <a href="#">“Using the Create Custom View Option”</a> for instructions)

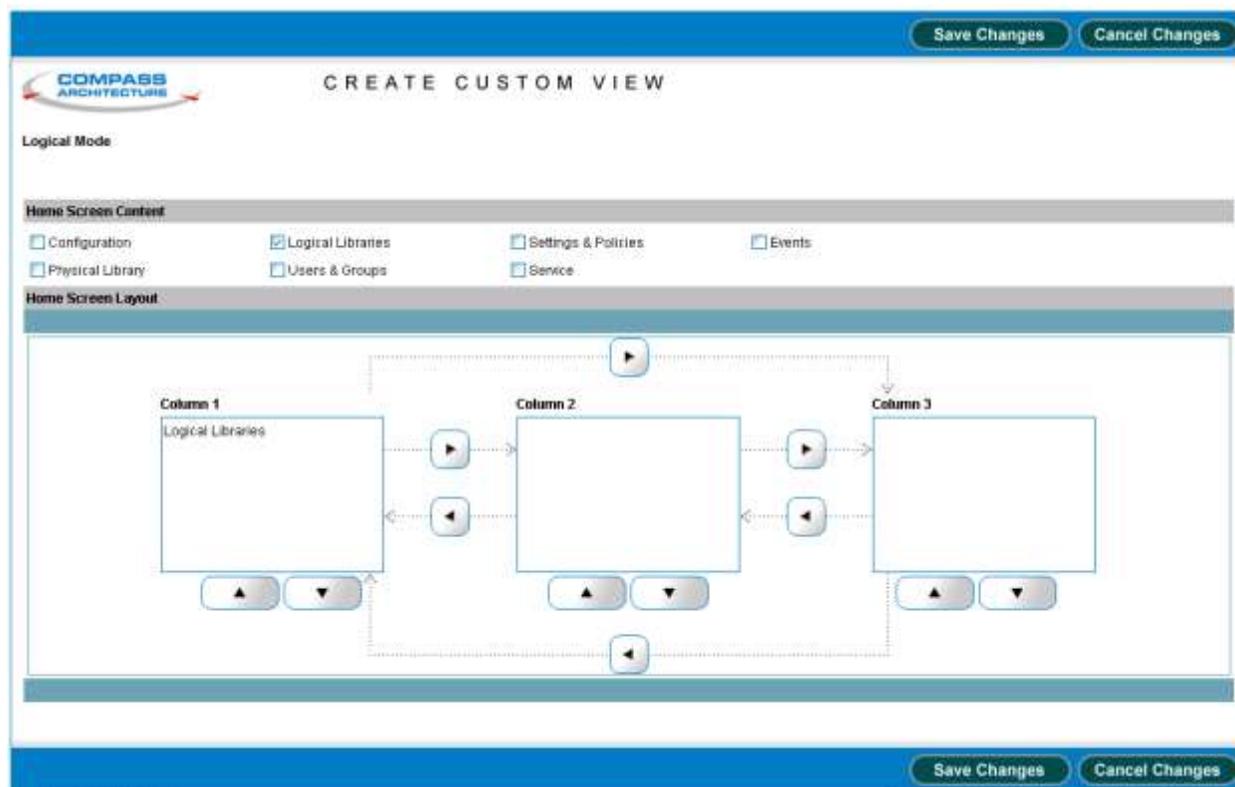
**Table 3-3** Function of View options on the Home page

## Using the Create Custom View Option

To use the Create Custom View option, follow these steps:

1. From the upper right of any page, press **Home** to return to the Home page.
2. Locate the view options at the top of the Home page, as shown in [Figure 3-14 on page 3-12](#).
3. Select **Create Custom View**.

The Create Custom View page opens, as shown in [Figure 3-16](#).



**Figure 3-16** Create Custom View page

4. In the Home Screen Content section, select or clear the check boxes to choose the portlets you want to display on your Home page. As you select them, the portlets names are shown in Column 1 of the Home Screen Layout section.
5. To rearrange the portlets on your custom Home page, highlight a portlet shown in the Home Screen Layout section and move it to the desired column and row position by pressing the left, right, up, and down arrow buttons.
6. Repeat step 5 for each portlet you want to move.
7. Press **Save Changes** to save the settings and exit the page.

The next time you return to the Home page, only those portlets you selected will be displayed. If you want to change your selections, simply re-select **Create Custom View**.

8. From the **Number of Columns** drop-down list, select 2 or 3 columns for the Home page.
9. Press **Save Changes** to save the settings and exit the page.

## Closing Home Page Portlets

There are two ways to prevent specific portlets from appearing on your browser—you can use the close button or you can select **Create Custom View** from the Home page.

**Using the Close Button** To close a portlet, press the close button in the upper right corner of the portlet, as shown in [Figure 3-17](#).



**Figure 3-17** Close button on the Settings & Policies portlet

The next time you return to the Home page, only those portlets you selected will be displayed. If you want to change your selections, select **Create Custom View** or **Show All**.

### 3.3.4 Refreshing the Display

Because X-Link uses a standard Internet browser interface, it is not automatically updated when a change in library status occurs (for example, an event). To update the statuses shown, you can do any of the following:

- Select the Autorefresh check box at the top of the Home page. This causes all statuses to be updated every 30 seconds.
- Press **Refresh** at the top or bottom of the screen to manually refresh the contents of the page.
- Use the refresh function on your Internet browser.

## 3.4 Using the Help System

As shown in [Figure 3-18](#), a Help button appears in the upper right corner of every page.



Figure 3-18 Help button

1. To display help for the page, press **Help**. Context-sensitive help for the page opens, as shown in [Figure 3-19](#).

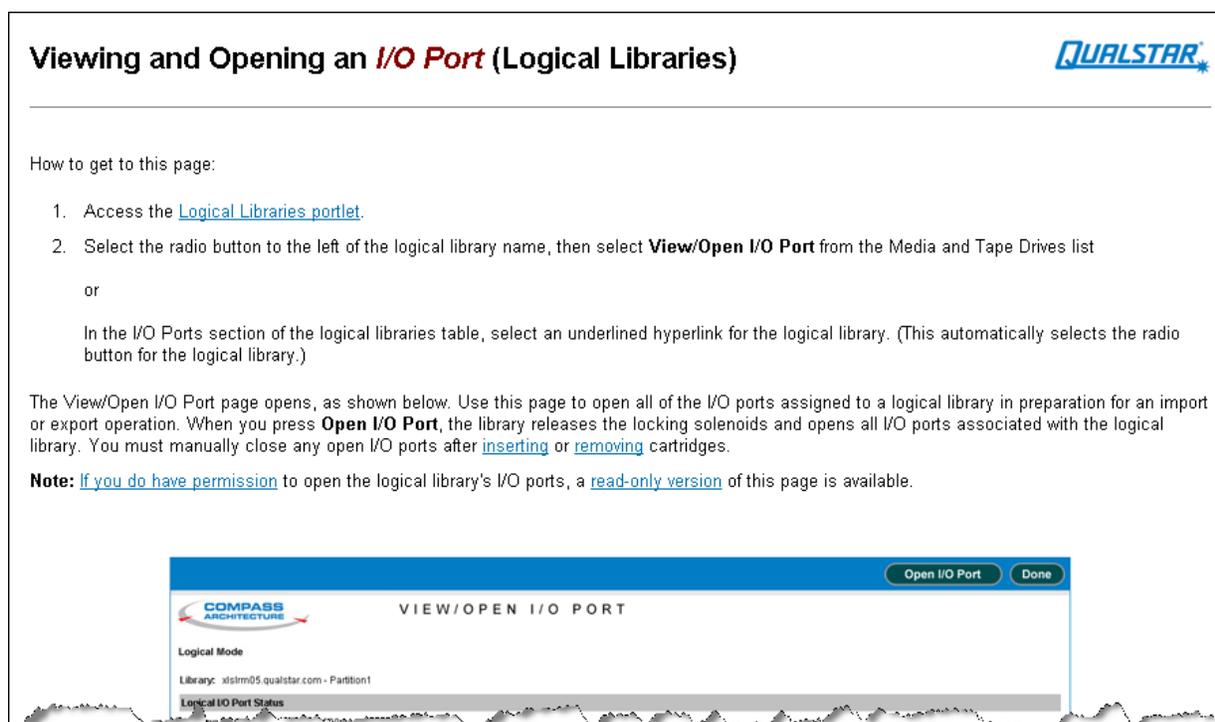


Figure 3-19 Context-sensitive help for View/Open I/O Port page

2. To close the context-sensitive help for the page, press **Close This Window** in the upper left corner of the help page.

or

To access the entire help system, press **Show Help Menus** in the upper left corner of the help page. The help menu and help panel open, as shown in [Figure 3-20](#).

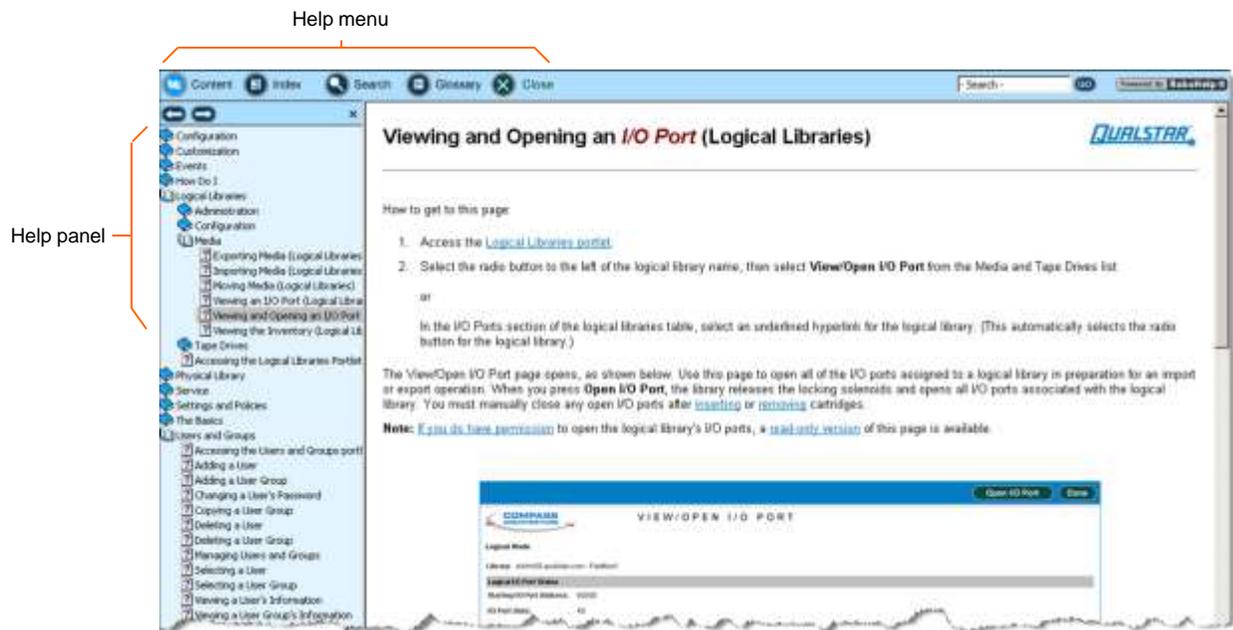


Figure 3-20 Help menu and help panel

3. Select one of the options on the help menu to change the information displayed on the help panel. [Table 3-4](#) describes the help options.

Help option	What it does
Content	Displays a table of contents for all help topics
Index	Displays an index of all terms in the help system
Search	Allows you to search for help topics containing a term you specify
Glossary	Displays a glossary of terms
Close	Closes the help window.

Table 3-4 Options on the Help menu

## 3.5 Specifying the Date and Time

You may need to specify a specific date and time to perform management functions such as searching for events in the event log, as shown in [Figure 3-21](#).

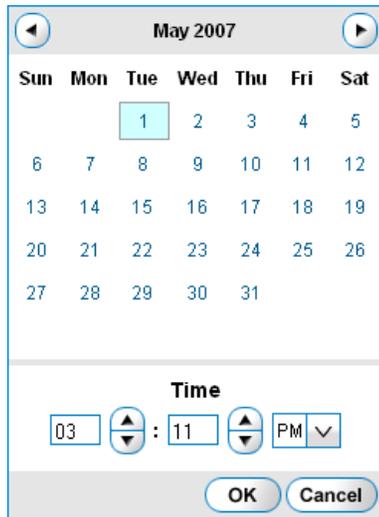
Date/time icon

The screenshot shows the 'VIEW/MANAGE EVENT LOG' interface. The 'Date/Time' section has four radio button options: 'is between', 'last 24 hours', 'is at', and 'is any date/time'. The 'is between' option is selected, with two date/time input fields containing '2007/05/01 03:11 PM'. A red circle highlights the date/time icon in the first input field. Below the filters are 'Message', 'Resource', and 'Severity' sections, each with a dropdown menu and an input field. A 'Search' button is located to the right of the 'Resource' field. At the bottom, there are links for 'Select All', 'Deselect All', 'Invert All', 'Delete Selected Events', and 'Delete All Events'. A status bar shows '61 items found, displaying 1 to 20.' and a table with columns: Event Time, Event Type, Severity, Resource, Message, and Action.

**Figure 3-21** Date/time icon

To specify a date and time, follow these steps:

1. Press the date/time icon, shown in [Figure 3-21 on page 3-19](#), to display the date and time selector, as shown in [Figure 3-22](#).



**Figure 3-22** Date and time selector

2. To specify the date, select the appropriate day within the calendar. To select a different month, press the left or right arrows.
3. To specify the hour, enter a value between 1 and 12 or press the up and down arrows next to the hours.
4. To specify the minute, enter a value between 00 and 59 or press the up and down arrows next to the minutes.
5. Select **AM** or **PM** from the drop-down list.
6. Press **OK** to save the date and time.

## 3.6 Sorting and Exporting Tables

This section describes how to sort and export the tables displayed in X-Link.

### 3.6.1 Sorting Tables

To sort a table, follow these steps:

1. Navigate to the table you want to sort.
2. Press the underlined heading of a column you want to sort by.

The rows in the table are sorted in ascending or descending order, based on the column you selected.

3. As required, re-sort the table by pressing the same column heading again or by selecting a different column heading.

[Figure 3-23](#) shows an example of a table sorted in ascending and descending order by the contents of one column.

### Ascending sort by Permission field

<input type="checkbox"/>	Permission	Description
<input type="checkbox"/>	AddUser	User can create new users.
<input type="checkbox"/>	AddUserGroup	User can create new user groups.
<input type="checkbox"/>	AddUserOwn	User can create new users in their own group.
<input type="checkbox"/>	AuditLibrary	User can initiate an audit (inventory) operation of the physical library.
<input type="checkbox"/>	AuditLibraryLogical	User can initiate an audit (inventory) operation of a logical library.

### Descending sort by Permission field

<input type="checkbox"/>	Permission	Description
<input type="checkbox"/>	ViewUserGroup	User can view information about user groups.
<input type="checkbox"/>	ViewUser	User can view information about users.
<input type="checkbox"/>	ViewTapeDriveTarget	User can view the SCSI/FC target ID of a tape drive in the physical library.
<input type="checkbox"/>	ViewSNMPSettingsOwnLogical	User can view the SNMP settings for their logical library.
<input type="checkbox"/>	ViewSNMPSettingsLogical	User can view the SNMP settings for a logical library.

**Figure 3-23** Sorting tables

## 3.6.2 Exporting Tables

You may want to export table information from X-Link to external file formats, including comma-separated value (CSV) format, Microsoft Excel format, and XML format. The pages containing information that can be exported include three Export options, as shown in [Figure 3-24](#).

Export options:  [CSV](#) |  [Excel](#) |  [XML](#)

**Figure 3-24** Export options

To export information to a file, follow these steps:

1. Navigate to the table you want to export.
2. Press **CSV**, **Excel**, or **XML**, depending on the format of the file you want the data exported to.

3. As prompted, specify whether you want to open the exported file or save it to disk.

**Note:** Depending on which Internet browser you are using and the file format, the exported data file may open automatically.

4. Review the data and reformat or sort it as required.
5. Save the file, being sure to add the correct extension.

## 3.7 Determining Which Tasks You Can Perform

In order to use X-Link, you must have a user ID and a password. In addition, you must belong to a *user group*. The user group determines which library tasks you have permission to perform. For example, you may belong to a user group that has permission to open the I/O ports, or your user group may be able to view, but not delete, events in the event log.

While you can view the complete list of permissions for each user group (see [Section 4.2.5 on page 4-9](#)), you can more quickly determine which tasks you can perform by noting which options you can select from each page, as follows:

- If you have permission to perform a task, it appears as a selectable (blue) option in X-Link.
- If you do not have permission to perform a task, it is not selectable (shown in gray) or it appears as **View** instead of **View/Edit**.

For example, [Figure 3-25](#) shows the Settings & Policies portlet on the Home page. One of the options on this page is shown in gray (not selectable), and several options appear as **View** instead of **View/Edit**. This indicates that the user does not have permission to change these settings.



**Figure 3-25** Example of non-selectable and View options

If you need to perform tasks that are not selectable, contact the XLS administrator. The administrator can assign you to a different user group or edit the user group to add the

appropriate permissions. See [Chapter 4, “Managing Users and Groups,”](#) for more information.

**Notes:**

# Part II: Working with Logical Libraries

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Chapter 5, “Managing Logical Libraries” .....	5-1
Chapter 6, “Managing Cartridges in a Logical Library” .....	6-1
Chapter 7, “Managing Tape Drives in a Logical Library” .....	7-1

**Notes:**

# 4 Managing Users and Groups

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To ensure overall library security, each user who accesses X-Link must have a user ID and a password. In addition, each user must belong to at least one *user group*. User groups specify which library tasks group members have permission to perform. They allow XLS administrators to more tightly control library security by ensuring that certain tasks can be performed only by authorized users.

This chapter provides instructions for the following:

- Accessing user and group information (see [Section 4.1](#))
- Managing user groups (see [Section 4.2 on page 4-2](#))
- Managing users (see [Section 4.3 on page 4-13](#))

## 4.1 Accessing the Manage Users & Groups Page

To access user and group information, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Administrator View** or **Show All** to display the Users & Groups portlet, shown in [Figure 4-1](#).



**Figure 4-1** Users & Groups portlet

**Note:** The **Current Number of Connections** field indicates how many users are currently logged into the library.

3. From the Users & Groups portlet, select **Manage Users & Groups**. The Manage Users & Groups page opens, as shown in [Figure 4-2 on page 4-2](#).

The right half of the page is used to manage user groups (see [Section 4.2](#)). The left half of the page is used to manage users (see [Section 4.3 on page 4-13](#)).

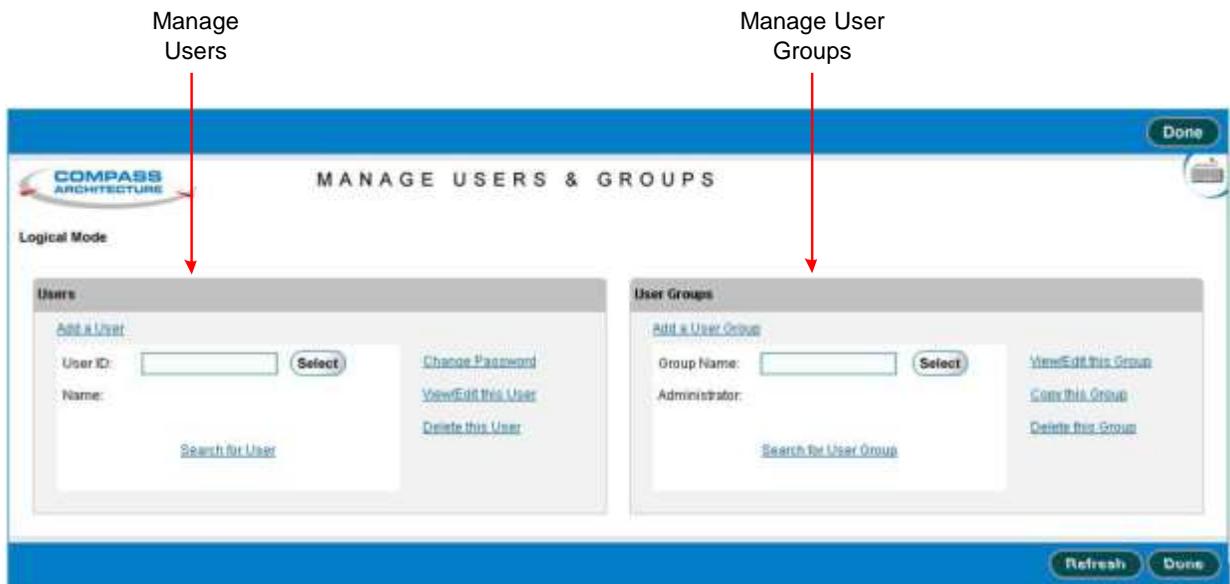


Figure 4-2 Manage Users & Groups page

## 4.2 Managing User Groups

Managing user groups includes the following tasks:

- Understanding user groups (see [Section 4.2.1 on page 4-3](#))
- Determining which user groups you need (see [Section 4.2.2 on page 4-4](#))
- Selecting user groups (see [Section 4.2.3 on page 4-5](#))
- Copying user groups (see [Section 4.2.4 on page 4-7](#))
- Viewing or editing user groups (see [Section 4.2.5 on page 4-9](#))
- Adding user groups (see [Section 4.2.6 on page 4-11](#))
- Deleting user groups (see [Section 4.2.7 on page 4-12](#))

## 4.2.1 Understanding User Groups

Each XLS user must belong to one or more user groups. A *user group* is simply a list of library tasks. If the user belongs to the user group, he or she has permission to perform the tasks listed. If the user does not belong to the user group, he or she cannot perform the tasks.

For example, one of the default users groups, Logical Library Administrator, lists those tasks that logical library administrators typically need to perform. It includes the following types of tasks:

- View Event Log Logical (user can view the event log for a logical library)
- Delete Event Log Logical (user can delete events from a logical library's event log)
- Open I/O Port Logical (user can open the I/O port for the logical library)

It does not, however, include the following types of tasks, which should be performed by physical library administrators only:

- Lock/Unlock Doors (user can lock and unlock the doors on the physical library)
- Shutdown Library (user can shut down the physical library)

By assigning users to the Logical Library Administrator users group, you can permit them to view and delete events for a logical library and to open a logical library's I/O ports. At the same time, you can prevent them from unlocking doors or shutting down the physical library.

## 4.2.2 Determining Which User Groups You Need

When shipped, the XLS includes a number of default user groups (see [Table 4-1](#)). Depending on your requirements, you can use these groups as is, copy and modify them, or create all new groups.

User Group Name	Description
SuperUser	Consists of the highest level administrators who can define and modify all aspects of the library, including configuring physical and logical libraries, defining other users and user groups, setting up the event log, and so on. <b>Note:</b> The XLS default user, admin, is a member of the SuperUser group.
Physical Library Administrator	Consists of users who can perform administrative tasks on the physical library but who cannot perform administrative tasks on a logical library.
Logical Library Administrator	Consists of users who can perform administrative tasks on a logical library but who cannot perform administrative tasks on the physical library.
Library Operator	Consists of users who can perform tasks that relate to operating the library hardware on a day-to-day basis. That is, group members can import and export media from the library, clean tape drives, view the status of library components, and manage the event log. However, group members cannot add, modify, or delete users and user groups or modify logical and physical library settings.
Logical Library User	Consists of users who can view information about the library and edit their own contact information and passwords.

**Table 4-1** Default user groups

To determine which user groups you need, follow these steps:

1. Identify the types of users who will be accessing the library. For example, some users will access the library to perform nightly backups; other users will access the library to monitor the hardware and to perform routine maintenance.
2. Consider the tasks that each type of user will need to perform. For example, users responsible for nightly backups may need to open a logical library's I/O ports to import and export cartridges. User responsible for monitoring operations and preventive maintenance need to view hardware status and set library policies.

3. View the permissions associated with each of the default XLS user groups. Refer to the instructions in [Section 4.2.5, “Viewing or Editing User Groups,” on page 4-9](#).

**Note:** You may find it helpful to export the list of permissions for each group to an CSV, Excel, or XML file. You can then print the files to compare them and to note any proposed changes.

4. Decide whether you want to use the groups as is, copy and modify them (see [Section 4.2.4, “Copying and Modifying User Groups,” on page 4-7](#)), or create all new groups (see [Section 4.2.6, “Adding User Groups,” on page 4-11](#)).

### CAUTION

Do not edit the default user groups provided by Qualstar. Instead, copy these user groups and give them different names (see [Section 4.2.4](#)). Then, change the permissions associated with each group.

## 4.2.3 Selecting User Groups

To select a user group, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. If you know the group’s name, enter it in the **Group Name** field and press **Select**. As long as the library finds an exact match for the specified name, it selects that group and displays the group name and administrator.

or

If you do not know the group’s name, select **Search for User Group**. The Search for User Group page opens, as shown in [Figure 4-3 on page 4-6](#).



Figure 4-3 Search for User Group page

This page lists the following attributes for each defined user group:

- **Name:** The group's full name
- **Description:** A description of the group
- **Administrator:** The user ID of the person who is the group's administrator

3. Locate the group you want, then press **Select** to select the group and return to the Manage Users & Groups page.

**Note:** If a large number of groups is displayed, you can narrow down the search by entering a portion of the group's name in the **Group Name contains** field. Use any combination of upper and lowercase letters.

4. Once you have selected a group, you can view, export, or edit the group's information; copy and modify the group; or delete the group.
5. Press **Done** when you are finished managing the group.

## 4.2.4 Copying and Modifying User Groups

Copying, then modifying a pre-existing group is the recommended way to create a new user group. To copy a user group, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select the group you want to copy. See [Section 4.2.3 on page 4-5](#).
3. Select **Copy this Group**. The Copy User Group page opens, as shown in [Figure 4-4](#). The Group Name and Description fields are blank, but all other information from the original group is preserved.

The screenshot shows the 'COPY USER GROUP' page in the COMPASS ARCHITECTURE system. The page has a blue header with the COMPASS ARCHITECTURE logo and the title 'COPY USER GROUP'. There are two buttons in the top right: 'Add this User Group' and 'Cancel Adding User Group'. Below the header, the 'Logical Mode' is set to 'Library: xisalpha.boulder.qualstar.com - (physical)'. The 'Basic Information' section contains three fields: 'Group Name' (blank), 'Description' (blank), and 'Administrator User ID' (set to 'admin'). The 'Alerts' section has two checkboxes: 'Send pager alerts to this group' (unchecked) and 'Send e-mail alerts to this group' (checked). The 'Permissions' section has a table with columns 'Permission' and 'Description'. The table lists three permissions: 'AddUser', 'AddUserGroup', and 'AddUserOwn', each with a checkbox and a description.

Permission	Description
<input type="checkbox"/> AddUser	User can create new users.
<input type="checkbox"/> AddUserGroup	User can create new user groups.
<input type="checkbox"/> AddUserOwn	User can create new users in their own group.

Figure 4-4 Copy User Group page

The Copy User Group page includes the following sections:

- **Basic Information:** Allows you to specify the user group's name, description, and administrator.
- **Alerts:** Allows you to specify whether e-mail and pager alerts should be sent to members of this user group when a library event occurs.
- **Permissions:** Allows you to specify which library tasks members of this user group have permission to perform. Each permission includes a code string and a description.

4. Add basic information, as described in [Table 4-2](#). All fields are required.

Field	Specify
Group Name	A unique name for this group. <b>Note:</b> Once the user group is created, the Group Name field cannot be edited.
Description	A description of this group, suggesting who should be a member
Administrator User ID	The ID of the user responsible for this user group. The administrator typically is the person who changes permissions and other attributes of the group, adds users to the group, or deletes users from the group. <b>Note:</b> Specifying a user ID in this field does not give the user permission to perform user group administration tasks. You must assign the named user to a user group that includes “OwnUserGroup” permissions (see <a href="#">Table 4-3 on page 4-9</a> ).

**Table 4-2** Copy User Group—Basic information

**Important:** If no users have been defined, specify the default system user (**admin**) for the Administrator User ID. Then, after adding users, modify the group to add the appropriate administrator. See [Section 4.2.5, “Viewing or Editing User Groups,” on page 4-9](#).

5. Specify whether alerts should be sent to members of this group when an event occurs in the library, as follows:
- To send alerts to pager e-mail addresses, select **Send pager alerts to this group**.
  - To send alerts to primary and alternate e-mail addresses, select **Send e-mail alerts to this group**.

**Important:** Select either or both of the **Send Alert** check boxes if you want alerts to be sent to the user group. Then, to ensure that individual users in this group can actually receive the alerts, confirm the following:

- The XLS has been configured to send e-mail and pager alerts. See [Section 10.2 on page 10-2](#).
- E-mail or pager addresses are enabled for each user. See [Table 4-5, “Contact information fields,” on page 4-15](#).

6. As required, set permissions for this user group by selecting or clearing the check boxes next to the permissions. You must select at least one permission for the group.
  - Press **Select All** to select all permissions in the list. You can individually clear any permissions you do not want the group to have.
  - Press **Deselect All** to clear all permissions in the list. You can individually select any permissions you want the group to have.

[Table 4-3](#) describes the types of permissions you can select.

If the Permission indicates a...	A user group member can...	Example Permission
Physical library task	Perform the task on the physical library <b>Note:</b> Physical library tasks are typically performed when the XLS is in physical mode	<ul style="list-style-type: none"> <li>• LockUnlockDoor</li> <li>• ShutdownLibrary</li> </ul>
Logical library task	Perform the task on <i>any</i> logical library	<ul style="list-style-type: none"> <li>• TakeLibraryOfflineLogical</li> <li>• DeleteLibraryLogical</li> </ul>
OwnLogical task	Perform the task only on the logical library specified for the user ID (see <a href="#">Section 4.3.1, “Adding Users,” on page 4-13</a> )	<ul style="list-style-type: none"> <li>• TakeLibraryOffline OwnLogical</li> <li>• DeleteLibraryOwnLogical</li> </ul>
OwnUserGroup task	Perform the task only on the user group or groups specified for the user ID (see <a href="#">Section 4.3.1, “Adding Users,” on page 4-13</a> )	<ul style="list-style-type: none"> <li>• ViewEditOwnUserGroup</li> <li>• AddUserOwn</li> </ul>
View/Edit task	View and edit library or user specifications	<ul style="list-style-type: none"> <li>• ViewEditEmailSettings</li> <li>• ViewEditUserGroup</li> </ul>
View task	View (but not edit) library or user specifications	<ul style="list-style-type: none"> <li>• ViewEmailSettings</li> <li>• ViewUserGroup</li> </ul>

**Table 4-3** User group permissions

7. Press **Add this User Group** to save the new information.

## 4.2.5 Viewing or Editing User Groups

### CAUTION

Do not edit the default user groups provided by Qualstar. Instead, copy these user groups and give them different names (see [Section 4.2.4 on page 4-7](#)). Then, change the permissions associated with each group.

To view or edit the information for a user group, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select the group. See [Section 4.2.3 on page 4-5](#).
3. Select **View/Edit this User Group**. The View/Edit User Group page opens, as shown in [Figure 4-5](#).

COMPASS ARCHITECTURE

VIEW/EDIT USER GROUP

Logical Mode

Library: alpha.boulder.qualstar.com - (physical) \* = Required

**Basic Information**

Group Name: LogicalLibraryAdministrator

Description: Group administers a single logical library \*

Administrator User ID: admin \*

**Alerts**

Send pager alerts to this group

Send e-mail alerts to this group

**Permissions**

[Select All](#) [Deselect All](#)

Permission	Description
<input type="checkbox"/> AddUser	User can create new users.
<input type="checkbox"/> AddUserGroup	User can create new user groups.
<input type="checkbox"/> AddUserOwn	User can create new users in their own group.
<input type="checkbox"/> AuditLibrary	User can initiate an audit (inventory) operation of the physical library.

**Figure 4-5** View/Edit User Group page

**Note:** If you do not have permission to edit the group information, select **View User Group** to display a read-only version of this page.

4. View and make any required changes to the basic information, alert information, and permission settings for the group.

**Important:** The Group Name field cannot be edited. If you want to rename a user group:

- Copy the user group and assign the new name.
- Edit the affected users to select the new user group. See [Section 4.3.4 on page 4-18](#).

See [Section 4.2.4, “Copying and Modifying User Groups,” on page 4-7](#) for explanations of each section on the page. Press **Save Changes** to save the new information.

## 4.2.6 Adding User Groups

In most cases, it is fastest to create a new user group by copying an existing group (see [Section 4.2.4, “Copying and Modifying User Groups,” on page 4-7](#)). However, if you want to create a new user group “from scratch,” follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. From the Manage Users & Groups page, select **Add a User Group**. The Add User Group page opens, as shown in [Figure 4-6](#).

The screenshot shows the 'ADD USER GROUP' page. At the top right, there are two buttons: 'Add this User Group' and 'Cancel Adding User Group'. Below the header, the 'Library' is set to 'xslalpha.boulder.qualstar.com - (physical)'. The page is divided into three main sections:

- Basic Information:** Contains three text input fields: 'Group Name', 'Description', and 'Administrator User ID'. Each field has a small '+' icon to its right, indicating it is a required field.
- Alerts:** Contains two checkboxes: 'Send pager alerts to this group' and 'Send e-mail alerts to this group'.
- Permissions:** Contains a table with two columns: 'Permissions' and 'Description'. The table lists five permissions, each with a checkbox to its left.

Permissions	Description
<input type="checkbox"/> AddUser	User can create new users.
<input type="checkbox"/> AddUserGroup	User can create new user groups.
<input type="checkbox"/> AddUserOwn	User can create new users in their own group.
<input type="checkbox"/> AuditLibrary	User can initiate an audit (inventory) operation of the physical library.
<input type="checkbox"/> AuditLibraryLogical	User can initiate an audit (inventory) operation of a logical library.

Figure 4-6 Add User Group page

3. Add basic information, alert information, and permission settings for the group. See [Section 4.2.4 on page 4-7](#) for explanations of each section on the page.
4. Press **Add this User Group** to create the group.

## 4.2.7 Deleting User Groups

When a user group is deleted, the following occurs:

- The group is no longer displayed as a selection when you are defining users or managing user groups.
- Any users that were assigned to the group no longer have the permissions associated with it.

To delete a user group, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select the group. See [Section 4.2.3 on page 4-5](#).
3. Select **Delete this User Group**. The Delete User Group page opens, as shown in [Figure 4-7](#).



Figure 4-7 Delete User Group page

4. Press **Yes** to delete the group.

## 4.3 Managing Users

This section provides information for the following tasks:

- Adding users (see [Section 4.3.1](#))
- Selecting users (see [Section 4.3.2 on page 4-16](#))
- Changing passwords (see [Section 4.3.3 on page 4-18](#))
- Viewing or editing user information (see [Section 4.3.4 on page 4-18](#))
- Deleting users (see [Section 4.3.5 on page 4-20](#))

### 4.3.1 Adding Users

After you have defined user groups, you can add individual users.

**Important:** When you add a user, you select one or more user groups. For this reason, define the user groups before adding the users.

To add a new user, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select **Add a User**. The Add User page opens, as shown in [Figure 4-8 on page 4-14](#).

**COMPASS ARCHITECTURE** ADD USER

Library: xisaipna.boulter.qualstar.com - (physical) \* = Required

**Logical Libraries**  
This user can work with  
 Only this logical library: Engineering

**Identification**  
Name:  \*  
User ID:  \*  
Password:  \*  
Re-type Password:  \*

**User Groups**  
(at least one user group must be specified)  
 PhysicalLibraryAdministrator  
 SuperUser  
 LibraryOperator  
 LogicalLibraryAdministrator  
 LogicalLibraryUser

**Contact Information**  
Work Phone Number:  \*  
Mobile Phone Number:   
Pager E-mail Address:   
 Send e-mail alerts to this address  
Primary E-mail Address:  \*  
 Send e-mail alerts to this address  
Alternate E-mail Address:   
 Send e-mail alerts to this address

**Work Address**  
Company:   
Street Address:  \*  
  
  
City / Town / Locality:  \*  
State / Province:  \*  
Postal / Zip Code:  \*  
Country:  \*

Add this User Cancel Adding User

Figure 4-8 Add User page

3. If the user will belong to a user group—such as Logical Library Administrator—that includes “own library” permissions, select **Only this logical library** and choose the logical library name from the drop-down list. This allows the user to perform “own library” tasks on the specified logical library.

4. Add identification information for this user, as described in [Table 4-4](#). All fields are required.

Field	Specify
Name (required)	The user's name. <b>Note:</b> You can enter the user's first and last names in any order; however, you may find it helpful to sort users if you enter the last names first.
User ID (required)	A unique ID for this user. The user ID: <ul style="list-style-type: none"> <li>• Is case sensitive</li> <li>• Must begin with an alphabetic character</li> <li>• Must contain between 4 and 32 characters</li> <li>• May contain alphabetic or numeric characters</li> <li>• May contain underscores (_) and hyphens (-)</li> </ul>
Password (required)	A password for this user. The password: <ul style="list-style-type: none"> <li>• Is case sensitive</li> <li>• Must contain between 6 and 32 characters</li> <li>• May contain alphabetic or numeric characters</li> </ul> <b>Note:</b> For security reasons, the password is not visible. Instead, each alpha-numeric character is displayed as an asterisk (*).
Re-type Password (required)	The user's password (to be entered again). If the Password and the Re-type Password fields do not match, the system prompts you to re-enter the information.

**Table 4-4** User Identification fields

5. Select one or more user groups from the list to determine which library tasks this user has permission to perform.

**Important:** If you select more than one user group, the user will be able to perform all tasks permitted by the first group, plus all tasks permitted by the second user group, and so on.

6. Add contact information for this user, as described in [Table 4-5](#).

Field	Specify
Work Phone Number (required)	The user's phone number at work
Mobile Phone Number	The user's mobile phone number
Pager E-mail Address	The user's pager e-mail address
Send e-mail alerts to this address	Whether alerts should be sent to this user's pager e-mail address <sup>1</sup>

**Table 4-5** Contact information fields

Field	Specify
Primary E-mail Address (required)	The address of the e-mail account the user manages on a regular basis
Send e-mail alerts to this address	Whether alerts should be sent to this user's primary e-mail address <sup>1</sup>
Alternate E-mail Address	An alternate e-mail address for the user
Send e-mail alerts to this address	Whether alerts should be sent to this user's alternative e-mail address <sup>1</sup>

1. The system must be configured to send e-mail and pager alerts. See [Section 10.2 on page 10-2](#). In addition, e-mail or pager capability must be enabled for the user group. See [page 4-8](#).

**Table 4-5** Contact information fields (*continued*)

7. Add a work address for the user.
8. Press **Add this User** to add the user.

### 4.3.2 Selecting Users

To select a particular user, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).

2. If you know the user's ID, enter it into the **User ID** field and press **Select**. As long as the library finds an exact match for the specified ID, it selects that user and displays the User ID and Name.

or

If you do not know the user's ID, select **Search for User**. The Search for User page opens, as shown in [Figure 4-9](#).

COMPASS ARCHITECTURE SEARCH FOR USER

Logical Mode

Search Criteria

Name contains:  Search (Search is case-insensitive)

Results:

Name	User ID	Email Address	Action
Qualistar Administrator	admin	admin@example.com	Select
Jim Schumacher	schumact	schumact@colorado.edu	Select

Export options: CSV | Excel | XML

**Figure 4-9** Search for User page

- a. Enter any part of the user's name in the **Name contains** field. You can use any combination of upper and lowercase letters.
- b. Press **Search** to begin the search.

For each user whose name matches the search value, the following attributes are displayed under Results:

- **Name:** The user's full name
  - **User ID:** The user's ID
  - **E-mail Address:** The user's primary e-mail address
- c. Locate the user you want, then press **Select** to select the user and return to the Manage Users & Groups page.
3. Once you have selected a user, you can change the password, view or edit user information, or delete the user.
  4. Press **Done** when you are finished managing the user.

### 4.3.3 Changing Passwords

To change the password for a user, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select the user. See [Section 4.3.2 on page 4-16](#).
3. Select **Change Password**. The Change User Password page opens, as shown in [Figure 4-10](#).

The screenshot shows a web interface for changing a user's password. At the top, there is a blue header with the COMPASS ARCHITECTURE logo and the title 'CHANGE USER PASSWORD'. Below the header, there are two buttons: 'Save Changes' and 'Cancel Changes'. The main content area displays the following information:

- Logical Mode
- Library: sbsalpha.boulder.qualstar.com - (physical)
- Change Password section with a grey background:
  - Name: Gualstar Administrator
  - User ID: admin
  - New Password: [input field] \*
  - Re-type New Password: [input field] \*

At the bottom of the page, there are two more buttons: 'Save Changes' and 'Cancel Changes'.

**Figure 4-10** Change User Password page

4. Enter and re-enter the user's new password. The password:
  - Is case sensitive
  - Must contain between 6 and 32 characters
  - May contain alphabetic or numeric characters

**Note:** Most users can change only their own passwords.

5. Press **Save Changes** to save the new password.

### 4.3.4 Viewing or Editing Users

To view or edit the information for a user, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select the user. See [Section 4.3.2 on page 4-16](#).

3. Select **View/Edit this User**. The View/Edit User page opens, as shown in [Figure 4-11](#).

Figure 4-11 View/Edit User page

4. View and make any desired changes to the user's information. See [Section 4.3.1, "Adding Users," on page 4-13](#) for the descriptions of each field.
5. Press **Save Changes** to save the new information.

### 4.3.5 Deleting Users

To delete a user, follow these steps:

1. Access the Manage Users & Groups page, as described in [Section 4.1 on page 4-1](#).
2. Select the user. See [Section 4.3.2 on page 4-16](#).
3. Select **Delete this User**. The Delete User page opens, as shown in [Figure 4-12](#).

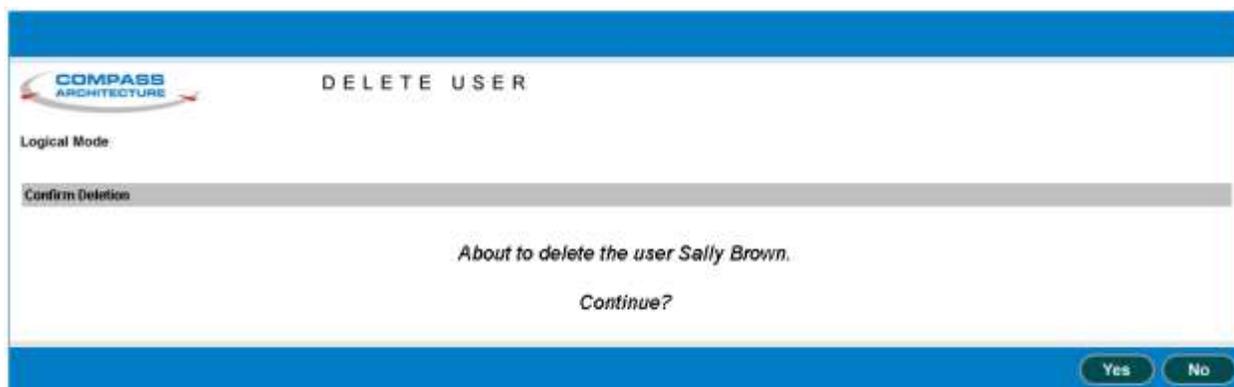


Figure 4-12 Delete User page

4. Press **Yes** to delete the user.

# 5 Managing Logical Libraries

---

This chapter provides introductory information about logical libraries, including instructions for using the options on the Logical Libraries portlet to manage logical libraries.

## 5.1 Before You Begin

Before referring to this chapter to manage logical libraries, ensure the following:

- One or more logical libraries have been created using the Create Logical Library wizard. For instructions, refer to the *XLS Library Installation Manual*.
- The logical libraries have been tested with the software applications. For instructions, refer to the *XLS Library Installation Manual*.
- User groups have been defined and users have been assigned to each group. For instructions, see [Chapter 4, “Managing Users and Groups.”](#)

## 5.2 About Physical and Logical Libraries

The *physical library* consists of the entire XLS system, including the Library Resource Module (LRM), any attached Media Expansion Modules (MEMs), all tape drives, all cartridge slots, all I/O ports, the medium changer interface, the robotics, and all HBAs in the system controller’s expansion slots.

When the XLS is installed, the resources in the XLS physical library are subdivided into one to eight partitions, called *logical libraries*. These logical library partitions ensure that different software applications have restricted and dedicated access to specific tape drives, cartridge slots, and I/O ports. All logical libraries share access to the XLS’s medium changer interface on a first-come, first-served basis.

[Figure 5-1 on page 5-3](#) depicts an example XLS configuration that shows the high-level relationship between the physical library, the logical libraries, the host computers, and the software applications. In the figure:

- Three host computers running three software applications share the XLS physical library.
- To ensure that each software application has its own dedicated set of resources, the physical library has been partitioned into three logical libraries. Each software application controls its own logical library.

- Each host computer connects to an HBA port in the library's system controller. The software applications communicate across the HBA connections to access the library's medium changer interface.

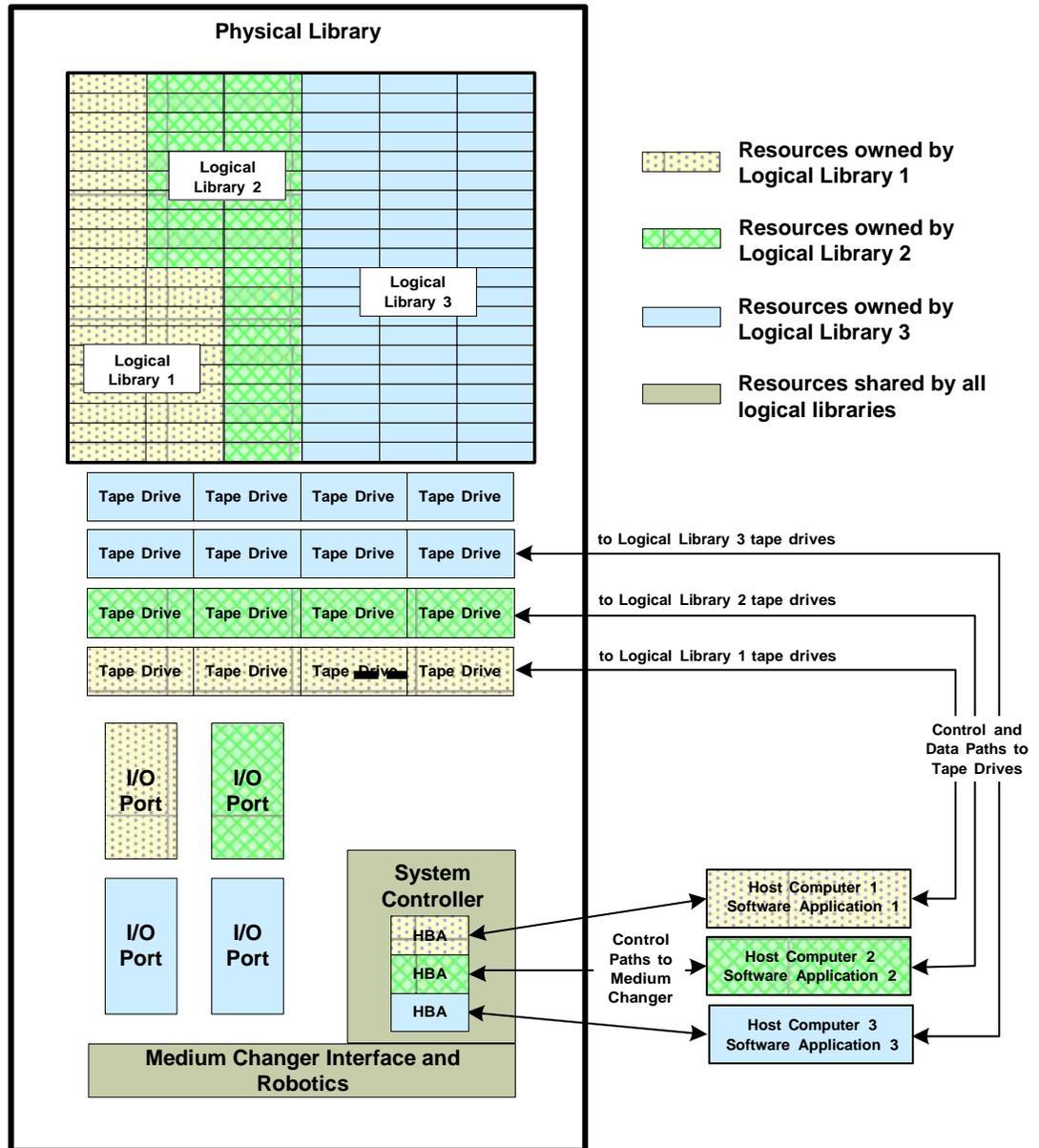
**Note:** The connections can be either parallel SCSI or Fibre Channel.

- All host computers communicate with the medium changer interface and share control of the robotics (handler and carousel) on a first-come, first-served basis.
- Each of the three logical libraries contains a subset of the total available tape drives and cartridge slots.
- Logical Libraries 1 and 3 have been assigned one and three I/O ports, respectively; Logical Library 2 does not have an assigned I/O port.

**Important:** The 10 slots in a single I/O port cannot be shared among logical libraries. If a logical library needs access to an I/O port, it must be assigned the entire port when the library is defined.

- The software applications and the host computers connect to and communicate with the tape drives independently of the medium changer.

**Note:** [Figure 5-1 on page 5-3](#) shows a typical and relatively simple logical library configuration. You may require more complex configurations to meet more sophisticated data-protection requirements, including equipment fail-over and backup redundancy. Refer to the *XLS Library Installation Manual* for more information.



**Figure 5-1** Example configuration showing the relationship between the physical library, logical libraries, and software applications

## 5.3 Accessing the Logical Library Portlet

To access the Logical Libraries portlet, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, shown in [Figure 5-2](#).

The screenshot shows the Logical Libraries portlet interface. At the top, there is a status bar indicating 'Status: All Libraries Online, All Libraries Ready' and 'Doors: All Closed, Locked'. Below this, there are tabs for 'Logical Mode', 'Physical Mode', 'Lock Doors', and 'Unlock Doors'. The main content is a table with columns for Logical Library Name, Status, Events (Fatal/Critical/L24), Tapes (Total), Storage (Slots/Tapes), Tape Drives (Drives/Tapes/Offline), and I/O Ports (Slots/Tapes/Status). The table lists several libraries: Empty, Engineering, Marketing, MyBankCustomerData, and Small. Below the table, there are export options for CSV, Excel, and XML. At the bottom, there are two sections: 'Media and Tape Drives' and 'Administration and Configuration', each with several navigation links.

Logical Library Name	Status	Events (Fatal / Critical / L24)	Tapes (Total)	Storage (Slots / Tapes)	Tape Drives (Drives / Tapes / Offline)	I/O Ports (Slots / Tapes / Status)
(Unassigned)				0	0 (1)	0
Empty	Online / Ready	0 / 0 / 0	0	0	0	0 / 0 / None
Engineering	Online / Ready	0 / 0 / 77	8	1 / 1	1 / 1 (2)	0 / 20 / 6 / Error
Marketing	Online / Ready	0 / 0 / 0	0	10 / 0	0 / 0 (2)	0 / 0 / None
MyBankCustomerData	Online / Ready	0 / 3 / 242	75	2341 / 75	0 / 0 (2)	0 / 0 / None
Small	Online / Ready	0 / 0 / 0	0	197 / 0	0 / 0 (1)	0 / 0 / None

Figure 5-2 Logical Libraries portlet

The Logical Libraries portlet includes the following information:

- Summary information about the physical library (see [Section 5.3.1](#))
- Short-cuts to frequently used physical library options (see [Section 5.3.2 on page 5-5](#))
- Detailed information about all defined logical libraries (see [Section 5.3.3 on page 5-6](#))
- Logical library options (see [Section 5.3.4 on page 5-8](#))

**Important:** The number of logical libraries displayed depends on your user group. If the user group has permission to view all logical libraries, all defined logical libraries are displayed. If the user group has permission to view only its own logical library, only that library is displayed.

### 5.3.1 Physical Library Status

[Table 5-1](#) describes the physical library status information available on the Logical Libraries portlet.

Field	Description
Status	<ul style="list-style-type: none"> <li>• <b>All Libraries Online:</b> All logical libraries are currently online.</li> <li>• <b>Some Libraries Offline:</b> One or more logical libraries is currently offline.</li> <li>• <b>All Libraries Offline:</b> All logical libraries are currently offline.</li> </ul>
Doors	<ul style="list-style-type: none"> <li>• <b>All Closed:</b> All doors are currently closed.</li> <li>• <b>Some Open:</b> One or more doors is currently open.</li> <li>• <b>All Open:</b> All doors are currently open.</li> </ul>
I/O Ports	<ul style="list-style-type: none"> <li>• <b>All Closed:</b> All I/O ports are currently closed.</li> <li>• <b>Some Open:</b> One or more I/O ports is currently open.</li> <li>• <b>All Open:</b> All I/O ports are currently open.</li> </ul>
Drives Offline	The number of tape drives that are currently offline.
Events	The number of fatal, critical, and other events, if any, that have occurred in the physical library in the past 24 hours. Fatal events are shown as bold, red numbers, indicating that user intervention is required. To view the event log for the physical library, select any of the underlined hyperlinks.

**Table 5-1** Physical library status information on the Logical Libraries portlet

### 5.3.2 Physical Library Options

[Table 5-2](#) describes the physical library options available on the Logical Libraries portlet.

Option	Description
Logical Mode	Select this option to put the XLS in logical mode. See <a href="#">Section 8.2.2 on page 8-5</a> .
Physical Mode	Select this option to put the XLS in physical mode. See <a href="#">Section 8.2.1 on page 8-4</a> .
Lock Doors	Select this option to lock all the doors in the physical library. See <a href="#">Section 11.4.2 on page 11-12</a> .
Unlock Doors	Select this option to unlock all the doors in the physical library. See <a href="#">Section 11.4.1 on page 11-11</a> .

**Table 5-2** Physical library options on the Logical Libraries portlet

### 5.3.3 Logical Library Status

[Table 5-3](#) describes the status information displayed for the logical libraries on the Logical Libraries portlet.

Section	Field	Description
Logical Library	Name	The name assigned to the logical library. If the logical library is offline, its name is displayed in bold, indicating that user intervention may be required.
	Status	<ul style="list-style-type: none"> <li><b>Online:</b> The logical library is currently online. Select the underlined hyperlink to display the Take Library Offline page.</li> <li><b>Offline:</b> The logical library is currently offline. Select the underlined hyperlink to display the Bring Library Online page.</li> </ul>
Events	Fatal	The number of fatal events, if any, that have occurred in this logical library in the past 24 hours. These events are shown as bold, red numbers, indicating that user intervention is required. Select the underlined number to review the logical library's event log, which has been filtered for these events.
	Critical	The number of critical events, if any, that have occurred in this logical library in the past 24 hours. These events are shown as bold numbers, indicating that user intervention may be required. Select the underlined number to review the logical library's event log, which has been filtered for these events.
	Other	The number of events of all other severities—including major, minor, degraded/warning, information, and unknown—that have occurred in this logical library in the past 24 hours. Select the underlined number to review the logical library's event log, which has been filtered for these events.
Cartridges	Total	The total number of cartridges in the logical library. The number includes all cartridges in storage slots, tape drives, closed I/O ports, and the handler. To obtain detailed status, select the underlined number. The View Inventory page for the logical library opens.
	Slots / Tapes	The number of cartridge slots assigned to the logical library, followed by the number of cartridges currently in these slots. To obtain detailed status, select the underlined number. The View Inventory page for the logical library opens.

**Table 5-3** Logical library status information on the Logical Libraries portlet

Section	Field	Description
Tape Drives	Drives/Tapes	The number of installed tape drives (not empty slots) assigned to the logical library, followed by the number of tapes currently loaded in the tape drives. To obtain detailed status, select the underlined number. The View/Manage Tape Drives page for the logical library opens. <b>Note:</b> If the logical library is offline and there are still cartridges in tape drives, the number of tape drives is shown as a bold, blue hyperlink, indicating that user intervention may be required.
	Offline	The number of tape drives that are currently offline. To obtain detailed status, select the underlined number. The View/Manage Tape Drives page for the logical library opens.
	Clean	The number of tape drives that have requested that cleaning be performed. To obtain detailed status, select the number. The View/Manage Tape Drives page for the logical library opens. <b>Note:</b> If the cleaning status for any of the tape drives is Mandatory, the number is shown as a bold, red hyperlink, indicating that immediate user intervention is required.
I/O Ports	Slots / Tapes	The number of I/O port slots, if any, assigned to the logical library, followed by the following information: <ul style="list-style-type: none"> <li>• <b>0–40:</b> The number of I/O port slots that contain a cartridge.</li> <li>• <i>blank:</i> The total number of cartridges could not be determined since one or more I/O ports are open or being scanned.</li> </ul>
	Status	A summary status of all I/O ports assigned to the logical library, as follows: <ul style="list-style-type: none"> <li>• <b>Error:</b> One or more of the I/O ports is experiencing an error.</li> <li>• <b>Open:</b> All I/O ports are open.</li> <li>• <b>Some Open:</b> One or more I/O ports are open.</li> <li>• <b>Closed:</b> All I/O ports are closed.</li> <li>• <b>Software Opened:</b> The I/O ports are closed and the software application has issued an extend command in preparation for an import or export.</li> <li>• <b>Scanning:</b> The I/O ports are closed, and the library is scanning the contents.</li> <li>• <b>Prevented:</b> The I/O ports are closed, and the software application has prevented them from being opened.</li> <li>• <b>Some with No Mag:</b> The I/O ports are closed, but one or more magazines are missing. This is not an error.</li> <li>• <b>Unknown:</b> The status of the I/O ports is currently unknown.</li> </ul> To obtain detailed status information or to open the I/O ports, select an underlined status.

**Table 5-3** Logical library status information on the Logical Libraries portlet (*continued*)

## Unassigned Resources

In the top row of the logical library status table, the **Unassigned resources** fields indicate how many cartridge slots, tape drives (actual tape drives, not empty slots), and I/O port slots in the physical library are currently not assigned to any logical library.

### 5.3.4 Logical Library Options

Below the logical libraries table are lists of options for managing logical libraries. To perform one of the tasks listed, select the radio button to the left of the logical library's name, then select the option.

**Important:** The options you can select depend on which user group the user belongs to. If the user group has permission to perform all logical library tasks, all options are selectable. If the user group has permission to perform a subset of tasks, some of the options may not be selectable (grayed out).

### Media and Tape Drive Options

The Media and Tape Drive options, shown in [Figure 5-3](#), allow you to manage the I/O ports and cartridges within a logical library.

Media and Tape Drives	
<a href="#">View/Open I/O Port</a>	<a href="#">Move Media</a>
<a href="#">Tape Drives</a>	<a href="#">Import Media</a>
<a href="#">View Inventory</a>	<a href="#">Export Media</a>

**Figure 5-3** Media and Tape Drive options on the Logical Libraries portlet

[Table 5-4](#) describes the Media and Tape Drive options.

Option	Select this option to...	Refer to...
View/Open I/O Ports	<ul style="list-style-type: none"> <li>View the status information for each I/O port in the logical library</li> <li>Open the I/O ports in the logical library</li> </ul>	<a href="#">Section 6.2 on page 6-2</a>
Tape Drives	Manage the tape drives within a logical library	<a href="#">Chapter 7, “Managing Tape Drives in a Logical Library”</a>
View Inventory	View information about each SCSI element and physical address in the logical library	<a href="#">Section 6.3 on page 6-13</a>
Move Media	Move a cartridge from one cartridge slot to another	<a href="#">Section 6.4 on page 6-15</a>

**Table 5-4** Media and Tape Drives options on the Logical Libraries portlet

Option	Select this option to...	Refer to...
Import Media	Move a cartridge from an I/O port to a cartridge slot	<a href="#">Section 6.2.3 on page 6-5</a>
Export Media	Move a cartridge from a cartridge slot to an I/O port	<a href="#">Section 6.2.4 on page 6-9</a>

**Table 5-4** Media and Tape Drives options on the Logical Libraries portlet (*continued*)

## Administration and Configuration Options

The Administration and Configuration options, shown in [Figure 5-4](#), allow you to perform administrative and configuration tasks for a logical library.

Administration and Configuration		
<a href="#">Event Log</a>	<a href="#">Library Specifications</a>	<a href="#">Nexus</a>
<a href="#">Offline Logical Library</a>	<a href="#">Contact Information</a>	<a href="#">Create a New Library</a>
<a href="#">Online Logical Library</a>	<a href="#">Administrator Information</a>	<a href="#">Delete Logical Library</a>

**Figure 5-4** Administration and Configuration options on the Logical Libraries portlet

[Table 5-5](#) describes the Administration and Configuration options.

Option	Select this option to...	Refer to...
Event Log	View or manage the event log for a logical library	<a href="#">Chapter 13, “Managing Events”</a>
Offline Logical Library	Take a logical library offline	<a href="#">Section 5.4 on page 5-10</a>
Online Logical Library	Bring a logical library online	<a href="#">Section 5.5 on page 5-11</a>
Library Specifications	View or change the specifications for the logical library, including the number of tape drives and cartridge slots	<a href="#">Section 5.6 on page 5-12</a>
Contact Information	View or edit information about the logical library’s contacts	<a href="#">Section 5.7 on page 5-15</a>
Administrator Information	View or edit information about the logical library’s administrator	<a href="#">Section 5.8 on page 5-16</a>
Nexus	View or edit information about the logical library’s nexus setting (port ID, target ID, and LUN)	<a href="#">Section 5.9 on page 5-17</a>
Create a New Library	Create a new logical library partition	<i>XLS Library Installation Manual</i>
Delete Logical Library	Delete a logical library	<a href="#">Section 5.10 on page 5-20</a>

**Table 5-5** Administration and Configuration options for managing logical libraries

## 5.4 Taking a Logical Library Offline

Once a logical library has been created and the software application installed, the XLS is designed to operate with minimal human intervention. In this normal operating mode, the logical library is *online*. When a logical library is online, the software application communicates with the XLS across the SCSI bus or Fibre Channel network to request various actions, such as moving cartridges from cartridge slots to tape drives and I/O ports. In turn, the XLS completes the requested action and returns status and other information to the software application.

If you need to perform a task that could disturb the software application's access to its assigned elements, you must take the logical library *offline*. For example, if you want to use X-Link to move a cartridge from one location to another (bypassing the software application), you must take the logical library that owns that cartridge offline. Otherwise, the software application may encounter unexpected errors when it tries to access its assigned elements.

When you take a logical library offline, the following occurs:

- The XLS completes any current or pending operations for the software application that controls the logical library.
- The XLS returns Check Condition status to any new requests by the software application, indicating that it is not ready.
- An event is logged in the event log and a message is sent to designated users.
- Tape drives in the logical library remain accessible to the software application and can continue reading and writing data.
- All other logical libraries remain in their current state.

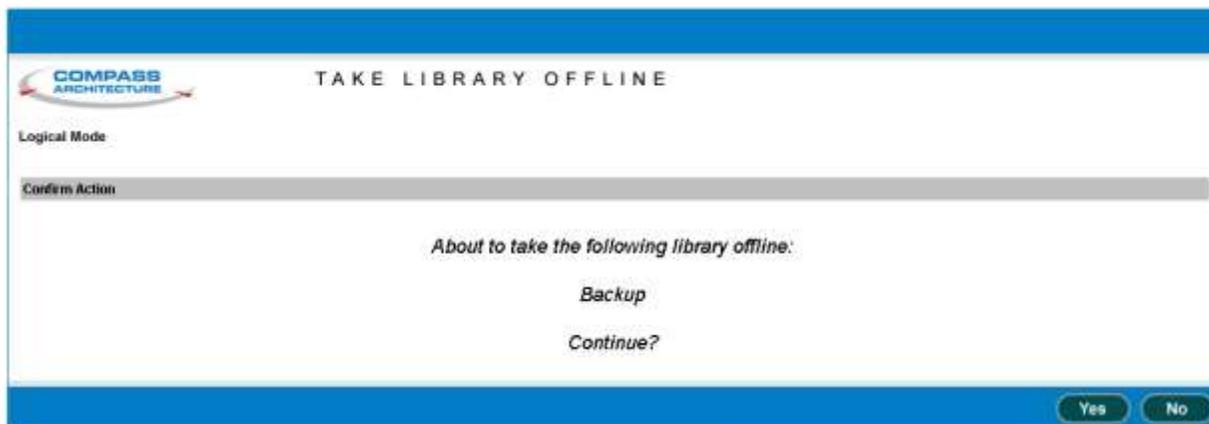
To take a logical library offline, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. Select the radio button to the left of the logical library name, then select **Offline Logical Library** from the Administration and Configuration list.

or

In the Status column of the logical libraries table, select **Online**. (This automatically selects the radio button for the logical library.)

The Take Library Offline confirmation page opens, as shown in [Figure 5-5](#).



**Figure 5-5** Take Library Offline confirmation page

4. Press **Yes** to confirm that you want to take the logical library offline.

## 5.5 Bringing a Logical Library Online

When you bring a logical library online, the following occurs:

- An event is logged in the event log and a message is sent to designated users.
- The XLS reports Check Condition status to any new requests by the software application, indicating that the cartridge inventory may have changed.
- All other logical libraries and the tape drives remain in their current states.

To bring a logical library online, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. Select the radio button to the left of the logical library name, then select **Online Logical Library** from the Administration and Configuration list.

or

In the Status column of the logical libraries table, select **Offline**. (This automatically selects the radio button for the logical library.)

The Bring Library Online page opens, as shown in [Figure 5-6 on page 5-12](#).



Figure 5-6 Bring Library Online page

4. Press **Yes** to confirm that you want to bring the library online.

## 5.6 Viewing or Editing Logical Library Specifications

To view or edit the specifications for a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. If you want to edit the specifications for a logical library, take the logical library offline. See [Section 5.4 on page 5-10](#).

4. Select the radio button to the left of the logical library name, then select **Library Specifications** from the Administration and Configuration list. The View/Edit Logical Library Specifications page opens, as shown in [Figure 5-7](#).

**Figure 5-7** View/Edit Logical Library Specifications page

5. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to make any changes.
6. View or edit the specifications for the logical library, as follows:
  - a. The **Name** field indicates a unique name for the logical library.

**Important:** If you change the name of a logical library, any users associated with the old library name are no longer associated with the new library name. You must edit the affected users to select the new logical library name. See [Section 4.3.4 on page 4-18](#).

- b. The **XLS-8000 Mode** field indicates whether the medium changer interface for this logical library should operate in XLS-8000 mode. When this box is checked, the XLS reports its Product ID as XLS-8000.

**Important:** To ensure proper library operation, be sure that the XLS-8000 mode box is checked.

- c. The **Barcode labels required** field indicates whether barcode labels are required in this logical library. The default setting is yes (option box

checked). If you clear the option box, the XLS allows both labeled and unlabeled cartridges in the logical library.

- d. The **Checksum characters required** field indicates whether checksum characters are required on the barcode labels used in this logical library. The default setting is no (option box cleared). If you select this option, the XLS uses the last digit on the label as a checksum for the other characters.

**Important:** If you select the **Checksum characters required** option, all labeled cartridges must include a checksum character as the last digit.

- e. The **Number of Slots** field shows the number of cartridge slots assigned to this logical library.
  - If you increase this number, new slots are added to the logical library.
  - If you decrease this number, slots are removed from the logical library.

To determine which slots were added or deleted, view the inventory report. See [Section 6.3 on page 6-13](#). Slots are added or deleted in SCSI element address order.

**Important:** When it deletes slots from a logical library, the XLS deletes the slot with the highest SCSI element address first, followed by the slot with the next highest element address, and so on. To avoid deleting a slot that contains a cartridge, follow these steps:

- Sort the View Inventory page for the library in descending order by SCSI element address.
- Starting with the highest SCSI element address, count backward to ensure that all slots you want to delete from the logical library are empty.

For example, before reducing the number of slots in a logical library from 50 to 40, make sure that the ten slots with element addresses 2049 to 2040 are empty.

- f. The **Number of I/O Ports** field indicates the number of I/O ports, if any, to allocate to this logical library. A logical library can have zero to four I/O ports; I/O ports cannot be shared among logical libraries.
- g. The **Tape Drives** field lists the physical addresses of all tape drive locations available to be assigned to the logical library. The field lists the addresses of installed tape drives and empty tape drive slots. If the location is highlighted, it was assigned to the logical library previously.
  - To add a tape drive location (tape drive or empty slot), select the check box next to the location.

- To remove a tape drive location (tape drive or empty slot), clear the check box next to the location.
7. Press **Save Changes** to save the new information.
  8. Bring the logical library online. See [Section 5.5 on page 5-11](#).

## 5.7 Viewing or Editing Contact Information

This section describes how to view and edit contact information for logical library. The primary and secondary contacts are typically responsible for the department or division that owns any data stored on the logical library.

**Important:** The information listed for the Primary and Secondary Contact Information fields is for reference only. The XLS does not use this information. If you want the contacts listed to receive e-mail or pager alerts, be sure to define them as library users (see [Section 4.3.1, “Adding Users,” on page 4-13](#)).

To view or edit contact information for a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. Select the radio button to the left of the logical library name, then select **Contact Information** from the Administration and Configuration list. The View/Edit Contact Information page opens, as shown in [Figure 5-8 on page 5-16](#).

Figure 5-8 View/Edit Contact Information page for a logical library

4. View or edit the contact information for the logical library. Required fields are denoted by an arrow.
5. Press **Save Changes** to save the new information.

## 5.8 Viewing or Editing Administrator Information

This section describes how to view and edit administrator information for a logical library. The logical library administrator is the person who has permission to perform administrative tasks on the logical library.

**Important:** The information listed for the Logical Library Administrator fields is for reference only. The XLS does not use this information. If you want the user listed to have permission to perform administrator tasks, you must define him or her as a library user and assign him or her to the appropriate user group (see [Section 4.3.1, “Adding Users,” on page 4-13](#)).

To view or edit administrator information for a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. Select the radio button to the left of the logical library name, then select **Administrator Information** from the Administration and Configuration list. The View/Edit Administrator Information page opens, as shown in [Figure 5-9](#).

The screenshot shows a web interface for managing administrator information. At the top, there are 'Save Changes' and 'Cancel Changes' buttons. Below the header, the page title is 'VIEW/EDIT ADMINISTRATOR INFORMATION'. The 'Logical Mode' is set to 'Production'. The library name is 'sisalpha.boulder.qualstar.com - Production'. The 'Administrator Information' section contains the following fields:

Name:	John Smith *	Company:	
User ID:	admin *	Street Address:	
Primary E-mail Address:	john@example.com *		
Alternate E-mail Address:			
Work Phone Number:	333-333-3333 *	City / Town / Locality:	
Mobile Phone Number:		State / Province:	
Pager E-mail Address:		Zip / Postal Code:	
		Country:	

At the bottom of the form, there are 'Save Changes' and 'Cancel Changes' buttons.

**Figure 5-9** View/Edit Administrator Information page for a logical library

4. View or edit the specifications for the logical library's administrator. Required fields are denoted by an arrow.
5. Press **Save Changes** to save the new information.

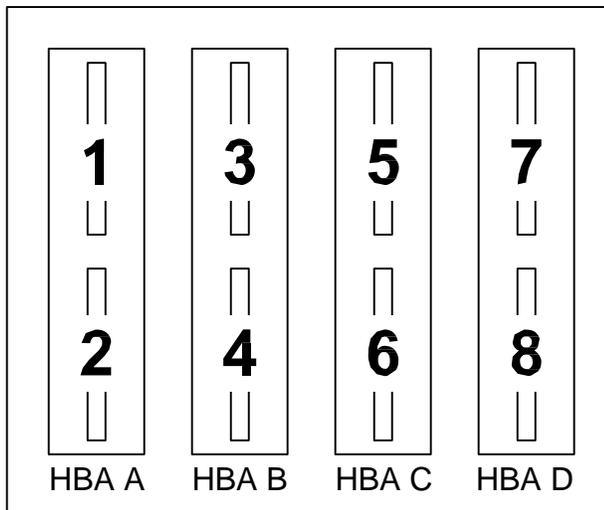
## 5.9 Viewing or Editing the Nexus Setting

This section describes how to view or edit the nexus settings for a logical library. As described in [Table 5-6 on page 5-18](#), the *nexus setting* is a unique combination of port ID, target (or SCSI) ID, and logical unit number (LUN) that describes each logical library connection. It is created when the logical library is first defined. In most cases, you do not need to change the nexus setting once it has been defined; however, if you are using a more complex configuration, you may need to add port IDs or specify a different LUN.

Identifier	What it is	When and where set
Port ID	A number describing the physical position of the HBA port on the back of the XLS. Depending on how many HBAs are installed in the XLS, port IDs can range from 1 to 8. See <a href="#">Figure 5-10</a> .	When completing the Create Logical Library wizard, you specify which HBA port the host computer is connected to. If the logical library will be controlled over multiple HBA ports, you must edit the nexus setting to enter the additional port IDs.
Target (or SCSI) ID	A number assigned to each HBA port that allows it to be addressed as a target by the initiating HBA in the host computer. For SCSI HBAs, target IDs can range from 0 to 15; for Fibre Channel HBAs, target IDs can range from 0 to 125.	The target ID for all HBA ports in the XLS is pre-set to 0. You can change these default values by selecting <b>View/Edit HBA Target Id</b> from the Configuration portlet (see <a href="#">Section 9.5.1 on page 9-7</a> ).
Logical unit number (LUN)	A number identifying the logical library that is controlled over the HBA port. LUN values can range from 0 to 7, but a LUN of 0 is recommended.	If multiple logical libraries will be controlled over a single HBA port, you must assign a unique LUN to each logical library. You can change a logical library's LUN value by selecting <b>View/Edit Library Specifications</b> .

**Table 5-6** Components in a logical library's nexus setting

[Figure 5-10](#) shows the port IDs for each HBA position on the back of the library.



**Figure 5-10** HBA port IDs (view from the back of the LRM)

To view or edit the nexus setting for a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. If you want to edit the nexus setting, take the logical library offline. See [Section 5.4 on page 5-10](#).
4. Select the radio button to the left of the logical library name, then select **Nexus** from the Administration and Configuration list. The View/Edit Nexus page opens, as shown in [Figure 5-11](#).



Figure 5-11 View/Edit Nexus page

5. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to make any changes.
6. Delete, create, or edit the nexus settings for the logical library, as follows:
  - To delete an already-existing nexus setting, press **Delete**.
  - or
  - To create a second nexus setting for the logical library (for example, if the logical library is controlled across more than one HBA port), select the second HBA port, then specify a LUN. Since the two port IDs are different, the two LUN values can be the same.

7. Press **Set Nexus** to save the new information.
8. Bring the logical library online. See [Section 5.5 on page 5-11](#).

## 5.10 Deleting a Logical Library

This section provides instructions for deleting a logical library. When you delete a logical library, the following occurs:

- All components (tape drives, cartridge slots, and I/O ports) that were assigned to the logical library are unassigned. These resources are now available to be assigned to other logical libraries.
- The logical library is no longer displayed as a selection on Logical Libraries portlet or when you are managing users and user groups.

To delete a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. Select the radio button to the left of the logical library name, then select **Delete this Library** from the Administration and Configuration list. The Delete Logical Library confirmation page opens, as shown in [Figure 5-12](#).

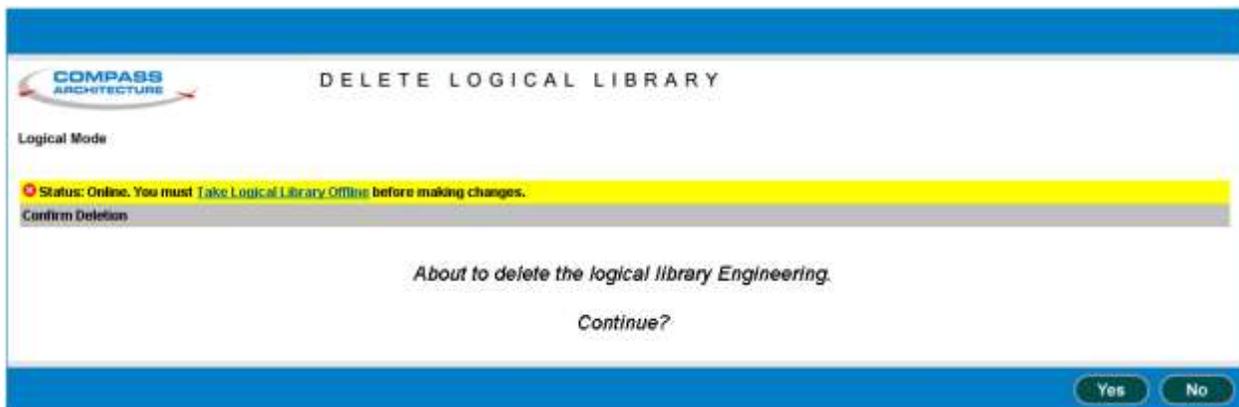


Figure 5-12 Delete Logical Library confirmation page

4. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to make any changes.
5. Press **Yes** to confirm that you want to delete this logical library.

# 6 Managing Cartridges in a Logical Library

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This chapter provides instructions for managing the cartridges in a logical library:

## 6.1 Accessing Media and Tape Drive Options for a Logical Library

The Media and Tape Drive options, shown in [Figure 6-1](#), are listed below the logical libraries table on the Logical Libraries portlet. These options allow you to manage the I/O ports, tape drives, and cartridges within a logical library.

Media and Tape Drives	
<a href="#">View/Open I/O Port</a>	<a href="#">Move Media</a>
<a href="#">Tape Drives</a>	<a href="#">Import Media</a>
<a href="#">View Inventory</a>	<a href="#">Export Media</a>

**Figure 6-1** Media and Tape Drive options on the Logical Libraries portlet

To perform one of the tasks listed, select the radio button to the left of the logical library, then select the option.

**Important:** The options you can select depend on which user group the user belongs to. If the user group has permission to perform all logical library tasks, all options are selectable. If the user group has permission to perform a subset of logical library tasks, some of the options may not be selectable (grayed out).

[Table 6-1](#) lists the options for managing cartridges in the logical library.

Option	Select this option to...	Refer to...
View/Open I/O Ports	<ul style="list-style-type: none"> <li>View the status information for each I/O port in the logical library</li> <li>Open the I/O ports in the logical library</li> </ul>	<a href="#">Section 6.2 on page 6-2</a>
Tape Drives	Manage the tape drives within a logical library	<a href="#">Chapter 7, “Managing Tape Drives in a Logical Library”</a>
View Inventory	View information about each SCSI element and physical address in the logical library	<a href="#">Section 6.3 on page 6-13</a>
Move Media	Move a cartridge from one cartridge slot to another	<a href="#">Section 6.4 on page 6-15</a>
Import Media	Move a cartridge from an I/O port to a cartridge slot	<a href="#">Section 6.2.3 on page 6-5</a>
Export Media	Move a cartridge from a cartridge slot to an I/O port	<a href="#">Section 6.2.4 on page 6-9</a>

**Table 6-1** Media and Tape Drive options on the Logical Libraries portlet

## 6.2 Using I/O Ports

The View/Open I/O Port page allows you to view summary information about the I/O ports assigned to a logical library and to open the I/O ports.

To access the View/Open I/O Port page, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Select the radio button to the left of the logical library name, then select **View/Open I/O Port** from the Media and Tape Drives list.

or

In the I/O Ports section of the logical libraries table, select an underlined hyperlink for the logical library. (This automatically selects the radio button for the logical library.)

The View/Open I/O Port page opens, as shown in [Figure 6-2](#).

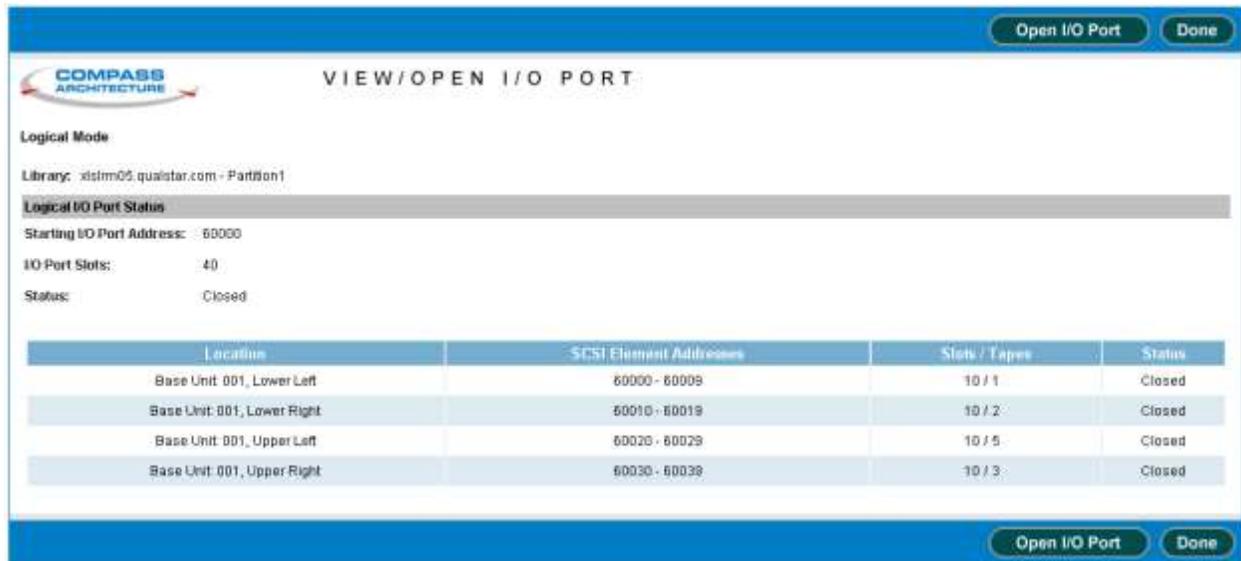


Figure 6-2 View/Open I/O Port page

### 6.2.1 I/O Port Status

[Table 6-2](#) describes the fields on the View/Open I/O Port page.

Field	Description
Library	The physical library's host name, followed by the logical library's name
Starting I/O Port Address	The SCSI element address for the first cartridge slot in the I/O port
I/O Port Slots	The number of I/O port slots assigned to the logical library. <b>Note:</b> An I/O port contains 10 slots; the slots in an I/O port cannot be shared among logical libraries.

Table 6-2 Fields on the View/Open I/O Port page

Field	Description
Status	<p>A summary status of all I/O ports assigned to the logical library, as follows:</p> <ul style="list-style-type: none"> <li>• <b>Error:</b> One or more of the I/O ports is experiencing an error.</li> <li>• <b>Open:</b> All I/O ports are open.</li> <li>• <b>Some Open:</b> One or more I/O ports are open.</li> <li>• <b>Closed:</b> All I/O ports are closed.</li> <li>• <b>Software Opened:</b> The I/O ports are closed and the software application has issued an extend command in preparation for an import or export.</li> <li>• <b>Scanning:</b> The I/O ports are closed, and the library is scanning the contents.</li> <li>• <b>Prevented:</b> The I/O ports are closed, and the software application has prevented them from being opened.</li> <li>• <b>Some with No Mag:</b> The I/O ports are closed, but one or more magazines are missing. This is not an error.</li> <li>• <b>Unknown:</b> The status of the I/O ports is currently unknown.</li> </ul> <p>To obtain detailed status information or to open the I/O ports, select an underlined status.</p>
Location	The physical location of the I/O port, including the LRM number.
SCSI Element Addresses	The range of SCSI element addresses assigned to the 10 slots in this I/O port.
Slots / Tapes	<p>The number of slots in this I/O port, followed by the number of slots that contain a cartridge.</p> <p><b>Note:</b> If the status is Open, Scanning, or No Magazine, the number of tapes is blank.</p>
Status	The status of the I/O port. See <a href="#">Section 6.2.2</a> .

**Table 6-2** Fields on the View/Open I/O Port page (*continued*)

## 6.2.2 I/O Port Options

After displaying the View/Open I/O Port page, follow these steps to work with the I/O ports:

1. Review the statuses displayed for each I/O port in the logical library:
  - **Open:** The I/O port is physically open. When you are done importing or exporting cartridges, remember to push each port closed.
  - **Closed:** The I/O port is closed and no other statuses are pending. To open all I/O ports in the logical library, follow the instructions in the documentation for your software application, then press **Open I/O Port**.
  - **Software Opened:** The I/O port is closed, and the software application has issued a command indicating that all I/O ports in the logical library should be

opened. To physically open the logical library's I/O ports, press **Open I/O Port**.

- **Scanning:** The I/O port is closed, and the library is scanning the contents to update the cartridge inventory. Wait for the operation to complete (usually within seconds).
- **Prevented:** The I/O port is closed, and the software application has prevented it from being opened. (If you press **Open I/O Port**, the action will fail.) To open the I/O ports, issue an Allow command from the software or take the logical library offline.
- **No Magazine:** The I/O port is closed, but there is no magazine installed. This is not an error.
- **Error:** The I/O port has experienced an error condition.
- **Unknown:** The status of the I/O port is currently unknown.

2. After viewing the I/O port information or opening the I/O ports, press **Done**.

### 6.2.3 Importing Cartridges

This section provides guidelines and instructions for importing cartridges into a logical library using the I/O ports and the software application. This is the preferred method for moving cartridges into the library since it allows the software application to manage the import process.

**When to use this method:** Use this method to import cartridges if the logical library has access to at least one I/O port.

**Important:** If the logical library does not have access to an I/O port, you can import cartridges into the physical library; however, you must put the XLS in physical mode.

**Procedure overview:** [Table 6-3](#) provides an overview of importing cartridges into a logical library.

Task	For instructions, refer to...
As required, instruct the software application to start the cartridge import process	The documentation for the software application
When prompted, open the I/O ports associated with the logical library	<a href="#">“Opening the I/O Ports”</a>
Insert one or more cartridges into the I/O port and push the port closed	<a href="#">“Inserting Cartridges into an I/O Port” on page 6-7</a>

**Table 6-3** Overview of importing cartridges into a logical library

## Opening the I/O Ports

To open the I/O ports, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Follow the instructions in the software documentation to start the import process.
4. Wait for the software application to prompt you that it is ready to import cartridges.

**Note:** Some software applications issue a command to the library to open the I/O port. If this is the case for your application, you can press **Refresh** to determine if the status for the logical library's I/O ports has changed to **Software Opened**.

5. Select the radio button to the left of the logical library name, then select **View/Open I/O Port** from the Media and Tape Drives list.

or

In the I/O Ports section of the logical libraries table, select the underlined status for the logical library. (This automatically selects the radio button for the logical library.)

The View/Open I/O Port page opens, as shown in [Figure 6-3](#).

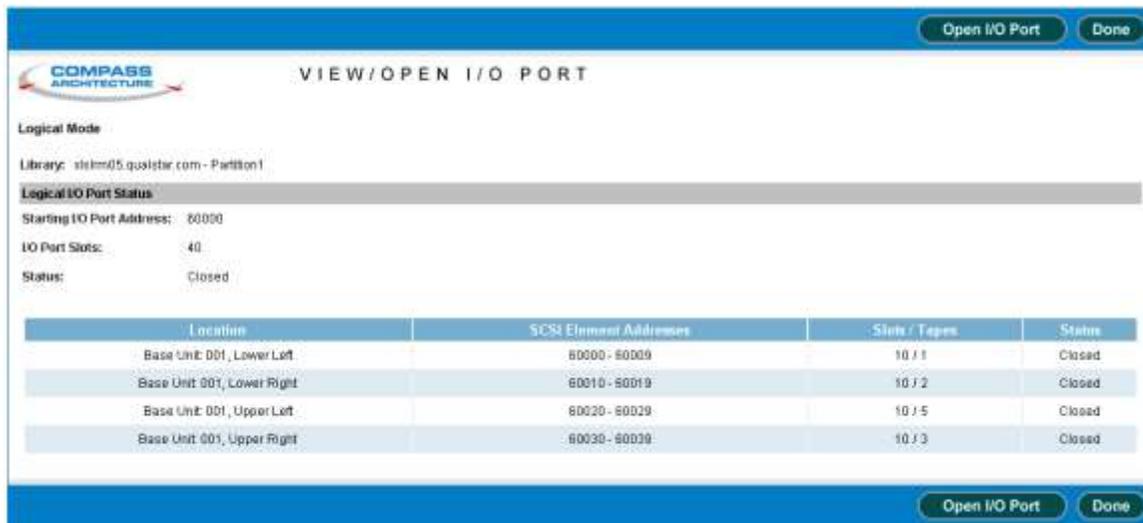


Figure 6-3 View/Open I/O Port page

6. Press **Open I/O Port** to open all I/O ports associated with this logical library.

## Inserting Cartridges into an I/O Port

To insert cartridges into an I/O port, follow these steps:

1. Grasp the I/O port magazine's handle and slide the magazine up and out of the I/O port. See [Figure 6-4](#).



**Figure 6-4** Removing the I/O port magazine

2. Insert one or more cartridges into the magazine, as shown in [Figure 6-5](#). Confirm that the write-protect switches are to the left.



**Figure 6-5** Inserting cartridges into the I/O port magazine

3. Replace the magazine in the I/O port. See [Figure 6-6](#).



**Figure 6-6** Inserting the magazine into an I/O port

4. Push the front of the I/O port to close it. See [Figure 6-7](#).



**Figure 6-7** Closing the I/O port

5. Repeat steps 1–4 for all I/O ports associated with the logical library.

### **What happens when the I/O port is closed:**

When you close all open I/O ports, the following actions occur:

- The XLS engages the locking solenoids on the I/O ports.
- The XLS scans the contents of the I/O ports and updates its cartridge inventory.
- The software application moves the cartridges to tape drives or storage slots within the logical library.

**Important:** If the software application does not move the cartridges from the I/O port automatically, you may need to import the cartridges manually. Refer to [Section 6.4.2 on page 6-17](#) for instructions.

## 6.2.4 Exporting Cartridges

This section provides guidelines and instructions for exporting one or more cartridges from a logical library using the I/O ports and the software application. This is the preferred method for moving cartridges out of the library since it allows the software application to manage the export process.

**When to use this method:** You should use this method to export cartridges if the logical library has access to at least one I/O port.

**Important:** If the logical library does not have access to an I/O port, you can export cartridges from the physical library; however, you must put the XLS in physical mode.

**Procedure overview:** [Table 6-4](#) provides an overview of exporting cartridges from a logical library:

Task	For instructions, refer to...
As required, instruct the software application to start the cartridge export process	The documentation for the software application
Open the I/O ports	<a href="#">“Opening the I/O Ports”</a>
Remove the cartridges from the I/O port and push the port closed	<a href="#">“Removing Cartridges from an I/O Port” on page 6-11</a>

**Table 6-4** Overview of exporting cartridges from a logical library

### Opening the I/O Ports

**Important:** If the software application does not move the cartridges to the I/O port automatically, you may need to export them manually. Refer to [Section 6.4.3 on page 6-18](#) for instructions.

To open the I/O ports for a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Follow the instructions in the software documentation to start the export process.
4. Wait for the software application to prompt you that it is ready to export cartridges.

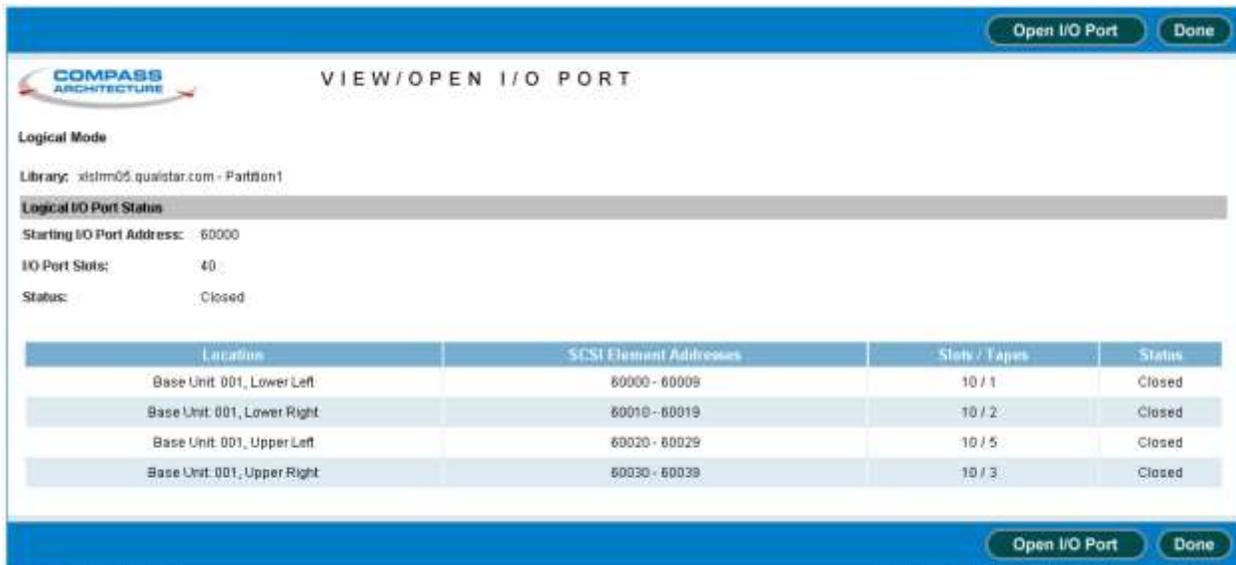
**Note:** Some software applications issue a command to the library to open the I/O port. If this is the case for your application, you can press **Refresh** to determine if the status for the logical library's I/O ports has changed to **Software Opened**.

5. Select the radio button to the left of the logical library name, then select **View/Open I/O Port** in the Media and Tape Drives list

or

In the I/O Ports section of the logical libraries table, select the underlined status for the logical library. (This automatically selects the radio button for the logical library.)

6. The View/Open I/O Port page opens, as shown in [Figure 6-8](#).



**Figure 6-8** View/Open I/O Port page

7. Press **Open I/O Port** to open all I/O ports associated with this logical library.

## Removing Cartridges from an I/O Port

To remove cartridges from an I/O port, follow these steps:

1. Grasp the I/O port magazine's handle and slide the magazine up and out of the I/O port. See [Figure 6-9](#).



**Figure 6-9** Removing the I/O port magazine

2. Remove the cartridges from the magazine, as shown in [Figure 6-10](#).



**Figure 6-10** Removing cartridges from the I/O port magazine

3. Replace the magazine in the I/O port. See [Figure 6-11](#).



**Figure 6-11** Inserting the magazine into an I/O port

4. Push the front of the I/O port to close it. See [Figure 6-12](#).



**Figure 6-12** Closing the I/O port

5. Repeat steps 1–4 for all I/O ports associated with the logical library.

### **What happens when the I/O port is closed:**

When all open I/O ports are closed, the following actions occur:

- The XLS engages the locking solenoids to prevent the ports from being opened accidentally.
- The XLS scans the contents of the I/O port and updates its cartridge inventory.

## 6.3 Viewing the Inventory Report

When a logical library is first created, the XLS assigns addresses to each element (tape drive, cartridge slot, I/O port slot, or handler). These addresses, known as *SCSI element addresses*, are used as follows:

- By the software application when it performs moves and other library operations
- From X-Link when you perform various tasks for the logical library.

[Table 6-5](#) lists the default SCSI element addresses for the four types of elements in a logical library.

Field	Value
Address of the handler (medium transport element)	1000
Number of handlers	1
Address of the first cartridge slot (storage element)	2000
Number of cartridge slots	Defined for each logical library
Address of the first I/O port slot (import/export element)	60000
Number of I/O port slots	Defined for each logical library. Possible values are 0, 10, 20, 30, and 40.
Address of the first tape drive (data transfer element)	40000
Number of tape drives	Defined for each logical library. Possible values are 0–32.

**Table 6-5** Default element addresses

**Important:** Unlike the fixed, physical addresses for each location, the SCSI element addresses are relative addresses that can be changed from the software application. For this reason, the values listed in [Table 6-5](#) may no longer apply to your logical library.

To determine the locations of the cartridge slots, I/O ports, and tape drives for each logical library and the SCSI element addresses assigned to each location, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.

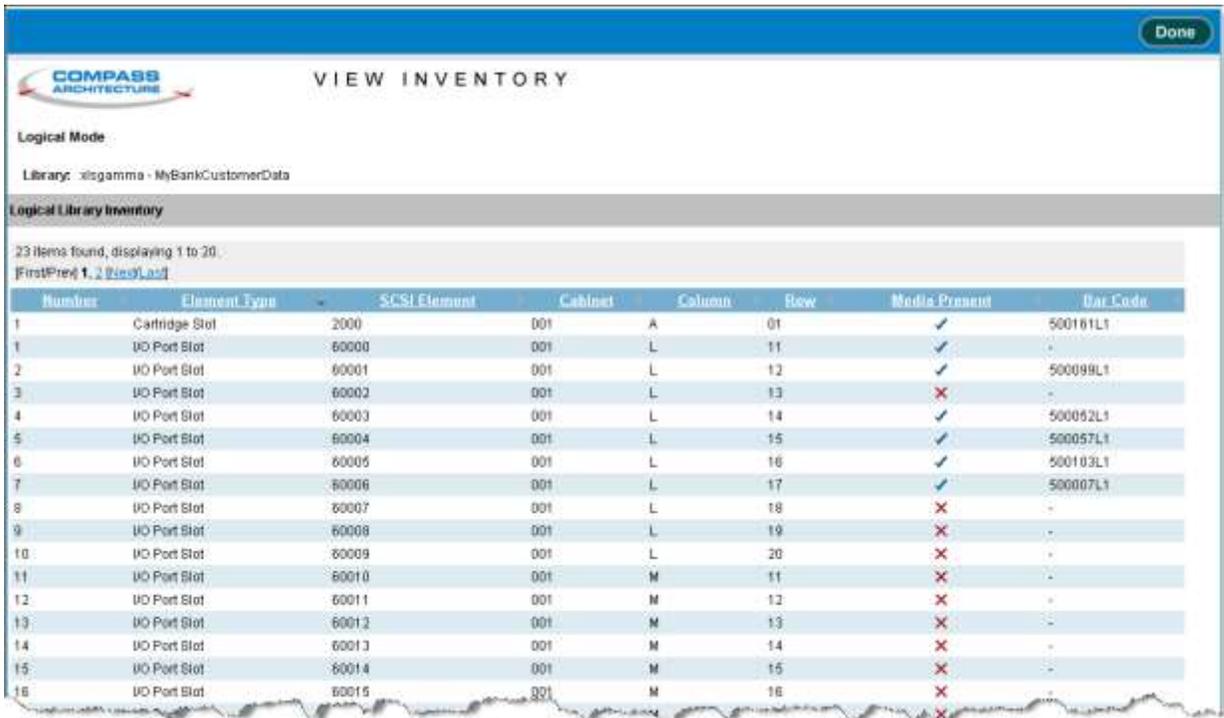
## 6.3 Viewing the Inventory Report

2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Select the radio button to the left of the logical library name, then select **View Inventory** from the Media and Tape Drives list.

or

In the Cartridges section of the logical libraries table, select an underlined hyperlink for the logical library. (This automatically selects the radio button for the logical library.)

4. Wait for the current inventory report to be generated (this can take a few minutes for a larger library) and the View Inventory page to open, as shown in [Figure 6-13](#).



The screenshot shows the 'VIEW INVENTORY' page from COMPASS ARCHITECTURE. The page title is 'VIEW INVENTORY' and the library name is 'Library: -itgamma - MyBankCustomerData'. Below the title, it says 'Logical Library Inventory' and '23 items found, displaying 1 to 20'. There are navigation links for 'First', 'Prev', 'Next', and 'Last'. The main table has the following columns: Number, Element Type, SCSI Element, Cabinet, Column, Row, Media Present, and Bar Code. The table contains 20 rows of data, with the 'Media Present' column showing checkmarks for rows 1-7 and 11-16, and red 'X' marks for rows 8-10 and 17-20.

Number	Element Type	SCSI Element	Cabinet	Column	Row	Media Present	Bar Code
1	Cartridge Slot	2000	001	A	01	✓	500181L1
1	UD Port Slot	60000	001	L	11	✓	-
2	UD Port Slot	60001	001	L	12	✓	500099L1
3	UD Port Slot	60002	001	L	13	✗	-
4	UD Port Slot	60003	001	L	14	✓	500052L1
5	UD Port Slot	60004	001	L	15	✓	500057L1
6	UD Port Slot	60005	001	L	16	✓	500103L1
7	UD Port Slot	60006	001	L	17	✓	500007L1
8	UD Port Slot	60007	001	L	18	✗	-
9	UD Port Slot	60008	001	L	19	✗	-
10	UD Port Slot	60009	001	L	20	✗	-
11	UD Port Slot	60010	001	M	11	✗	-
12	UD Port Slot	60011	001	M	12	✗	-
13	UD Port Slot	60012	001	M	13	✗	-
14	UD Port Slot	60013	001	M	14	✗	-
15	UD Port Slot	60014	001	M	15	✗	-
16	UD Port Slot	60015	001	M	16	✗	-

Figure 6-13 View Inventory page

5. Review or sort the report as follows:
  - To scroll through the report, select the page number, **First**, **Prev**, **Next**, or **Last**. Twenty elements are shown on each page.
  - To sort the rows in ascending or descending order, press the underlined heading of the column you want to sort by.

6. To export the inventory report, press **Excel**, **XML** or **CSV**. Then, as prompted, save the file.

[Table 6-6](#) describes the fields in the inventory report. Refer to [Appendix A, “Library Addresses,”](#) to learn the physical location of each column and row position.

Field	Description
Number	The element’s number, starting at 1
Element Type	The type of element: tape drive, cartridge slot, or I/O port
SCSI Element	The SCSI element address that is currently assigned to this location
Cabinet	A number identifying which LRM or MEM cabinet the element is located in
Column	A letter identifying which column the element is located in. Refer to <a href="#">Appendix A, “Library Addresses,”</a> for more information.
Row	A number identifying which row the element is located in. Refer to <a href="#">Appendix A, “Library Addresses,”</a> for more information.
Media Present	Whether or not a cartridge is present in the element, as follows: 4 = The element contains a cartridge 5 = The element is empty
Bar Code	If the element contains a cartridge, the identifier on its barcode label

**Table 6-6** Fields on View Inventory page

## 6.4 Moving Cartridges

This section provides instructions for moving cartridges within a logical library. You can use the following options on the Logical Libraries portlet:

- **Move Media**, to move a cartridge from one slot to another. See [Section 6.4.1 on page 6-16](#).
- **Import Media**, to move a cartridge from an I/O port slot to a cartridge slot. See [Section 6.4.2 on page 6-17](#).
- **Export Media**, to move a cartridge from a cartridge slot to an I/O port slot. See [Section 6.4.3 on page 6-18](#).

## Before You Begin

Before moving cartridges within a logical library, follow these steps:

1. Take the logical library offline. See [Section 5.4 on page 5-10](#) for instructions.

**Important:** Under normal circumstances, the cartridges within a logical library are automatically moved from location to location by the software application. To prevent conflicts with the software application, you must take the logical library offline before moving cartridges with X-Link.

2. Determine the SCSI element addresses for the source and destination cartridge slots. See [Section 6.3 on page 6-13](#) for instructions.

### 6.4.1 Using the Move Media Option

To move cartridges from one cartridge slot in a logical library to another, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Select **Move Media** from the Media and Tape Drives list. The Move Media page opens, as shown in [Figure 6-14](#).

COMPASS ARCHITECTURE MOVE MEDIA

Logical Mode:

Library: vlsalpha.boulder.qualstar.com - Engineering \* = Required

\* Status: Online. You must Take Logical Library Offline before making changes.

Source Slot		Destination Slot	
Starting Slot Address:	2000	Starting Slot Address:	2000
Slot Count:	199	Slot Count:	199
SCSI Element Address:	<input type="text"/> *	SCSI Element Address:	<input type="text"/> *

Figure 6-14 Move Media page

4. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to move any cartridges.

5. In the Source Slot section, enter the SCSI element address for the cartridge slot that contains the cartridge you want to move.

**Note:** The address you specify must be within the addresses designated by the Starting Slot Address and the Slot Count fields.

6. In the Destination Slot section, enter the SCSI element address for the destination slot you want the cartridge moved to.

**Note:** The address you specify must be within the addresses designated by the Starting Slot Address and the Slot Count fields.

7. Press **Move Media** to move the cartridge.
8. Bring the logical library online. See [Section 5.5 on page 5-11](#).

## 6.4.2 Using the Import Media Option

In most cases when the I/O ports are closed, the software application automatically moves the cartridges from the I/O port to cartridge slots within the logical library. However, if the software application does not move the cartridges for some reason, you may need to manually import the new cartridges into the logical library.

**Important:** This procedure is required only if the software application does not automatically move the cartridges from the I/O port.

To move cartridges from an I/O port in a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.

3. Select **Import Media** from the Media and Tape Drives list. The Import Media page opens, as shown in [Figure 6-15](#).

COMPASS ARCHITECTURE

IMPORT MEDIA

Library: alsalpha.boulder.qualstar.com - Engineering \* = Required

⊘ Status: Online. You must **Take Logical Library Offline** before making changes.

Source I/O Port		Destination Slot	
Starting I/O Port Address:	60000	Starting Slot Address:	2000
I/O Port Count:	10	Slot Count:	100
SCSI Element Address:	<input type="text"/>	SCSI Element Address:	<input type="text"/>

**Figure 6-15** Import Media page for a logical library

4. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to move any cartridges.
5. In the Source I/O Port section, enter the SCSI element address for the I/O port slot that contains the cartridge you want to import.

**Note:** The address you specify must be within the addresses designated by the Starting I/O Port Address and the I/O Port Count fields.

6. In the Destination Slot section, enter the SCSI element address for the empty cartridge slot you want the cartridge to be moved to.

**Note:** The address you specify must be within the addresses designated by the Starting Slot Address and the Slot Count fields.

7. Press **Import Media** to move the cartridge from the I/O port to the specified cartridge slot. The library moves the cartridge and updates its cartridge inventory.
8. Bring the logical library online. See [Section 5.5 on page 5-11](#).

### 6.4.3 Using the Export Media Option

In most cases when a software application starts the export process, it automatically moves the cartridges to the I/O ports. However, if the software application does not move the cartridges for some reason, you may need to manually move the cartridges to the port.

**Important:** This procedure is required only if the software application does not automatically move the cartridges to the I/O port.

To move cartridges to an I/O port in a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Select **Export Media** from the Media and Tape Drives list. The Export Media page opens, as shown in [Figure 6-16](#).

**Figure 6-16** Export Media page for a logical library

4. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to move any cartridges.
5. In the Source Slot section, enter the SCSI element address for the cartridge slot that contains the cartridge you want to export.
 

**Note:** The address you specify must be within the addresses designated by the Starting Slot Address and the Slot Count fields.
6. In the Destination I/O Port section, enter the SCSI element address for the I/O port slot you want the cartridge moved to.
 

**Note:** The address you specify must be within the addresses designated by the Starting I/O Port Address and the I/O Port Count fields.
7. Press **Export Media** to move the cartridge to the I/O port slot. The library moves the cartridge and updates its cartridge inventory.
8. Open the I/O port, remove the cartridges, then close the I/O port. See [“Opening the I/O Ports” on page 6-6](#).
9. Bring the logical library online. See [Section 5.5 on page 5-11](#).

**Notes:**

# 7 Managing Tape Drives in a Logical Library

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During typical day-to-day library operation, no human intervention is required to operate the tape drives in the XLS. Instead, the tape drives are controlled by the software applications, which issue commands to load and unload cartridges and to read and write data. In addition, most software applications can also automate tape drive cleaning.

Although the tape drives are typically controlled by the software, you may occasionally want to view information about their status or perform tape drive operations manually. You can do this in either of two ways:

- **Within a logical library**, by accessing the View/Manage Tape Drives page for the logical library. Use this page when the XLS is operating in logical mode, with one or more of the logical libraries online. Refer to this chapter for instructions.
- **Within the physical library**, by accessing the View/Manage Tape Drives page for the physical library. Use this page when the XLS is operating in physical mode with all logical libraries offline. Refer to [Chapter 12, “Managing Tape Drives in the Physical Library,”](#) for instructions.

## 7.1 Accessing the View/Manage Tape Drives Page

To access the View/Manage Tape Drives page for the logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet.
3. Select the radio button to the left of the logical library name, then select **Tape Drives** from the Media and Tape Drives list.

or

In the Tape Drives section of the logical libraries table, select an underlined hyperlink for the logical library. (This automatically selects the radio button for the logical library.)

## 7.1 Accessing the View/Manage Tape Drives Page

The View/Manage Tape Drive page opens, as shown in [Figure 7-1](#).

The screenshot displays the 'VIEW/MANAGE TAPE DRIVES' page. At the top, there is a 'Refresh' and 'Done' button. The page header includes the 'COMPASS ARCHITECTURE' logo and the title 'VIEW/MANAGE TAPE DRIVES'. Below the header, it shows 'Logical Mode' and 'Library: qualstands - qualstands'. There is an 'Autorefresh' checkbox. The main content is a table with the following data:

Address		ID					Status					Tape	
Physical	Element	App	Type	Target	WWN	Serial Number	Power	Offline	SCD	Cleaning	Taps	Calibrated	Barcode
B001T01E	40000					No Drive Present	Off						
B001T02E	40001					No Drive Present	Off						
B001T03E	40002					No Drive Present	Off						
B001T04E	40003					No Drive Present	Off						

Below the table, there are 'Export options: CSV | Excel | PDF'. At the bottom, there are two sections of actions:

- Tape Drive**: Power On Tape Drive, Power Off Tape Drive, Offline Tape Drive, Online Tape Drive, Clean Tape Drive, Load Tape Drive, Eject Tape, Unload Tape Drive, Calibrate Tape Drive.
- Logical Library is Online**: Offline Logical Library, Online Logical Library.

At the bottom right, there are 'Refresh' and 'Done' buttons.

**Figure 7-1** View/Manage Tape Drives page

## 7.1.1 Tape Drive Status

[Table 7-1](#) describes the status information displayed for each tape drive in the logical library.

Section	Field	Description
Address	Physical	<p>A unique physical address for the tape drive in the format BxxxTyyz, where:</p> <ul style="list-style-type: none"> <li>• Bxxx is the LRM number</li> <li>• T indicates that this is a tape drive</li> <li>• yy is a number (01–04) indicating the position of the tape drive within the drive bay</li> <li>• z is a letter (A–H) indicating the position of the drive bay within the LRM</li> </ul> <p>To view detailed information about the tape drive, select the underlined hyperlink. For more information about physical addresses, refer to <a href="#">Appendix A, “Library Addresses.”</a></p> <p><b>Note:</b> The Physical column lists the addresses of all tape drive positions assigned to the logical library, whether or not they contain a tape drive. If no tape drive is installed, the physical address is not selectable, the Element field displays “No Drive Present,” and all other fields in the row are blank.</p>
	Element	<p>The element address for the tape drive in the logical library. The default starting element address for tape drives is 40000.</p> <p><b>Note:</b> If no tape drive is installed, this field displays, “No Drive Present.”</p>
	App	The application’s address for the tape drive.
	Type	The tape drive type; for example, LTO 3 pSCSI or LTO 3 Fibre
ID	Target	The target or SCSI ID currently assigned to the tape drive
	WWN	This value is an abbreviation for World Wide Node Name and will only appear when Fibre tape drives are installed in the library. The WWN value indicates the unique hardware address of the tape drive that is used when communicating in a network environment.
	Serial Number	The tape drive’s serial number

**Table 7-1** Status information on the View/Manage Tape Drives page

Section	Field	Description
Status	Power	<ul style="list-style-type: none"> <li>• <b>Off:</b> The tape drive is currently powered off. Select the underlined hyperlink to display the Power On Tape Drive page.</li> <li>• <b>On:</b> The tape drive is currently powered on. Select the underlined hyperlink to display the Power Off Tape Drive page.</li> </ul>
	Offline	<ul style="list-style-type: none"> <li>• <b>Offline:</b> The tape drive is currently offline to the software application. Select the underlined hyperlink to display the Bring Tape Drive Online page.</li> <li>• <b>Online:</b> The tape drive is currently online to the software application. Select the underlined hyperlink to display the Take Tape Drive Offline page.</li> </ul> <p><b>Note:</b> If the tape drive is powered off, you cannot bring it online.</p>
	SCD	<p>The single-character-display (SCD) code for the tape drive. Select the underlined hyperlink to display a help page that provides information about each code.</p> <p><b>Note:</b> If the tape drive is powered off, no SCD is shown.</p>
	Cleaning	<ul style="list-style-type: none"> <li>• <b>Cleaning:</b> The tape drive is currently being cleaned.</li> <li>• <b>Requested:</b> The tape drive has requested that it be cleaned as soon as possible. Select the underlined hyperlink to display the Clean Tape Drive page.</li> <li>• <b>Mandatory:</b> The tape drive has requested that it be cleaned and is no longer able to read or write data. Select the underlined hyperlink to display the Clean Tape Drive page.</li> </ul>
	Tape	<ul style="list-style-type: none"> <li>• <b>Empty:</b> The tape drive does not currently contain a cartridge. Select the underlined hyperlink to display the Load Tape Drive page.</li> <li>• <b>Ejected:</b> The tape drive has ejected the cartridge, but it has not been unloaded from the drive. Select the underlined hyperlink to display the Unload Tape Drive page.</li> <li>• <b>Loaded:</b> A cartridge is loaded into the tape drive. Select the underlined hyperlink to display the Eject Tape page.</li> </ul> <p><b>Note:</b> You must take the logical library offline before you can load a tape drive, unload a tape drive, or eject a tape from X-Link.</p>
	Calibrated	<ul style="list-style-type: none"> <li>• <b>Calibrated:</b> The tape drive's position is calibrated.</li> <li>• <b>Uncalibrated:</b> The tape drive's position is not calibrated. Select the underlined hyperlink to display the Calibrate Tape Drive page.</li> </ul>
Tape	Barcode	If a cartridge is loaded into or ejected from the tape drive, the information from the cartridge's barcode label.

**Table 7-1** Status information on the View/Manage Tape Drives page (*continued*)

## 7.1.2 Tape Drive Options

Below the tape drive summary table are options for managing tape drives. See [Figure 7-2](#). You can select one of these options instead of selecting an underlined hyperlink in the table. However, if you select an option from the list, you must enter the element address of the tape drive; if you select an underlined hyperlink, the tape drive address is filled in for you.

Tape Drive		
<a href="#">Power On Tape Drive</a>	<a href="#">Online Tape Drive</a>	<a href="#">Eject Tape</a>
<a href="#">Power Off Tape Drive</a>	<a href="#">Clean Tape Drive</a>	<a href="#">Unload Tape Drive</a>
<a href="#">Offline Tape Drive</a>	<a href="#">Load Tape Drive</a>	<a href="#">Calibrate Tape Drive</a>

**Figure 7-2** Tape Drive options on the View/Manage Tape Drives page

[Table 7-2](#) lists the Tape Drive options on the View/Manage Tape Drives page.

Option	Select this option to...	Refer to...
Power On Tape Drive	Apply power to a tape drive after replacing it	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Power Off Tape	Power off a tape drive in preparation for removing it	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Offline Tape Drive	Take a tape drive offline to the software application <b>Note:</b> You need take a tape drive offline only if you want to perform tape drive service operations while the logical library remains online.	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Online Tape Drive	Bring a tape drive online to the software application	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Clean Tape Drive	Clean a tape drive in the logical library	<a href="#">Section 7.2</a>
Load Tape Drive	Load a tape drive in the logical library <b>Note:</b> You must take the logical library offline before you can perform this operation.	<a href="#">Section 7.3 on page 7-8</a>
Eject Tape	Eject a tape from a tape drive in the logical library <b>Note:</b> You must take the logical library offline before you can perform this operation.	<a href="#">Section 7.4 on page 7-10</a>
Unload Tape Drive	Unload a tape drive in the logical library <b>Note:</b> You must take the logical library offline and eject the tape before you can perform this operation.	<a href="#">Section 7.5 on page 7-11</a>

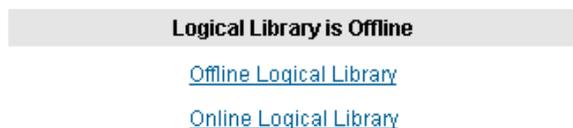
**Table 7-2** Tape Drive options on the View/Manage Tape Drives page

Option	Select this option to...	Refer to...
Calibrate Tape Drive	Calibrate the position of a new tape drive (required only if you want to access the tape drive before bringing it online). <b>Note:</b> You can also use this option to recalibrate the location of an existing tape drive.	<a href="#">Appendix B, “Replacing a Tape Drive”</a>

**Table 7-2** Tape Drive options on the View/Manage Tape Drives page (*continued*)

### 7.1.3 Logical Library Options

Below the tape drive summary table are options for onlining and offlining the logical library. See [Figure 7-3](#). You can select these options if you need to offline a logical library before performing a tape drive task.



**Figure 7-3** Logical Library options on the View/Manage Tape Drives page

[Table 7-3](#) lists the Logical Library options on the View/Manage Tape Drives page.

Option	Select this option to...	Refer to...
Offline Logical Library	Take the logical library offline	<a href="#">Section 5.4 on page 5-10</a>
Online Logical Library	Bring the logical library online	<a href="#">Section 5.5 on page 5-11</a>

**Table 7-3** Logical Library options on the View/Manage Tape Drives page

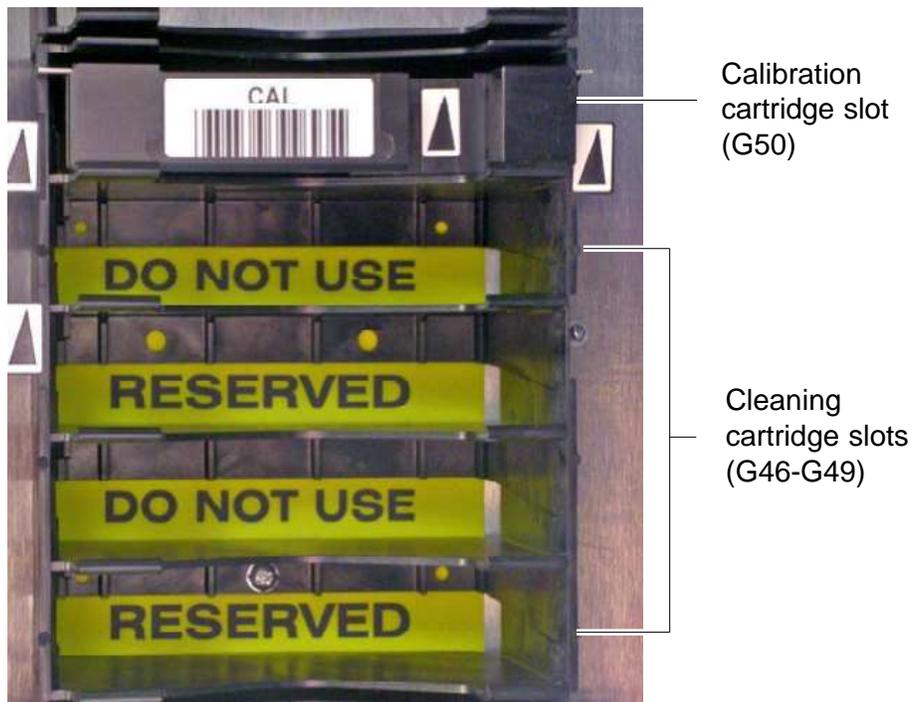
## 7.2 Cleaning a Tape Drive

This section provides guidelines and instructions for cleaning a tape drive in a logical library, bypassing the software application. When you request cleaning from X-Link, the XLS uses a cleaning cartridge stored in one of the library’s four reserved cleaning cartridge slots (see [Figure 7-4 on page 7-7](#)). These cartridges are not available to the software applications.

### CAUTION

Before cleaning the tape drive from X-Link, ensure that it will not be automatically cleaned by the software application. **Never clean a tape drive unless absolutely required.** Cleaning a tape drive too frequently may damage the tape drive.

**Note:** If you need to install or replace the cleaning cartridges in the reserved slots, refer to [Section 11.2, “Importing Cartridges Using the I/O Ports,” on page 11-2.](#)



**Figure 7-4** Location of the reserved cleaning cartridge slots

To clean a tape drive in a logical library, follow these steps:

1. Confirm that a cleaning cartridge is stored in one of the slots reserved for cleaning cartridges. See [Figure 7-4](#).

**Important:** Be sure that the system-reserved slots contain cleaning cartridges only. Never install data cartridges in these slots.

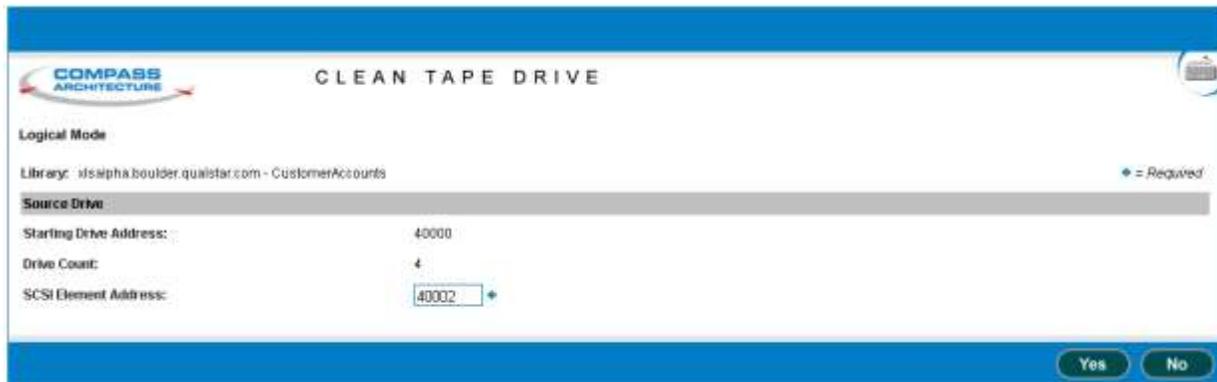
2. Access the View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
3. If the logical library is online, select **Offline Logical Library** from the Logical Library options.

**Note:** Although it is not required by the XLS, the software application may require you to take the logical library offline before cleaning a tape drive from X-Link.

4. In the Status–Cleaning column of the tape drives table, select **Requested** or **Mandatory**.

**Important:** As an alternative, you can select **Clean Tape Drive** from the list of options below the table. However, if you select **Clean Tape Drive**, you must enter the element address of the tape drive.

The Clean Tape Drive page opens, as shown in [Figure 7-5](#).



**Figure 7-5** Clean Tape Drive page for a logical library

5. Press **Yes** to clean the tape drive. The handler moves a cleaning cartridge from one of the reserved slots to the tape drive listed, then inserts the cartridge. When the cleaning is complete, the tape drive ejects the cartridge and the handler returns it to the slot.
6. Confirm that **Requested** or **Mandatory** is no longer reported in the Status–Cleaning column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

## 7.3 Loading a Tape Drive

On rare occasions, you may need to load a cartridge into a tape drive manually, bypassing the software application.

To load a cartridge into an empty tape drive, follow these steps:

1. Access the View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).

- In the Status–Tape column of the tape drives table, select **Empty**.

**Important:** As an alternative, you can select **Load Tape Drive** from the list of options below the table. However, if you select **Load Tape Drive**, you must enter the element address of the tape drive.

The Load Tape Drive page opens, as shown in [Figure 7-6](#).

**Figure 7-6** Load Tape Drive page for a logical library

- If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to move any cartridges.
- In the Source Slot section, enter the SCSI element address of the cartridge you want loaded into the tape drive listed.

**Note:** The address you specify must be within the addresses designated by the Starting Slot Address and the Slot Count fields.

- Press **Yes** to load the cartridge into the tape drive.
- Confirm that **Loaded** is now reported in the Status–Tape column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

- When you are ready to bring the logical library back online, select **Online Logical Library**.

## 7.4 Ejecting a Tape from a Tape Drive

On rare occasions, you may need to instruct a tape drive to eject the tape before the cartridge can be unloaded from the tape drive.

To eject a tape from a tape drive in a logical library, follow these steps:

1. Access the View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
2. In the Status–Tape column of the tape drives table, select **Loaded**.

**Important:** As an alternative, you can select **Eject Tape** from the list of options below the table. However, if you select **Eject Tape**, you must enter the element address of the tape drive.

The Eject Tape page opens, as shown in [Figure 7-7](#).

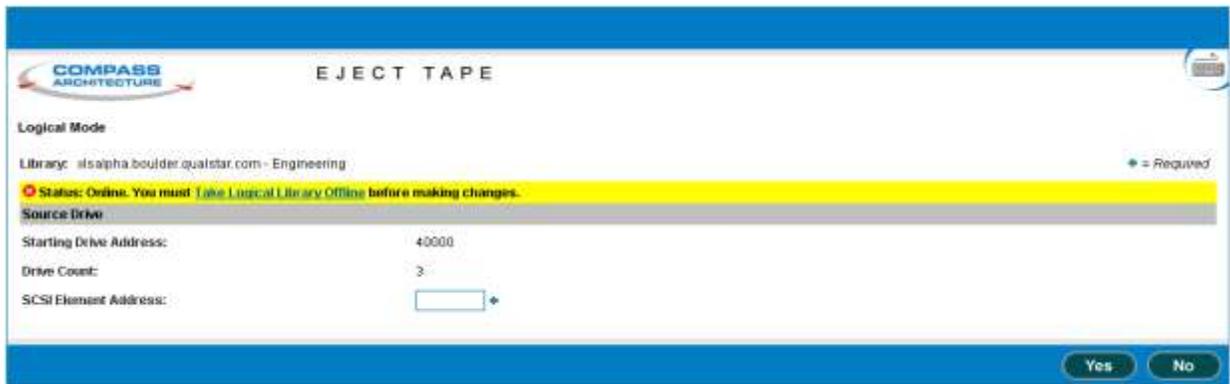


Figure 7-7 Eject Tape page for a logical library

3. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to move any cartridges.
4. Press **Yes** to eject the tape from the tape drive.
5. Confirm that **Ejected** is now reported in the Status–Tape column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

6. As required, unload the tape from the tape drive. See [Section 7.5 on page 7-11](#).
7. When you are ready to bring the logical library back online, select **Online Logical Library**.

## 7.5 Unloading a Tape Drive

On rare occasions, you may need to unload a cartridge from a tape drive manually, bypassing the software application.

To unload a cartridge from a tape drive, follow these steps:

1. Access the View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
2. If required, eject the tape from the tape drive, as described in [Section 7.4](#).
3. In the Status–Tape column of the tape drives table, select **Ejected**.

**Important:** As an alternative, you can select **Unload Tape Drive** from the list of options below the table. However, if you select **Unload Tape Drive**, you must enter the element address of the tape drive.

The Unload Tape Drive page opens, as shown in [Figure 7-8](#).

The screenshot shows the 'UNLOAD TAPE DRIVE' interface. At the top left is the 'COMPASS ARCHITECTURE' logo. The title 'UNLOAD TAPE DRIVE' is centered. Below the title, the 'Logical Mode' section shows the library name 'stsalphaboulder.qualstar.com - CustomerAccounts'. There are two main sections: 'Source Drive' and 'Destination Slot'. The 'Source Drive' section has fields for 'Starting Drive Address' (40000), 'Drive Count' (4), and 'SCSI Element Address' (40000). The 'Destination Slot' section has fields for 'Starting Slot Address' (2000), 'Slot Count' (348), and 'SCSI Element Address' (empty). A small icon with a plus sign and the text '\* = Required' is located to the right of the library name. At the bottom right, there are two buttons: 'Yes' and 'No'.

**Figure 7-8** Unload Tape Drive page for a logical library

4. If the status of the logical library is Online, select **Take Logical Library Offline** before attempting to move any cartridges.
5. In the Destination Slot section, enter the SCSI element address for the cartridge you want unloaded.

**Note:** The address you specify must be within the addresses designated by the Starting Slot Address and the Slot Count fields.

6. Press **Yes** to unload the cartridge from the tape drive. The handler moves the cartridge from the tape drive to the slot.
7. Confirm that **Unloaded** is now reported in the Status–Tape column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

8. When you are ready to bring the logical library back online, select **Online Logical Library**.

# Part III: Working with the Physical Library

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Chapter 8, “Managing the Physical Library” .....	8-1
Chapter 9, “Managing the Library’s Configuration” .....	9-1
Chapter 10, “Managing the Library’s Settings and Policies”	10-1
Chapter 11, “Managing Cartridges in the Physical Library”	11-1
Chapter 12, “Managing Tape Drives in the Physical Library” .....	12-1
Chapter 13, “Managing Events” .....	13-1
Chapter 15, “Viewing Library Hardware” .....	15-1
Chapter 16, “Preventive Maintenance” .....	16-1

**Notes:**

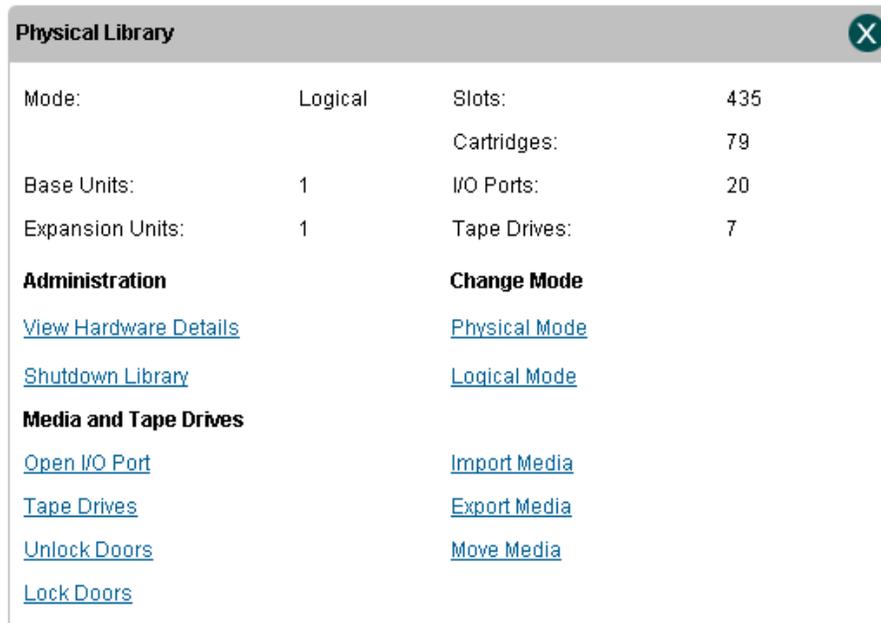
# 8 Managing the Physical Library

This chapter provides instructions for using the Physical Library portlet.

## 8.1 Accessing the Physical Library Portlet

The Physical Library portlet contains a number of options for managing the physical library. To access the Physical Library portlet, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Service View** or **Show All** to display the Physical Library portlet, shown in [Figure 8-1](#).



The screenshot shows the Physical Library portlet with a title bar and a close button. The main content area is divided into several sections:

Mode:	Logical	Slots:	435
		Cartridges:	79
Base Units:	1	I/O Ports:	20
Expansion Units:	1	Tape Drives:	7

**Administration**

- [View Hardware Details](#)
- [Shutdown Library](#)

**Change Mode**

- [Physical Mode](#)
- [Logical Mode](#)

**Media and Tape Drives**

- [Open I/O Port](#)
- [Tape Drives](#)
- [Unlock Doors](#)
- [Lock Doors](#)
- [Import Media](#)
- [Export Media](#)
- [Move Media](#)

Figure 8-1 Physical Library portlet

### 8.1.1 Status Fields on the Physical Library Portlet

[Table 8-1](#) lists the status fields on the Physical Library portlet.

Status field	Description
Mode	Whether the physical library is in logical mode or physical mode. See <a href="#">Section 8.2 on page 8-3</a> .
Base Units	The number of Library Resource Modules (LRMs)
Expansion Units	The number of attached Media Expansion Modules (MEMs)
Slots	The number of cartridge slots in the physical library
Cartridges	The number of cartridges in the physical library
I/O Ports	The number of I/O port slots in the physical library
Tape Drives	The number of tape drives in the physical library

**Table 8-1** Status fields on the Physical Library portlet

### 8.1.2 Options on the Physical Library Portlet

[Table 8-2](#) lists the options that can be selected from the physical library portlet.

**Important:** The options you can select depend on which user group the user belongs to. If the user group has permission to perform all physical library tasks, all options are selectable. If the user group has permission to perform a subset of tasks, some of the options may not be selectable (grayed out).

Section	Option	Refer to...
Administration	View Hardware Details	<a href="#">Chapter 15, “Viewing Library Hardware”</a>
	Shutdown Library	<a href="#">Section 8.3 on page 8-6</a>
Change Mode	Physical Mode	<a href="#">Section 8.2.1 on page 8-4</a>
	Logical Mode	<a href="#">Section 8.2.2 on page 8-5</a>

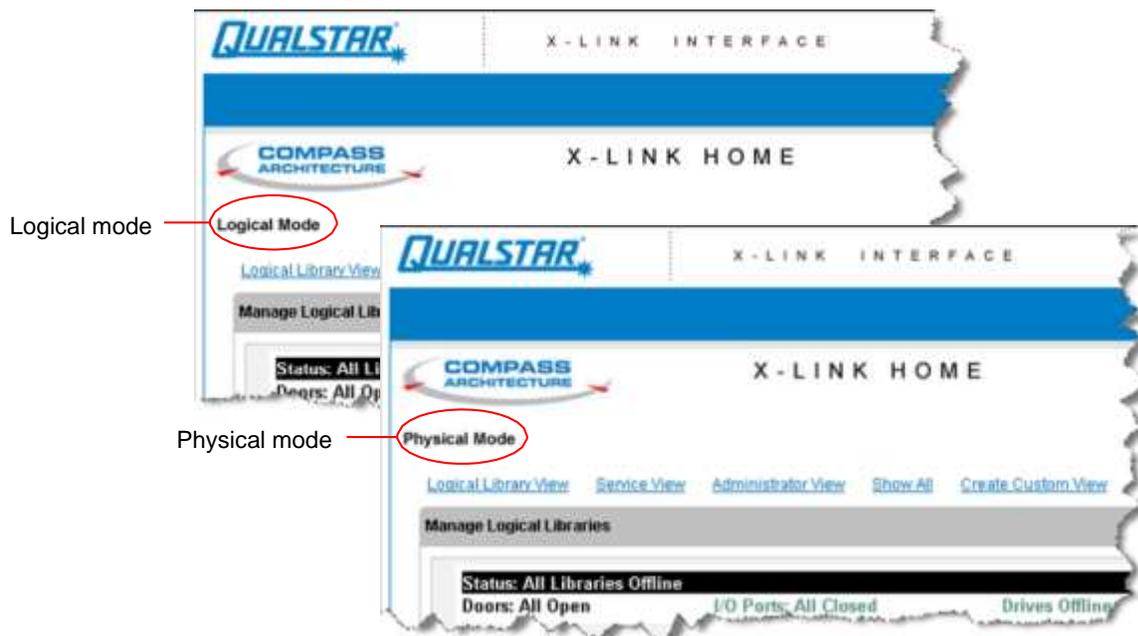
**Table 8-2** Options for managing the physical library

Section	Option	Refer to...
Media and Tape Drives	Open I/O Port	<a href="#">Section 11.2.1 on page 11-3</a>
	Tape Drive	<a href="#">Chapter 12, “Managing Tape Drives in the Physical Library”</a>
	Unlock Doors	<a href="#">Section 11.4.1 on page 11-11</a>
	Lock Doors	<a href="#">Section 11.4.2 on page 11-12</a>
	Import Media	<a href="#">Section 11.2.2 on page 11-5</a>
	Export Media	<a href="#">Section 11.3.1 on page 11-7</a>
	Move Media	<a href="#">Section 11.5 on page 11-13</a>

**Table 8-2** Options for managing the physical library (*continued*)

## 8.2 About Logical and Physical Modes

As described in this section, you can operate the XLS in logical mode or in physical mode. The current operating mode is shown at the top of every page. See [Figure 8-2](#).



**Figure 8-2** Physical and logical mode indicators (included on each page)

### Logical Mode

During typical day-to-day library operation, the XLS is in *logical mode*. In logical mode, one or more software applications control the library and you interact with X-Link from a logical library perspective. When you interact with the XLS in logical mode:

- You can view and control only those resources (cartridge slots, tape drives, and I/O ports) that have been assigned to a particular logical library.
- You cannot view or control resources assigned to any other logical library.
- You specify SCSI element addresses for cartridge slots, I/O port slots, and tape drives.
- The logical libraries may be online or offline.

### Physical Mode

If you are an XLS administrator, you may occasionally need to operate the XLS in *physical mode*. In physical mode, you interact with X-Link from a physical library perspective. When you interact with the XLS in physical mode:

- You can view and control all resources in the library, whether or not they have been assigned to a logical library.
- You specify physical addresses for each cartridge slot, I/O port slot, or tape drive.
- All logical libraries must be offline.

#### 8.2.1 Putting the XLS in Physical Mode

If you need to perform a task that could change the state of the physical library, you must put the XLS in physical mode. For example, if you wanted to open the library's doors, you would put the XLS in physical mode.

When you put the XLS in physical mode, the following occurs:

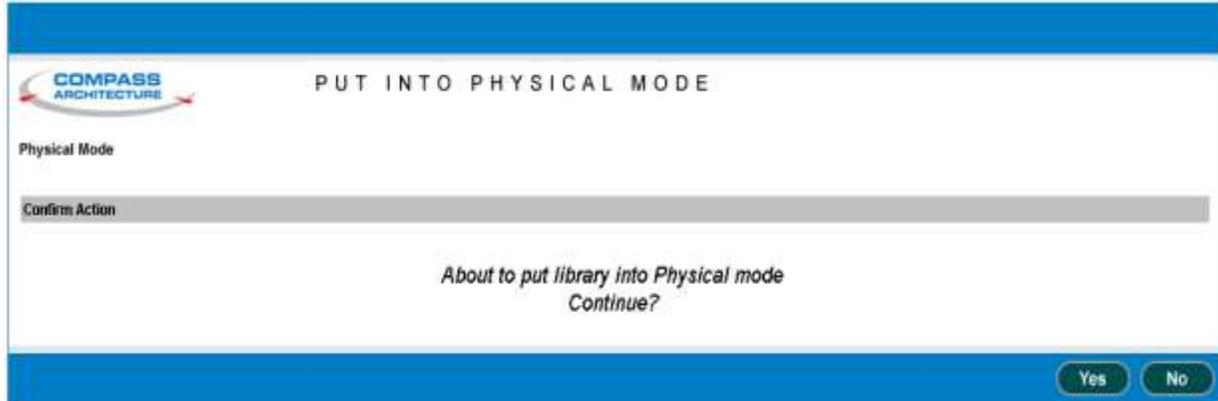
- The XLS completes any current or pending operations for the software applications, then it takes all defined logical libraries offline.
- The XLS returns Check Condition status to any new requests by the software applications, indicating that it is not ready.
- An event is logged in the event log and a message is sent to designated users.
- The tape drives remain accessible to the software applications and can continue reading and writing data.

To put the XLS in physical mode, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access either the Physical Library portlet (see [Section 5.3 on page 5-4](#)) or the Logical Libraries portlet (see [Section 8.1 on page 8-1](#)).

3. Select **Physical Mode** from the Change Mode section of the Physical Library portlet or from the physical library section of the Logical Library portlet.

The Put into Physical Mode confirmation page opens, as shown in [Figure 8-3](#).



**Figure 8-3** Put into Physical Mode confirmation page

4. Press **Yes** to confirm that you want to put the XLS in physical mode.

## 8.2.2 Putting the XLS in Logical Mode

This section provides instructions for putting the XLS in logical mode. When you put the XLS in logical mode, the following occurs:

- The XLS restores the logical libraries to their previous states.

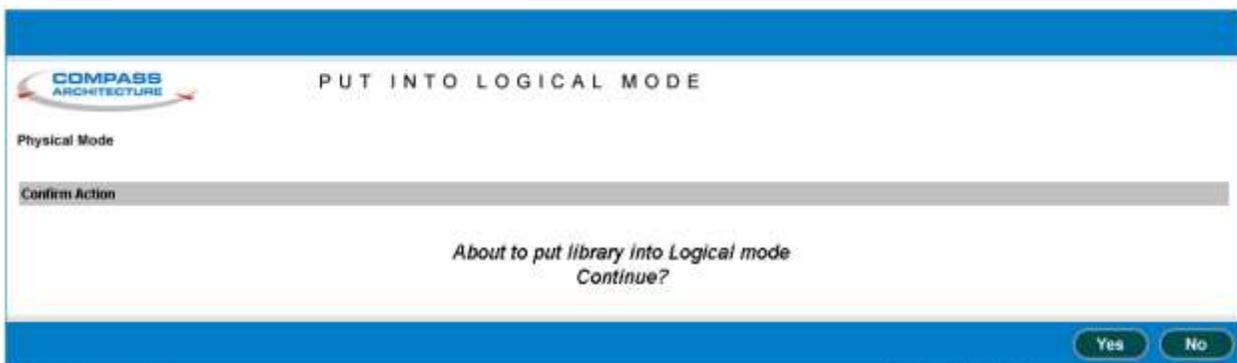
<p><b>Important:</b></p>	<ul style="list-style-type: none"> <li>• If a logical library was online when you put the XLS in physical mode, it will go back online when you put the XLS in logical mode.</li> <li>• If a logical library was offline when you put the XLS in physical mode, it will remain offline when you put the XLS in logical mode.</li> </ul>
--------------------------	---

- As it onlines any logical libraries, the XLS returns Check Condition status to any new requests by the software applications, indicating that the cartridge inventory may have changed.
- An event is logged in the event log and a message is sent to designated users.

To put the XLS in logical mode, follow these steps:

1. Make sure that all library doors are closed and locked. See [“Locking the Doors and Resuming Operation” on page 11-12](#).
2. Access either the Physical Library portlet (see [Section 5.3 on page 5-4](#)) or the Logical Libraries portlet (see [Section 8.1 on page 8-1](#)).
3. Select **Logical Mode** from the Change Mode section of the Physical Library portlet or from the physical library section of the Logical Library portlet.

The Put into Logical Mode confirmation page opens, as shown in [Figure 8-4](#).



**Figure 8-4** Put into Logical Mode confirmation page

4. Press **Yes** to confirm that you want to put the XLS in logical mode.

## 8.3 Shutting Down the Physical Library

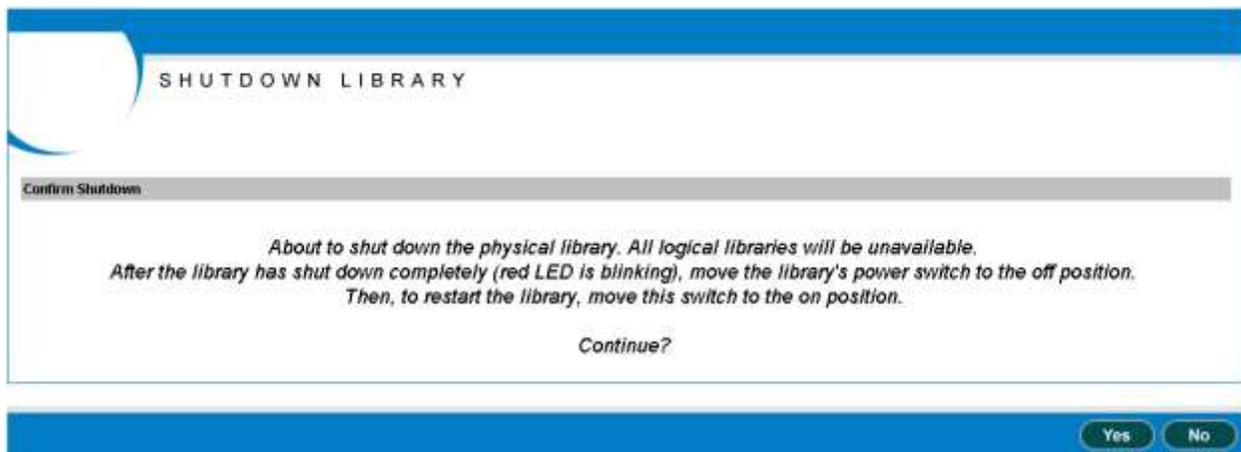
When the physical library is shut down, it performs the following actions:

- It completes all current and pending moves.
- It parks the robotics.
- It logs an event in the event log and sends a message to designated users.
- It takes all logical libraries offline if they haven't been taken offline already.
- It closes X-Link and displays a system-halted message on the touch screen.

When the shut-down process is complete, the Fault LED (red) flashes, indicating that it is safe to move the power switch to the off position.

To shut down the physical library, follow these steps:

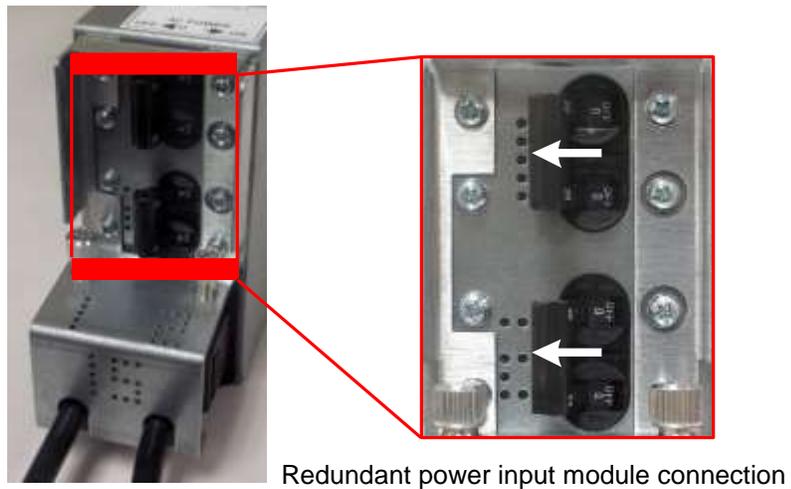
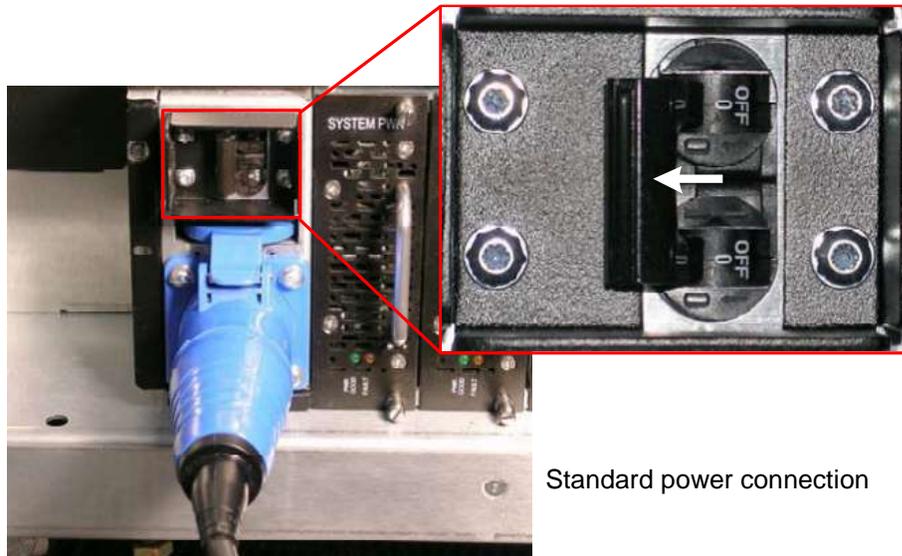
1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. From the Change Mode section of the Physical Library portlet, select **Physical Mode**. See [Section 8.2.1 on page 8-4](#).
3. From the Administration section of the Physical Library portlet, select **Shutdown Library**. The Shutdown Library confirmation page opens, as shown in [Figure 8-5](#).



**Figure 8-5** Shutdown Library confirmation page

4. Press **Yes** to confirm that you want to shut down the physical library.
5. Wait while the library shuts down. The amount of time required depends on what activities were occurring when you began the shut-down process.
6. When the Fault (red) LED begins flashing, finish shutting down the XLS by moving the single power switch on the back of the library to the off position for

standard power connections or move both switches to the off position for the redundant power input module, as shown in [Figure 8-6](#).



**Figure 8-6** Power switch (switches) in off position

**Important:** For instructions for reapplying power to the library, including information about what happens during the library's power-on self-test, refer to the *XLS Library Installation Manual*.

# 9

# Managing the Library's Configuration

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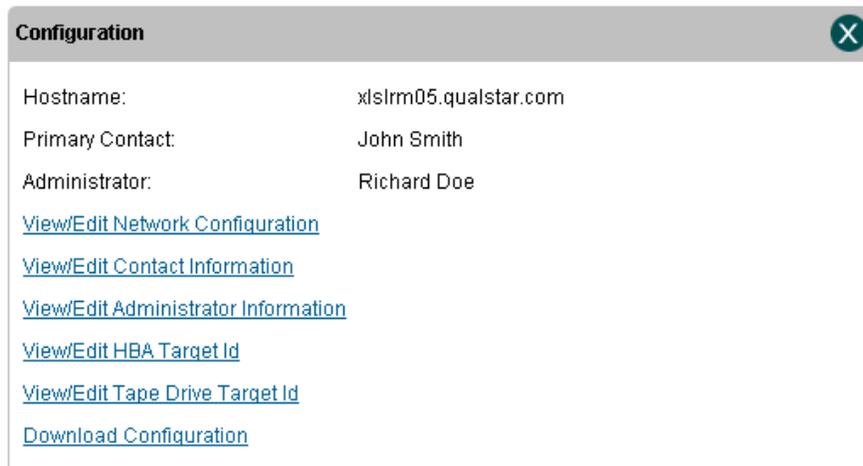
When the XLS is installed, you specify initial values for the physical library's configuration. This chapter provides instructions for using the Configuration portlet to perform the following tasks:

- Accessing the Configuration portlet (see [Section 9.1](#))
- Viewing and editing the network configuration (see [Section 9.2 on page 9-2](#))
- Viewing and editing contact information (see [Section 9.3 on page 9-4](#))
- Viewing and editing administrator information (see [Section 9.4 on page 9-6](#))
- Viewing and editing target IDs for the HBAs and tape drives (see [Section 9.5 on page 9-7](#))
- Downloading the library's configuration files (see [Section 9.6 on page 9-11](#))

## 9.1 Accessing the Configuration Portlet

To access the Configuration portlet, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Administrator View** or **Show All** to display the Configuration portlet, shown in [Figure 9-1 on page 9-2](#).



**Figure 9-1** Configuration portlet

[Table 9-1](#) lists the fields on the Configuration portlet. This chapter provides instructions for changing the values of these fields.

Field	Description
Hostname	The name of the XLS library
Primary Contact	The primary contact for the XLS library
Administrator	The XLS library administrator

**Table 9-1** Fields on the Configuration portlet

## 9.2 Viewing and Editing the Network Configuration

This section describes how to view and edit the physical library's network configuration, which includes the library host name, the IP address, and the DNS address. If your network supports these capabilities, IP addresses and DNS servers can be assigned automatically.

**Important:** Before changing the network configuration, contact your network administrator for the correct values. An incorrect network setting can cause the XLS or another device on the network to become unavailable.

To view or edit the network configuration, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).

3. Select **View/Edit Network Configuration**. The View/Edit Network Configuration page opens, as shown in [Figure 9-2](#).

The screenshot shows the 'VIEW/EDIT NETWORK CONFIGURATION' page. At the top, there are 'Save Changes' and 'Cancel Changes' buttons. Below the title bar, the 'Logical Mode' is set to 'Library: xisalpha.boulder.qualstar.com - (physical)'. The 'Network Configuration' section includes a 'Library Hostname' field with the value 'sisalpa'. There are two radio button options: 'Obtain IP address automatically' (selected) and 'Use the following IP address:'. The 'Use the following IP address' section has input fields for IP Address (192, 168, 100, 45), Subnet Mask (255, 255, 255, 0), and Default Gateway (192, 168, 100, 1). There are also radio button options for DNS: 'Obtain DNS server address automatically' (selected) and 'Use the following DNS server addresses:'. The 'Use the following DNS server addresses' section has input fields for Preferred DNS Server (192, 168, 100, 4) and Alternate DNS Server (192, 168, 100, 5). At the bottom, there are 'Save Changes' and 'Cancel Changes' buttons.

**Figure 9-2** View/Edit Network Configuration page

**Note:** If you do not have permission to edit the network configuration, select **View Network Configuration** to display a read-only version of this page.

4. If you want to change the name for the physical library, enter a new name in the **Library Hostname** field.
  - If your network includes an automatic dynamic host configuration protocol (DHCP) server and dynamic domain name system (DNS), the library's host name will be automatically available to the network.
  - If your network uses static IP addresses, the name will be displayed in X-Link, but you must update the DNS on your network to make the library name available to the network.
5. Specify whether you want to enter an IP address or have it obtained automatically. Then, as required, enter information for the **IP Address**, **Subnet Mask**, and **Default Gateway** fields.

**Important:** If you change the IP address, you must direct your browser to the new address after exiting this page.

6. Specify whether you want to enter preferred and alternate DNS server addresses or have the DNS address obtained automatically. Then, as required, enter addresses for the **Preferred DNS Server** and **Alternate DNS Server** fields.
7. Press **Save Changes** to save the information.

8. If you changed the IP address for the library, redirect the Internet browser to the new address.

### 9.3 Viewing and Editing Contact Information

This section describes how to view and edit contact information for the physical library. The primary and secondary contacts are typically responsible for the department or division that manages the XLS library.

**Important:** The information listed for the Primary and Secondary Contact Information fields is for display purposes only. The XLS does not use this information. If you want the contacts listed to receive e-mail or pager alerts, be sure to define them as library users (see [Section 4.3.1, “Adding Users,” on page 4-13](#)).

To view or edit contact information for the physical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).

3. Select **View/Edit Contact Information**. The View/Edit Contact Information page opens, as shown in [Figure 9-3](#).

COMPASS ARCHITECTURE

VIEW/EDIT CONTACT INFORMATION

Logical Mode

Library: vlsalpha boulder qualstar.com - (physical) \* = Required \* = Required if Secondary Contact is specified

Primary Contact Information	Secondary Contact Information
Name: John Smith *	Name: Sally Jones *
Primary E-mail Address: jsmith@example.com *	Primary E-mail Address: sjones@example.com *
Alternate E-mail Address: contact1@example.com	Alternate E-mail Address: Contact2@example.com
Pager E-mail Address:	Pager E-mail Address:
Work Phone Number: 303 333 2222 *	Work Phone Number: 303 333 2223 *
Mobile Phone Number: 303 333 2222	Mobile Phone Number: 303 333 2223
Company:	Company:
Street Address: 1 Example Way	Street Address: 1 Example Way
City / Town / Locality: Example View	City / Town / Locality: Example View
State / Province: CO	State / Province: CO
Zip / Postal Code: 80111	Zip / Postal Code: 80111
Country: USA	Country: USA

Save Changes Cancel Changes

**Figure 9-3** View/Edit Contact Information page

**Note:** If you do not have permission to edit the library's contact information, select **View Contact Information** to display a read-only version of this page.

4. View or edit the contact information for the library. Required fields are denoted by an arrow.
5. Press **Save Changes** to save the information.

## 9.4 Viewing and Editing Administrator Information

This section describes how to view and edit administrator information for the physical library. The physical library administrator is the person who has permission to perform administrative tasks on the entire XLS library.

**Important:** The information listed for the Physical Library Administrator fields is for display purposes only. The XLS does not use this information. If you want the user listed to have permission to perform administrator tasks, you must define him or her as a library user and assign him or her to the appropriate user group (see [Section 4.3.1, “Adding Users,” on page 4-13](#)).

To view or edit administrator information for the physical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).
3. Select **View/Edit Administrator Information**. The View/Edit Administrator Information page opens, as shown in [Figure 9-4](#).

The screenshot shows the 'VIEW/EDIT ADMINISTRATOR INFORMATION' page. At the top, there are 'Save Changes' and 'Cancel Changes' buttons. Below the COMPASS ARCHITECTURE logo, the page title is 'VIEW/EDIT ADMINISTRATOR INFORMATION'. The 'Logical Mode' is set to 'Library: xitsalpha.boulder.qualstar.com - (physical)'. A legend indicates that a blue asterisk (\*) denotes a required field. The 'Administrator Information' section contains the following fields:

Name:	<input type="text" value="Richard Doe"/>	Company:	<input type="text"/>
User ID:	<input type="text" value="rdoe"/>	Street Address:	<input type="text" value="100 Example Plaza"/>
Primary E-mail Address:	<input type="text" value="rdoe@example.com"/>		<input type="text" value="Suite 200"/>
Alternate E-mail Address:	<input type="text" value="admin@example.com"/>	City/Town/Locality:	<input type="text" value="Example Heights"/>
Work Phone Number:	<input type="text" value="805 111 2222"/>	State/Province:	<input type="text" value="CA"/>
Mobile Phone Number:	<input type="text" value="303 333 2222"/>	Zip/Postal Code:	<input type="text" value="90333"/>
Pager E-mail Address:	<input type="text"/>	Country:	<input type="text" value="USA"/>

At the bottom of the page, there are 'Save Changes' and 'Cancel Changes' buttons.

Figure 9-4 View/Edit Administrator Information page

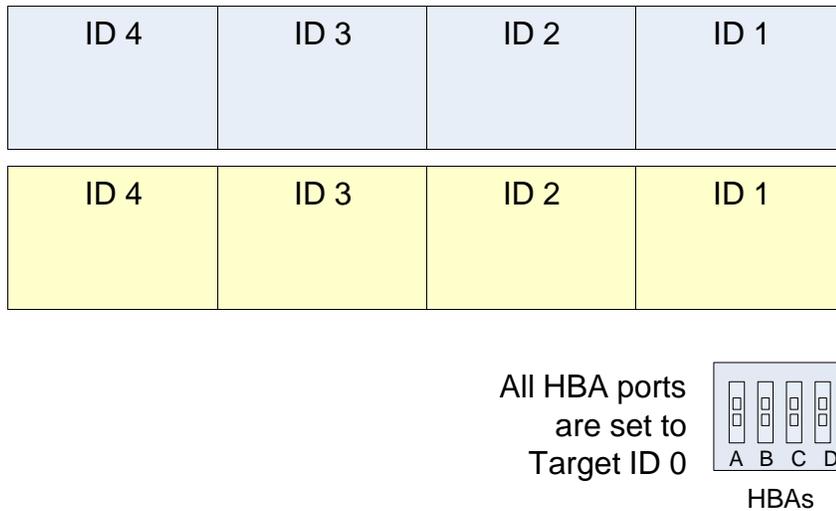
**Note:** If you do not have permission to edit the physical library’s administrator information, select **View Administrator Information** to display a read-only version of this page.

4. View or edit the administrator information for the library.

5. Press **Save Changes** to save the information.

## 9.5 Viewing and Editing Target IDs

This section describes how to view and edit the target ID settings for the HBAs and the tape drives. [Figure 9-5](#) shows the default target IDs for the tape drives and the HBA ports. Note that the target IDs may have been changed from their default values when the XLS was installed.



**Figure 9-5** Default target IDs for tape drives and HBAs (view from back of the LRM)

[Table 9-2](#) summarizes the ranges and default values for HBA and tape drive target IDs.

Type of interface	Target ID range	Default setting	
Fibre Channel	0 to 125	HBA port	0
		Tape drive	4, 3, 2, or 1*
SCSI	0 to 15	HBA port	0
		Tape drive	4, 3, 2, or 1*

\* The default IDs for the tape drives match the physical address of the tape drives within the drive bay.

**Table 9-2** Target IDs for tape drives and HBAs

### 9.5.1 Viewing and Editing HBA Target IDs

The HBAs, installed in the XLS's system controller's expansion slots, allow the host computer and software application to access the XLS's medium changer interface.

To view the current settings, follow these steps:

1. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).
2. Type **http://qualstarxls/viewHBATarget.do** in the address field for the browser, where *qualstarxls* is the default name for the physical library. The HBA Target ID page opens, as shown in [Figure 9-6](#).



**Figure 9-6** HBA Target ID page

To edit the target ID settings for the HBAs, follow these steps:

1. If you want to change an HBA target ID, put the XLS in physical mode. See [Section 8.2.2 on page 8-5](#).

**Important:** You must put the XLS in physical mode before changing an HBA target ID.

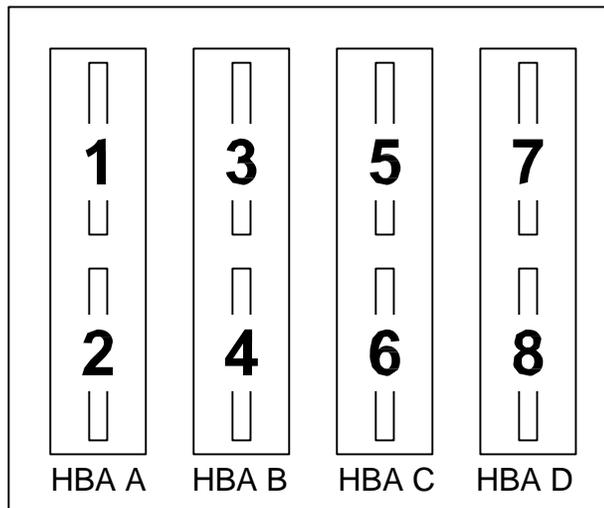
2. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).

3. Select **View/Edit HBA Target Id** from the Configuration portlet. The View/Edit HBA Target ID page opens, as shown in [Figure 9-7](#).



**Figure 9-7** View/Edit HBA Target ID page

4. In the **Host Bus Adapter** drop-down list, select the HBA port you want to view or edit the target ID for. Since the XLS supports four HBAs with two ports each, up to eight HBA port numbers may be displayed. [Figure 9-8](#) shows how these numbers correspond to the ports' physical locations in the system controller.



**Figure 9-8** HBA port IDs

5. In the **Target Id** drop-down list, view or edit the target IDs for the selected HBA port.
6. Press **Save HBA Target ID** to save the information. The new target ID takes effect as soon as the confirmation page appears.
7. Put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#).

## 9.5.2 Viewing and Editing Tape Drive Target IDs

Within a drive bay, the default target IDs for the tape drives range from 4 to 1, which match the physical addresses of the tape drive positions. To view or edit the target ID settings for the tape drives, follow these steps:

1. If you want to change the target ID, take the logical library that controls the tape drive offline. See [Section 5.4 on page 5-10](#).
2. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).
3. Select **View/Edit Tape Drive Target Id** from the Configuration portlet. The View/Edit Tape Drive Target ID page opens, as shown in [Figure 9-9](#).



**Figure 9-9** View/Edit Tape Drive Target ID page

**Note:** If you do not have permission to edit the tape drive target IDs, select **View Tape Drive Target Id** to display a read-only version of this page.

4. Enter the location of the tape drive, as follows:
  - a. From the **Base Unit** drop-down list, select the LRM that contains the tape drive you want to view or edit the target ID for.
  - b. From the **Column** drop-down list, select the location of the tape drive within the drive bay (where 1 is the leftmost position and 4 is the rightmost position when the library is viewed from the front).
  - c. From the **Row** drop-down list, select the location of the drive bay (where A is the bottom drive bay position and H is the top drive bay position).

**Note:** See [Appendix A, “Library Addresses.”](#) to determine the physical address of each tape drive position.

5. View or edit the target ID for the tape drive.

6. Press **Save Tape Drive Target ID** to save the information.

For Fibre Channel tape drives, the new target ID takes effect as soon as the confirmation page appears. For SCSI tape drives, the new target ID takes effect after the next power-on or reset event.

7. Bring the logical library online. See [Section 5.5 on page 5-11](#).

## 9.6 Downloading the Library Configuration

Any time you change the configuration of the physical library or of a logical library, you should copy the configuration file, which is stored on the XLS's system controller, to the network or to a standalone computer. You will need this file if the system controller fails or if you want to restore the XLS's logical and physical library's configuration. See the *XLS Technical Service Manual* for instructions.

### CAUTION

Whenever you make changes to the system configuration, be sure to download and save the new configuration file.

To download a copy of the configuration file, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Configuration portlet. See [Section 9.1 on page 9-1](#).
3. Select **Download Configuration**. The Download Configuration page opens, as shown in [Figure 9-10](#), indicating that zipped configuration files are ready to be downloaded.

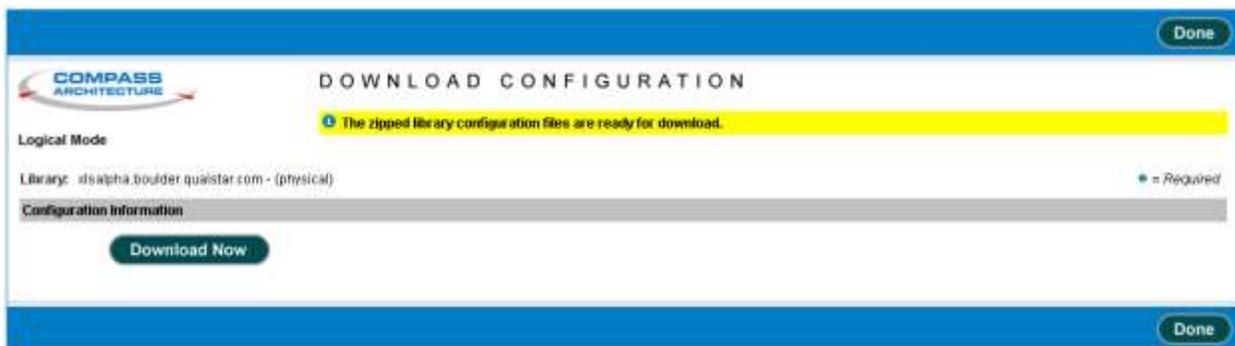
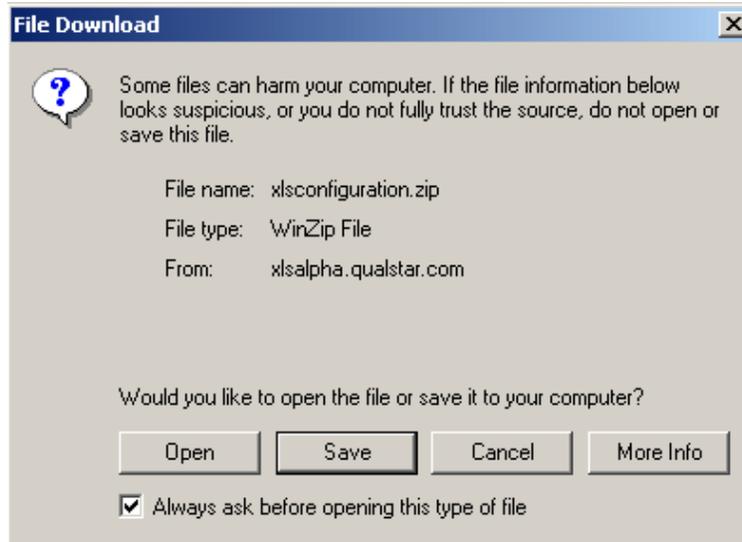


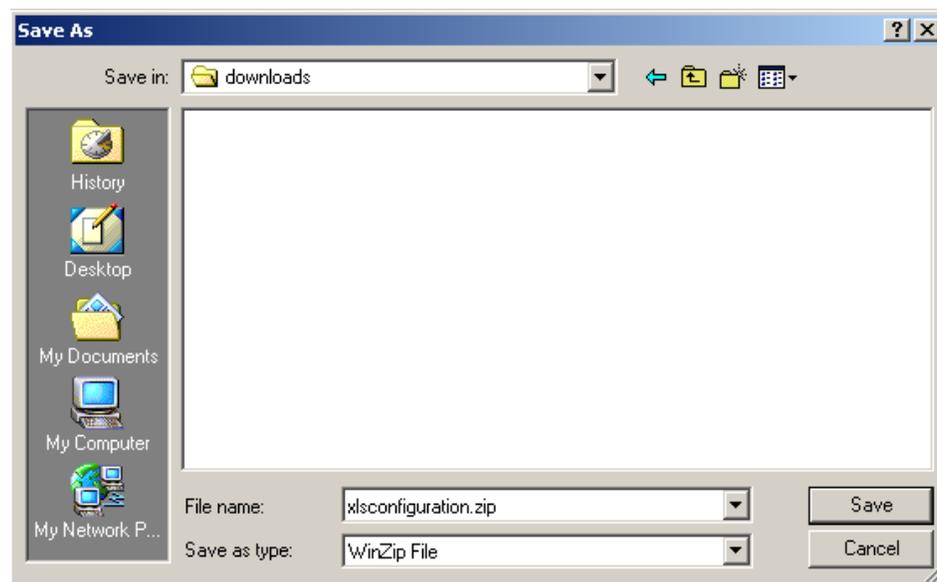
Figure 9-10 Download Configuration page

4. Press **Download Now**. A File Download window similar to the one shown in [Figure 9-11](#) opens, allowing you to save or open the configuration file **xlsconfiguration.zip**.



**Figure 9-11** Example of a download window

5. Press **Save**. A window similar to the one in [Figure 9-12](#) opens, allowing you to specify a destination for the zipped configuration file.



**Figure 9-12** Example of a Save As window

6. Specify a destination folder for the configuration file and press **Save**.

7. When you have successfully downloaded the zipped configuration file, press **Done**.
8. Make a backup copy of the downloaded file and save it in a secure location.

**Important:** Refer to the *XLS Library Technical Service Manual* for instructions for using the downloaded file to restore the library's configuration.

**Notes:**

# 10

# Managing the Library's Settings and Policies

---

This chapter provides instructions for using the Settings & Policies portlet to perform the following tasks:

- Accessing the Settings & Policies portlet (see [Section 10.1](#))
- Viewing and editing e-mail settings (see [Section 10.2 on page 10-2](#))
- Viewing and editing SNMP settings (see [Section 10.3 on page 10-3](#))
- Viewing and editing event log settings (see [Section 10.4 on page 10-4](#))
- Viewing and editing library policies (see [Section 10.5 on page 10-5](#))

## 10.1 Accessing the Settings & Policies Portlet

To access the Settings & Policies portlet, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Administrator View** or **Show All** to display the Settings & Policies portlet, shown in [Figure 10-1](#).



**Figure 10-1** Settings & Policies portlet

## 10.2 Viewing and Editing E-Mail Settings

This section describes how to view and edit e-mail settings for the physical library. The XLS uses these settings to determine whether to send e-mail alerts to designated users when certain events occur.

- Important:** After configuring the physical library to send e-mail and pager alerts, follow these steps to ensure that individual users can receive the alerts:
- Enable e-mail and pager alerts for the user groups. See [Section 4.2.4 on page 4-7](#).
  - Enable e-mail or pager addresses for the user. See [Table 4-5, “Contact information fields,” on page 4-15](#).
  - Set the Event Severity to Email and Event Severity to Page policies. See [Section 10.5 on page 10-5](#).

To view or edit e-mail settings for the physical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Settings & Policies portlet. See [Section 10.1 on page 10-1](#).
3. Select **View/Edit E-mail Settings**. The View/Edit E-mail Settings page opens, as shown in [Figure 10-2](#).

Figure 10-2 View/Edit E-Mail Settings page

**Note:** If you do not have permission to edit the physical library’s e-mail settings, select **View E-mail Settings** to display a read-only version of this page.

4. If you do not want the system to send e-mail alerts, select **Do not send e-mail alerts** and go to step 5.

or

If you want to send e-mail alerts, select **Send e-mail alerts** and specify the settings listed in [Table 10-1](#).

Field	Specify this information
Mail Server Hostname or IP Address	The mail server's host name or IP address. This is the name of the SMTP server that sends the e-mail alerts.
Mail Server Port	The port used by the mail server to send e-mail
Sender Name	The name that is to appear as the sender of the e-mail alerts (for example, Qualstar XLS Library)
Sender E-mail Address	The e-mail address to which e-mail recipients can respond (for example, XLS Administrator@yourcompany.com)

**Table 10-1** Settings for e-mail alerts

5. After specifying the e-mail settings, test them by following these steps:
  - a. Enter an e-mail address in the **Test E-mail Recipient** field. You may want to use your own e-mail address, so you can verify that the test e-mail was sent.
  - b. Press **Test Settings**.
  - c. Verify that a test message from the sender specified in the **Sender Name** field arrived in the test e-mail account's mailbox. In some cases, you may have to wait a few minutes to receive the test message.
6. Press **Save Changes** to save the information.

## 10.3 Viewing and Editing SNMP Settings

This section describes how to view and edit the Simple Network Management Protocol (SNMP) settings for the physical library. Data from the SNMP agents, contained in a Management Information Base (MIB), helps in managing the network by showing whether all devices are operating properly.

To view or edit SNMP settings for the physical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Settings & Policies portlet. See [Section 10.1 on page 10-1](#).
3. Select **View/Edit SNMP Settings**. The View/Edit SNMP Settings page opens, as shown in [Figure 10-3](#).

**Figure 10-3** View/Edit SNMP Settings page

**Note:** If you do not have permission to edit the physical library's SNMP settings, select **View SNMP Settings** to display a read-only version of this page.

4. Enter a name for the SNMP community in the **Community Name** field.
5. Press **Save Changes** to save the information.

## 10.4 Viewing and Editing Event Log Settings

This section describes how to view and edit the event log settings. The XLS uses these settings to determine when to *automatically* delete entries in the event log.

**Note:** Refer to [Section 13.2.4, “Deleting Events,” on page 13-8](#) to learn how to delete events manually.

Depending on the values specified, the library deletes events when:

- The number of events in the log exceeds the maximum number specified
- The age of the events in the log exceeds the time period specified.

Events are deleted in first-in first-out (FIFO) sequence; that is, the oldest events are deleted first.

To view or edit event log settings, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Settings & Policies portlet. See [Section 10.1 on page 10-1](#).
3. Select **View/Edit Event Log Settings**. The View/Edit Event Log Settings page opens, as shown in [Figure 10-4](#).

**Figure 10-4** View/Edit Event Log Settings page

**Note:** If you do not have permission to edit the event log settings, select **View Event Log Settings** to display a read-only version of this page.

4. In the **Maximum # of events to save** field, enter the maximum number of events you want to save in the event log. The library can save a maximum of 1,000 events. As soon as there are more events in the log than this number, the library deletes the oldest event.
5. In the **Save events for** field, enter the number of hours, days, or weeks to save events for. Then, select **hours**, **days**, or **weeks** from the drop-down list. As soon as there are events in the log older than this age, the library deletes them.
6. Press **Save Changes** to save the information.

## 10.5 Viewing and Editing Library Policies

This section describes how to view and edit policies for the physical library. The library uses these settings to determine the following:

- When to send alerts that the library's air filters need to be checked
- When to log off idle users
- What severity of events to e-mail or page users about

To view or edit policy settings for the physical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Access the Settings & Policies portlet. See [Section 10.1 on page 10-1](#).
3. Select **View/Edit Policies**. The View/Edit Policies page opens, as shown in [Figure 10-5](#).

The screenshot shows the 'VIEW/EDIT POLICIES' page. At the top, there are 'Save Changes' and 'Cancel Changes' buttons. Below the header, the 'Logical Mode' is set to 'Library: xisalpha.boulder.gualstar.com - Production'. The 'Policies' section contains the following settings:

Days until Air Filter Check:	120	days
Minutes before Logging Off Idle Users:	30	minutes
Event Severity to Email:	Major	
Event Severity to Page:	Critical	

At the bottom of the form, there are 'Save Changes' and 'Cancel Changes' buttons.

**Figure 10-5** View/Edit Policies page

**Note:** If you do not have permission to edit the physical library's policies, select **View Policies** to display a read-only version of this page.

- In the **Days until Air Filter Check** field, specify how often you want the library to send reminders to check the air filters. The default is 120 days.

**Important:** The system controller, power supplies, and drive carriers include cooling fans. The fans draw air through the filters behind the front grilles on LRMs and the XLS-89000 MEM and exhaust it out the back of the library. The filters keep dust and dirt from entering the library and protect the performance of the tape drives and media.

To ensure optimum read and write reliability, periodically check and replace the air filters. When the XLS is first installed, inspect the filters frequently. Then, as required for your operating environment, adjust the time specified for the **Days until Air Filter Check** field. See [Section 16.3 on page 16-3](#).

- In the **Minutes before Logging Off Idle Users** field, specify the maximum number of minutes that a user can be idle before being logged off the system automatically (see [Figure 3-6 on page 3-5](#)). The default session timeout value is 30 minutes.
- From the **Event Severity to Email** drop-down list, select a severity level. The XLS sends email alerts to specified recipients when events of this severity level or above occur. See [Figure 10-6](#).



**Figure 10-6** Specifying event severities for e-mail alerts

- From the **Event Severity to Page** drop-down list, select a severity level. The XLS sends pager alerts to specified recipients when events of this severity level or above occur.

8. Press **Save Changes** to save the information.

# 11 Managing Cartridges in the Physical Library

---

This chapter provides instructions for managing cartridges when the XLS is in physical mode.

**Important:** The instructions described in this chapter assume that the library is in physical mode. To perform these tasks while library is in logical mode, refer to [Chapter 6, “Managing Cartridges in a Logical Library.”](#)

## 11.1 Accessing Media Options for the Physical Library

As shown in [Figure 11-1](#), the Physical Library portlet contains options for managing cartridges when the XLS is in physical mode. To access the Physical Library portlet, see [Section 8.1 on page 8-1](#).

### Media and Tape Drives

[Open I/O Port](#)

[Import Media](#)

[Tape Drives](#)

[Export Media](#)

[Unlock Doors](#)

[Move Media](#)

[Lock Doors](#)

**Figure 11-1** Media and Tape Drive options on the Physical Library portlet

**Important:** The options you can select depend on which user group the user belongs to. If the user group has permission to perform all physical library tasks, all options are selectable. If the user group has permission to perform a subset of tasks, some of the options may not be selectable (grayed out).

[Table 11-1](#) lists the media and tape drive options that can be selected from the Physical Library portlet.

Option	Refer to...
View/Open I/O Port	<a href="#">Section 11.2.1 on page 11-3</a>
Tape Drives	<a href="#">Chapter 12, “Managing Tape Drives in the Physical Library”</a>
Unlock Doors	<a href="#">Section 11.4.1 on page 11-11</a>
Lock Doors	<a href="#">Section 11.4.2 on page 11-12</a>
Import Media	<a href="#">Section 11.2.2 on page 11-5</a>
Export Media	<a href="#">Section 11.3.1 on page 11-7</a>
Move Media	<a href="#">Section 11.5 on page 11-13</a>

**Table 11-1** Options for managing cartridges in the physical library

## 11.2 Importing Cartridges Using the I/O Ports

This section provides guidelines and instructions for importing cartridges into the physical library using the I/O ports.

### How this method differs from other methods:

- Unlike importing cartridges into a logical library, you must put the XLS in physical mode to complete this procedure.
- Unlike importing cartridges into the physical library using the doors, there is no need to wait while the library audits a large number of cartridge slots to re-establish its cartridge inventory.

**When to use this method:** Use this method to import cartridges if:

- A logical library does not have access to an I/O port and you are importing a relatively small number of cartridges at once.

**Important:** If you are importing a large number of cartridges, it may be faster to open the doors.

- You are replacing a cleaning cartridge in one of the library’s reserved slots.
- You are performing a maintenance function and the XLS is already in physical mode.

**Procedure overview:** [Table 11-2](#) provides an overview of importing cartridges into the physical library using the I/O ports.

Task	For instructions, refer to...
Determine the physical address of the destination cartridge slot or slots	<a href="#">Appendix A, “Library Addresses”</a>
Put the XLS in physical mode	<a href="#">Section 8.2.1 on page 8-4</a>
Open the I/O port	<a href="#">Section 11.2.1</a>
Insert one or more cartridges into the I/O port and push the port closed	<a href="#">“Inserting Cartridges into an I/O Port” on page 6-7</a>
Move the cartridges from the I/O port to specified locations in the physical library	<a href="#">Section 11.2.2 on page 11-5</a>
Put the XLS in logical mode	<a href="#">Section 8.2.2 on page 8-5</a>

**Table 11-2** Overview of importing cartridges into the physical library using the I/O ports

## 11.2.1 Opening an I/O Port

To open the I/O port, follow these steps:

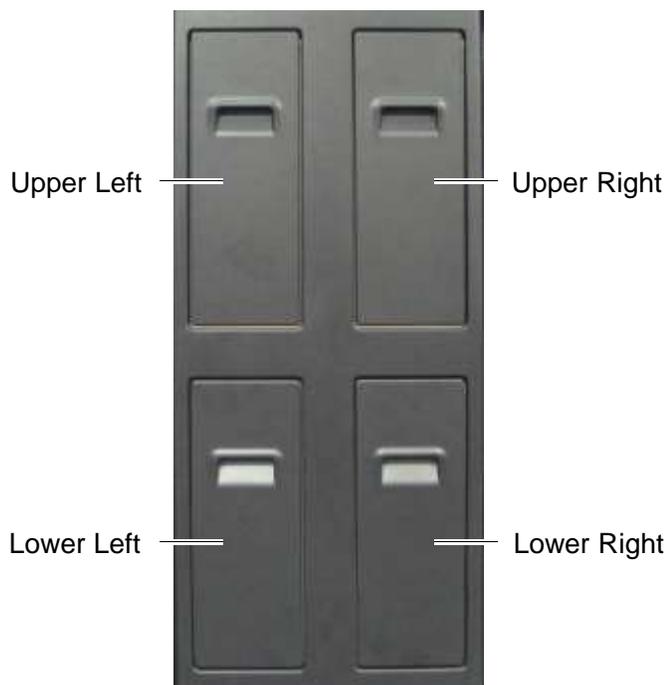
1. Put the XLS in physical mode. See [Section 8.2.1 on page 8-4](#).
2. From the Media and Tape Drives section of the Physical Library portlet, select **View/Open I/O Port**. The Open I/O Port page opens, as shown in [Figure 11-2](#).



**Figure 11-2** Open I/O Port page for the physical library

3. From the **Base Unit** drop-down list, select the LRM that contains the I/O port you want to open.

4. In the **Position** field, select the location of the I/O port. [Figure 11-3](#) shows the I/O port locations.



**Figure 11-3** Locations of the I/O ports

**Note:** You can select only those I/O ports that are closed.

5. Press **Open this Port** to open the I/O port. The library releases the I/O port's locking solenoid and the port opens automatically.
6. When the I/O port has opened, remove the magazine, insert the cartridges and push the port closed. See [“Inserting Cartridges into an I/O Port” on page 6-7](#).

## 11.2.2 Importing Cartridges to the Physical Library

After you insert cartridges into the I/O port, you must move them into the cartridge slots one at a time. To move cartridges from an I/O port, follow these steps:

1. From the Media and Tape Drives section of the Physical Library portlet, select **Import Media**. The Import Media page opens, as shown in [Figure 11-4](#).

The screenshot shows the 'IMPORT MEDIA' interface. At the top, there are buttons for 'Import Media' and 'Cancel Importing Media'. Below the title, the 'Physical Mode' is indicated. The library path is shown as 'Library: xdsalpha.boulder.qualstar.com'. The form is divided into two main sections: 'Source I/O Port Slot' and 'Destination Slot'. In the 'Source I/O Port Slot' section, 'Base Unit' is set to 'Base Unit 001', 'Position' is 'Upper Left', and 'Row' is '1'. In the 'Destination Slot' section, 'Base / Expansion Unit' is 'Base Unit 001', 'Facet' is 'A', 'Column' is 'A', and 'Row' is '1'. A legend indicates that a plus sign (+) denotes a required field. At the bottom of the form, there are again buttons for 'Import Media' and 'Cancel Importing Media'.

Figure 11-4 Import Media page for the physical library

2. Enter the physical address for the source I/O port slot, as follows:
  - a. From the **Base Unit** drop-down list, select the LRM that contains the I/O port you want to move the cartridge from.
  - b. In the **Position** field, select the location of the I/O port (lower left, lower right, upper left, upper right).
  - c. From the **Row** drop-down list, select the cartridge slot within the I/O port where the cartridge is located (10 is the top slot and 1 is the bottom slot).

**Note:** You can select only those slots that contain a cartridge.

3. Enter the physical address for the destination slot, as follows:
  - a. From the **Base/Expansion Unit** drop-down list, select the LRM or MEM where you want to move the imported cartridge to.
  - b. If you selected a LRM, select the column containing the cartridge slot from the **Column** drop-down list.  
  
or  
  
If you selected a MEM, select the facet containing the cartridge slot from the **Facet** drop-down list.
  - c. From the **Row** drop-down list, select the row containing the cartridge slot.

**Note:** You can select only those slots that do not contain a cartridge.
4. Press **Import Media** to move the cartridge from the I/O port slot into the library.
5. Put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#). When any logical libraries come online, the XLS returns Check Condition status to any new requests by the software applications, indicating that the inventory may have changed.

## 11.3 Exporting Cartridges Using the I/O Ports

This section provides guidelines and instructions for exporting one or more cartridges from the physical library using the I/O ports.

### How this method differs from other methods:

- Unlike exporting cartridges from a logical library, you must put the XLS in physical mode to complete this procedure.
- Unlike exporting cartridges from the physical library using the doors, there is no need to wait while the library audits a large number of cartridge slots to re-establish its cartridge inventory.

**When to use this method:** Use this method to export cartridges if:

- A logical library does not have access to an I/O port and you are exporting a relatively small number of cartridges at once.

<p><b>Important:</b> If you are exporting a large number of cartridges, it may be faster to open the doors.</p>
---

- You are replacing a cleaning cartridge in one of the library's reserved slots.
- You are performing a maintenance function and the XLS is already in physical mode.

**Procedure overview:** [Table 11-3](#) provides an overview of exporting cartridges from the physical library using the I/O ports.

Task	For instructions, refer to...
Determine the physical address of the source cartridges	<a href="#">Appendix A, "Library Addresses"</a>
Put the XLS in physical mode	<a href="#">Section 8.2.1 on page 8-4</a>
Move the cartridges from cartridge slots to the I/O ports	<a href="#">Section 11.3.1</a>
Open the I/O ports	<a href="#">Section 11.3.2 on page 11-9</a>
Remove the cartridges from the I/O ports and push the ports closed	<a href="#">"Removing Cartridges from an I/O Port" on page 6-11</a>
Put the XLS in logical mode	<a href="#">Section 8.2.2 on page 8-5</a>

**Table 11-3** Overview of exporting cartridges from the physical library using the I/O ports

### 11.3.1 Exporting Cartridges from the Physical Library

Before exporting cartridges from the physical library, you must move them from the library to an I/O port. To move cartridges to an I/O port, follow these steps:

1. Put the XLS in physical mode. See [Section 8.2.1 on page 8-4](#).
2. From the Media and Tape Drives section of the Physical Library portlet, select **Export Media**. The Export Media page opens, as shown in [Figure 11-5](#).

The screenshot shows the 'EXPORT MEDIA' interface. At the top right, there are buttons for 'Export Media' and 'Cancel Exporting Media'. The main area is divided into two sections: 'Source Slot' and 'Destination I/O Port Slot'. A legend indicates that a star symbol (\*) denotes a required field.

**Source Slot Configuration:**

- Library: xlsalpha.boulder.qualstar.com -
- Base / Expansion Unit: Base Unit 0001 \*
- Facet: A \*
- Column: A \*
- Row: 1 \*

**Destination I/O Port Slot Configuration:**

- Base Unit: Base Unit 001 \*
- Position: Upper Left \*
- Row: 1 \*

At the bottom of the page, there are buttons for 'Export Media' and 'Cancel Exporting Media'.

**Figure 11-5** Export Media page for the physical library

3. Enter the physical address of the source slot, as follows:
  - a. From the **Base/Expansion Unit** drop-down list, select the LRM or MEM that contains the cartridge you want to export.
  - b. If you selected a LRM, use the **Column** drop-down list to select the column containing the cartridge slot.

or

If you selected a MEM, use the **Facet** drop-down list to select the facet containing the cartridge slot.

- c. From the **Row** drop-down list, select the row containing the cartridge.

**Note:** You can select only those slots that actually contain a cartridge.

4. Enter information for the destination I/O port, as follows:
  - a. From the **Base Unit** drop-down list, select the LRM that contains the I/O port you want to load the cartridge into.
  - b. From the **Position** drop-down list, select the location of the I/O port. [Figure 11-6](#) shows the I/O port locations.



**Figure 11-6** Locations of the I/O ports

- c. From the **Row** drop-down list, select the cartridge slot within the I/O port that you want to export the cartridge from (10 is the top slot and 1 is the bottom slot).

**Note:** You can select only those slots that do not contain a cartridge.

5. Press **Export Media** to move the cartridge to the I/O port slot.

### 11.3.2 Opening an I/O Port

To open the I/O ports, follow these steps:

1. From the Media and Tape Drives section of the Physical Library portlet, select **Open I/O Port**. The Open I/O Port page opens, as shown in [Figure 11-7](#).



**Figure 11-7** Open I/O Port page for the physical library

2. From the **Base Unit** drop-down list, select the LRM that contains the I/O port you want to open.
3. In the **Position** field, select the location of the I/O port.
 

**Note:** You can select only those I/O ports that are closed.
4. Press **Open this Port** to open the I/O port. The library releases the I/O port's locking solenoid and the port opens automatically.
5. When the port opens, remove the cartridges, replace the magazines, then push the port closed. See [“Removing Cartridges from an I/O Port” on page 6-11](#).
6. Put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#). When any logical libraries come online, the XLS returns Check Condition status to any new requests by the software applications, indicating that the inventory may have changed.

## 11.4 Importing and Exporting Cartridges Using the Doors

This section provides guidelines and instructions for importing and exporting cartridges by opening the doors.

**Important:** To avoid lengthy delays, do not open the library's doors unnecessarily.

When you close and lock the library's doors, the library audits all potentially affected cartridge locations to re-establish its cartridge inventory. It can take more than 15 minutes to audit a fully-populated LRM with attached MEMs.

### How this method differs from other methods:

- Unlike importing and exporting cartridges in a logical library, the XLS must be in physical mode to complete this procedure.
- Unlike importing and exporting cartridges in the physical library using the I/O ports, you may need to wait while the library audits a large number of cartridge slots to re-establish its cartridge inventory.

**When to use this method:** Use this method to import and export cartridges if:

- A logical library does not have access to an I/O port and you are importing or exporting a large number of cartridges at once.

**Note:** If you are importing or exporting a small number of cartridges, it is generally faster to use the I/O ports.

- You are performing a maintenance function and the XLS is already in physical mode.

**Procedure overview:** [Table 11-4](#) provides an overview of importing and exporting cartridges using the doors.

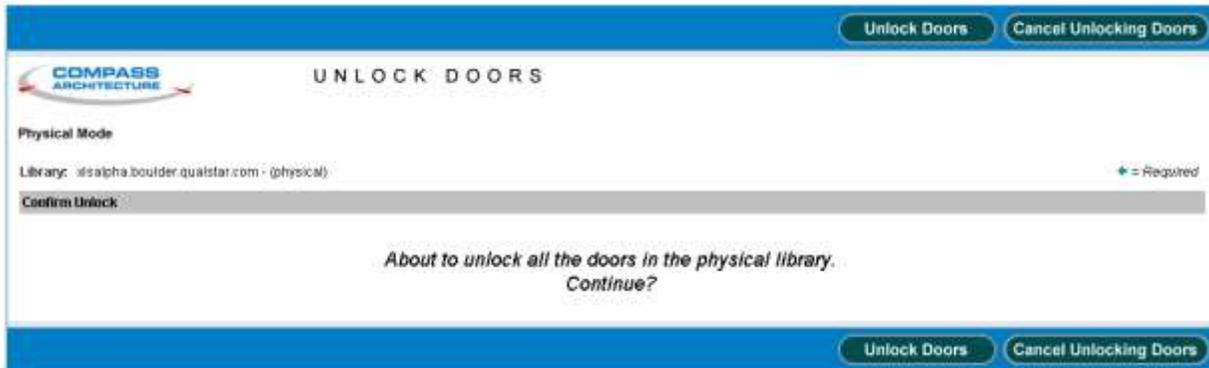
Task	For instructions, refer to...
Put the XLS in physical mode	<a href="#">Section 8.2.1 on page 8-4</a>
Unlock the doors and insert or remove the cartridges	<a href="#">Section 11.4.1</a>
Lock the doors	<a href="#">Section 11.4.2 on page 11-12</a>
Put the XLS in logical mode	<a href="#">Section 8.2.2 on page 8-5</a>

**Table 11-4** Overview of importing or exporting cartridges using the doors

## 11.4.1 Unlocking the Doors

To unlock and open the doors, follow these steps:

1. Put the XLS in physical mode. See [Section 8.2.1 on page 8-4](#).
2. From the Media and Tape Drives section of the Physical Library portlet, select **Unlock Doors**. The Unlock Doors page opens, as shown in [Figure 11-8](#).



**Figure 11-8** Unlock Doors page

3. Press **Unlock Doors**. The library performs the following actions:
  - It completes all current operations.
  - It parks the robotics.
  - It releases the solenoids controlling the electronic door locks, if they are installed.
  - It flashes the yellow Attention LED and displays a message on the touch screen, indicating that it is safe to open the doors.
4. When the yellow LED begins flashing and the message displays, use the key to unlatch the doors.

### CAUTION

To ensure that the robotics are securely parked and that the XLS has been put in physical mode, do not open the doors until the yellow LED begins to flash.

5. Pull the doors open.

**Important:** To reduce the time required for the library to become ready when you close the doors:

- Open as few doors as possible. This will help you avoid unnecessary violations of the “light curtain,” which is created by the Inventory Sentry sensors. When you close the door, the XLS automatically reinventories any violated areas.
- Leave the power on while the doors are open. Otherwise, the library will automatically reinventory the entire LRM and any attached MEMs when the power is reapplied.

6. Install or remove the cartridges.

### 11.4.2 Locking the Doors and Resuming Operation

To lock the doors and resume operation, follow these steps:

1. Close the doors and push the latches into place.
2. Lock the latches with the key and place the key in a safe location.
3. From the Media and Tape Drives section of the Physical Library portlet, select **Lock Doors**. The Lock Doors page opens, as shown in [Figure 11-9](#).

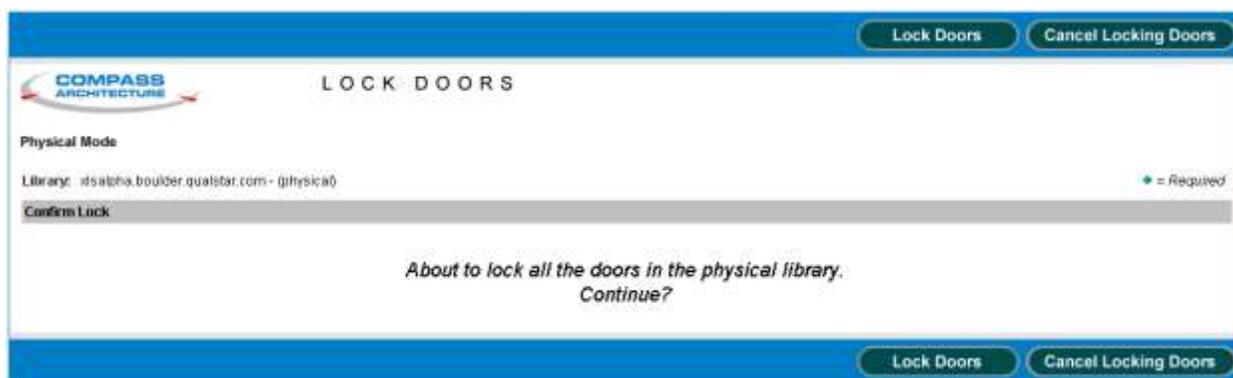


Figure 11-9 Lock Doors page

4. Press **Lock Doors**. The library performs the following actions:
  - It re-engages the solenoids controlling the electronic door locks, if they are installed.
  - It stops flashing the yellow Attention LED.

**Note:** If one or more I/O ports are open, the LED remains on but does not flash.

- It performs a cartridge inventory to determine the location of all tape drives and cartridges.
5. Put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#). When any logical libraries come online, the XLS returns Check Condition status to any new requests by the software applications, indicating that the inventory may have changed.

## 11.5 Moving Cartridges

This section provides instructions for moving cartridges from one location to another within the physical library. You may need to perform this function if, for example, you wanted to rearrange cartridges for maintenance purposes.

To move cartridges from one location in the physical library to another, follow these steps:

1. Put the XLS in physical mode. See [Section 8.2.1 on page 8-4](#).
2. From the Media and Tape Drives section of the Physical Library portlet, select **Move Media**. The Move Media page opens, as shown in [Figure 11-10](#).

Figure 11-10 Move Media page

3. Enter the physical address of the source and destination slots for the move media operation, as follows:
  - a. From the **Base/Expansion Unit** drop-down list, select the LRM or MEM that contains the cartridge slot.
  - b. If you selected a LRM, use the **Column** drop-down list to select the column containing the cartridge slot.  
  
or  
  
If you selected a MEM, use the **Facet** drop-down list to select the facet containing the cartridge slot.
  - c. From the **Row** drop-down list, select the row containing the cartridge slot.
4. Press **Move Media** to move the cartridge.
5. Put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#). When any logical libraries come online, the XLS returns Check Condition status to any new requests by the software applications, indicating that the inventory may have changed.

# 12 Managing Tape Drives in the Physical Library

This chapter provides instructions for managing all of the tape drives in the XLS, whether or not they have been assigned to a logical library.

**Important:** The instructions described in this chapter assume that the library is in physical mode. To perform these tasks while the library is in logical mode, refer to [Chapter 7, “Managing Tape Drives in a Logical Library.”](#)

## 12.1 Accessing Tape Drive Options for the Physical Library

The Physical Library portlet provides access to options for managing all of the tape drives in the XLS, whether or not they have been assigned to a logical library. To access the tape drive options, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Service View** or **Show All** to display the Physical Library portlet, shown in [Figure 12-1](#).

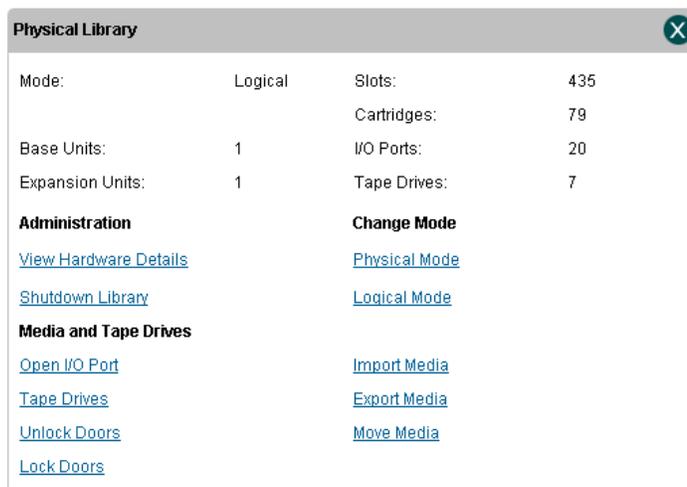


Figure 12-1 Physical Library portlet

- From the Media and Tape Drives section of the Physical Library portlet, select **Tape Drives**. The View/Manage Tape Drive page opens, as shown in [Figure 12-2](#).

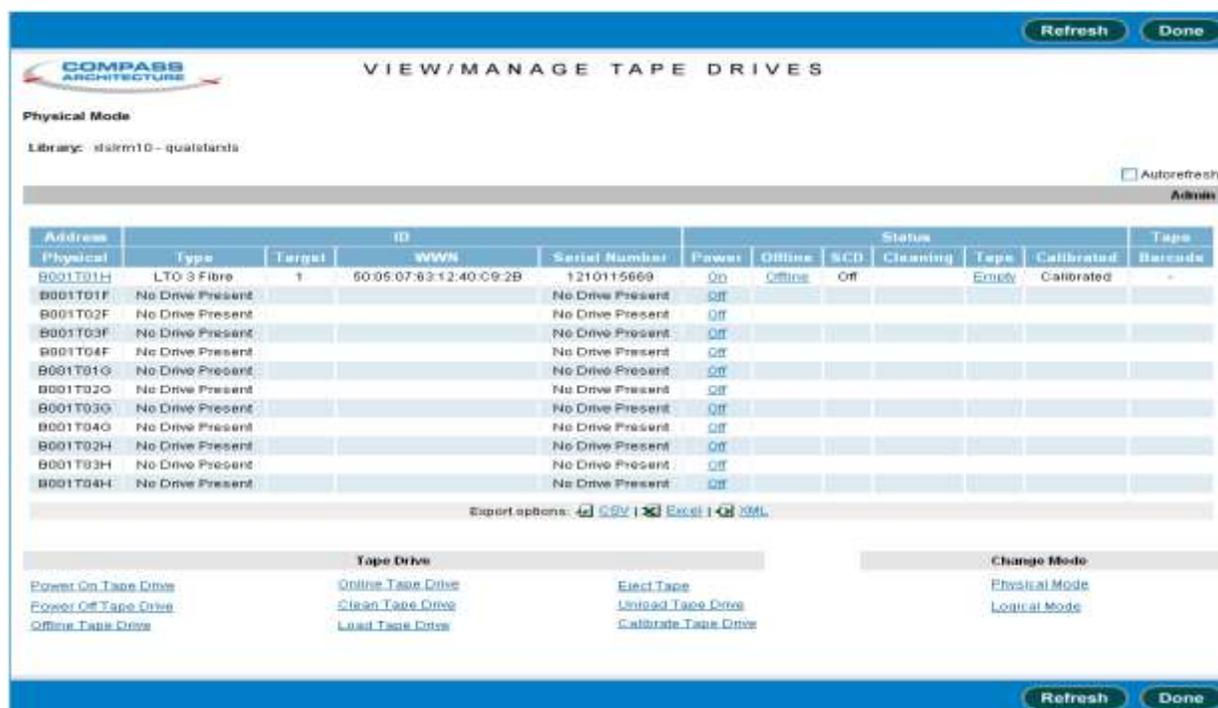


Figure 12-2 View/Manage Tape Drives page

[Table 12-1](#) describes the status information displayed for each tape drive.

Section	Field	Description
Address	Physical	<p>A unique physical address for the tape drive in the format BxxxTyyz, where:</p> <ul style="list-style-type: none"> <li>Bxxx is the LRM number</li> <li>T indicates that this is a tape drive</li> <li>yy is a number (01–04) indicating the position of the tape drive within the drive bay</li> <li>z is a letter (A–H) indicating the position of the drive bay within the LRM</li> </ul> <p>To view detailed information about the tape drive, select the underlined hyperlink. For more information about physical addresses, refer to <a href="#">Appendix A, “Library Addresses.”</a></p> <p><b>Note:</b> The Physical column lists the addresses of all tape drive positions, whether or not they contain a tape drive. If no tape drive is installed, the physical address is not selectable, the Type field displays “No Drive Present,” and all other fields in the row are blank.</p>

Table 12-1 Status information on the View/Manage Tape Drives page

Section	Field	Description
ID	Type	The tape drive type; for example, LTO 3 pSCSI or LTO 3 Fibre. If no tape drive is installed, this field displays "No Drive Present."
	Target	The target or SCSI ID currently assigned to the tape drive
	WWN	This value is an abbreviation for World Wide Node Name and will only appear when Fibre tape drives are installed in the library. The WWN value indicates the unique hardware address of the tape drive that is used when communicating in a network environment.
	Serial Number	The tape drive's serial number
Status	Power	<ul style="list-style-type: none"> <li>• <b>Off:</b> The tape drive is currently powered off. Select the underlined hyperlink to display the Power On Tape Drive page.</li> <li>• <b>On:</b> The tape drive is currently powered on. Select the underlined hyperlink to display the Power Off Tape Drive page.</li> </ul>
	Offline	<ul style="list-style-type: none"> <li>• <b>Offline:</b> The tape drive is currently offline to the software application. Select the underlined hyperlink to display the Bring Tape Drive Online page.</li> <li>• <b>Online:</b> The tape drive is currently online to the software application. Select the underlined hyperlink to display the Take Tape Drive Offline page.</li> </ul> <p><b>Note:</b> If the tape drive is powered off, you cannot bring it online.</p>
	SCD	The single-character-display (SCD) code for the tape drive. Select the underlined hyperlink to display a help page that provides information about each code. <b>Note:</b> If the tape drive is powered off, no SCD is shown.
	Cleaning	<ul style="list-style-type: none"> <li>• <b>Cleaning:</b> The tape drive is currently being cleaned.</li> <li>• <b>Requested:</b> The tape drive has requested that it be cleaned as soon as possible. Select the underlined hyperlink to display the Clean Tape Drive page.</li> <li>• <b>Mandatory:</b> The tape drive has requested that it be cleaned and is no longer able to read or write data. Select the underlined hyperlink to display the Clean Tape Drive page.</li> </ul> <p><b>Note:</b> You must take the logical library offline before you can clean a tape drive from X-Link.</p>
	Tape	<ul style="list-style-type: none"> <li>• <b>Empty:</b> The tape drive does not currently contain a cartridge. Select the underlined hyperlink to display the Load Tape Drive page.</li> <li>• <b>Ejected:</b> The tape drive has ejected the cartridge. Select the underlined hyperlink to display the Unload Tape Drive page.</li> <li>• <b>Loaded:</b> A cartridge is loaded into the tape drive. Select the underlined hyperlink to display the Eject Tape page.</li> </ul> <p><b>Note:</b> You must take the logical library offline before you can load a tape drive, unload a tape drive, or eject a tape from X-Link.</p>
Calibrated	<ul style="list-style-type: none"> <li>• <b>Calibrated:</b> The tape drive's position is calibrated.</li> <li>• <b>Uncalibrated:</b> The tape drive's position is not calibrated. Select the underlined hyperlink to display the Calibrate Tape Drive page.</li> </ul>	

**Table 12-1** Status information on the View/Manage Tape Drives page (*continued*)

Section	Field	Description
Tape	Barcode	If a cartridge is loaded into or ejected from the tape drive, the information from the cartridge's barcode label.

**Table 12-1** Status information on the View/Manage Tape Drives page (*continued*)

## 12.1.1 Tape Drive Options

Below the tape drive summary table are options for managing tape drives. See [Figure 12-3](#). You can select one of these options instead of selecting an underlined hyperlink in the table. However, if you select an option from the list, you must enter the physical address of the tape drive; if you select an underlined hyperlink, the tape drive address is filled in for you.

Tape Drive		
<a href="#">Power On Tape Drive</a>	<a href="#">Online Tape Drive</a>	<a href="#">Eject Tape</a>
<a href="#">Power Off Tape Drive</a>	<a href="#">Clean Tape Drive</a>	<a href="#">Unload Tape Drive</a>
<a href="#">Offline Tape Drive</a>	<a href="#">Load Tape Drive</a>	<a href="#">Calibrate Tape Drive</a>

**Figure 12-3** Tape Drive options on the View/Manage Tape Drives page

[Table 12-2](#) lists the Tape Drive options on the View/Manage Tape Drives page.

Option	Select this option to...	Refer to...
Power On Tape Drive	Apply power to a tape drive after replacing it	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Power Off Tape	Power off a tape drive before removing it	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Offline Tape Drive	Take a tape drive offline to the software application <b>Note:</b> You need take a tape drive offline only if you want to perform tape drive service operations while the logical library remains online.	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Online Tape Drive	Bring a tape drive online to the software application	<a href="#">Appendix B, “Replacing a Tape Drive”</a>
Clean Tape Drive	Clean a tape drive in the logical library <b>Note:</b> You must take the logical library offline before you can perform this operation.	<a href="#">Section 12.2 on page 12-5</a>
Load Tape Drive	Load a tape drive in the logical library <b>Note:</b> You must take the logical library offline before you can perform this operation.	<a href="#">Section 12.3 on page 12-7</a>

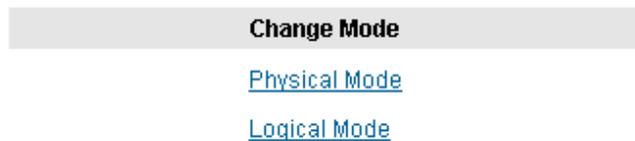
**Table 12-2** Tape Drive options on the View/Manage Tape Drives page

Option	Select this option to...	Refer to...
Eject Tape	Eject a tape from a tape drive in the logical library <b>Note:</b> You must take the logical library offline before you can perform this operation.	<a href="#">Section 12.4 on page 12-9</a>
Unload Tape Drive	Unload a tape drive in the logical library <b>Note:</b> You must take the logical library offline and eject the tape before you can perform this operation.	<a href="#">Section 12.5 on page 12-10</a>
Calibrate Tape Drive	Calibrate the position of a new tape drive (required only if you want to access the tape drive before bringing it online). <b>Note:</b> You can also use this option to recalibrate the location of an existing tape drive.	<a href="#">Appendix B, “Replacing a Tape Drive”</a>

**Table 12-2** Tape Drive options on the View/Manage Tape Drives page (*continued*)

## 12.1.2 Change Mode Options

Below the tape drive summary table are options for changing the operating mode of the XLS. See [Figure 12-4](#).



**Figure 12-4** Change Mode options on the View/Manage Tape Drives page

[Table 12-3](#) lists the Change Mode options on the View/Manage Tape Drives page.

Option	Select this option to...	Refer to...
Physical Mode	Put the XLS into physical mode	<a href="#">Section 8.2.1 on page 8-4</a>
Logical Mode	Put the XLS into logical mode	<a href="#">Section 8.2.2 on page 8-5</a>

**Table 12-3** Change Mode options on the View/Manage Tape Drives page

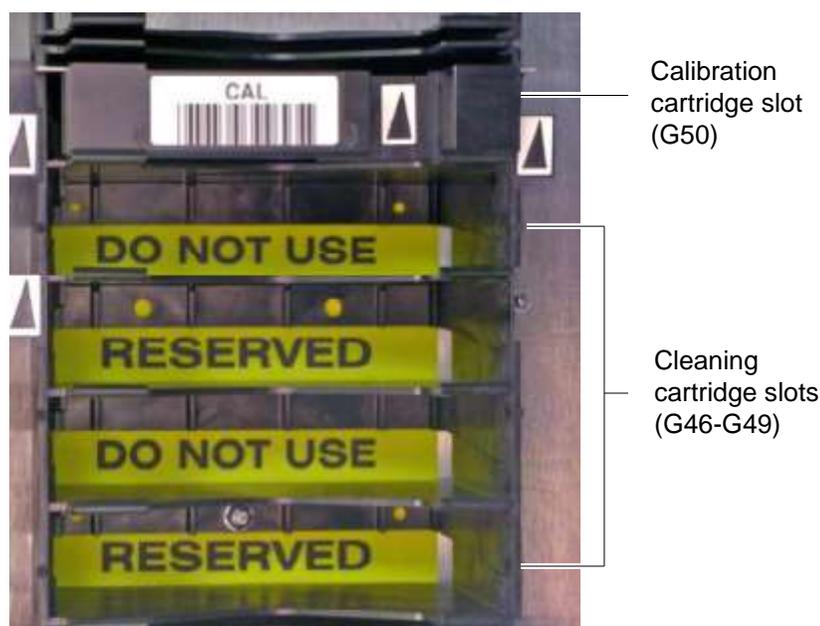
## 12.2 Cleaning a Tape Drive

This section provides guidelines and instructions for cleaning a tape drive in the physical library, when all the logical libraries are offline. When you request cleaning from X-Link, the XLS uses a cleaning cartridge stored in one of the library's four reserved cleaning

cartridge slots (see [Figure 12-5](#)). These cartridges are not available to the software applications.

### CAUTION

Before cleaning the tape drive from X-Link, ensure that it will not be automatically cleaned by the software application. **Never clean a tape drive unless absolutely required.** Cleaning a tape drive too frequently may damage the tape drive.



**Figure 12-5** Location of the reserved cleaning cartridge slots

To clean a tape drive in the physical library, follow these steps:

1. Confirm that a cleaning cartridge is stored in one of the slots reserved for cleaning cartridges. See [Figure 12-5](#).

**Important:** Be sure that the system-reserved slots contain cleaning cartridges only. Never install data cartridges in these slots.

2. Access the View/Manage Tape Drives page, as described in [Section 12.1 on page 12-1](#).
3. If the XLS is in logical mode, select **Physical Mode** from the Change Mode list. See [Section 8.2.1 on page 8-4](#).

- In the Status–Cleaning column of the tape drives table, select **Requested** or **Mandatory**.

**Important:** As an alternative, you can select **Clean Tape Drive** from the list of options below the table. However, if you select **Clean Tape Drive**, you must enter the physical address of the tape drive.

The Clean Tape Drive page opens, as shown in [Figure 12-6](#).

**Figure 12-6** Clean Tape Drive page for the physical library

- Press **Yes** to clean the tape drive. The handler moves a cleaning cartridge from one of the reserved slots into the tape drive, then inserts it. When the cleaning is complete, the tape drive ejects the cartridge and the handler returns it to the slot.
- Confirm that **Requested** or **Mandatory** is no longer reported in the Status–Cleaning column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

- Put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#).

## 12.3 Loading a Tape Drive

On rare occasions, you may need to load a cartridge into a tape drive manually, bypassing the software application.

To load a cartridge into a tape drive, follow these steps:

- Access the View/Manage Tape Drives page, as described in [Section 12.1 on page 12-1](#).

2. If the XLS is in logical mode, select **Physical Mode** from the Change Mode list. See [Section 8.2.1 on page 8-4](#).
3. In the Status–Tape column of the tape drives table, select **Empty**.

**Important:** As an alternative, you can select **Load Tape Drive** from the list of options below the table. However, if you select **Load Tape Drive**, you must enter the physical address of the tape drive.

The Load Tape Drive page opens, as shown in [Figure 12-7](#).

**Figure 12-7** Load Tape Drive page for the physical library

4. Enter information for the source slot, as follows:
    - a. From the **Base/Expansion Unit** drop-down list, select the LRM or MEM that contains the cartridge you want to load into the tape drive.
    - b. Identify which column or facet contains the cartridge to be loaded, as follows:
      - If you selected an LRM, use the **Column** drop-down list to select the column containing the cartridge slot.
      - If you selected a MEM, use the **Facet** drop-down list to select the facet containing the cartridge slot.
    - c. From the **Row** drop-down list, select the row containing the cartridge.
- Note:** You can select only those slots that actually contain a cartridge.
5. Press **Yes** to load the cartridge into the tape drive. The handler moves the cartridge from the slot to the tape drive, then inserts the cartridge.

6. Confirm that **Loaded** is now reported in the Status–Tape column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

7. When the operation is complete, put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#).

## 12.4 Ejecting a Tape from a Tape Drive

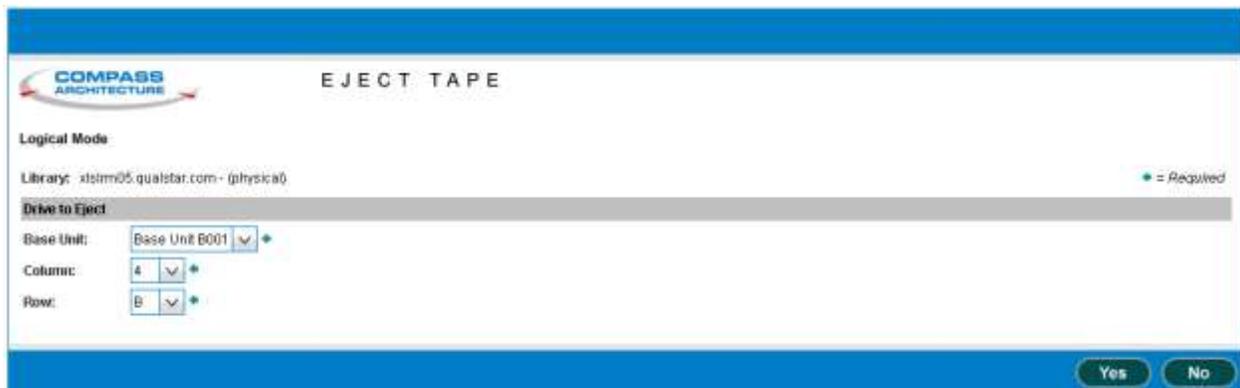
On rare occasions, you may need to instruct a tape drive to eject the tape before the cartridge can be unloaded from the tape drive.

To eject a tape from a tape drive in the physical library, follow these steps:

1. Access the View/Manage Tape Drives page, as described in [Section 12.1 on page 12-1](#).
2. If the XLS is in logical mode, select **Physical Mode** from the Change Mode list. See [Section 8.2.1 on page 8-4](#).
3. In the Status–Tape column of the tape drives table, select **Loaded**.

**Important:** As an alternative, you can select **Eject Tape** from the list of options below the table. However, if you select **Eject Tape**, you must enter the physical address of the tape drive.

The Eject Tape page opens, as shown in [Figure 12-8](#).



**Figure 12-8** Eject Tape page for the physical library

4. Press **Yes** to eject the tape from the tape drive.
5. Confirm that **Ejected** is now reported in the Status–Tape column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

6. As required, unload the tape from the tape drive. See [Section 12.5 on page 12-10](#).
7. When the operation is complete, put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#).

## 12.5 Unloading a Tape Drive

On rare occasions, you may need to unload a cartridge from a tape drive manually, bypassing the software application.

To unload a cartridge from a tape drive, follow these steps:

1. If the XLS is in logical mode, select **Physical Mode** from the Change Mode list. See [Section 8.2.1 on page 8-4](#).
2. In the Status–Tape column of the tape drives table, select **Ejected**.

**Important:** As an alternative, you can select **Unload Tape Drive** from the list of options below the table. However, if you select **Unload Tape Drive**, you must enter the physical address of the tape drive.

The Unload Tape Drive page opens, as shown in [Figure 12-9](#).

**Figure 12-9** Unload Tape Drive page for the physical library

3. Enter information for the destination slot, as follows:
  - a. From the **Base/Expansion Unit** drop-down list, select the LRM or MEM that contains the cartridge slot you want to place the unloaded cartridge into.
  - b. If you selected a LRM, use the **Column** drop-down list to select the column containing the cartridge slot.

or

If you selected a MEM, use the **Facet** drop-down list to select the facet containing the cartridge slot.

- c. From the **Row** drop-down list, select the row containing the cartridge slot.

**Note:** You can select only those slots that do not contain a cartridge.

4. Press **Yes** to unload the cartridge from the tape drive. The handler moves the cartridge from the tape drive to the slot.
5. Confirm that **Empty** is now reported in the Status–Tape column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

6. When the operation is complete, put the XLS in logical mode. See [Section 8.2.2 on page 8-5](#).

**Notes:**

This chapter provides instructions for viewing and deleting library events.

## 13.1 About Library Events

An event is a specific type of occurrence or change of state within the library. When an event occurs:

- It is recorded in the event log.
- It is noted on the Events portlet.
- The XLS can send an e-mail or pager alerts to specified users.

Depending on the severity of the event, the XLS administrator may need to take corrective action to ensure that XLS operations can continue.

### 13.1.1 Event Severities

As shown in [Table 13-1](#), each event is assigned a severity level that can help determine what the operator's response should be.

Severity level	Indicates....
Fatal/Non-recoverable	An error has occurred; however, is too late to take remedial action. For example, a motor failed and the library is no longer operational.
Critical	A serious error has occurred and immediate operator intervention is required to keep the library operational. For example, the inventory scan failed when an I/O port was closed.
Major	There was a change to a library setting and <i>immediate</i> operator intervention is required. However, the library is still operating. For example, a door was opened or a tape drive was removed.

**Table 13-1** Severity levels for events

Severity level	Indicates....
Minor	There was a change to a library setting and operator intervention is required. However, the situation is not serious right now. For example, an I/O port was opened.
Degraded/Warning	There was a change to a library setting and operator intervention may be required. For example, a tape drive was taken offline.
Information	There was a change to a library setting, but it did not affect library functionality. The library continued operating normally without operator intervention. For example, an I/O port was closed or an inventory scan was completed.
Unknown	The severity of the event is unknown.

**Table 13-1** Severity levels for events (*continued*)

## 13.2 Managing Library Events

Depending on the permissions set up for the user group, a user can perform the following tasks related to events:

- Access the event log. See [Section 13.2.1](#).
- Use the View/Manage Event Log page. See [Section 13.2.2 on page 13-4](#).
- Search for events that contain a specific message or that occurred within a specific time period. See [Section 13.2.3 on page 13-7](#).
- Delete events. See [Section 13.2.4 on page 13-8](#).
- Export the event log to a file. See [Section 3.6.2 on page 3-21](#).

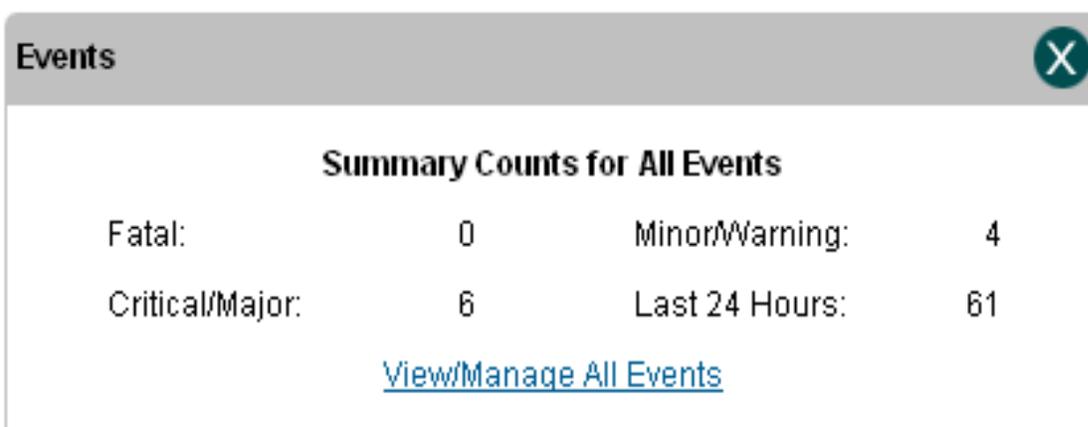
### 13.2.1 Accessing the Event Log

The XLS maintains a single, comprehensive log of all library events. Depending on your role in using the XLS, you may want to access the entire event log, which includes all physical library and logical library events, or a logical library's event log, which includes a subset of the events that affect the logical library (for example, an I/O port being opened or closed).

## Assessing the Entire Event Log

To access the entire event log (includes all physical library and logical library events), follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Service View** or **Show All** to display the Events portlet, shown in [Figure 13-1](#). The Events portlet indicates how many fatal, critical/major, and minor/warning events have occurred in the past 24 hours.



**Figure 13-1** Events portlet

3. Select **View/Manage Event Log**. The View/Manage Event Log page opens. See [Figure 13-3 on page 13-6](#).

**Note:** If you do not have permission to edit the event log, select **View Event Log** to display a read-only version of this page.

## Accessing a Logical Library Event Log

Each logical library has its own event log, which is a subset of the event log for the entire library. To view the event log for a logical library, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Logical Library View** or **Show All** to display the Logical Libraries portlet, as described in [Section 5.3 on page 5-4](#).
3. Select the radio button to the left of the logical library name, then select **Event Log** from the Administration and Configuration list.

or

In the Events columns of the logical libraries table, select any of the underlined numbers. (This automatically selects the radio button for the logical library.)

The View/Manage Event Log page opens, showing the events for the logical library only. See [Figure 13-2 on page 13-5](#).

### 13.2.2 Using the View/Manage Event Log page

[Figure 13-2 on page 13-5](#) shows the View/Manage Event Log page for the entire library; the event log for a logical library uses the same format but includes only those events that affect the logical library.

**COMPASS ARCHITECTURE** VIEW/MANAGE EVENT LOG

Physical Mode

Library is xlsirm10 - (All Libraries)

Date/Time

is between 2007/05/03 02:55 PM and 2007/05/03 02:55 PM (inclusively)

last 24 hours

is at 2007/05/03 02:55 PM

is any date/time

Message contains

Resource contains

Severity is Any Severity

Select All Deselect All Invert All Delete Selected Events Delete All Events

173 items found, displaying 1 to 20.  
[First/Prev] 1, 2, 3, 4, 5, 6, 7, 8 [Next/Last]

Event Time	Event Type	Severity	Resource	Message	Action
2007/05/03 13:51:02.000	LibraryAuditFinished	Warning	Library	An audit has finished on library xlsirm10. Sq_4214, -6616	<a href="#">View</a>
2007/05/03 13:51:00.000	LimitedAccessPortError	Major	IOPort	The qualstands Upper Right IOPort (Base Unit: 001 I/O Port, Row: 02, Column: M) on library xlsirm10 did not scan successfully: Scan ioport fids failed (-136).	<a href="#">View</a>
2007/05/03 13:50:51.001	LimitedAccessPortError	Major	IOPort	The qualstands Upper Left IOPort (Base Unit: 001 I/O Port, Row: 02, Column: L) on library xlsirm10 did not scan successfully: Scan ioport fids failed (-136).	<a href="#">View</a>
2007/05/03 13:50:51.000	DriveBayStatusChange	Warning	DriveBay	The Base Unit: 001 Drive Bay, Row: 01 status has changed from Bay Power Not Good to Bay Power Good on library xlsirm10.	<a href="#">View</a>
2007/05/03	DriveBayStatusChange	Warning	DriveBay	The Base Unit: 001 Drive Bay, Row: 01 status has changed from Bay Power Not	

**Figure 13-2** View/Manage Event Log page

The bottom half of the page is the event log, which includes the following information for each event:

- **Event Time:** The date and time the event occurred.
- **Event Type:** The event's type.
- **Severity:** The severity of the event. See [Table 13-1 on page 13-1](#).
- **Resource:** The XLS component that experienced the event.
- **Message:** A longer description of the event.
- **Action:** A link to more information about the event.

When reviewing library events, you can:

- Scroll through the event log using the scroll bar on your browser or by selecting the page links (**[First/Prev]**, **1**, **2**, **3**,..., **[Next/Last]**) at the top and bottom of the table.
- Search for events that occurred at a specific time or with a specific severity. See [Section 13.2.3 on page 13-7](#).
- Sort the log in ascending or descending order by the contents of a column. See [Section 3.6.1 on page 3-20](#).
- Export the log to an CSV, Excel, or XML file. See [Section 3.6.2 on page 3-21](#).

- Delete selected events. See [Section 13.2.4 on page 13-8](#).
- Display new events that have occurred since you accessed the page by pressing **Refresh**.
- Display detailed information about a particular event by selecting **View** in the Action column. The View Event page opens, as shown in [Figure 13-3](#).



Figure 13-3 View Event page

[Table 13-2](#) describes each field shown in [Figure 13-3](#).

Field	Indicates
<b>Event Log Entry</b>	
Summary	A description of the event
Type	The event's type
Severity	The severity of the event; see <a href="#">Table 13-1 on page 13-1</a>
Resource	The XLS component that experienced the event
Time/Date	The date and time the event occurred
<b>Event Attribute</b>	
KEY	One or more explanatory keywords for this event
VALUE	The value of the keywords for this event

Table 13-2 Field definitions for View Event page

### 13.2.3 Searching for Events

To search for particular events for a physical or logical library, follow these steps:

1. Access the View/Manage Event Log page for the library, as described in [Section 13.2.1 on page 13-2](#).
2. From the View/Manage Event Log page (see [Figure 13-2 on page 13-5](#)), specify the dates and times the events occurred in the **Date/Time** field, as shown in [Table 13-3](#).

Select...	If the...
is between	Events occurred between two dates and times
last 24 hours	Events occurred in the past 24 hours
is at	Events occurred exactly at a certain date and time
is before	Events occurred before a particular date and time
is at or before	Events occurred at or before a particular date and time
is after	Events occurred after a particular date and time
is at or after	Events occurred at or after a particular date and time
is any date/time	Dates and times of the events are not important

**Table 13-3** Specifying the date and time

3. As required, enter the date and time in the **Date/Time** field. See [Section 3.5 on page 3-19](#).
4. Optionally, enter any part of the message contained in the events in the **Message contains** field. The field is case-insensitive.
5. Optionally, enter any part of the name of the XLS component that triggered the events in the **Resource contains** field. The field is case-insensitive.
6. Select the severity of the events that are to be displayed, as follows:
  - If the severity of the events is not important, select **Any Severity**.
  - If you want to see events of a particular severity, select **Fatal**, **Critical**, **Major**, **Minor**, **Warning**, **Information**, or **Unknown**.
7. Press **Search**.

## 13.2.4 Deleting Events

This section describes how to delete one or more events from the event log.

**Important:** The XLS may automatically delete events from the log, using the criteria set with the View/Edit Event Log Settings selection on the Settings & Policies portlet. Refer to [Section 10.4 on page 10-4](#).

To delete one or more events from the event log, follow these steps:

1. Access the View/Manage Event Log page, as described in [Section 13.2.1 on page 13-2](#).
2. As required, search for the types of events you want to delete, as described in [Section 13.2.3 on page 13-7](#). For example, if you want to delete all events with a severity level of Information that occurred before August 1, 2005, specify the following, then press **Search**:
  - **Date/Time:** is before 2005/8/01 12:00 AM
  - **Severity:** Information
3. From the View/Manage Event Log page, select the exact events to be deleted, as shown in [Table 13-4](#).

Press	To...
Individual check boxes	Select individual events
Select All	Select all events that are currently displayed
Deselect All	Clear all events that are currently selected
Invert All	Invert the selections. <b>Invert All</b> clears all events that are selected and selects all events that are not selected.

**Table 13-4** Selecting events to delete

4. Select **Delete Selected Events**. A confirmation message appears on the page to indicate that the selected events were deleted.

# 14 Encryption Key Management

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Library Managed Encryption (LME) is available for XLS customers who need to encrypt and decrypt cartridges but do not have an application (backup/recovery, archive, HSM, etc.) that supports encryption/decryption.

Features of XLS LME:

1. Single key per partition.
2. Each partition can use the same key or a different key.
3. Many keys can be resident on the XLS, each with their own alias, for easy identification of the key.
4. When encryption is enabled for a partition, all cartridges in the partition are encrypted and decrypted with the same key.
5. Keys may be imported and exported for use with other XLS models and with Qualstar RLS-8500/8350 libraries, allowing interchange of encrypted cartridges.
6. Separate administrator sign-in for administering encryption, enhancing the security of encryption and keys.
7. Icon on the X-Link main screen that indicates whether that partition has encryption enabled, making it easy to confirm that encryption is enabled or not.
8. Keys can be backed up and recovered from the customer's network file system and/or the customer's local disk, allowing a safe non-resident copy of keys should they need to be restored or sent to another site.

**Note:** Keys are not like passwords—they cannot be reset, recreated, nor recovered if lost. The only way to restore a key is to load it from a backup copy of the keystore file. It is the responsibility of the XLS Encryption Administrator to backup all keys and to record any passwords used to save those keystore backup files.

When running the XLS with applications that are encryption-enabled, it is advisable to utilize Application Managed Encryption (AME) if it is offered by the backup/archive/HSM application, not the XLS LME. Some application software, including Backup Exec, turn off encryption at the drive if the customer has not selected encryption, which overrides the LME in the XLS.

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### XLS Encryption Key Management Quick Start:

1. Determine the encryption strategy, such as: if you need to write encrypted and unencrypted cartridges at the same time i.e. without user intervention, then you will need to have separate partitions for each.
2. Choose the administrator password, the alias (as many as you need) and the keystore password. Keep a secure record of the passwords and begin a record of which tapes are written with which alias.
3. Stop the application(s) that control the library and write or read the drives during this process.
4. Sign-into X-Link, and then to the Encryption Key Management console on the Service View of X-Link, initially with the default password; later using your password.
5. Change the XLS Encryption Administrator password to the password you chose in Step 2.
6. Create the key(s) using the alias(s) chosen above.
7. Export and download a copy of all of the keys you have created using the "View/Manage Keys" screen. Use the check boxes to select the keys and then browse to the location where you will save the keystore. Use the keystore password you chose in step 2.
8. Enable the key you want to use using the "View/Manage Encryption Configuration" screen. First make the partition off-line, select the alias, select the partition, select the "Enable" option, and then choose "Configure Partition".
9. Repeat for each partition where encryption is utilized.
10. The encryption state for each drive can be confirmed on the "Drive Statuses" screen.
11. You can make the partition on-line via the "View/Manage Encryption Configuration" screen, or back at the X-Link Logical Library home screen.
12. At the X-Link Logical Library home screen, you will see the X-Link LME enabled logo on the partition you selected.
13. Restart the application(s). It is advisable to do a sample write to tape and subsequent read and verification of the information written to insure that everything is working normally.

## 14.1 About Encryption Key Management

The configuration is on a per logical library (partition) basis meaning that each logical library is configured independently of the other logical libraries in the system. Once a key is assigned to a partition and encryption is enabled, all data written to tape cartridges belonging to that partition will be encrypted using the key for that partition. Trying to read an encrypted tape cartridge with a different encryption key or no key will result in a data protect error in which case the tape will not read.

**Note:** The XLS must have RAID enabled disks and a USB flash drive mounted to modify the keystore.

### 14.1.1 Accessing the Encryption Key Management Home Portlet

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Service View** or **Show All** to display the Service portlet, shown in [Figure 14-1](#).

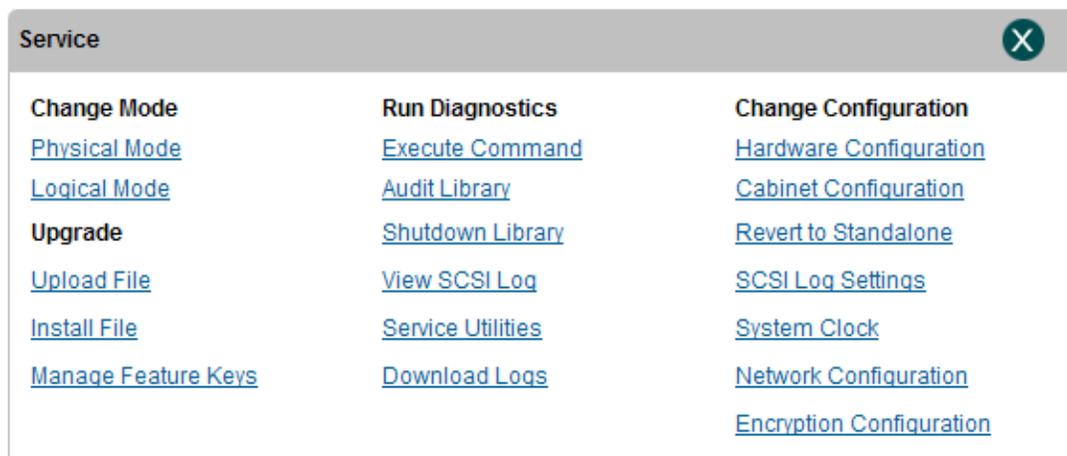


Figure 14-1 Service portlet

3. Select **Encryption Configuration** which will bring up the encryption administration utilities log-in page.



**Figure 14-2** Encryption Administration Utilities Log-in page

4. Type in your encryption administrator ID and password, then press **Log In**.

## 14.2 The Encryption Key Management portlet

The Encryption Key Management Home portlet is the starting point for configuring library encryption management in the XLS.

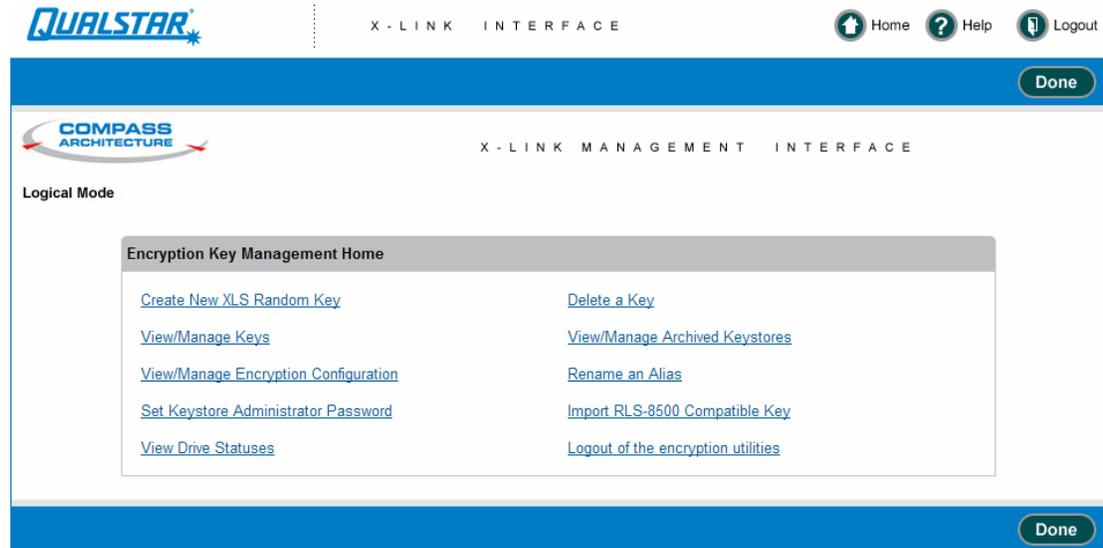


Figure 14-3 Encryption Key Management Home portlet

### 14.2.1 Create New XLS Random Key

The XLS keystore maintains a collection of keys known as the keystore. Keys are identified as alias, which is just an arbitrary string. This page allows users to add new keys to the keystore. Creating a new key will fail if the alias already identifies an existing key in the keystore. Adding a key to the keystore does not change the encryption configuration for any logical libraries, it simply makes the key available to the system.

Select **Create New XLS Random Key**. The **Create New XLS Random Key** page opens as shown in [Figure 14-4](#).

The screenshot shows the 'X-LINK MANAGEMENT INTERFACE' with a 'Logical Mode' section. A form titled 'Create New XLS Encryption Key' is displayed. It includes two input fields: 'Alias:' and 'Label:'. The 'Alias:' field is marked with a blue asterisk, indicating it is required. The 'Label:' field is marked with a blue plus sign, indicating it is optional. A 'Create New Key' button is located below the input fields. The page also features a 'Done' button in the top right corner and a 'Home' button in the top right corner of the interface.

**Figure 14-4** Create New XLS Random Key page

1. Type in the alias for the newly created key. The alias serves as an identifier for the key and attempting to create a new key with an alias that already exists in the keystore will fail. Existing keys will not be overwritten by this operation.
2. As an option, a label may also be typed in that can be stored with the key. It can be used to help users describe a particular key.
3. Press **Done** after the desired information has been entered.

### 14.2.2 View/Manage Keys

The XLS keystore maintains a collection of keys known as the keystone. This page displays the keystone contents in the form of aliases and checksums of the binary key material. This page DOES NOT display the raw key data, nor does any other page. There are also options to export all or some of the keys from the keystore viewed on this page.

Select **View/Manage Keys**. The **View/Manage Keys** page opens as shown in [Figure 14-5](#).



**Figure 14-5** View/Manage Keys page

When a user does an export by clicking the **Export Selected Keys** button, a file is created that contains the selected keys in an encrypted format. The password is used for the encryption so it is important to choose a strong password. The new file can then be downloaded by users for archival purposes.

**Note:** If a user forgets the password used to create the exported keystore, the exported keystore cannot be recovered by any means.

**Password:** The password field is used to specify a password for the exported keystore. Keystores are exported in an encrypted format so that key security is retained. One can only recover the keys with the password provided at export time. **If a user forgets the password used to create the exported keystore, the exported keystore cannot be recovered by any means.**

**Re-enter Password:** Make users re-enter passwords to make sure there are no typos in the input password.

**Export RLS-8500 Keystore:** The checkbox creates a keystore file suitable for transporting the keys to an RLS-8500 library. If the box is not checked, the resulting exported keystore will only be compatible with other XLS libraries.

**Selection:** The selection check boxes are used to choose which keys will be exported. This allows exporting a subset of the current keys for archival purposes or to transport keys to another library.

### 14.2.3 View/Manage Encryption Configuration

The XLS allows a single key per logical library (partition) in the library. This screen allows users to enable/disable encryption for each logical library, as well as choosing a key for each library.

**Note:** The same key may be used in more than one logical library.

Modifying encryption configuration for the logical library requires the logical library to be **offline** to the host application. The steps for configuring encryption for a logical library are:

- Take the logical library offline
- Select the enable/disable and a key and press the Configure Partition button
- Bring the logical library back online

Select **View/Manage Encryption Configuration**. The **View/Manage Encryption Configuration** page opens as shown in [Figure 14-6](#).

The screenshot displays the 'X-LINK MANAGEMENT INTERFACE' for 'COMPASS ARCHITECTURE'. The main section is titled 'Configure Partition for Encryption'. It includes a dropdown menu for 'Alias' (currently set to 'Select an alias...'), a dropdown for 'Partition' (set to '0'), and radio buttons for 'Enable' and 'Disable'. A 'Configure Partition' button is located below these options. Below the configuration section is a table titled 'Current Configuration' with the following data:

Partition	Library Name	Library Status	Encrypted?	Size
0	qualstar1	Offline	true	Qualstar1
1	n/a	Online	false	
2	n/a	Online	false	
3	n/a	Online	false	
4	n/a	Online	false	
5	n/a	Online	false	
6	n/a	Online	false	
7	n/a	Online	false	

**Figure 14-6** View/Manage Encryption Configuration page

**Alias:** This selects which key will be used when enabling encryption for a logical library.

**Partition:** Selects which partition (logical Library) to configure. The partition number is shown in the table at the bottom of the page.

**Enable/Disable:** This selects whether to enable or disable encryption for the selected library. If enable is checked, an alias must also be selected in the Alias dropdown. If disable is checked, the Alias field is ignored.

The steps to enable encryption for a logical library are:

1. Take the logical library offline, if it is not already offline.
2. Select an alias (key) to be used for the logical library from the drop down.
3. Select a partition from the dropdown. The mapping between partition number and logical library is shown in the table at the bottom of the screen.
4. Check the Enable button.
5. Press the Configure Partition button.
6. Bring the logical library back online after the command successfully completes.

The steps to disable encryption for a logical library are:

1. Take the logical library offline, if it is not already offline.
2. Select a partition from the dropdown. The mapping between partition number and logical library is shown in the table at the bottom of the screen.
3. Check the Disable button.
4. Press the Configure Partition button.
5. Bring the logical library back online after the command successfully completes.

#### **14.2.4 Set Keystore Administrator Password**

The Encryption Administrator is a special login to provide additional security. This page allows a user to modify the login password for the encryption administrator.

Select **Set Keystore Administrator Password**. The **Set Keystore Administrator Password** page opens as shown in [Figure 14-7](#).

The screenshot shows the 'Set Keystore Administrator Password' page within the 'X-LINK MANAGEMENT INTERFACE'. The page header includes the 'QUALSTAR' logo, 'X-LINK INTERFACE', and navigation links for 'Home', 'Help', and 'Logout'. Below the header is a blue bar with a 'Done' button. The main content area features the 'COMPASS ARCHITECTURE' logo and 'X-LINK MANAGEMENT INTERFACE' text. The page is in 'Logical Mode'. The central form is titled 'Set Keystore Administrator Password' and contains the following fields and controls:

- Current Keystore Admin Username: **admin** (with a required field indicator)
- Current Keystore Admin Password:  (with a required field indicator)
- New Password:  (with a required field indicator)
- Re-Enter New Password:  (with a required field indicator)
- 

A blue bar at the bottom of the form area contains a 'Done' button.

**Figure 14-7** Set Keystore Administrator Password page

**Current Keystore Password:** The password for the currently logged in keystore administrator. This makes sure that in the event that a browser is left unattended, a random person can not use it to change the password.

**New Keystore Password:** The new password.

**Re-Enter New Keystore Password:** Re-Enter the new password to prevent typos.

### 14.2.5 View Drive Statuses

This page provides a low level view of drive state. Typical use is to verify that drives have encryption enabled/disabled. the page supplies lots of information and most of it is queried live from the drive to prevent displaying out of date information.

Select **View Drive Statuses**. The **View Drive Statuses** page opens as shown in [Figure 14-8](#).

Partition / Library Name / SCSI ID	Chad	DRC ID	Firmware	DRC Firmware	DRC Name	Enc./Cap. Used	Current File Size	SCC
0 / qualstacks / 40000	B001T01D	0x44	SBHE	0.0.4	00:00:07:03:12:49:23:60	2 / 2	5040 zpm	Def
0 / qualstacks / 40001	B002T04E	0x01	SBHE	0.0.4	00:00:07:03:12:4A:09:77	2 / 3	5040 zpm	Def
1 / XLS_part2 / 40000	B001T01A	0x14	SBHE	0.0.4	00:00:07:03:12:47:C2:1F	0 / 0	0160 zpm	Def
1 / XLS_part2 / 40001	B001T04A	0x11	SBHE	0.0.4	00:00:07:03:12:4A:07:03	0 / 0	0160 zpm	Def
1 / XLS_part2 / 40002	B001T04D	0x41	SBHE	0.0.4	00:00:07:03:12:40:00:04	0 / 0	0100 zpm	Def
1 / XLS_part2 / 40003	B002T02E	0x53	SBHE	0.0.4	00:00:07:03:12:4A:07:79	0 / 0	0220 zpm	Def
unassigned	B001T02A	0x13					n/a	
unassigned	B001T03A	0x12					n/a	
unassigned	B001T01B	0x24					n/a	
unassigned	B001T02B	0x25					n/a	
unassigned	B001T03B	0x22					n/a	
unassigned	B001T04B	0x21		1.1.1	n/a		n/a	
unassigned	B001T01C	0x34					n/a	
unassigned	B001T02C	0x33					n/a	
unassigned	B001T03C	0x32					n/a	
unassigned	B001T04C	0x31					n/a	
unassigned	B001T02D	0x43					n/a	
unassigned	B001T03D	0x42					n/a	
unassigned	B002T01E	0x54					n/a	
unassigned	B002T03E	0x52					n/a	

**Figure 14-8** View Drive Statuses page

Displayed Fields For Each Drive:

**Partition / Library Name / SCSI id:** If a drive is assigned to a logical library this column shows the following data:

- **Partition** - an identifier for a logical library.
- **Library Name** - the name of the logical library this drive is assigned to.
- **SCSI id** - the SCSI element address for this drive

For example, if the entry was 4 / Engineering / 40003, it means the drive is assigned to the “Engineering” library (which can also be identified by Partition 4) and has SCSI address 40003. If a drive is not assigned to any logical libraries, the field shows “unassigned”.

**Chad:** The physical location of the drive.

**DRC id:** This is an internal drive identifier.

**Firmware:** The drive’s firmware revision.

**DRC Firmware:** The drive carrier's firmware revision.

**World Wide Name:** The world wide name reported by the drive.

**Enc/Dec Mode:** This field does a live query to the drive asking about the internal encryption state. When encryption is **disabled** this field reports **0 / 0**. When encryption **enabled** this field should be **2 / 3**. If the library was unable to get a status from the drive, this field shows "error"

**Carrier Fan Tach:** This field reports the speed of the fan in the drive carrier assembly.

**SCD:** The single character display as reported by the drive, if any.

### 14.2.6 Delete a Key

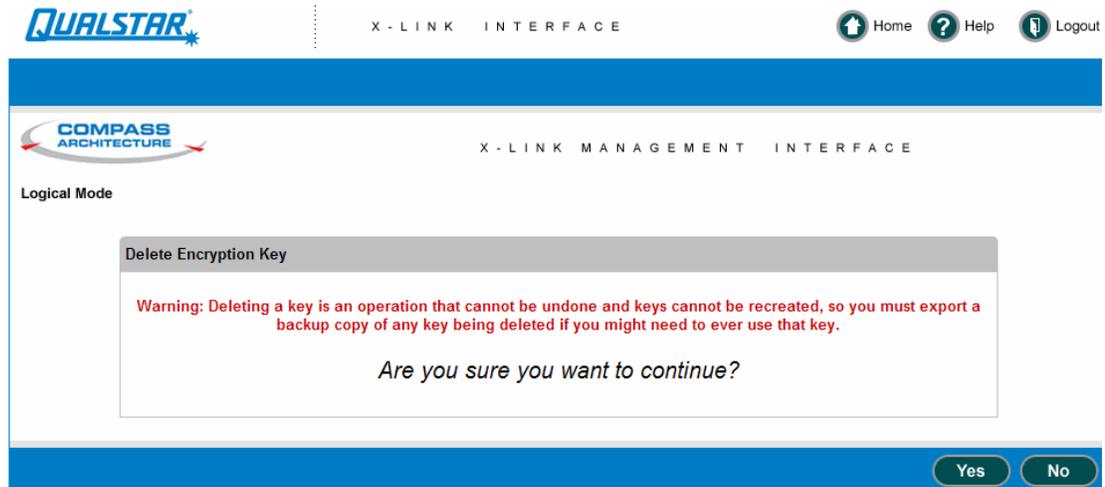
The XLS keystore maintains a collection of keys known as a keystore. This page lets users remove keys from the keystore.

**Note:** The XLS will not allow deleting keys that are currently in use.

#### CAUTION

Deleting a key is a irreversible operation and should not be taken lightly. **If a key might be needed in the future, it is the user's responsibility to export a copy of the key before deleting it from the XLS's keystore.** There is no way to re-create a key that has been deleted. The implication is that if a key is deleted, there is simply no way to recover data written to tapes with the deleted key.

Select **Delete a Key**. The **Delete a Key** warning page opens as shown in [Figure 14-9](#).



**Figure 14-9** Delete a Key warning page

After Yes has been selected the **Delete a Key** page will appear as shown in [Figure 14-10](#).



**Figure 14-10** Delete a Key page

**Alias:** The alias for the key to delete.

**Re-enter Alias:** Repeat the alias to help prevent typos and selecting the incorrect key.

**Encryption Administrator Password:** The password for the keystore administrator. even though the user must be logged in to the encryption key management we make the

user enter the password here. Deleting a key is an irreversible operation and should be treated with care.

### 14.2.7 View/Manage Archived Keystores

This page allows user's to upload and download keystores from the XLS. From this screen, a user can also restore an archived keystore to the live XLS keystore. Also, a user can display an RLS-8500 compatible keystore directly in XLink without having to download it. The XLS keystore format is a non-human readable file that is encrypted while the RLS compatible files a human readable XML used to transport keys to and from an RLS-8500.

The only way to retrieve a deleted key is from a backup copy. Creating a key with the prior alias will **NOT** create the prior key.

Select **View/Manage Archived Keystores**. The **View/Manage Archived Keystores** page opens as shown in [Figure 14-11](#).

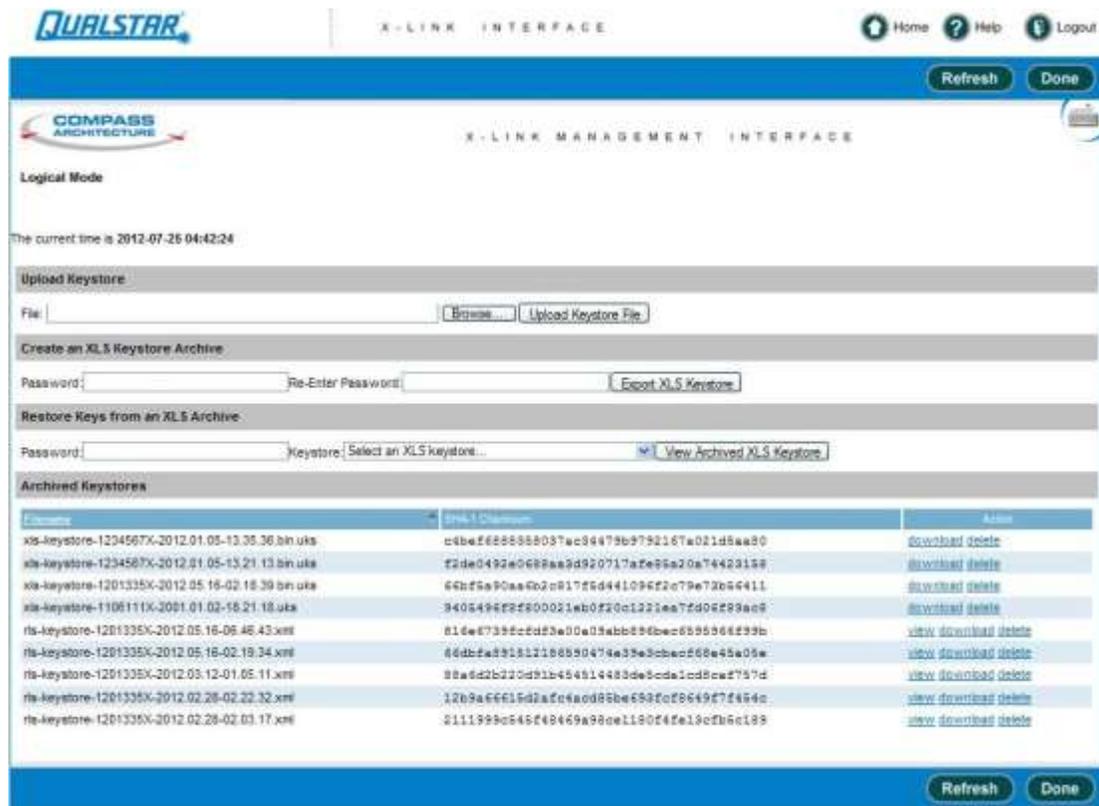


Figure 14-11 View/Manage Archived Keystores page

**Upload File:** Select a keystore to upload to the XLS. If a user has previously archived and downloaded a keystore for archival purposes, this action is how to get the downloaded keystore back into the XLS.

**Create an XLS Keystore Archive:** This action is a convenience to create an archive of the entire live keystore in the XLS. Enter a password which is used to encrypt the archive. Exported archives are encrypted to prevent users from accessing raw keys.

**Restore Keys from an Archive:** Enter a password and select an archive to show a list of keys in the archive. From the list, a user can select all keys or a subset of the keys and restore them back to the live keystore. Restoring fails if any aliases in the archived keystore are already present in the live XLS keystore.

**SHA-1 Checksum:** The checksum of each file is presented so that a user may verify integrity of any downloaded/uploaded file.

## 14.2.8 Rename an Alias

The XLS keystore maintains a collection of keys known as the keystore. This page allows users to rename a key by changing the alias. This operation does not delete the actual key, it just stores it under a new alias. The rename operation will fail if a key is currently in use to maintain consistency.

Select **Rename an Alias**. The **Rename as Alias** page opens as shown in [Figure 14-12](#).

The screenshot shows the 'X-LINK MANAGEMENT INTERFACE' for 'COMPASS ARCHITECTURE'. The page is titled 'Logical Mode' and contains a 'Rename Alias' form. The form has three input fields: 'Encryption Administrator Password', 'Current Alias', and 'Rename To'. Each field has a small blue plus icon to its right. A legend indicates that the plus icon means 'required'. Below the input fields is a 'Rename Alias' button. The page also features a 'Done' button in the top right corner and a 'Logout' link in the top right navigation area.

**Figure 14-12** Rename an Alias page

**Encryption Administrator Password:** The password for the keystore administrator. Even though must be logged in to the encryption key management we make the user enter the password here.

**Current Alias:** The alias for the key to be renamed.

**Rename To:** The new alias. The key is no longer available under the original alias after the rename is complete.

## 14.2.9 Import RLS-8500 Compatible Key

The XLS keystore maintains a collection of keys known as the keystore. This page allows users to import keys from an RLS-8500 library into the XLS keystore. Keys and passphrases can be input in the following formats:

- Base64: a string with characters 0-9, a-z, A-Z, and the additional characters of + and /
- Hexidecimal: a string with characters 0-9, a-f, A-F, with “.” characters separating 2, 4, or 8 hex characters.

Select **Import RLS-8500 Compatible Key**. The **Import RLS-8500 Compatible Key** page opens as shown in [Figure 14-13](#).

The screenshot shows the 'Import RLS-8500 Compatible Key' page. At the top, there is a navigation bar with the QUALSTAR logo, 'X-LINK INTERFACE', and links for Home, Help, and Logout. Below this is a blue header with the COMPASS ARCHITECTURE logo and 'X-LINK MANAGEMENT INTERFACE'. The main content area is titled 'Logical Mode' and contains a form with the following fields:

- Alias:  (marked as required with a red asterisk)
- Passphrase:
- Re-Enter Passphrase:
- Enter the Key:

At the bottom of the form is a button labeled 'Import RLS-8500 Key'. There are 'Done' buttons in the top right and bottom right corners of the page.

**Figure 14-13** Import RLS-8500 Compatible Key page

Examples of formats:

Example 1:

tC6h7DL2dodPJc/FBsS1pLXRAkHjRd8+HLgz0hWKbYE is an example of a base64 encoded value.

Example 2:

B4:2E:A1:EC:32:F6:76:87:4F:25:CC:85:06:C4:B5:A4:B5:D1:68:A8:63:45:DF:26:1C:B8:33:D2:15:8A:6D:81 is an example of a hexadecimal encoded key.

Example 3:

B42E:A1EC:32F6:7687:4F25:CC85:06C4:B5A4:B5D1:68A8:6345:DF26:1CB8:33D2:158A:6D81 is an example of grouping the above key with 4 characters.

Example 4:

B42EA1EC:32F67687:4F25CC85:06C4B5A4:B5D168A8:6345DF26:1CB833D2:158A6D81 is an example of grouping the above key with 8 characters.

Example 5:

B:42E:A1EC:32F67687:4F25:CC85:06C4:B5A4:B5D168A8:6:345:DF26:1CB833D2:158A6D81 is an example of an invalid key because the grouping is not 2, 4 or 8 characters.

**Alias:** The alias for the newly imported key. The alias serves as an arbitrary identifier for a key. The import will fail with an error message indicating there was an alias collision if a key with the given alias already exists in the XLS keystore.

**Passphrase:** The passphrase for the key. Keys are transported between libraries in an encrypted format and require the passphrase used when exporting the key to import it so the receiving library can decrypt the key and import it. The passphrase can input in several formats: base 64 encoded, hexadecimal digits separated by colon (:) characters. See above for some examples.

**Re-Enter the Passphrase:** Re-enter the passphrase to make sure there are no typos.

**Key:** This is where the key is entered. See **Examples** above for a description of the formats allowed.

### 14.2.10 Logout of the encryption utilities

Selecting Logout of the encryption utilities will return the user to the X-Link Home page.

**Notes:**

# 15 Viewing Library Hardware

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This chapter provides instructions for the following tasks:

- Interpreting the status LEDs on the library's front panel, the tape drives, and the power supplies (see [Section 15.1](#))
- Viewing information about the following physical library components:
  - **Entire Qualstar XLS Library.** See [Section 15.2 on page 15-5](#).
  - **Library Resource Module (LRM),** including the system controller, robotics, controller cards, door slots, front panel slots, rear wall and cartridge bay slots, drive bays, I/O ports, and power supplies. See [Section 15.3 on page 15-8](#).
  - **Media Expansion Module (MEM),** including the MEM controller card and cartridge slots. See [Section 15.4 on page 15-30](#).
  - **Tape drives,** including tape drive status, identification, and tape drive specifications. See [Section 15.5 on page 15-36](#).

## 15.1 Meanings of the LEDs

You can determine the library's operational status at a glance by looking at the status LEDs on the following components:

- Front panel of the LRM
- Tape drive assemblies
- Power supplies

### 15.1.1 Front Panel LEDs

[Figure 15-1](#) shows the status LEDs on the front panel of the LRM.



**Figure 15-1** Status LEDs on the LRM front panel

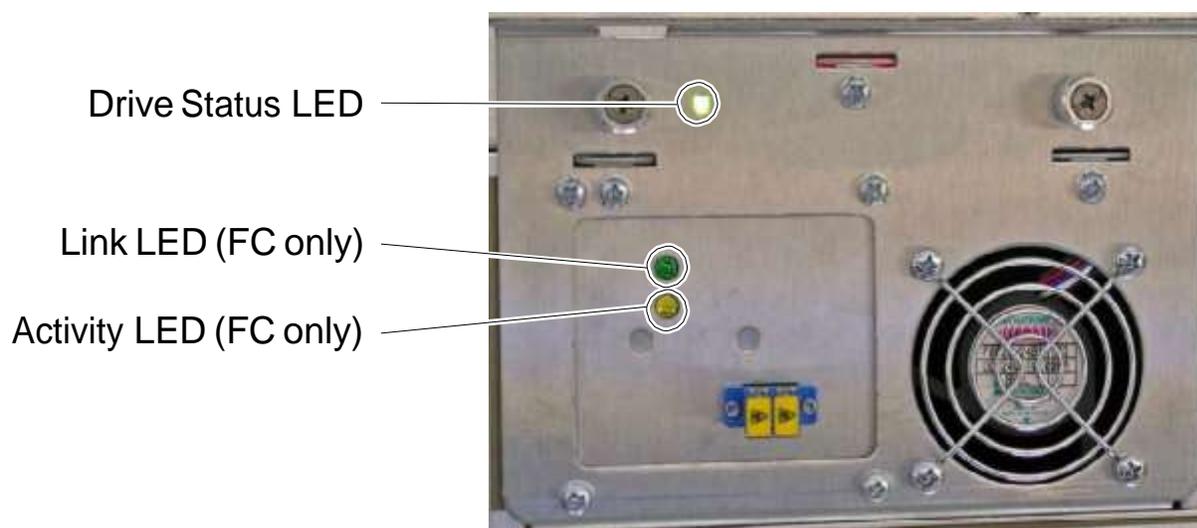
[Table 15-1](#) lists the meanings of the status LEDs

LED	State	Indicates
Attention	Flashing	Operator intervention is required; for example, a door is unlocked or opened, or a light curtain is blocked
	Solid yellow	An I/O port is open
Network Activity	Flashing green	There is activity on the Ethernet network (currently not implemented)
Library Activity	Steady green	The XLS is powered on and in an error-free state (currently not implemented)
Robot Activity	Flashing green	The handler or the carousel is moving
Fault	Flashing red	The XLS has experienced an unrecoverable error or it has been shut down from X-Link

**Table 15-1** Meanings of the status LEDs

### 15.1.2 Tape Drive Assembly LEDs

[Figure 15-2](#) shows the location of the LEDs on the back of the Fibre Channel tape drive assembly. The SCSI tape drive assemblies include the Drive Carrier LED only.



**Figure 15-2** Status LEDs on a Fibre Channel tape drive assembly

Table 15-2 lists the meanings of the tape drive LEDs

LED	State	Meaning
Drive Carrier	Off	The XLS is powered down or the tape drive assembly is not seated correctly
	Yellow	The tape drive assembly is installed, but the tape drive is powered off
	Green	The tape drive assembly is installed, and the tape drive is powered on
Link (Fibre Channel carrier only)	Off	The tape drive is not connected to a Fibre Channel switch, or a link is not established
	Green	The tape drive is connected to an active Fibre Channel switch, and a link is established
Activity (Fibre Channel carrier only)	Off	The tape drive is not connected to a Fibre Channel switch, or the switch is off
	Solid yellow	The tape drive is connected to a Fibre Channel switch, but no activity is occurring over the connection
	Flashing yellow	Activity is occurring over the Fibre Channel connection

Table 15-2 Meaning of the tape drive LEDs

### 15.1.3 Power Supply LEDs

Figure 15-3 shows the location of the two LEDs on the back of a power supply.



LEDs

Figure 15-3 Power supply LEDs

[Table 15-3](#) lists the meanings of the LEDs.

LED state		Meaning
PWR Good	Fault	
On (green)	Off	The power supply is operating correctly
On (green)	On (yellow)	The power supply is on, but it is not providing power to the XLS
Off	On	The power supply has failed and needs to be replaced
Off	Off	The power supply has failed and needs to be replaced, or the library is powered down

**Table 15-3** Meaning of the LEDs on the power supplies

## 15.2 Viewing Hardware Information

To view details about the library’s hardware, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Service View** or **Show All** to display the Physical Library portlet. See [Section 8.1 on page 8-1](#).
3. From the Administration section of the Physical Library portlet, select **View Hardware Details**. The Physical Library Hardware page opens, as shown in [Figure 15-4](#).

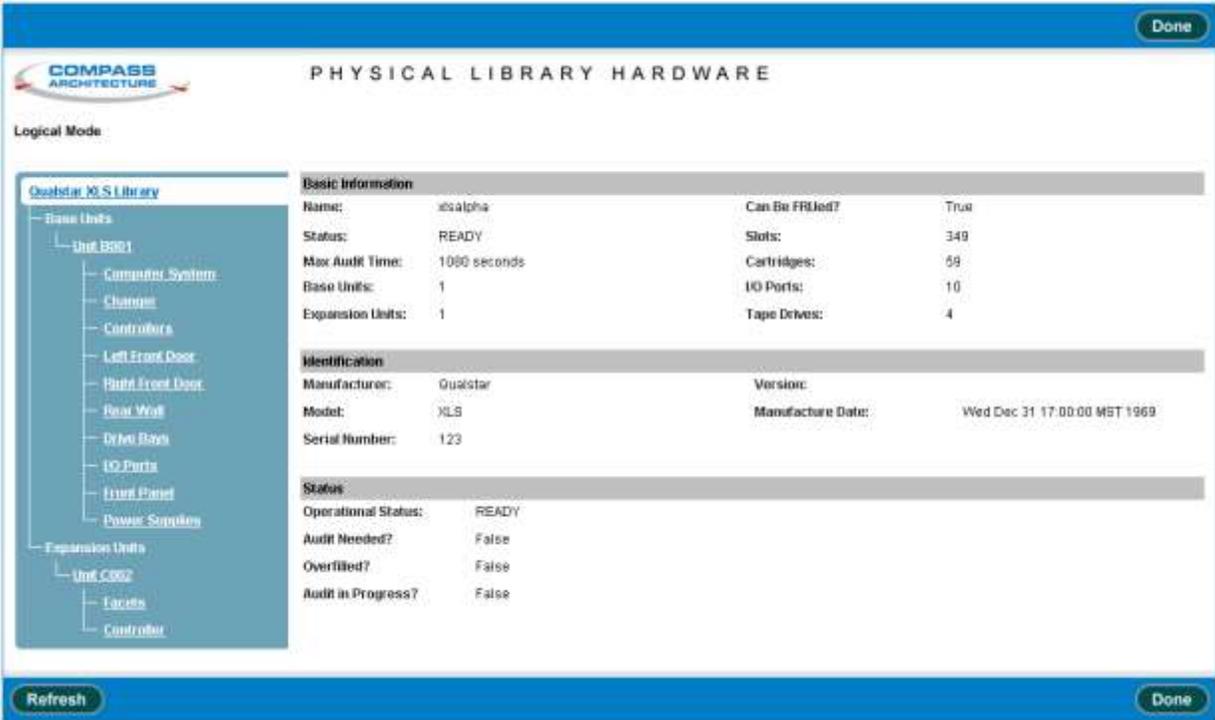
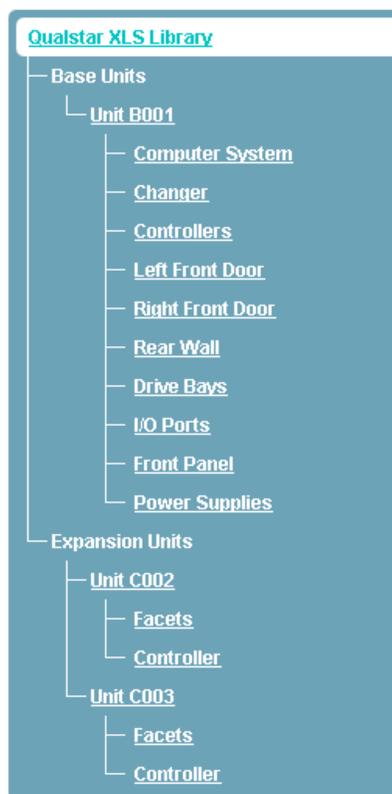


Figure 15-4 Physical Library Hardware page

The hardware navigation panel on the left, shown in [Figure 15-5](#), represents the physical configuration of the library.



**Figure 15-5** Hardware navigation panel

4. To view detailed information about a particular hardware component or assembly, select an underlined item on the navigation panel. Information about the selected item is displayed on the right side of the Physical Hardware page.
5. When you are finished viewing hardware information, press **Done** to return to the Home page.

## 15.2.1 Qualstar XLS Library

[Figure 15-4 on page 15-5](#) shows the basic information, identification details, and status information displayed for the entire Qualstar XLS Library. [Table 15-4](#) describes each field shown in the figure.

Field	Indicates
<b>Basic Information</b>	
Name	The physical library's host name
Status	<p>The current status of the physical library, as follows:</p> <p><b>OK:</b> The element is functioning normally.</p> <p><b>Error:</b> The element has experienced an error.</p> <p><b>Degraded:</b> The element is experiencing degraded performance.</p> <p><b>Unknown:</b> The state of the element is unknown.</p> <p><b>Predictive Failure:</b> The element is functioning nominally but predicting a failure in the near future.</p> <p><b>Starting:</b> The element is in the process of starting up.</p> <p><b>Stopping:</b> The element is in the process of shutting down or stopping.</p> <p><b>Service:</b> The element is being serviced.</p> <p><b>Stressed:</b> The element is functioning, but needs attention. Examples of Stressed states are overload, overheated, and so on.</p> <p><b>NonRecover:</b> The element is in a non-recoverable state.</p> <p><b>No Contact:</b> The monitoring system has knowledge of this element, but has never been able to establish communications with it.</p> <p><b>Lost Communication:</b> The element is known to exist and has been contacted successfully in the past, but is currently unreachable.</p> <p><b>Stopped:</b> The system has been shut down normally</p>
Max Audit Time	The maximum time needed for the XLS to perform a complete audit of each cartridge slot to determine the absence or presence of a cartridge
Base Units	The number of base units (Library Resource Modules) in this XLS library
Expansion Units	The number of expansion units (Media Expansion Modules) in this XLS library
Can be FRUed?	The XLS itself is not a field replaceable unit (FRU), so this field is always False
Slots	The number of cartridge slots installed in this XLS library
Cartridges	The number of cartridges currently installed in this XLS library
I/O Ports	The number of I/O ports installed in this XLS library
Tape Drives	The number of tape drives currently installed in this XLS library
<b>Identification</b>	
Manufacturer	The manufacturer of the XLS library; always Qualstar
Model	The model number of the XLS library

**Table 15-4** Field definitions for Qualstar XLS Library page

Field	Indicates
Serial Number	The serial number of this XLS library
Version	The version of this XLS library
Manufacture Date	The date the primary LRM was manufactured
<b>Status</b>	
Audit Needed?	Whether an audit of the library is required
Overfilled?	Whether there are more cartridges in the library than cartridge slots
Audit In Progress?	Whether a library audit is currently in process

**Table 15-4** Field definitions for Qualstar XLS Library page (*continued*)

## 15.3 Information Displayed for the Library Resource Module

As described in this section, you can view information about the following components in the Library Resource Module (LRM) or base unit:

- LRM or base unit itself (see [Section 15.3.1 on page 15-9](#))
- System controller or computer system (see [Section 15.3.2 on page 15-11](#))
- Robot or changer (see [Section 15.3.3 on page 15-12](#))
- Controller cards (see [Section 15.3.4 on page 15-15](#))
- Cartridge slots on the left door (see [Section 15.3.5 on page 15-17](#))
- Cartridge slots on the right door (see [Section 15.3.6 on page 15-19](#))
- Cartridge slots in the cartridge bays and on the rear wall (see [Section 15.3.7 on page 15-20](#))
- Cartridge slots on the front panel, if installed (see [Section 15.3.10 on page 15-26](#))
- Drive bays (see [Section 15.3.8 on page 15-21](#))
- I/O ports (see [Section 15.3.9 on page 15-23](#))
- Power supplies (see [Section 15.3.11 on page 15-28](#))

### 15.3.1 Library Resource Module

Figure 15-6 shows the fields displayed for each Library Resource Module (LRM).

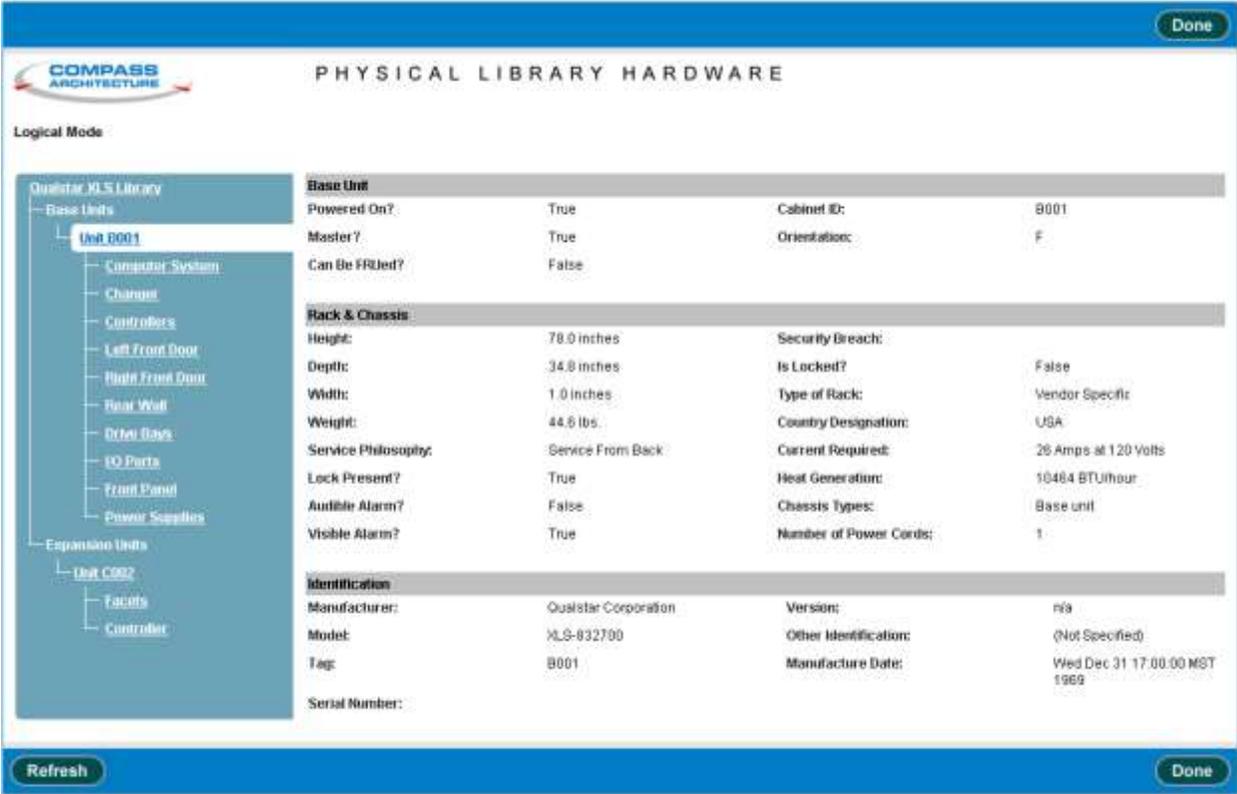


Figure 15-6 Information displayed for a Library Resource Module (XLS-832700 shown)

Table 15-5 describes each field shown in Figure 15-6.

Field	Indicates
<b>Base Unit</b>	
Powered On?	Whether the LRM is powered on
Master?	Whether this LRM is the primary base unit
Can be FRUed?	The LRM itself is not a field replaceable unit (FRU) so this field is always False
Cabinet ID	A unique identifier for the LRM; for example, B001
Orientation	The orientation of the LRM. The LRM is always oriented to the front, so this field is always F
<b>Rack &amp; Chassis</b>	
Height	The height of the LRM in inches
Depth	The depth of the LRM in inches

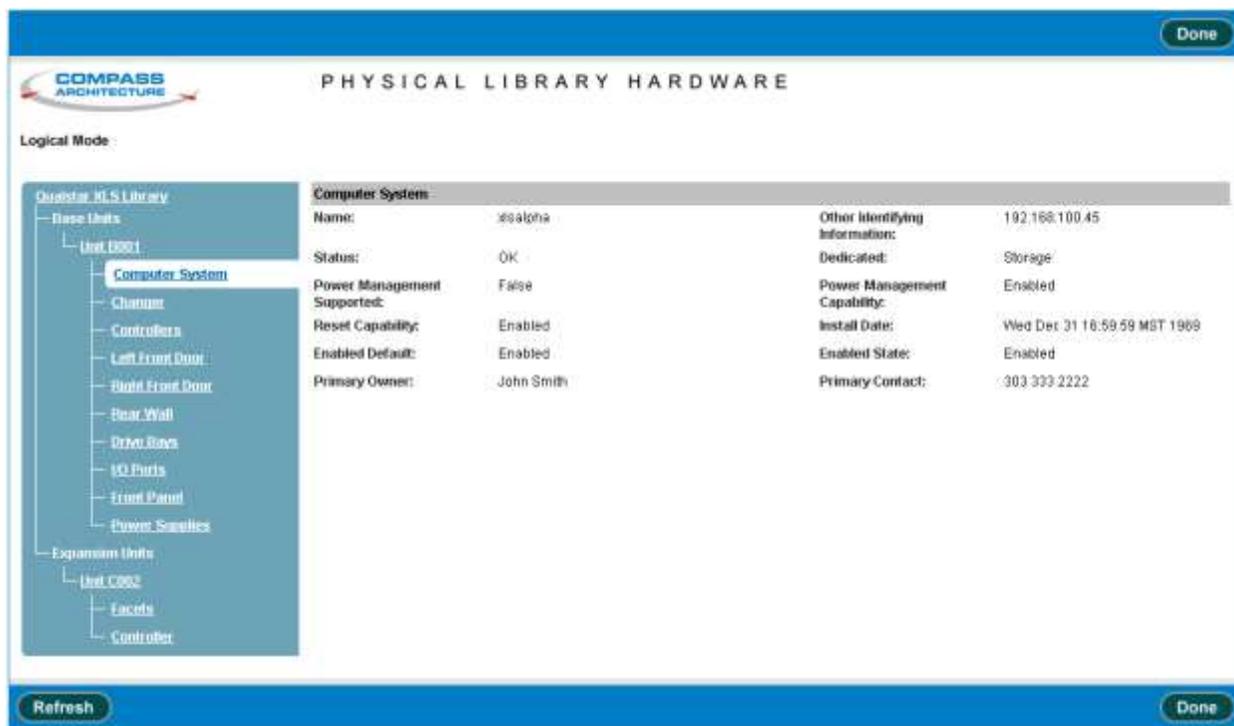
Table 15-5 Field definitions for Library Resource Module information page

<b>Field</b>	<b>Indicates</b>
Width	The width of the LRM in inches
Weight	The weight of the LRM in pounds
Service Philosophy	The primary service access to the LRM. The LRM is typically serviced from the back, so this field is always Service From Back.
Lock Present?	Each door on the LRM contains a lockable latch, so this field is always True.
Audible Alarm?	The LRM does not have an audible alarm, so this field is always False.
Visible Alarm?	The LRM contains LEDs on the front panel, so this field is always True.
Security Breach	Whether the LRM is currently experiencing a security breach; for example, a security breach could occur if you open a door without taking logical libraries offline (only possible if electronic locks are not installed)
Is Locked?	Whether the LRM is currently locked
Type of Rack	The LRM is not a standard rack size so this field is always Non-Standard.
Country Designation	USA
Current Required	The current required by the LRM in amps at 120 volts <b>Note:</b> This number assumes all tape drives are installed but no MEMs are attached.
Heat Generation	The amount of heat generated by the LRM in BTU/hour <b>Note:</b> This number assumes all tape drives are installed but no MEMs are attached.
Chassis Types	Whether the chassis is a base unit (that is, LRM) or carousel (that is, MEM)
Number of Power Cords	The number of power cords used by the LRM. This field is always 1. <b>Note:</b> This number does not include any power cords used by equipment installed in the optional equipment rack
<b>Identification</b>	
Manufacturer	The manufacturer of the LRM; always Qualstar
Model	The model number of the XLS
Tag	A unique identifier for this LRM
Serial Number	The serial number of the XLS
Version	The version number
Manufacture Date	The date the LRM was manufactured

**Table 15-5** Field definitions for Library Resource Module information page (*continued*)

## 15.3.2 Computer System

[Figure 15-7](#) shows the fields displayed for the computer system in the LRM.



**Figure 15-7** Information displayed for the computer system

[Table 15-6](#) describes each field shown in [Figure 15-7](#).

Field	Indicates
Name	The physical library's host name
Status	The current status of the system controller (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Power Management Supported	The system controller does not support power management, so this field is always False.
Reset Capability	The system controller can be reset, so this field is always Enabled.
Enabled Default	The system controller can process commands as soon as it is booted, so this field is always Enabled
Primary Owner	The primary contact for the physical library
Other Identifying Information	The IP address for the physical library
Dedicated	The physical library's primary purpose, which is Storage
Power Management Capability	The system controller does not support power management, so this field is always Disabled.

**Table 15-6** Field definitions for computer system information page

Field	Indicates
Install Date	The date and time that the system controller was installed
Enabled Status	Whether the system controller is currently enabled (able to process commands) or disabled
Primary Contact	The phone number of the physical library's primary contact

**Table 15-6** Field definitions for computer system information page (*continued*)

### 15.3.3 Changer

[Figure 15-8](#) shows the fields displayed for the changer in the LRM. The changer, also known as the robotic handler, includes the barcode reader and the gripper or picker.



**Figure 15-8** Information displayed for the changer

[Table 15-7](#) describes each field shown in [Figure 15-8](#).

Field	Indicates
<b>Changer</b>	
Max Transit Time	The maximum time in seconds required to move a cartridge between the two most physically distant slots
Media Flip Supported?	The XLS uses single-sided media, so this field is always False
Availability	The primary availability and status of the handler, as follows: Unknown, Running/Full Power, Warning, In Test, Not Applicable, Power Off, Off Line, Off Duty, Degraded, Not Installed, Install Error, Power Save, Paused, Not Ready, Not Configured, and Quiesced
Last Error Code	The last error code reported by the handler
Enabled Default	The handler can accept commands as soon as the system is booted, so this field is always Enabled
Installed Date	The date and time that the handler was installed
Audit in Progress?	Whether an audit is currently in process
Audits Performed	The total number of audits performed since the last time the XLS was powered on
Device ID	A unique identifier for the handler
Power Management Supported	The XLS does not support power management, so this field is always False.
Enabled State	Whether the handler is currently enabled (able to process commands) or disabled
Status	The current status of the handler (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
<b>Label Reader Specifications</b>	
Supported Formats	The format of the labels that can be read or scanned by the barcode reader
Technology	The technology used by the barcode reader; always Other
Availability	The primary availability and status of the barcode reader, as follows: Unknown, Running/Full Power, Warning, In Test, Not Applicable, Power Off, Off Line, Off Duty, Degraded, Not Installed, Install Error, Power Save, Paused, Not Ready, Not Configured, and Quiesced
Enabled Default	The barcode reader can accept commands as soon as the system is booted, so this field is always Enabled
Enabled State	Whether the barcode reader is currently enabled (able to process commands) or disabled
<b>Label Reader Status</b>	
Scan Successes	The number of successful barcode scans since the XLS was last powered on
Scan Failures	The number of failed barcode scans since the XLS was last powered on
Scan Retries	The number of barcode scans that were retried since the XLS was last powered on

**Table 15-7** Field definitions for the changer information page

Field	Indicates
<b>Picker Specifications</b>	
Max Pick Time	The maximum time in seconds for the picker to grab a cartridge from a cartridge slot, once the picker has arrived at that slot
Max Put Time	The maximum time in seconds for the picker to place a cartridge in a cartridge slot, once the picker has arrived at that slot
Availability	The primary availability and status of the picker, as follows: Unknown, Running/Full Power, Warning, In Test, Not Applicable, Power Off, Off Line, Off Duty, Degraded, Not Installed, Install Error, Power Save, Paused, Not Ready, Not Configured, and Quiesced
Last Error Code	The last error code reported by the picker
Power Management Supported	The XLS does not support power management, so this field is always False.
Enabled Default	The picker can accept commands as soon as the system is booted, so this field is always Enabled
Enabled State	Whether the picker is currently enabled (able to process commands) or disabled
Installed Date	The date and time the picker was installed
Status	The current status of the picker (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
<b>Picker Status</b>	
Pick Successes	The number of successful picks since the XLS was last powered on
Pick Failures	The number of failed picks since the XLS was last powered on
Pick Retries	The number of picks that were retried since the XLS was last powered on
Put Successes	The number of successful puts since the XLS was last powered on
Put Failures	The number of failed puts since the XLS was last powered on
Put Retries	The number of puts that were retried since the XLS was last powered on

**Table 15-7** Field definitions for the changer information page (*continued*)

### 15.3.4 Controller Cards

[Figure 15-9](#) shows the fields displayed for the various controller cards in the Library Resource Module (LRM).

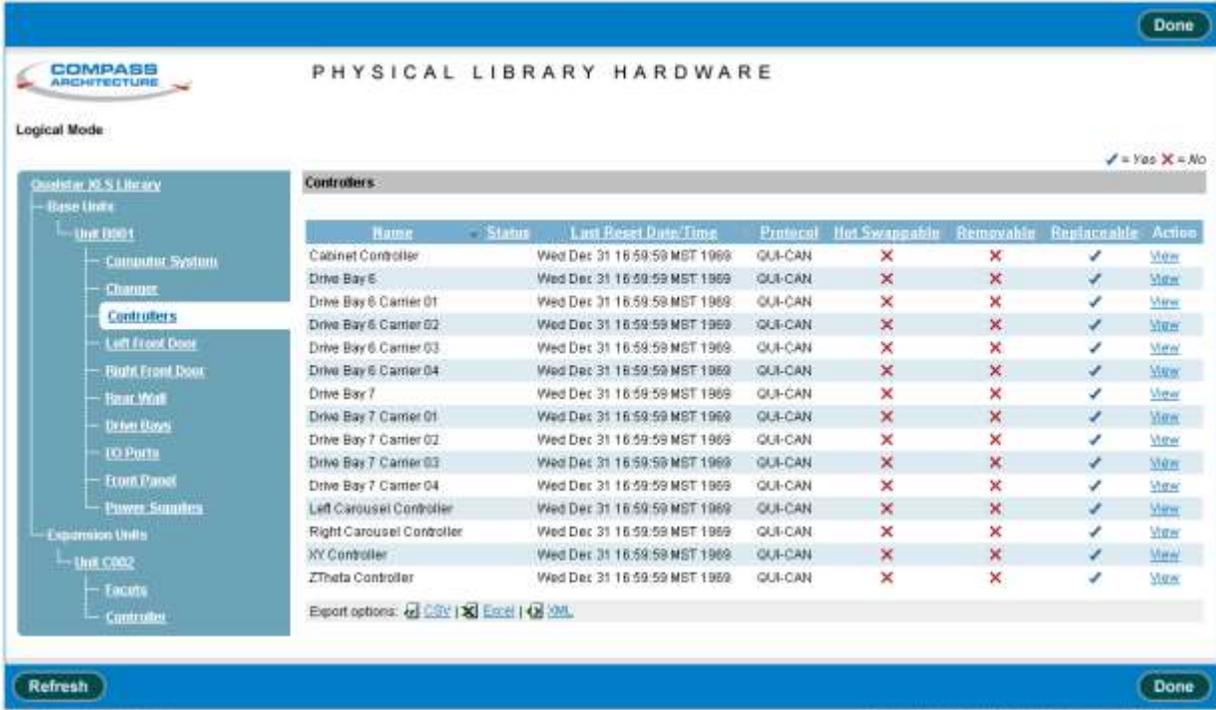


Figure 15-9 Information displayed for the controller cards

[Table 15-8](#) describes each field shown in [Figure 15-9](#).

Field	Indicates
Name	The name of the controller card
Status	The current status of the controller card (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Last Reset Date/Time	The date and time the controller card was last reset or powered on
Protocol	The communication protocol used by the controller card
Hot Swappable	Whether the controller card is hot swappable (that is, whether it can be replaced while the XLS is receiving power), as follows: 4 The controller card is hot swappable 5 The controller card is not hot swappable
Removable	Whether the controller card is removable (that is, whether it can be taken in and out without impairing the function of the library), as follows: 4 The controller card is removable 5 The controller card is not removable

Table 15-8 Field definitions for controller card information page

Field	Indicates
Replaceable	Whether the controller card is replaceable (that is, whether it is possible to replace the card with a different one), as follows: <b>4</b> The controller card is replaceable <b>5</b> The controller card is not replaceable
Action	Select <b>View</b> to see additional information for the selected controller card.

**Table 15-8** Field definitions for controller card information page (*continued*)

To view additional information for a specific controller card, select **View**. The Controller page opens, as shown in [Figure 15-10](#).

Controller - Cabinet Controller			
Controls:	B001C01J	Hotswappable?	False
Status:		Removable?	False
Firmware Version:	6.20	Replaceable?	True
Last Reset Date/Time:	Wed Dec 31 16:59:59 MST 1999	Availability:	Unknown
Max Controlled:	1	Enabled:	Unknown
Protocol:	GIC-CAN	Enabled Default:	Enabled

**Figure 15-10** Example Controller page

[Table 15-9](#) describes each field shown in [Figure 15-10](#).

Field	Indicates
Controller	The name of the controller card
Controls	A Qualstar-unique designator for the hardware controlled by the controller card
Status	The current status of the controller (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Firmware Version	The firmware version currently installed on the controller
Last Reset Date/Time	The date and time the controller was last reset or powered on
Max Controlled	The maximum number of elements that can be controlled by the controller card
Protocol	The communication protocol used by the controller card
Hot Swappable?	Whether the controller card is hot swappable (that is, whether it can be replaced while the XLS is receiving power)

**Table 15-9** Field definitions for Controller page

Field	Indicates
Removable?	Whether the controller card is removable (that is, whether it can be taken in and out without impairing the function of the library)
Replaceable?	Whether the controller card is replaceable (that is, whether it is possible to replace the card with a different one)
Availability	The primary availability and status of the controller card, as follows: Unknown, Running/Full Power, Warning, In Test, Not Applicable, Power Off, Off Line, Off Duty, Degraded, Not Installed, Install Error, Power Save, Paused, Not Ready, Not Configured, and Quiesced
Enabled	Whether the controller is currently enabled (able to process commands) or disabled
Enabled Default	The controller can process commands as soon as it is booted, so this field is always Enabled

Table 15-9 Field definitions for Controller page (continued)

### 15.3.5 Left Door Slots (XLS-832700 only)

Figure 15-11 shows the fields displayed for the cartridge slots on the left door of the XLS-832700, if installed.



Figure 15-11 Information displayed for the left door slots (XLS-832700 only)

[Table 15-10](#) describes each field shown in [Figure 15-11](#).

Field	Indicates
<b>Left Front Door</b>	
Locked	Whether the door is locked with the electronic locks
Open	Whether the door is opened
Last Open	The date and time the door was last opened
<b>Slots (information available if the optional door slots are installed)</b>	
Column	The column identifier for the slot
Row	The row identifier for the slot
Media Present	Whether there is a cartridge currently in the slot, as follows: <b>4</b> The slot contains a cartridge <b>5</b> The slot is empty
Bar Code	If the slot contains a cartridge, the identifier on its barcode label
Picks	The number of times a cartridge was successfully picked from the slot
Retries	The number of times one or more retries was required to pick a cartridge from the slot
Failures	The number of failures that occurred while attempting to pick a cartridge from the slot
Media Types Supported	The type of media that can be placed in the slot

**Table 15-10** Field definitions for left door information page

### 15.3.6 Right Door Slots

Figure 15-12 shows the fields displayed for the cartridge slots on the right door of the LRM.

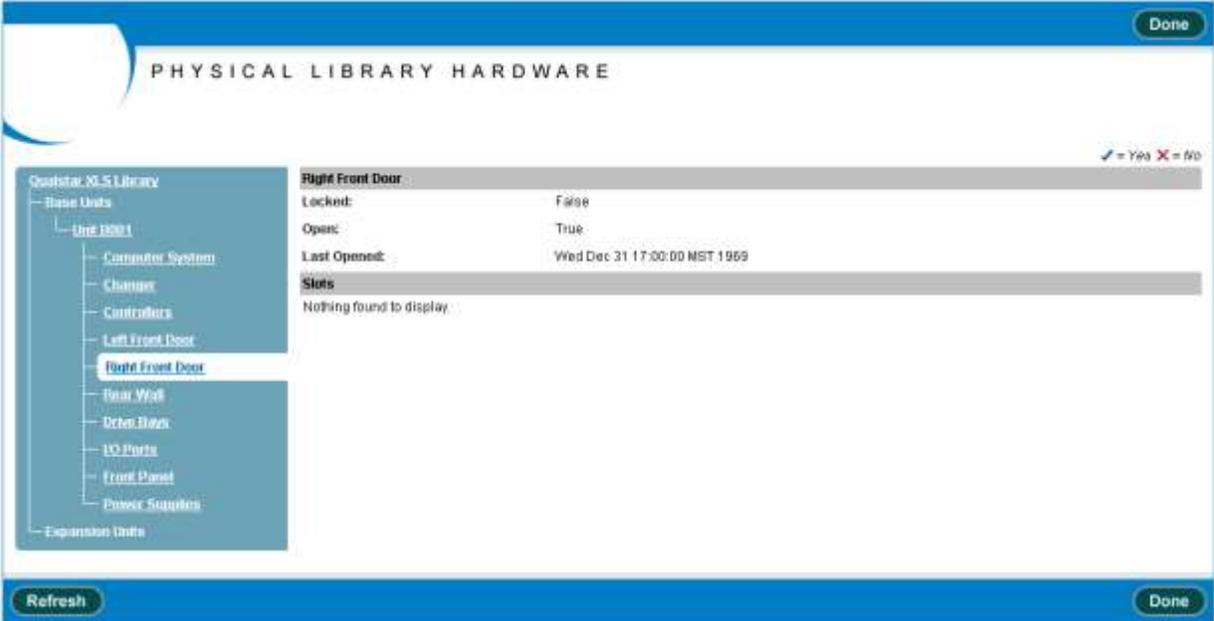


Figure 15-12 Information displayed for the right door slots

Refer to [Table 15-10 on page 15-18](#) for descriptions of each field shown in [Figure 15-12](#).

## 15.3.7 Rear Wall

[Figure 15-13](#) shows the fields displayed for the cartridge slots in the cartridge bays and on the rear wall of the LRM.

COMPASS ARCHITECTURE PHYSICAL LIBRARY HARDWARE

Logical Mode

Quintec XLS Library

Base Units

- Unit 0001
  - Controller System
  - Chassis
  - Controllers
  - Left Front Door
  - Right Front Door
  - Rear Wall**
  - Drive Bays
  - IO Ports
  - Front Panel
  - Power Supplies
- Expansion Units
  - Unit 0002
    - Encsets
    - Controller

Rear Wall Slots

420 items found, displaying 1 to 20  
(First Prev 1 2 3 4 5 6 7 8 (Info) Last)

Column	Row	Media Present	Bar Code	Picks	Retries	Failures	Media Types Supported
A	01	X	-				LTO Cartridge
A	02	✓	A00032L2	0	0	0	LTO Cartridge
A	03	X	-				LTO Cartridge
A	04	X	-				LTO Cartridge
A	05	X	-				LTO Cartridge
A	06	X	-				LTO Cartridge
A	07	X	-				LTO Cartridge
A	08	✓	500092L1	0	0	0	LTO Cartridge
A	09	X	-				LTO Cartridge
A	10	X	-				LTO Cartridge
A	11	X	-				LTO Cartridge
A	12	X	-				LTO Cartridge
A	13	X	-				LTO Cartridge
A	14	X	-				LTO Cartridge
A	15	X	-				LTO Cartridge
A	16	X	-				LTO Cartridge
A	17	X	-				LTO Cartridge
A	18	X	-				LTO Cartridge
A	19	X	-				LTO Cartridge
A	20	✓	500151L1	0	0	0	LTO Cartridge

Export options:  CSV |  Excel |  HTML

**Figure 15-13** Information displayed for the rear wall and cartridge bay slots

[Table 15-11](#) describes each field shown in [Figure 15-13](#).

Field	Indicates
Column	The column identifier for the slot
Row	The row identifier for the slot
Media Present	Whether there is a cartridge currently in the slot, as follows: <b>4</b> The slot contains a cartridge <b>5</b> The slot is empty
Bar Code	If the slot contains a cartridge, the identifier on its barcode label
Picks	The number of times a cartridge was successfully picked from the slot
Retries	The number of times one or more retries was require to pick a cartridge from the slot

**Table 15-11** Field definitions for the rear wall information page

Field	Indicates
Failures	The number of failures that occurred while attempting to pick a cartridge from the slot
Media Types Supported	The type of media that can be placed in the slot

Table 15-11 Field definitions for the rear wall information page (continued)

### 15.3.8 Drive Bays

Figure 15-14 shows the fields displayed for the drive bays in the LRM.

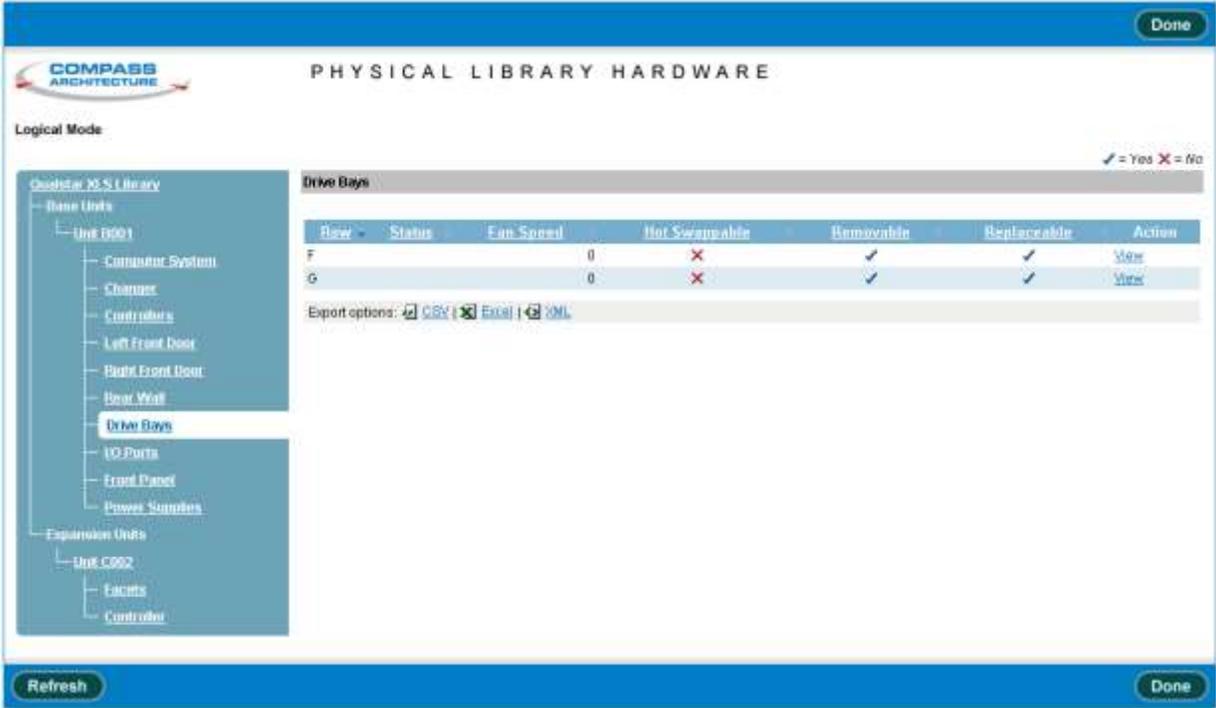


Figure 15-14 Information displayed for the drive bays

Table 15-12 describes each field shown in Figure 15-14.

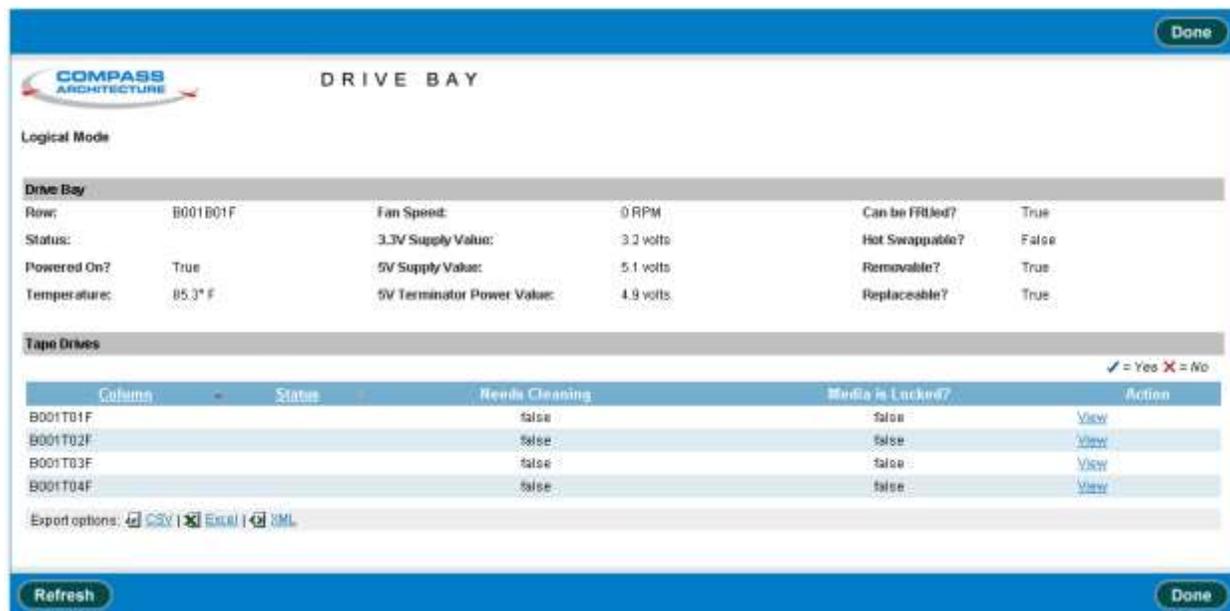
Field	Indicates
Row	The row identifier for the drive bay
Status	The current status of the drive bay (see Table 15-4 on page 15-7 for descriptions)
Hot Swappable	Drive bays are not hot swappable (that is, they cannot be replaced while the XLS is receiving power), so this field is always 5
Removable	Drive bays are removable (that is, they can be taken in and out without impairing the function of the library), so this field is always 4

Table 15-12 Field definitions for drive bay information page

Field	Indicates
Replaceable	Drive bays can be replaced with a different one, so this field is always <b>4</b>
Action	Select <b>View Details</b> to see additional information for the selected drive bay.

**Table 15-12** Field definitions for drive bay information page (*continued*)

To view additional information for a specific drive bay, select **View Details**. The Drive Bay page opens, as shown in [Figure 15-15](#).



**Figure 15-15** Drive Bay page

[Table 15-13](#) describes each field shown in [Figure 15-15](#).

Field	Indicates
<b>Drive Bay</b>	
Row	The row identifier for the drive bay position
Status	The current status of the drive bay position (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Powered On?	Whether the drive bay is powered on
Temperature	The temperature of the drive bay in °F
3.3V Supply Value	Whether the drive carriers power supply is operating at correct voltage.
5V Supply Value	Whether the drive bay is supplying the correct voltage to the drive carriers.
5V Terminator Power Value	This value indicates that 5 volts are present if active terminators are being used with the tape drives.
Can be FRUed?	Drive bays are field replaceable units (FRUs), so this field is always True

**Table 15-13** Field definitions for Drive Bay page

Field	Indicates
Hot Swappable?	Drive bays are not hot swappable (that is, they cannot be replaced while the XLS is receiving power), so this field is always False
Removable?	Drive bays are removable (that is, they can be taken in and out without impairing the function of the library), so this field is always True
Replaceable?	Drive bays can be replaced with a different one, so this field is always True
<b>Tape Drives</b>	
Column	The column identifier for the tape drive position within the drive bay
Temperature	Whether the tape drive is reporting that its temperature is too high
Needs Cleaning	Whether the tape drive is reporting that it needs to be cleaned
Media is Locked?	Whether the write-protect switch is set for the cartridge
Action	Select <b>View Details</b> to see additional information for the selected tape drive.

**Table 15-13** Field definitions for Drive Bay page (*continued*)

To view additional information for a specific tape drive, select **View Details**. The Tape Drive information page opens, as discussed in [Section 15.5, “Information Displayed for the Tape Drives,” on page 15-36](#).

### 15.3.9 I/O Ports

[Figure 15-16 on page 15-24](#) shows the fields displayed for each I/O port in the LRM.

**Note:** This page is not available if no I/O ports are installed.



Figure 15-16 Information displayed for an I/O port

Table 15-14 describes each field shown in Figure 15-16.

Field	Indicates
Position	The position of the I/O port: the LRM number, followed by Bottom Left, Bottom Right, Top Left, or Top Right
Status	The current status of the I/O port (see Table 15-4 on page 15-7 for descriptions)
Locked?	I/O ports are not locked at the physical library level, so this field is always 5
Extended?	Whether the I/O port is currently opened
Last Extended	The date and time the I/O port was last opened
Imports	The number of import operations from the I/O port
Exports	The number of export operations from the I/O port
Action	Select <b>View Details</b> to see additional information for the selected I/O port.

Table 15-14 Field definitions for I/O port information page

To view additional information for a specific I/O port, select **View Details**. The I/O Port page opens, as shown in [Figure 15-17](#).

The screenshot shows the 'I/O PORT' page with the following details:

- Logical Mode:** (Not specified)
- I/O Port Details:**
  - Position: Base Unit 001, Top Left
  - Locked?: False
  - Extended?: False
  - Direction: Import and Export
  - Imports: 0
  - Exports: 0
  - Extend Timeout: 0 seconds
  - Last Extended: Wed Dec 31 16:59:59 MST 1999
  - Status: (Not specified)
  - Availability: Unknown
  - Enabled Default: Enabled
  - Enabled State: Unknown
- Slots Table:**

Column	Row	Media Present	Bar Code	Pools	Rerules	Failures	Media Types Supported
L	11	X	-	-	-	-	LTO Cartridge
L	12	X	-	-	-	-	LTO Cartridge
L	13	X	-	-	-	-	LTO Cartridge
L	14	X	-	-	-	-	LTO Cartridge
L	15	X	-	-	-	-	LTO Cartridge
L	16	X	-	-	-	-	LTO Cartridge
L	17	X	-	-	-	-	LTO Cartridge
L	18	X	-	-	-	-	LTO Cartridge
L	19	X	-	-	-	-	LTO Cartridge
L	20	X	-	-	-	-	LTO Cartridge

Figure 15-17 I/O Port page

[Table 15-15](#) describes each field shown in [Figure 15-17](#).

Field	Indicates
<b>I/O Port</b>	
Position	The position of the I/O port: the LRM number, followed by Bottom Left, Bottom Right, Top Left, or Top Right
Locked?	I/O ports are not locked at the physical library level, so this field is always 5
Extended?	Whether the I/O port is currently opened
Direction	The I/O ports support both import and export operations, so the field is always Import and Export
Imports	The number of import operations from the I/O port
Exports	The number of export operations from the I/O port
Extend Timeout	The number of seconds before the XLS sends an alert when the I/O port is opened. The XLS sends an alert immediately when an I/O port is opened, so this field is 0
Last Extended	The date and time the I/O port was last opened

Table 15-15 Field definitions for I/O Port page

Field	Indicates
Status	The current status of the I/O port (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Availability	The primary availability and status of the I/O port, as follows: Unknown, Running/Full Power, Warning, In Test, Not Applicable, Power Off, Off Line, Off Duty, Degraded, Not Installed, Install Error, Power Save, Paused, Not Ready, Not Configured, and Quiesced
Enabled Default	The I/O port can be open and closed as soon as the XLS is booted, so this field is always Enabled?
Enabled State	Whether the I/O port is currently enabled (able to process commands) or disabled
Slots	
Column	The column identifier for the I/O port slot
Row	The row identifier for the I/O port slot
Media Present	Whether there is a cartridge currently in the slot, as follows: <b>4</b> The slot contains a cartridge <b>5</b> The slot is empty
Bar Code	If the slot contains a cartridge, the identifier on its barcode label
Picks	The number of times a cartridge was successfully picked from the slot
Retries	The number of times one or more retries was require to pick a cartridge from the slot
Failures	The number of failures that occurred while attempting to pick a cartridge from the slot
Media Types Supported	The type of media that can be placed in the slot

**Table 15-15** Field definitions for I/O Port page (*continued*)

### 15.3.10 Front Panel Slots

[Figure 15-18 on page 15-27](#) shows the fields displayed for the 40 optional cartridge slots on the front panel of the LRM.

**Note:** This page is available only if fewer than four I/O ports are installed.

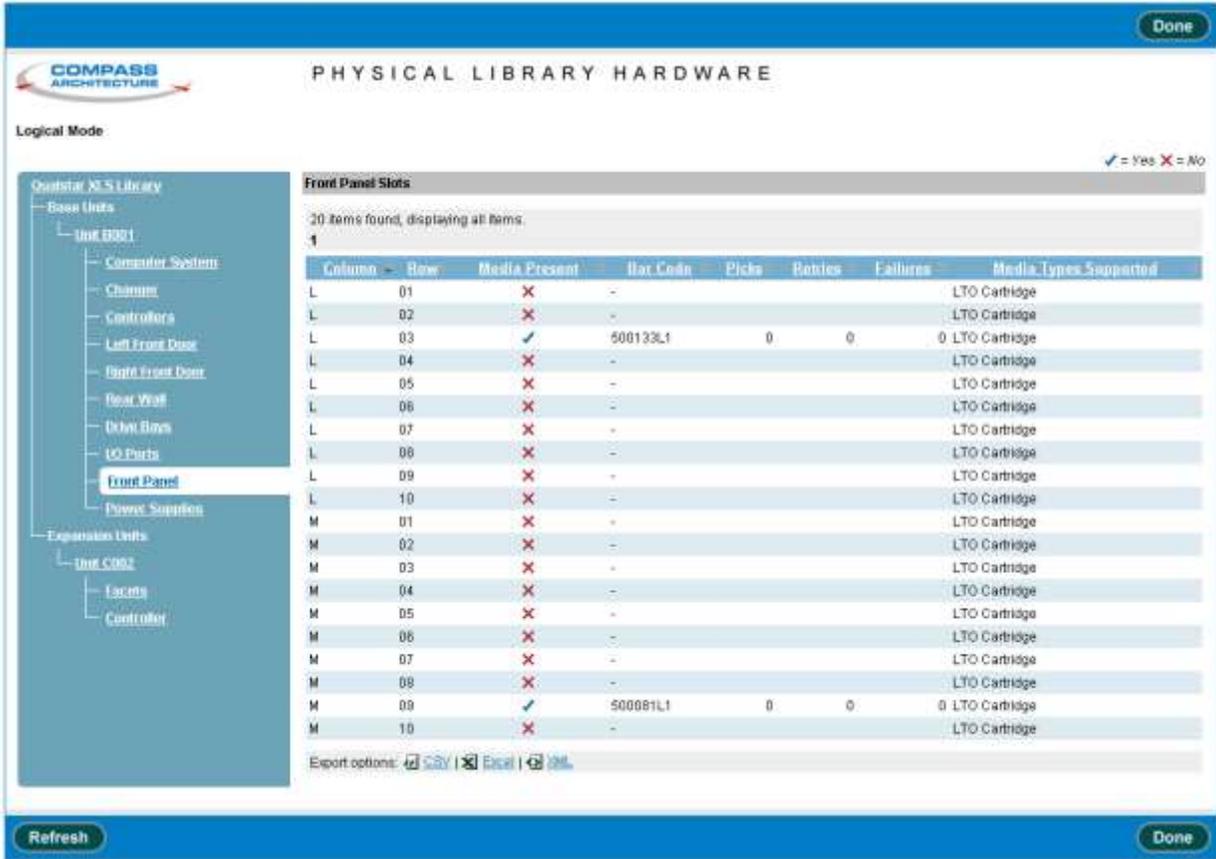


Figure 15-18 Information displayed for the front panel slots

Table 15-16 describes each field shown in Figure 15-18.

Field	Indicates
Column	The column identifier for the slot
Row	The row identifier for the slot
Media Present	Whether there is a cartridge currently in the slot, as follows: 4 The slot contains a cartridge 5 The slot is empty
Bar Code	If the slot contains a cartridge, the identifier on its barcode label
Picks	The number of times a cartridge was successfully picked from the slot
Retries	The number of times one or more retries was require to pick a cartridge from the slot

Table 15-16 Field definitions for front panel information page

Field	Indicates
Failures	The number of failures that occurred while attempting to pick a cartridge from the slot
Media Types Supported	The type of media that can be placed in the slot

**Table 15-16** Field definitions for front panel information page (*continued*)

### 15.3.11 Power Supplies

[Figure 15-19](#) shows the fields displayed for the power supplies in the LRM.

The screenshot shows the 'Power Supplies' section of the COMPASS ARCHITECTURE PHYSICAL LIBRARY HARDWARE interface. The table displays the following data:

ID	Input Freq. High	Input Freq. Low	Input Volt High	Input Volt Low	Total Output Power	Action
1	63	47	0	90000	500000	<a href="#">View</a>
2	63	47	0	90000	500000	<a href="#">View</a>
3	63	47	0	90000	500000	<a href="#">View</a>
4	63	47	0	90000	500000	<a href="#">View</a>
5	63	47	0	90000	500000	<a href="#">View</a>
6	63	47	0	90000	500000	<a href="#">View</a>
7	63	47	0	90000	500000	<a href="#">View</a>
8	63	47	0	90000	500000	<a href="#">View</a>

Export options:  CSV |  Excel |  HTML

**Figure 15-19** Information displayed for the power supplies

[Table 15-17](#) describes each field shown in [Figure 15-19](#).

Field	Indicates
ID	A unique identifier for the power supply
Input Freq. High	The frequency in Hertz at the high end of the power supply's input frequency range
Input Freq. Low	The frequency in Hertz at the low end of the power supply's input frequency range
Input Volt High	The high end of the input voltage range for the power supply in millivolts
Input Volt Low	The low end of the input voltage range for the power supply in millivolts

**Table 15-17** Field definitions for the power supply information page

Field	Indicates
Total Output Power	The total output power of the power supply in milliWatts
Action	Select <b>View</b> to see additional information for the selected power supply

**Table 15-17** Field definitions for the power supply information page (continued)

To view additional information for a specific power supply, select **View Details**. The Power Supply page opens, as shown in [Figure 15-20](#).



**Figure 15-20** Power Supply page

[Table 15-18](#) describes each field shown in [Figure 15-20](#).

Field	Indicates
ID	A unique identifier for the power supply
Status	The current status of the power supply (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Input Freq. High	The frequency in Hertz at the high end of the power supply's input frequency range
Input Freq. Low	The frequency in Hertz at the low end of the power supply's input frequency range
Input Volt High	The high end of the input voltage range for the power supply in millivolts
Input Volt Low	The low end of the input voltage range for the power supply in millivolts
Over Maximum Temperature?	Whether the power supply is exceeding its maximum temperature
Is a Switching Supply?	The XLS uses switching (vs. linear) power supplies, so this field is always True
Active Cooling Fan?	The power supplies include active cooling fans, so this field is always True
Variable Speed Fan?	The fans in the power supplies are not variable speed, so this field is always False

**Table 15-18** Field definitions for Power Supply page

Field	Indicates
Fan Desired Speed	The fans in the power supplies are not variable speed, so this field is n/a (not applicable)
Total Output Power	The total output power of the power supply in milliWatts

Table 15-18 Field definitions for Power Supply page (continued)

## 15.4 Information Displayed for the Media Expansion Module

As described in this section, you can view information about the following components for each Media Expansion Module (MEM) or expansion unit:

- Expansion unit itself (see [Section 15.4.1](#))
- Facets (see [Section 15.4.2 on page 15-33](#))
- Controller card (see [Section 15.4.3 on page 15-34](#))

### 15.4.1 Media Expansion Module

[Figure 15-21](#) shows the fields displayed for each expansion unit or Media Expansion Module (MEM).

The screenshot shows the COMPASS ARCHITECTURE software interface. The main panel displays the following information for Unit CB02:

Carousal			
Powered On?	Yes	Cabinet ID:	110
Can Be FRIed?	Yes	Orientation:	F
Num Facets:	18	Num Magazine Rows:	12
Facet Angle:	20 degrees		

Rack & Chassis			
Height:	3 Us	Security Breach:	No Breach
Depth:	1 U	Is Locked?	Yes
Width:	5 Us	Type of Rack:	Non-Standard
Weight:	8 lbs.	Country Designation:	USA
Cable Management Strategy:	(Not Specified)	Number of Power Cords:	1
Service Philosophy:	Service From Back	Current Required or Produced:	2 Amos at 120 Volts
Lock Present?	Yes	Heat Generation:	3 BTU/hour
Audible Alarm?	No	Chassis Types:	Storage Chassis
Visible Alarm?	Yes		

Identification			
Manufacturer:	Qualstar	Version:	1.0
Model:	XLS-2	Other Identification:	(Not Specified)
Tag:	7-8887-900	Manufacture Date:	2003/02/13 05:04
Serial Number:	123-6677-9879	Vendor Equipment Type:	(Not Specified)

Figure 15-21 Information displayed for a Media Expansion Module

[Table 15-19](#) describes each field shown in [Figure 15-21](#).

Field	Indicates
<b>Carousel</b>	
Powered On?	Whether the MEM is powered on
Can be FRUed?	The MEM itself is not a field replaceable unit (FRU) so this field is always False
Num Facets	The number of facets, or columns of cartridges, on the carousel. The XLS-89000 carousel includes 18 facets so this field would be 18 while the XLS-85000 has 9 facets so the field would be 9.
Facet Angle	For a XLS-89000 which includes 18 facets, this field is always 20 degrees (360/18). With an XLS-85000 that has 9 facets this field will be 40 degrees (360/9).
Cabinet ID	A unique identifier for the MEM
Orientation	The orientation of the MEM. The MEM is always oriented to the front, so this field is always F
Num Magazine Rows	The number of magazines on each facet of the carousel. Since each facet includes 12 magazines, this field is always 12. Each magazine contains 5 cartridge slots (12 $\times$ 5=60 rows per facet).
<b>Rack &amp; Chassis</b>	
Height	The height of the MEM in inches
Depth	The depth of the MEM in inches
Width	The width of the MEM in inches
Weight	The weight of the MEM in pounds
Service Philosophy	The primary service access to the MEM. The MEM is typically serviced from the back, so this field is always Service From Back.
Lock Present?	Each door on a MEM contains a lockable latch, so this field is always True. The XLS-89000 has two doors, while the XLS-8500 has a single door.
Audible Alarm?	The MEM does not have an audible alarm, so this field is always False
Visible Alarm?	The MEM does not contain LEDs or any other visible alarm, so this field is always False
Security Breach	Whether the MEM is currently experiencing a security breach; for example, a security breach could occur if you open a door without taking logical libraries offline (only possible if electronic locks are not installed)
Is Locked?	Whether the MEM is currently locked
Type of Rack	The MEM is not a standard rack size so this field is always Non-Standard.
Country Designation	USA
Number of Power Cords	The MEM does not use a separate power cord, so this field is always 0
Current Required	The current required by the MEM in amps at 120 volts

**Table 15-19** Field definitions for Media Expansion Module information page

---

<b>Field</b>	<b>Indicates</b>
Heat Generation	The amount of heat generated by the MEM in BTU/hour
Chassis Types	Whether the chassis is a base unit (that is, LRM) or carousel (that is, MEM)
<b>Identification</b>	
Manufacturer	The manufacturer of the MEM; always Qualstar
Model	The model number of the XLS
Tag	A unique identifier for this MEM
Serial Number	The serial number of the XLS
Version	The version number
Manufacture Date	The date the MEM was manufactured

**Table 15-19** Field definitions for Media Expansion Module information page (*continued*)

### 15.4.2 Facets

Figure 15-22 shows the fields displayed for each of the nine or 18 facets (columns) in a MEM’s carousel.

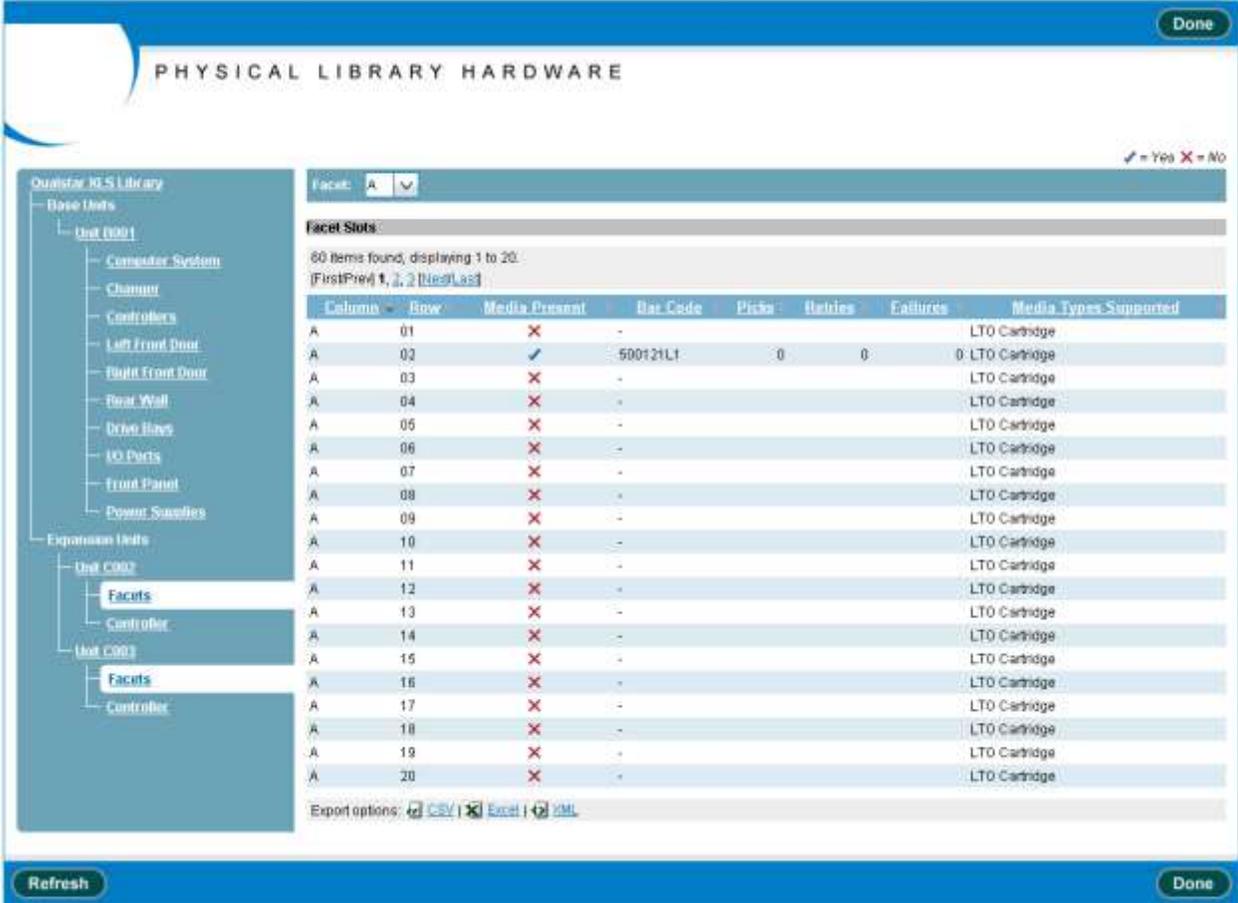


Figure 15-22 Information displayed for the facets of a XLS-89000

To view information about the 60 slots with each facet, select a letter from **A** to **T** in the Facet drop-down list (the letters I and O are skipped). Refer to [Figure A-13](#) in [Appendix A, “Library Addresses,”](#) to learn the addresses of the MEM cartridge slots.

[Table 15-20](#) describes each field shown in [Figure 15-22](#).

Field	Indicates
Column	The column (facet) identifier for the slot
Row	The row identifier for the slot
Media Present	Whether there is a cartridge currently in the slot, as follows: <b>4</b> The slot contains a cartridge <b>5</b> The slot is empty

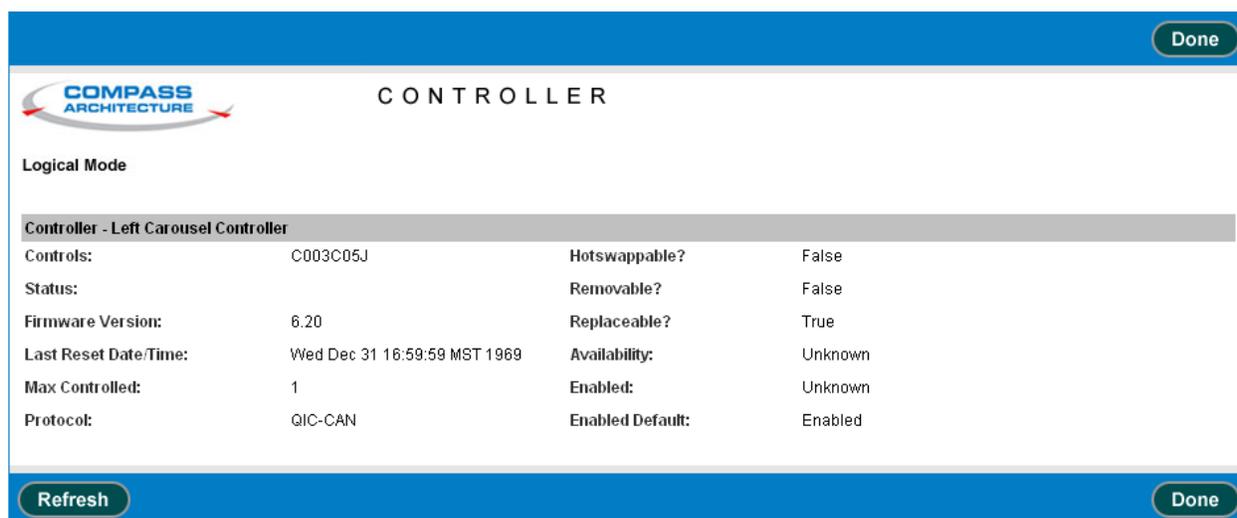
Table 15-20 Field definitions for the facet information page

Field	Indicates
Bar Code	If the slot contains a cartridge, the identifier on its barcode label
Picks	The number of times a cartridge was successfully picked from the slot
Retries	The number of times one or more retries was require to pick a cartridge from the slot
Failures	The number of failures that occurred while attempting to pick a cartridge from the slot
Media Types Supported	The type of media that can be placed in the slot

**Table 15-20** Field definitions for the facet information page (*continued*)

### 15.4.3 MEM Controller Card

[Figure 15-23](#) shows the fields displayed for the controller card in the MEM.



**Figure 15-23** Information displayed for the MEM controller card

[Table 15-21](#) describes each field shown in [Figure 15-23](#).

Field	Indicates
Controller	The name of the controller card
Controls	A Qualstar-unique designator for the hardware controlled by the controller card
Status	The current status of the controller (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Firmware Version	The firmware version currently installed on the controller
Last Reset Date/Time	The date and time the controller was last reset or powered on

**Table 15-21** Field definitions for MEM Controller page

Field	Indicates
Max Controlled	The maximum number of elements that can be controlled by the controller card
Protocol	The communication protocol used by the controller card
Hot Swappable?	Whether the controller card is hot swappable (that is, whether it can be replaced while the XLS is receiving power), as follows: <b>4</b> The controller card is hot swappable <b>5</b> The controller card is not hot swappable
Removable?	Whether the controller card is removable (that is, whether it can be taken in and out without impairing the function of the library), as follows: <b>4</b> The controller card is removable <b>5</b> The controller card is not removable
Replaceable?	Whether the controller card is replaceable (that is, whether it is possible to replace the card with a different one), as follows: <b>4</b> The controller card is replaceable <b>5</b> The controller card is not replaceable
Availability	The primary availability and status of the controller card, as follows: Unknown, Running/Full Power, Warning, In Test, Not Applicable, Power Off, Off Line, Off Duty, Degraded, Not Installed, Install Error, Power Save, Paused, Not Ready, Not Configured, and Quiesced
Enabled	Whether the controller is currently enabled (able to process commands) or disabled
Enabled Default	The controller can process commands as soon as it is booted, so this field is always Enabled?

**Table 15-21** Field definitions for MEM Controller page (*continued*)

## 15.5 Information Displayed for the Tape Drives

You can view information about each tape drive in a Library Resource Module. To access tape drive information, follow these steps:

1. If necessary, press the **Home** button in the upper right corner of any page to return to the Home page.
2. Select **Service View** or **Show All** to display the Physical Library portlet.
3. From the Administration section of the Physical Library portlet, select **View Hardware Details**.
4. From the hardware navigation panel on the left, select **Drive Bays** for the base unit that contains the tape drive you want to view.
5. Select **View Details** for the drive bay that contains the tape drive you want to view.
6. Select **View Details** for the specific tape drive.
7. Select any of the four tabs to get detailed information about the tape drive:
  - Status (see [Section 15.5.1 on page 15-37](#))
  - Identification (see [Section 15.5.2 on page 15-39](#))
  - Specifications (see [Section 15.5.3 on page 15-40](#))
  - Other Hardware (see [Section 15.5.4 on page 15-41](#))
8. When you are finish viewing tape drive information, press **Done** to return to the previous page.

## 15.5.1 Status

[Figure 15-24](#) shows the fields displayed when you select the Status tab for a tape drive.

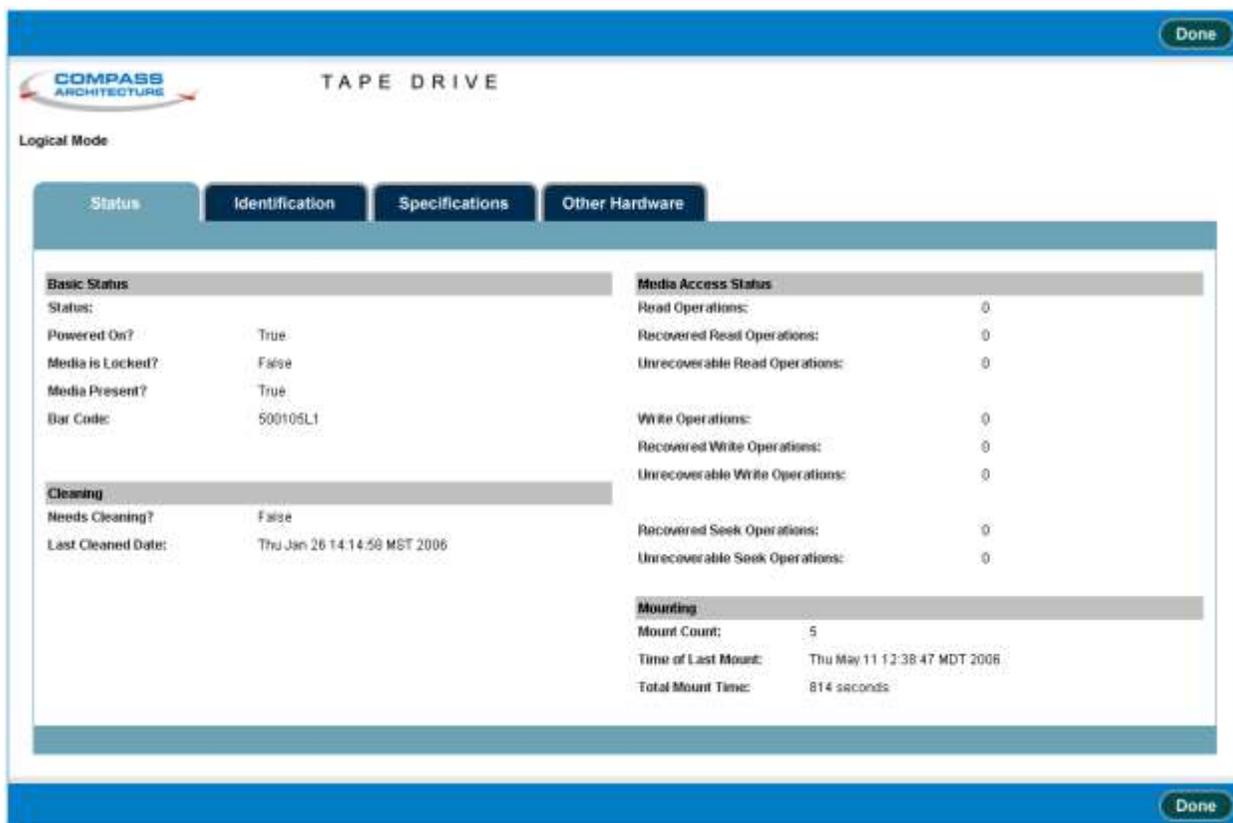


Figure 15-24 Status tab on Tape Drive page

[Table 15-22](#) describes each field shown in [Figure 15-24](#).

Field	Indicates
<b>Basic Status</b>	
Status	The current status of the tape drive (see <a href="#">Table 15-4 on page 15-7</a> for descriptions)
Powered On?	Whether the tape drive is powered on
Media is Locked?	Whether the write-protect switch is set for the cartridge
Media Present?	Whether the tape drive contains a cartridge
Bar Code	If the tape drive contains a cartridge, the identifier on its barcode label
<b>Cleaning</b>	
Needs Cleaning?	Whether the tape drive is reporting that it needs to be cleaned
Last Cleaned Date	The date and time the tape drive was last cleaned

Table 15-22 Field definitions for Status tab on Tape Drive page

<b>Field</b>	<b>Indicates</b>
<b>Media Access Status</b>	
Read Operations	The number of attempted read operations since the XLS was last powered on
Recovered Read Operations	The number of recovered read operations since the XLS was last powered on
Unrecoverable Read Operations	The number of unrecoverable read operations since the XLS was last powered on
Write Operations	The number of attempted write operations since the XLS was last powered on
Recovered Write Operations	The number of recovered write operations since the XLS was last powered on
Unrecoverable Write Operations	The number of unrecoverable write operations since the XLS was last powered on
Recovered Seek Operations	The number of recovered seek operations since the XLS was last powered on
Unrecoverable Seek Operations	The number of unrecoverable seek operations since the XLS was last powered on
<b>Mounting</b>	
Mount Count	The number of times that a tape has been mounted for data transfer or cleaning
Time of Last Mount	The date and time that a tape was last mounted
Total Mount Time	The total time in seconds that a tape has been mounted

**Table 15-22** Field definitions for Status tab on Tape Drive page (*continued*)

### 15.5.2 Identification

Figure 15-25 shows the fields displayed when you select the Identification tab for a tape drive.



Figure 15-25 Identification tab on Tape Drive page

Table 15-23 describes each field shown in Figure 15-25.

Field	Indicates
Location	The location of the tape drive, including information about the LRM and the column and row
Manufacturer	The manufacturer of the tape drive
Model	The model number of the tape drive
Vendor Equipment Type	The equipment type; always Tape Drive
Serial Number	The serial number of the tape drive
Manufacture Date	The date the tape drive was manufactured

Table 15-23 Field definitions for Identification tab on Tape Drive page

### 15.5.3 Specifications

[Figure 15-26](#) shows the fields displayed when you select the Specifications tab for a tape drive.



**Figure 15-26** Specifications tab on Tape Drive page

[Table 15-24](#) describes each field shown in [Figure 15-26](#).

Field	Indicates
Target	The Target ID for the tape drive
Can be FRUed?	Tape drives are field replaceable units (FRUs) so this field is always True
Number of Media Supported	Each tape drive supports one cartridge, so this field is always 1
Compression Method	The algorithm used by the tape drive to compress data
Uncompressed Data Rate	The sustained data transfer rate in KB/sec that the tape drive can read from and write to tape
Unload Time	The time, in seconds, for a tape to go from its BOT position to being fully ejected and accessible to the handler
Min Block Size	The minimum block size, in bytes, for media accessed by the tape drive
Max Block Size	The maximum block size, in bytes, for media accessed by the tape drive
Security	Whether the write-protect switch is set for the cartridge
Max Media Size	The maximum size, in GB, of media supported by the tape drive
Max Rewind Time	The time, in seconds, to move from the most physically distant point on the tape to the beginning

**Table 15-24** Field definitions for Specifications tab on Tape Drive page

Field	Indicates
Load Time	The time, in seconds, from “load” to being able to read or write a tape
Error Methodology	The type of error detection and correction supported by the tape drive

**Table 15-24** Field definitions for Specifications tab on Tape Drive page (*continued*)

## 15.5.4 Other Hardware

[Figure 15-27](#) shows the fields displayed when you select the Other Hardware tab for a tape drive.



**Figure 15-27** Other Hardware tab on Tape Drive page

[Table 15-25](#) describes each field shown in [Figure 15-27](#).

Field	Indicates
<b>Slot</b>	
Location Coordinates	The location of the tape drive, including information about the LRM and the column and row
Location Type	Tape drives are installed in slots, so this field is always Slot
Media Types Supported	The type of media supported by the tape drive
Media Sizes Supported	The media size supported by the tape drive
<b>Fan</b>	
Active Cooling	The tape drives include active cooling fans, so this field is always True

**Table 15-25** Field definitions for Other Hardware tab on Tape Drive page

Field	Indicates
Variable Speed	The fans in the tape drives are not variable speed, so this field is always False
Desired Speed	The fans in the tape drives are not variable speed, so this field is n/a (not applicable)

**Table 15-25** Field definitions for Other Hardware tab on Tape Drive page (*continued*)

# 16

# Preventive Maintenance

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This chapter provides instructions for the following tasks:

- Cleaning the library's exterior (see [Section 16.1](#))
- Cleaning and inspecting the library's interior (see [Section 16.2](#))
- Checking the air filters (see [Section 16.3 on page 16-3](#))
- Replacing an air filter (see [Section 16.4 on page 16-5](#))

**Note:** If additional library maintenance or repair is required, refer to the *XLS Library Technical Service Manual*.

## 16.1 Cleaning the Exterior

As required, use any standard office equipment cleaner and a soft, clean cloth to clean the exterior of the XLS.

### CAUTION

Do not use ammonia-based cleaners or other harsh cleaning solutions, which may damage the exterior surfaces.

The windows are made of polycarbonate plastic and should be cleaned with an appropriate, ammonia-free, plastic cleaning solution. Kleenmaster Brilliantize is recommended.

**Note:** Kleenmaster® Brilliantize® is produced by Chemical Products Co., Inc., Omaha, Nebraska.

## 16.2 Cleaning and Inspecting the Interior

### CAUTION

To avoid damaging the robotics, motors, and control cards, never attempt to lubricate the library's internal components.

Under normal operating conditions in an office environment, the interior of the XLS does not require cleaning. If you detect dust building up inside the cabinet, check the condition of the air filter and replace it if it is dirty (see [Section 16.3 on page 16-3](#)).

If you are operating the library in an especially dusty environment, you may need to clean the library's interior. In addition, you should check the condition of the cartridge slots on a regular basis (typically once per year).

**Important:** You must disconnect the library from power before cleaning the interior. To avoid a lengthy out-of-service period, be sure to schedule library inspection and cleaning to coincide with other service procedures.

To clean and inspect the library's interior, follow these steps:

1. Shut down the library (see [Section 8.3 on page 8-6](#)).
2. Disconnect the power cord.

### **WARNING!**

To avoid the possibility of personal injury, be sure to turn off the library's power and disconnect the power cord before doing any work inside the cabinet.

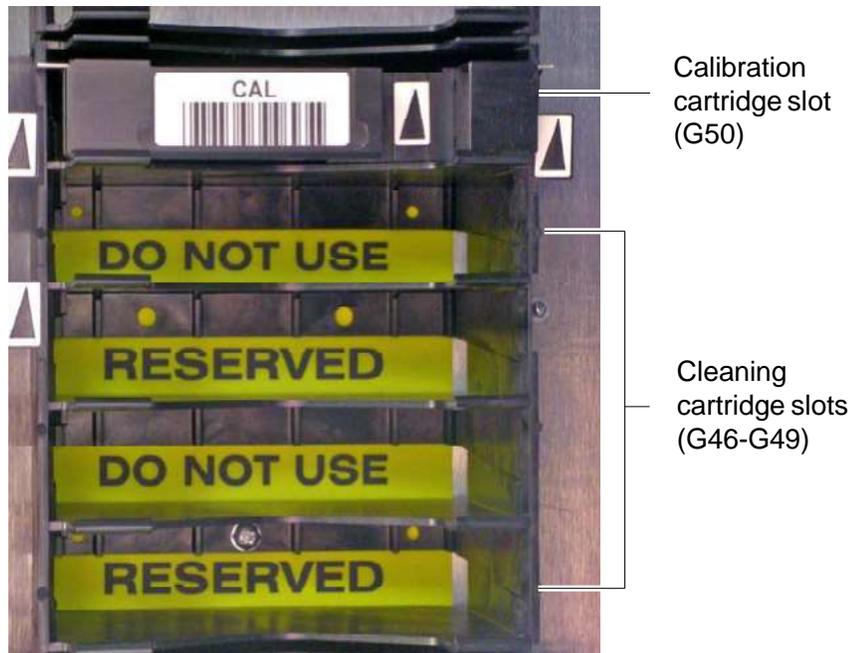
### **GEFAHR!**

UM EVENTUELLE PERSÖNLICHE VERLETZUNGEN ZU VERMEIDEN, VERSICHERN SIE SICH VOR JEGLICHER ARBEIT INNERHALB DES GEHÄUSES DASS DER STROM DES XLS AUSGESCHALTET UND DAS STROMKABEL AUSGESTECKT IST.

3. Using the key, unlock and open the doors.
4. Using a vacuum cleaner or slightly damp cloth, carefully remove any dust from within the cabinet.
5. Inspect each cartridge slot. If you notice broken or worn parts, replace the 5-slot cartridge magazine. See the *XLS Library Technical Service Manual*.
6. Using a dry, lint-free cloth, wipe any dust from the cartridge cases.

7. Replace any cleaning cartridges in the system-reserved slots (G46 to G49). See [Figure 16-1](#).

**Important:** Be sure that the system-reserved slots contain cleaning cartridges only. Never install data cartridges in these slots.



**Figure 16-1** Location of the calibration and reserved cleaning cartridges

8. Inspect the calibration cartridge in the system-reserved slot (G50) and replace it if it is worn or damaged. See [Figure 16-1](#).
9. Close and lock the doors.
10. Reapply power to the library. See the *XLS Library Installation Manual* for instructions.

### 16.3 Checking the Air Filters

Fans in the system controller, each power supply, and each drive carrier draw outside air through filters located behind the grilles on the LRM and MEM. The filters help keep dust and dirt from entering the library and degrading the performance of the tape drives and media. To ensure the best reliability, periodically check and replace the air filters.

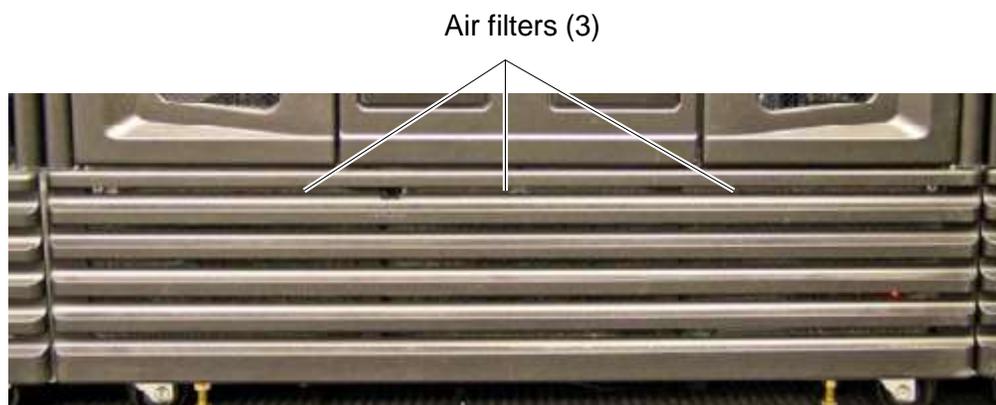
To order replacement filters, see [Section 1.3.2, “Contacting Qualstar,” on page 1-8](#).

**Important:** The air filters help protect the library from large contaminants but are not intended to keep the tape drives clean. For best performance, clean the tape drives according to the manufacturer’s recommendations.

X-Link automatically alerts users to check the air filters after the amount of time specified by the Days until Air Filter Check library policy (see [Section 10.5 on page 10-5](#)). Because filters should be replaced more frequently in dusty environments, the recommended time between air filter changes varies with the installation environment. When the XLS is first installed, inspect the filters frequently. Then, as required, adjust the time specified for the Days until Air Filter Check policy.

When you receive a check air filter alert, follow these steps:

1. Locate the air filters behind the grille, as shown in [Figure 16-2](#). The XLS-832700 and XLS-816100 have three filters, the XLS-820500, XLS-812300 and XLS-89000 MEM all have two filters.



**Figure 16-2** Location of the air filters (XLS-832700 shown)

2. Inspect the air filters. If dirt is clinging to the gray filter, you should replace it.
3. As required, adjust the **Days until Air Filter Check** library policy:
  - a. Access the Settings & Policies portlet. See [Section 10.1 on page 10-1](#).

- b. From the Settings & Policies portlet, select **View/Edit Policies**. The View/Edit Policies page opens, as shown in [Figure 16-3](#).

The screenshot shows the 'VIEW/EDIT POLICIES' page. At the top right, there are 'Save Changes' and 'Cancel Changes' buttons. The page header includes the 'COMPASS ARCHITECTURE' logo and the title 'VIEW/EDIT POLICIES'. Below the header, it indicates 'Logical Mode' and the library name 'xdsalpha.boulder.qualstar.com - Production'. A section titled 'Policies' contains the following settings:

- Days until Air Filter Check: 120 days
- Minutes before Logging Off Idle Users: 30 minutes
- Event Severity to Email: Major
- Event Severity to Page: Critical

At the bottom right, there are 'Save Changes' and 'Cancel Changes' buttons. A small icon with a plus sign and the text '= Required' is visible in the top right corner of the main content area.

**Figure 16-3** View/Edit Policies page

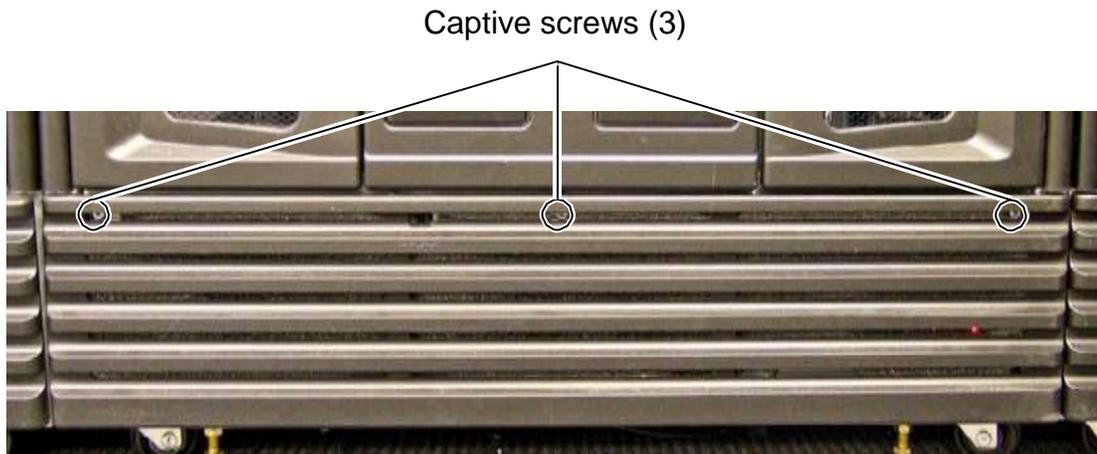
- c. In the **Days until Air Filter Check** field, specify how long you want to wait before receiving another alert to check the air filters.
- If you did not need to change the filters, enter the number of days until you want to receive a second reminder.
  - If the filters are especially dirty, specify a shorter time for the policy.

## 16.4 Replacing the Air Filters

As shown in [Figure 16-2 on page 16-4](#), the air filters are located behind the grilles on the LRM and the MEM. You can replace the air filters while the library is powered on and in logical mode.

To replace the air filters, follow these steps:

1. Locate the captive screws at the top of the grille, as shown in [Figure 16-4](#). The XLS-832700 and XLS-816100 have three screws, the XLS-820500, XLS-812300 and XLS-89000 MEM all have two screws.



**Figure 16-4** Location of the captive screws on the grille (XLS-832700 shown)

2. Using a medium-sized Phillips screwdriver, loosen the screws.
3. Release the top edge of the grille from the chassis. See [Figure 16-5](#).



**Figure 16-5** Releasing the top edge of the grille (XLS-832700 shown)

4. Remove the bottom edge of the grille by lifting the tabs out of the slots.

5. Remove the old air filters from the back of the grille. See [Figure 16-6](#).



**Figure 16-6** Removing the air filter

6. With their notched edges toward the top of the grille, insert the new filters, making sure that all edges are held securely under the metal flanges.
7. Insert the grille's tabs into the slots on the frame.
8. Raise the top of the grille into position.
9. Using the Phillips screwdriver, tighten the captive screws.

**Notes:**

# Part IV:

# Reference

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Appendix B, “Replacing a Tape Drive” .....	B-1
“Glossary” .....	GL-1
“Index” .....	1-1

**Notes:**

# Appendix A Library Addresses

This appendix lists physical addresses for every possible cartridge slot or tape drive location in the XLS-8161100, XLS-832700, XLS-820500, or XLS-812300.

You may need to know the library's physical addresses when you install the tape drives and cartridges and when you perform various operations on the physical library. These physical addresses are fixed and cannot be changed. In this way, they differ from the SCSI element addresses for a logical library, which are assigned when the logical libraries are created.

To determine the physical address for a particular cartridge slot or tape drive within the physical library, refer to the figures listed in [Table A-1](#):

Model	For physical addresses of...	Refer to...
XLS-8161100	All cartridge slots on the rear wall, carousels and the optional door slots	<a href="#">Figure A-1 on page A-3</a>
	The carousels and the drive bays	<a href="#">Figure A-2 on page A-4</a>
	The tape drives as viewed from the back	<a href="#">Figure A-3 on page A-5</a>
XLS-832700	All cartridge slots on the rear wall and the optional door slots	<a href="#">Figure A-4 on page A-6</a>
	The rear wall assuming that drive bays are installed instead of cartridge bays	<a href="#">Figure A-5 on page A-7</a>
	The tape drives as viewed from the back	<a href="#">Figure A-6 on page A-8</a>
XLS-820500	All cartridge slots on the rear wall and the optional door slots	<a href="#">Figure A-7 on page A-9</a>
	The rear wall assuming that drive bays are installed instead of cartridge bays	<a href="#">Figure A-8 on page A-10</a>
	The tape drives as viewed from the back	<a href="#">Figure A-9 on page A-11</a>
XLS-812300	All cartridge slots on the rear wall and the optional door slots	<a href="#">Figure A-10 on page A-12</a>
	The rear wall assuming that drive bays are installed instead of cartridge bays	<a href="#">Figure A-11 on page A-13</a>
	The tape drives as viewed from the back	<a href="#">Figure A-12 on page A-14</a>
	The slots in the expansion pods	<a href="#">Figure A-13 on page A-15</a>
All Models	Left and right door slots, assuming that all possible cartridge slots are installed.	<a href="#">Figure A-14 on page A-16</a>
	The I/O port slots	<a href="#">Figure A-15 on page A-17</a>
	The fixed port slots	<a href="#">Figure A-16 on page A-17</a>

**Table A-1** Physical addresses for the XLS

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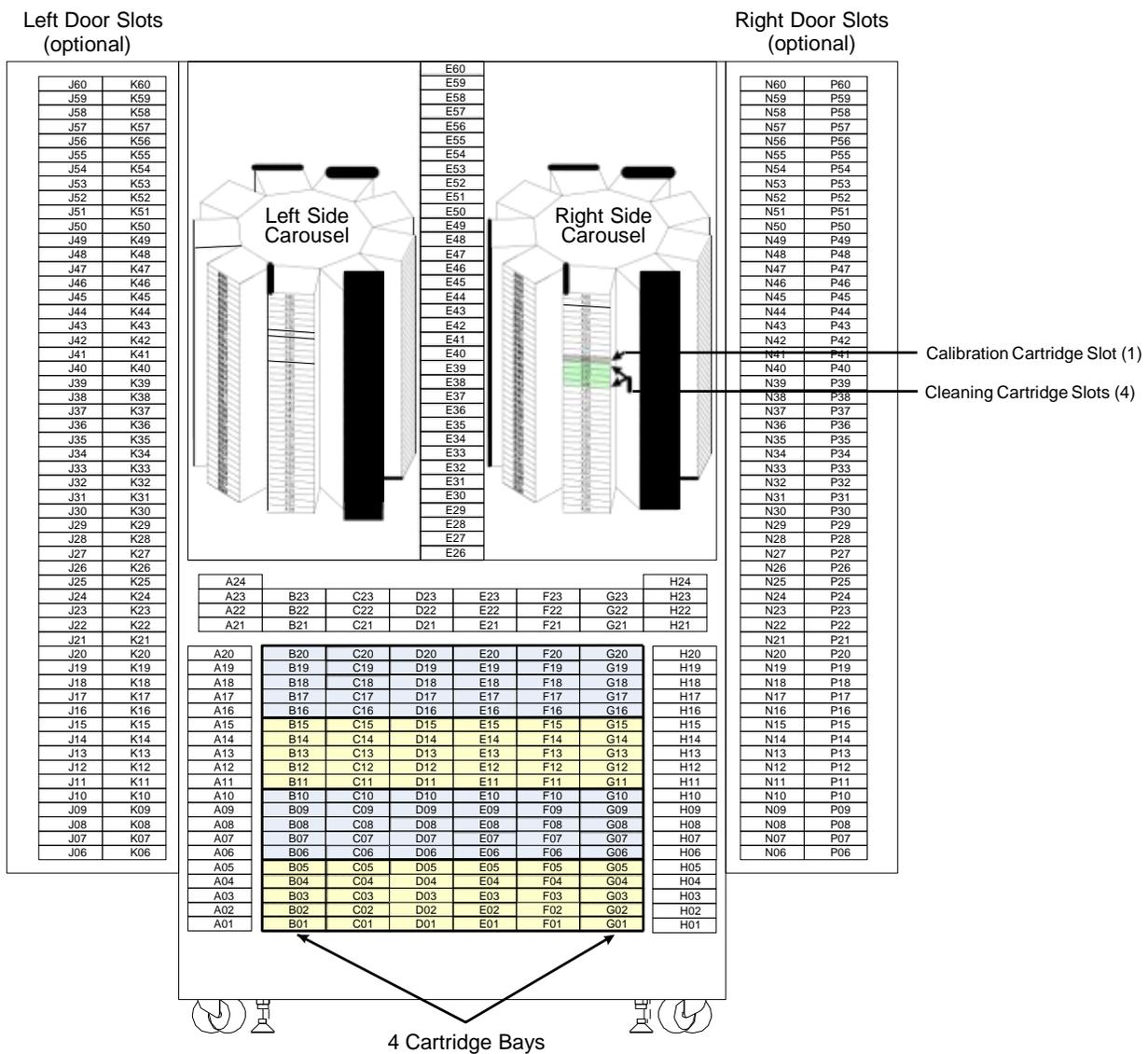
Model	For physical addresses of...	Refer to...
MEMs	The cartridge slots on the carousel (XLS-832700 and XLS-820500)	<a href="#">Figure A-17 on page A-18</a> and <a href="#">Figure A-18 on page A-19</a>

**Table A-1** Physical addresses for the XLS (*continued*)

## A.1 Addresses for the XLS-8161100

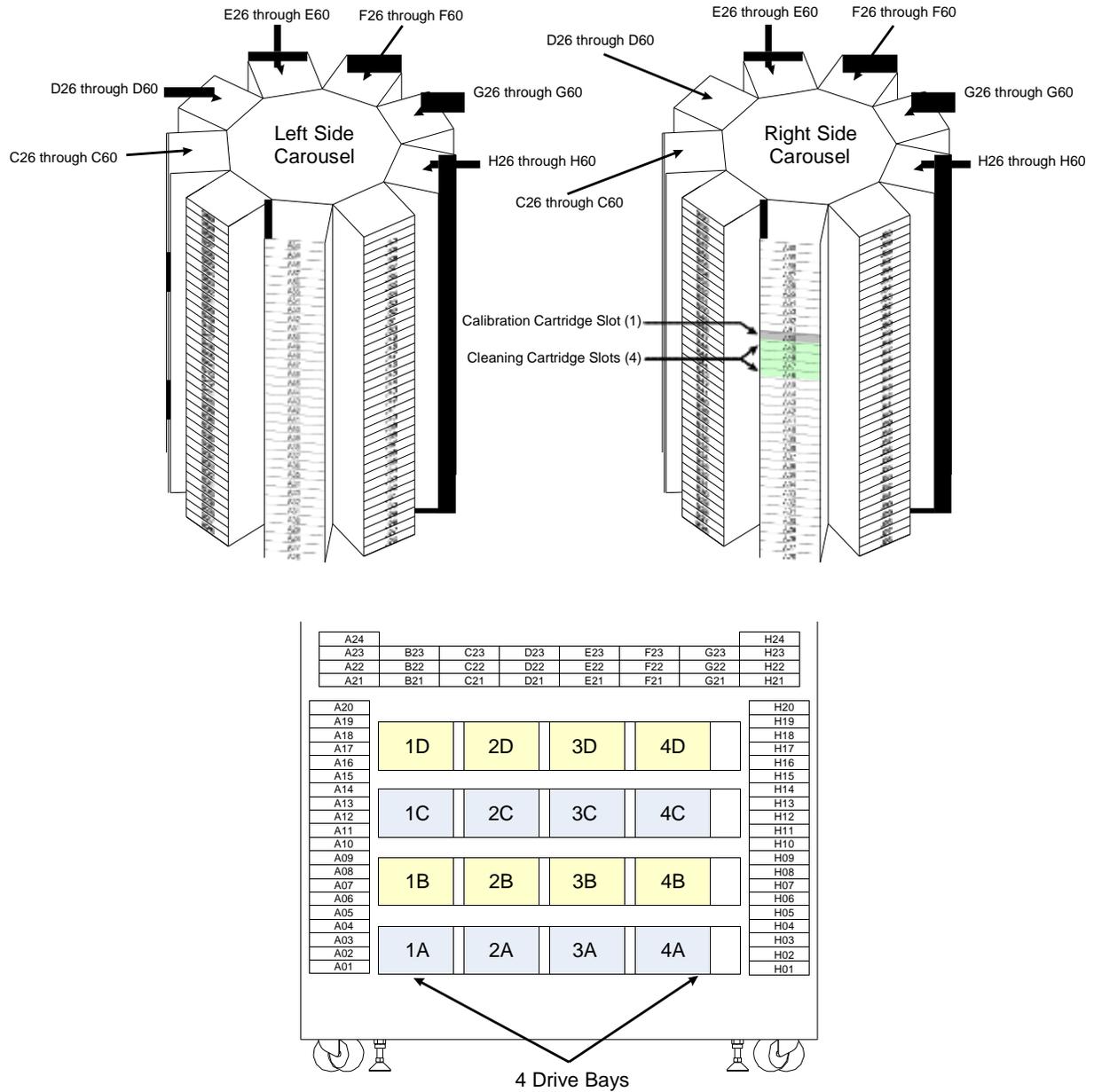
**Figure A-1** shows the physical addresses for the rear wall, carousels and the optional door slots of the XLS-8161100. The figure shows four cartridge bays installed in positions B01–G01 to B20–G20. While this is technically an invalid configuration (the XLS must include at least one drive bay), refer to this figure to learn the fixed address of each potential cartridge position.

**Note:** Slot A50 in the right side carousel is reserved for the calibration cartridge, and slots A46–A49 are reserved for the cleaning cartridges used by the physical library.



**Figure A-1** Physical addresses for the rear wall and carousels of the XLS-8161100, with 4 cartridge bays installed in positions B01–G20 (view from the front with the doors open)

**Figure A-2** shows the physical addresses for the carousels of the XLS-8161100 and a detailed view of four drive bays installed (that is, no cartridge bays are installed). This figure shows the fixed address for each tape drive position as viewed from the front.



**Figure A-2** Physical addresses for the carousels of the XLS-8161100 and 4 drive bays installed in positions 1A–4D (view from the front with the doors open)

[Figure A-3](#) shows the physical addresses of the tape drives in the XLS-8161100, as viewed from the back.

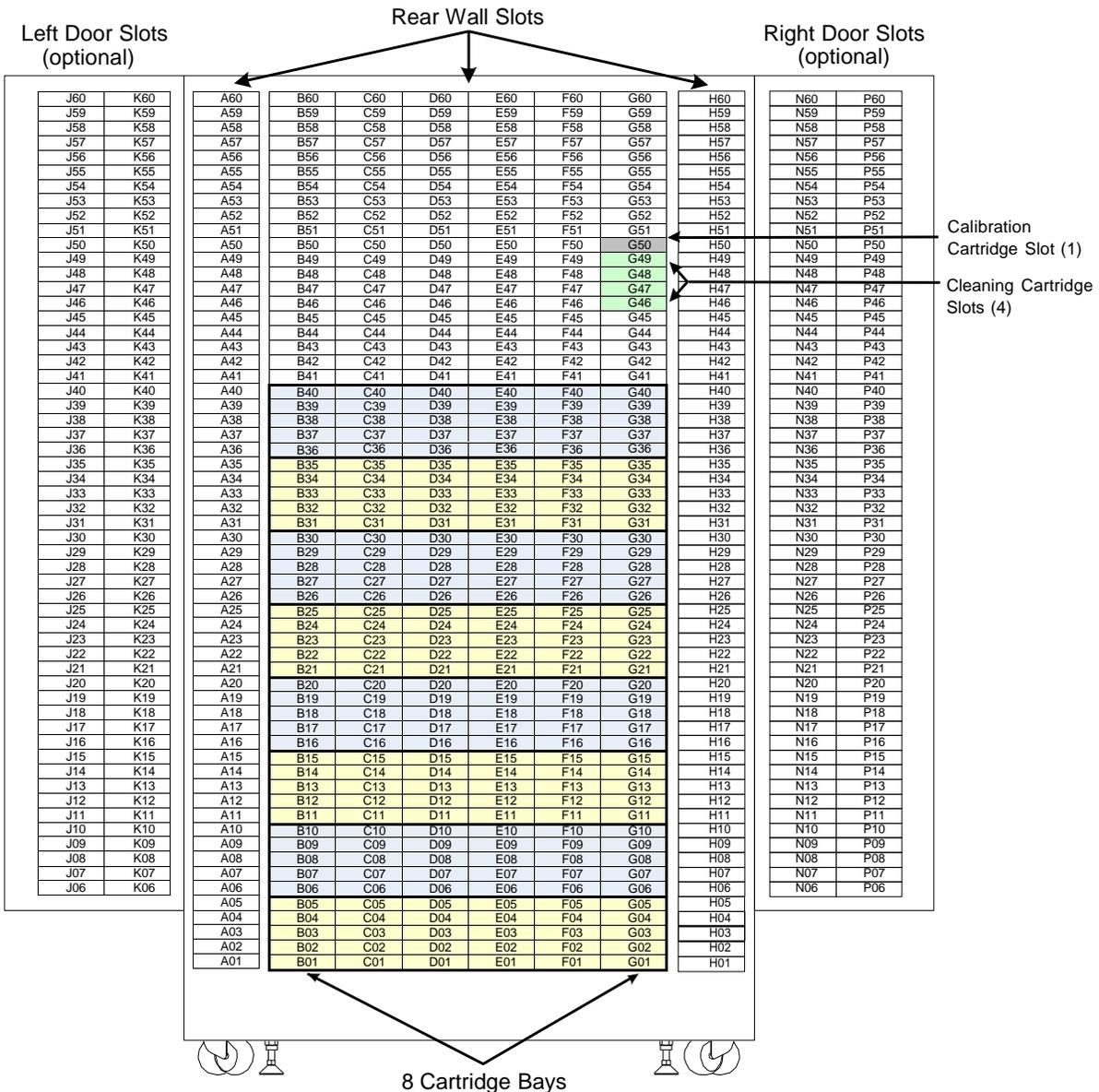
	4	3	2	1
D	4D	3D	2D	1D
C	4C	3C	2C	1C
B	4B	3B	2B	1B
A	4A	3A	2A	1A

**Figure A-3** Physical addresses for the tape drives in the XLS-8161100, as viewed from the back

## A.2 Addresses for the XLS-832700

**Figure A-4** shows the physical addresses for the rear wall of the XLS-832700 and for the optional door slots. The figure shows eight cartridge bays installed in positions B01–G01 to B40–G40. While this is technically an invalid configuration (the XLS must include at least one drive bay), refer to this figure to learn the fixed address of each potential cartridge position on the rear wall.

**Note:** Slot G50 is reserved for the calibration cartridge, and slots G46–G49 are reserved for the cleaning cartridges used by the physical library.



**Figure A-4** Physical addresses for the rear wall of the XLS-832700, with 8 cartridge bays installed in positions B01–G40 (view from the front with the doors open)

Figure A-5 shows the physical addresses for the rear wall of the XLS-832700, assuming that eight drive bays are installed (that is, no cartridge bays are installed). This figure shows the fixed address for each tape drive position as viewed from the front.

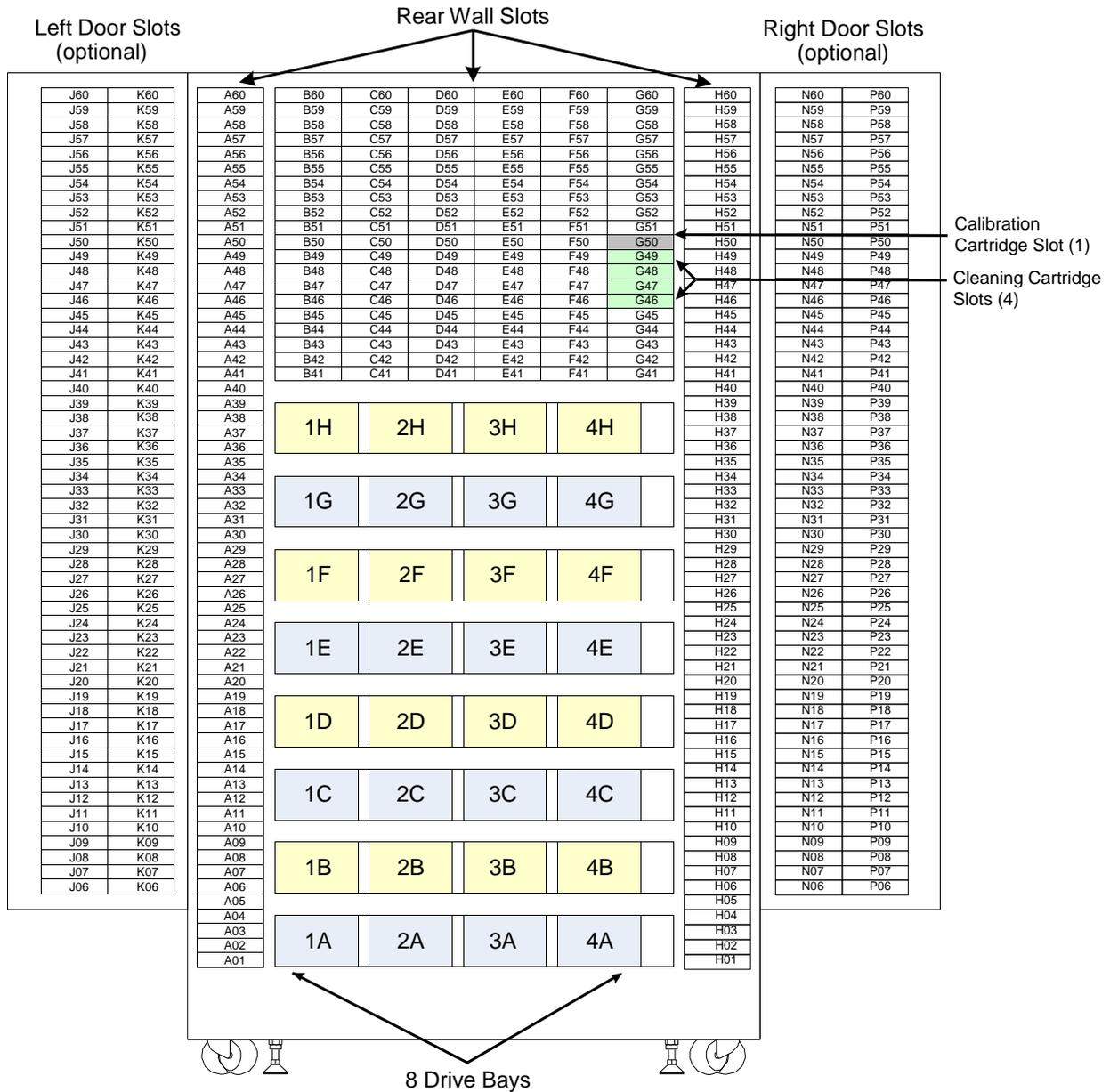


Figure A-5 Physical addresses for the rear wall of the XLS-832700, with 8 drive bays installed in positions 1A–4H (view from the front with the doors open)

**Figure A-6** shows the physical addresses of the tape drives in the XLS-832700, as viewed from the back.

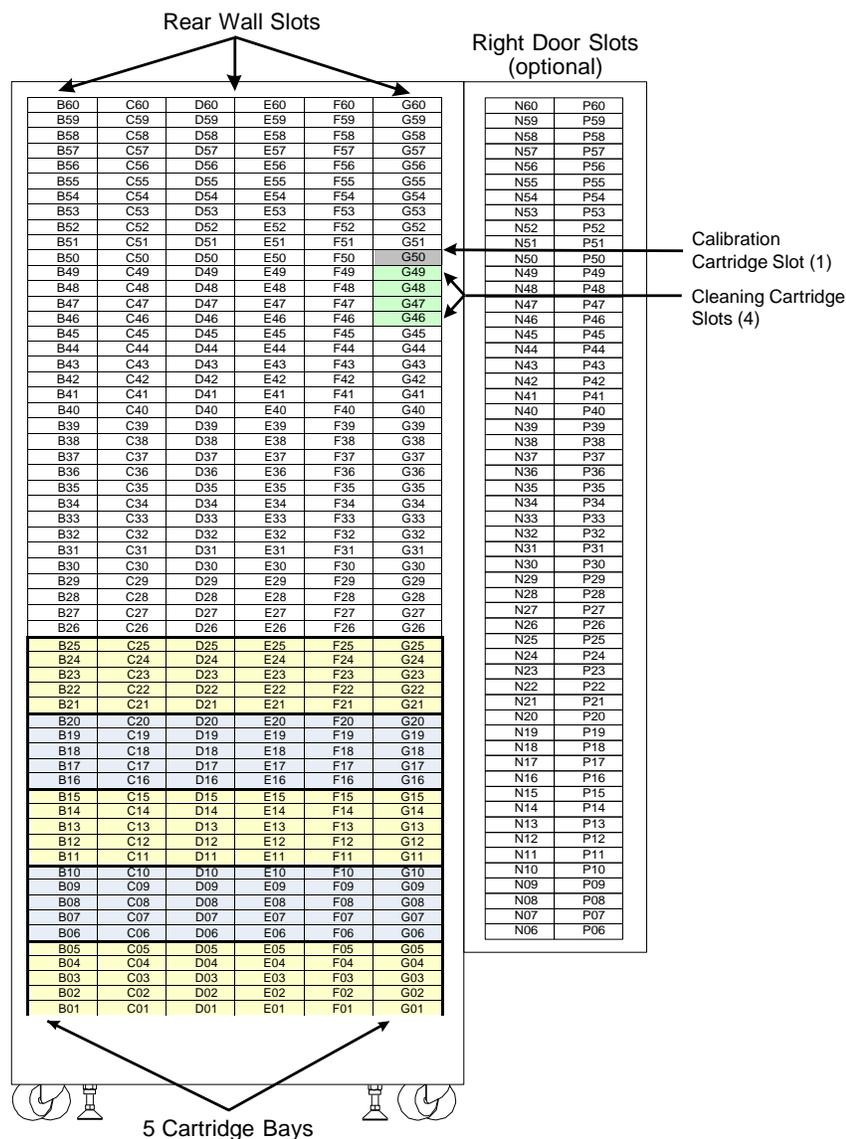
	4	3	2	1
H	4H	3H	2H	1H
G	4G	3G	2G	1G
F	4F	3F	2F	1F
E	4E	3E	2E	1E
D	4D	3D	2D	1D
C	4C	3C	2C	1C
B	4B	3B	2B	1B
A	4A	3A	2A	1A

**Figure A-6** Physical addresses for the tape drives in the XLS-832700, as viewed from the back

### A.3 Addresses for the XLS-820500

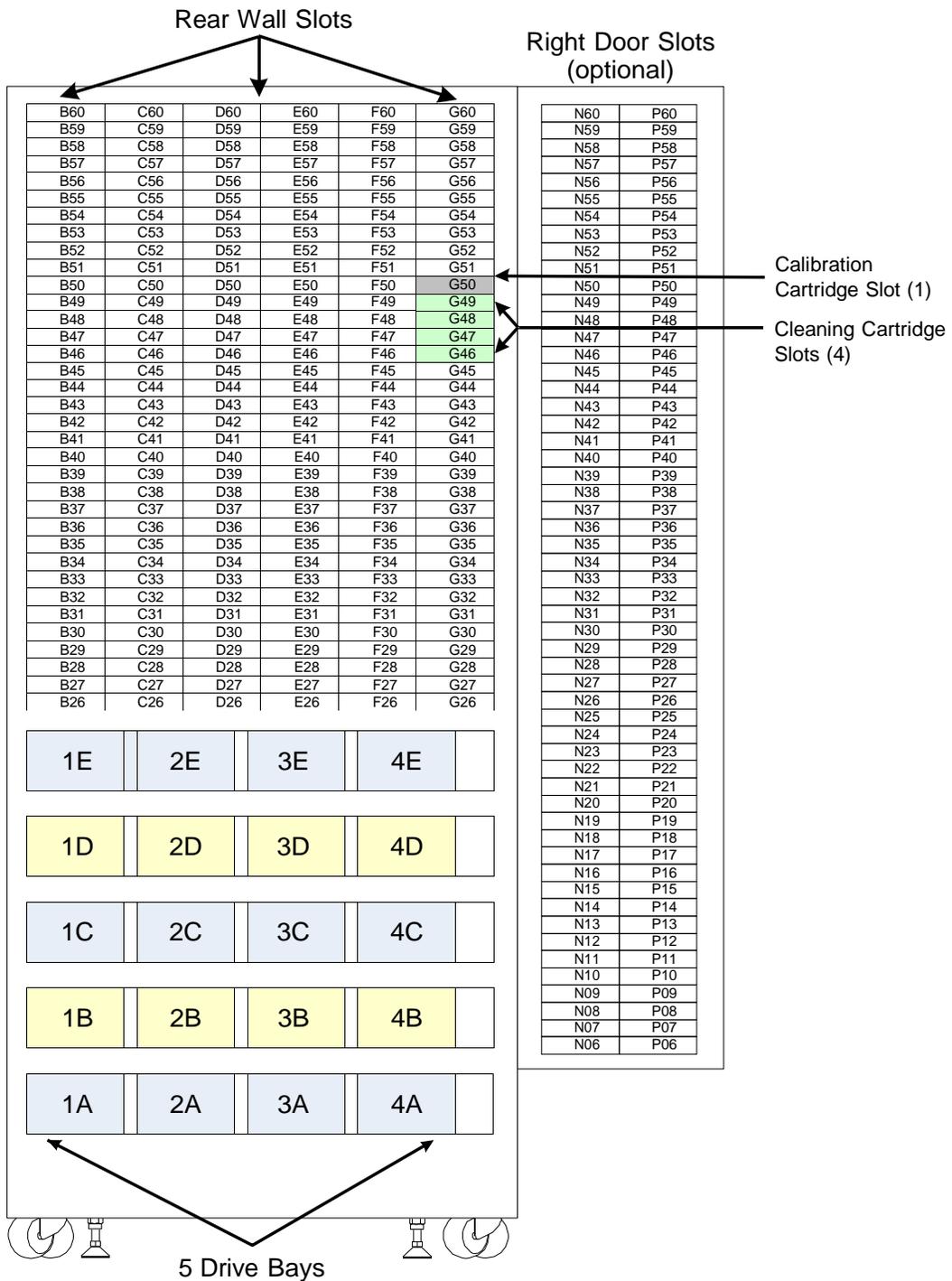
[Figure A-7](#) shows the physical addresses for the rear wall of the XLS-820500 and for the optional door slots. The figure shows five cartridge bays installed in positions B01–G01 to B25–G25. While this is technically an invalid configuration (the XLS must include at least one drive bay), refer to this figure to learn the fixed address of each potential cartridge position on the rear wall.

**Note:** Slot G50 is reserved for the calibration cartridge, and slots G46–G49 are reserved for the cleaning cartridges used by the physical library.



**Figure A-7** Physical addresses for the rear wall of the XLS-820500, with 5 cartridge bays installed in positions B01–G25 (view from the front with the door open)

**Figure A-8** shows the physical addresses for the rear wall of the XLS-820500, assuming that five drive bays are installed (that is, no cartridge bays are installed). This figure shows the fixed address for each tape drive position as viewed from the front.



**Figure A-8** Physical addresses for the rear wall of the XLS-820500, with 5 drive bays installed in positions 1A–4E (view from the front with the door open)

[Figure A-9](#) shows the physical addresses of the tape drives in the XLS-820500, as viewed from the back.

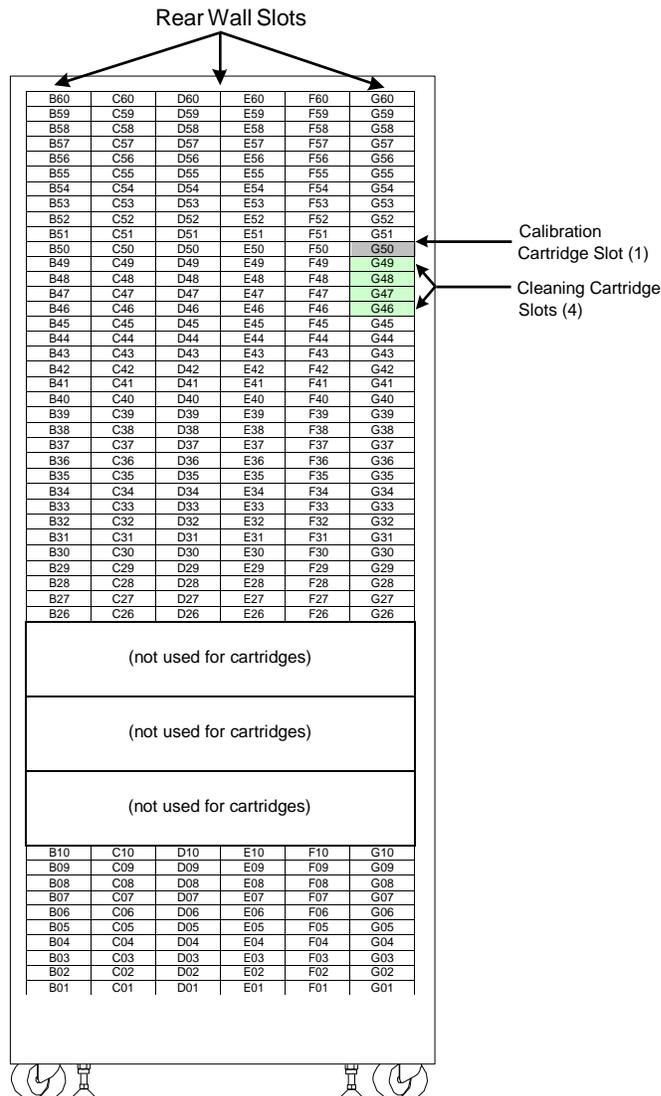
	4	3	2	1
E	4E	3E	2E	1E
D	4D	3D	2D	1D
C	4C	3C	2C	1C
B	4B	3B	2B	1B
A	4A	3A	2A	1A

**Figure A-9** Physical addresses for the tape drives in the XLS-820500, as viewed from the back

## A.4 Addresses for the XLS-812300

**Figure A-10** shows the physical addresses for the rear wall of the XLS-812300. The figure shows no drive bays and additional cartridge bays cannot be installed in their place. While this is technically an invalid configuration (the XLS must include at least one drive bay), refer to this figure to learn the fixed address of each potential cartridge position on the rear wall.

**Note:** Slot G50 is reserved for the calibration cartridge, and slots G46–G49 are reserved for the cleaning cartridges used by the physical library.



**Figure A-10** Physical addresses for the rear wall of the XLS-812300, with no cartridge bays installed (view from the front with the door open)

Figure A-11 shows the physical addresses for the rear wall of the XLS-812300, assuming that all three drive bays are installed. This figure shows the fixed address for each tape drive position as viewed from the front.

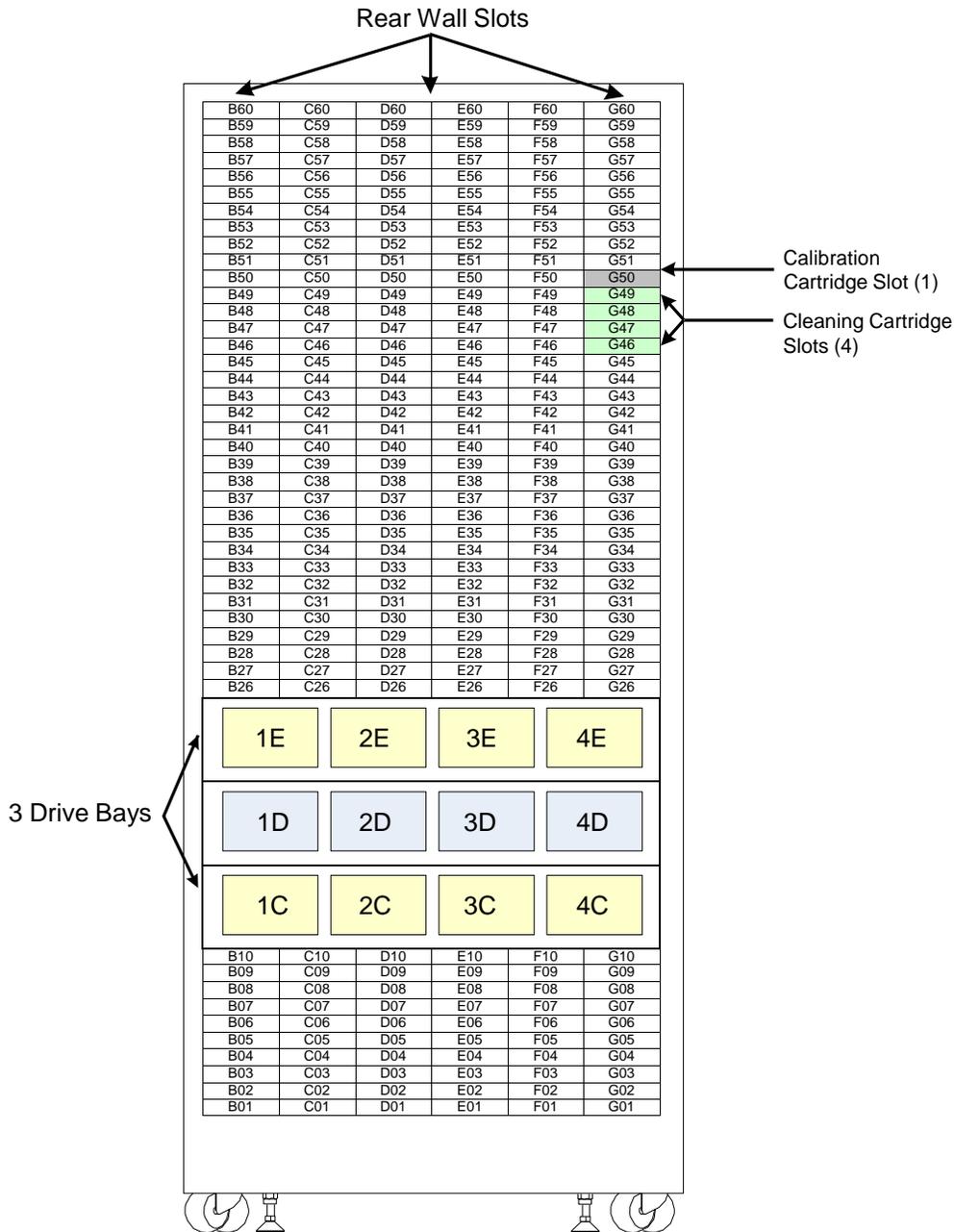


Figure A-11 Physical addresses for the rear wall of the XLS-812300, with 3 drive bays installed in positions 1C–4E (view from the front with the door open)

[Figure A-12](#) shows the physical addresses of all possible tape drives in the XLS-812300, as viewed from the back.

	4	3	2	1
E	4E	3E	2E	1E
D	4D	3D	2D	1D
C	4C	3C	2C	1C

**Figure A-12** Physical addresses for the tape drives in the XLS-812300, as viewed from the back

[Figure A-13](#) shows the physical addresses for the cartridge slots in an XLS-812300 expansion pod.

**Important:** The XLS keeps track of whether the expansion pod is to the left or the right of the base unit. For this reason, left and right expansion pods use the same physical addresses.

Expansion Pod  
(left or right)

B60	A60
B59	A59
B58	A58
B57	A57
B56	A56
B55	A55
B54	A54
B53	A53
B52	A52
B51	A51
B50	A50
B49	A49
B48	A48
B47	A47
B46	A46
B45	A45
B44	A44
B43	A43
B42	A42
B41	A41
B40	A40
B39	A39
B38	A38
B37	A37
B36	A36
B35	A35
B34	A34
B33	A33
B32	A32
B31	A31
B30	A30
B29	A29
B28	A28
B27	A27
B26	A26
B25	A25
B24	A24
B23	A23
B22	A22
B21	A21
B20	A20
B19	A19
B18	A18
B17	A17
B16	A16
B15	A15
B14	A14
B13	A13
B12	A12
B11	A11
B10	A10
B09	A09
B08	A08
B07	A07
B06	A06
B05	A05
B04	A04
B03	A03
B02	A02
B01	A01

**Figure A-13** Physical addresses for the slots in a left or right XLS-812300 expansion pod

## A.5 Addresses for Doors, I/O Ports, and Fixed Port Slots

[Figure A-14](#) shows the physical addresses for the left and right door slots, if installed. In this figure, the columns are labeled from left to right as if the door(s) were open. Left door slots are available for the XLS-832700 and XLS-8161100 only.

Left Door Slots (XLS-832700 and XLS-8161100 only)		Right Door Slots (XLS-832700, XLS-8161100 and XLS-820500)	
J60	K60	N60	P60
J59	K59	N59	P59
J58	K58	N58	P58
J57	K57	N57	P57
J56	K56	N56	P56
J55	K55	N55	P55
J54	K54	N54	P54
J53	K53	N53	P53
J52	K52	N52	P52
J51	K51	N51	P51
J50	K50	N50	P50
J49	K49	N49	P49
J48	K48	N48	P48
J47	K47	N47	P47
J46	K46	N46	P46
J45	K45	N45	P45
J44	K44	N44	P44
J43	K43	N43	P43
J42	K42	N42	P42
J41	K41	N41	P41
J40	K40	N40	P40
J39	K39	N39	P39
J38	K38	N38	P38
J37	K37	N37	P37
J36	K36	N36	P36
J35	K35	N35	P35
J34	K34	N34	P34
J33	K33	N33	P33
J32	K32	N32	P32
J31	K31	N31	P31
J30	K30	N30	P30
J29	K29	N29	P29
J28	K28	N28	P28
J27	K27	N27	P27
J26	K26	N26	P26
J25	K25	N25	P25
J24	K24	N24	P24
J23	K23	N23	P23
J22	K22	N22	P22
J21	K21	N21	P21
J20	K20	N20	P20
J19	K19	N19	P19
J18	K18	N18	P18
J17	K17	N17	P17
J16	K16	N16	P16
J15	K15	N15	P15
J14	K14	N14	P14
J13	K13	N13	P13
J12	K12	N12	P12
J11	K11	N11	P11
J10	K10	N10	P10
J09	K09	N09	P09
J08	K08	N08	P08
J07	K07	N07	P07
J06	K06	N06	P06

**Figure A-14** Physical addresses for door slots, if installed (view from the front with door(s) open)

[Figure A-15](#) shows the physical addresses for all possible I/O port slots. The XLS-812300 can have two I/O ports in the upper left and upper right positions only.

Upper Left	L20	M20	Upper Right
	L19	M19	
	L18	M18	
	L17	M17	
	L16	M16	
	L15	M15	
	L14	M14	
	L13	M13	
	L12	M12	
	L11	M11	
Lower Left	L10	M10	Lower Right
	L09	M09	
	L08	M08	
	L07	M07	
	L06	M06	
	L05	M05	
	L04	M04	
	L03	M03	
	L02	M02	
	L01	M01	

**Figure A-15** Physical addresses for the I/O port slots, if installed (view from the front)

[Figure A-16](#) shows the physical addresses for the 40 fixed port slots. Note that all libraries include at least one I/O port, typically in positions M11–M20.

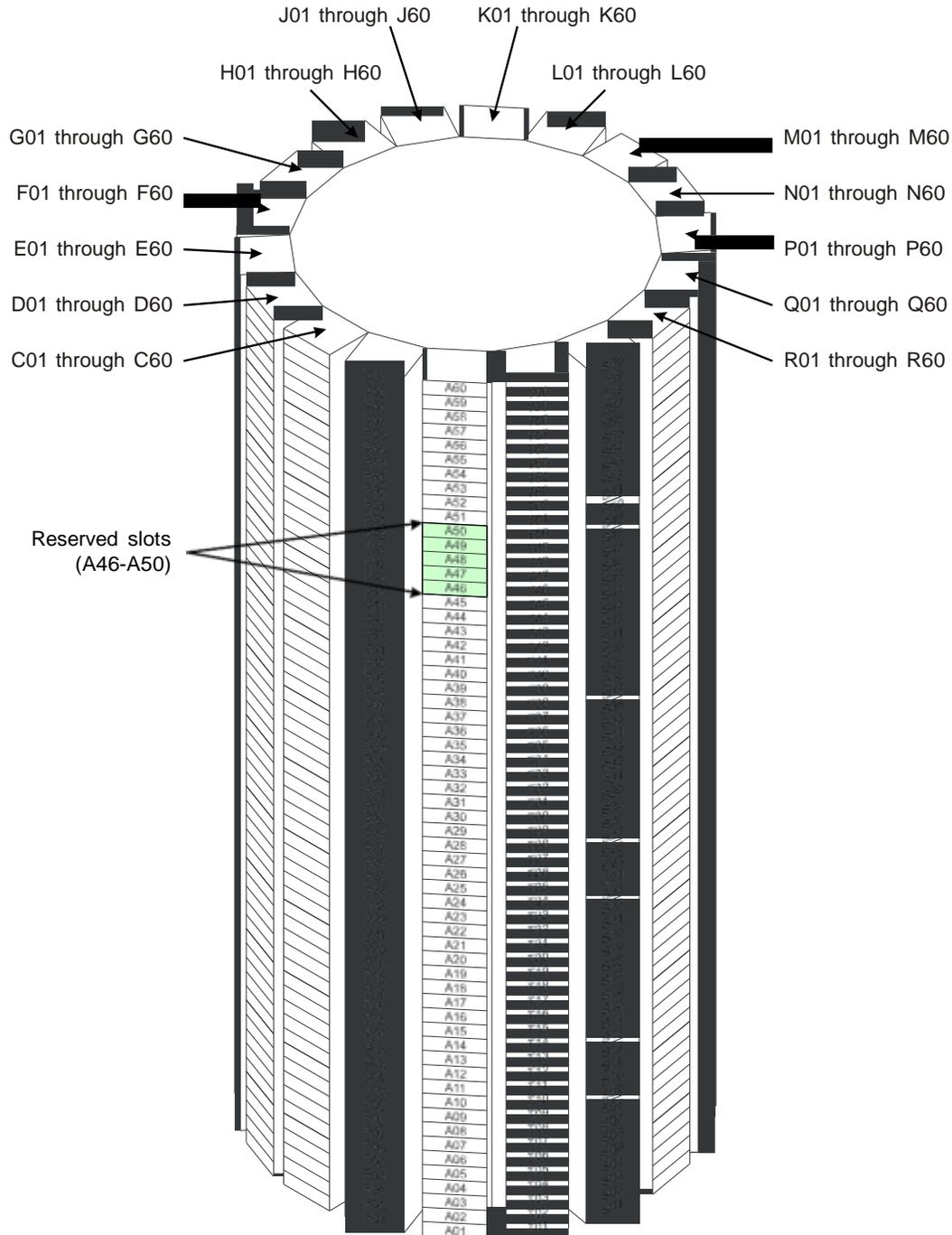
L20	M20
L19	M19
L18	M18
L17	M17
L16	M16
L15	M15
L14	M14
L13	M13
L12	M12
L11	M11
L10	M10
L09	M09
L08	M08
L07	M07
L06	M06
L05	M05
L04	M04
L03	M03
L02	M02
L01	M01

**Fixed Port Slots  
(if installed)**

**Figure A-16** Physical addresses for the fixed port slots, if installed (view from the front)

## A.6 Addresses for the Media Expansion Modules (MEMs)

[Figure A-17](#) and [Figure A-18 on page A-19](#) show the physical addresses for the cartridge slots on the carousel in the Media Expansion Modules (MEMs). The five slots A46–A50 are reserved for pass through.



**Figure A-17** Physical addresses for the slots in an XLS-89000 Media Expansion Module

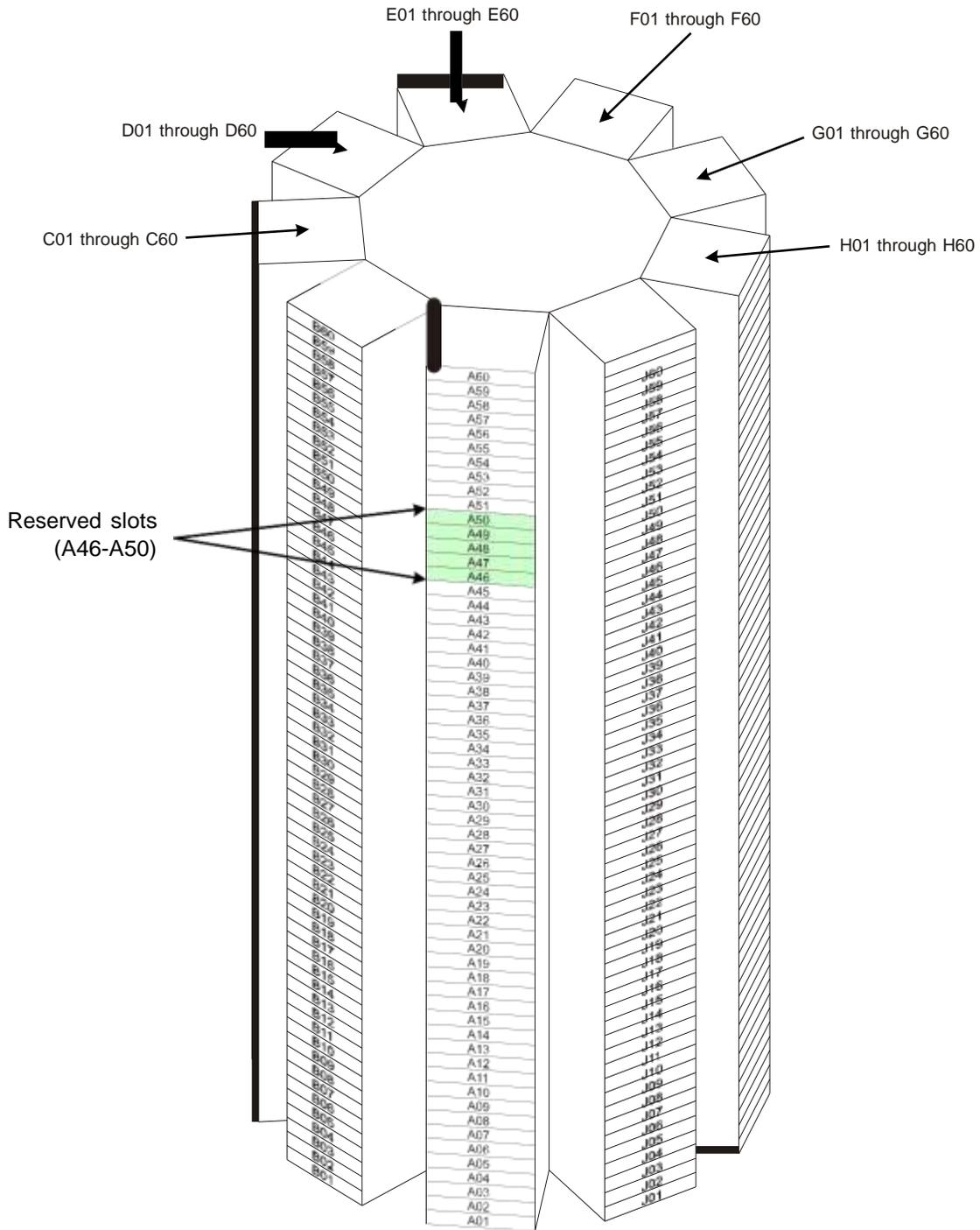


Figure A-18 Physical addresses for the slots in an XLS-85000 Media Expansion Module

**Notes:**

# Appendix B

# Replacing a Tape Drive

This appendix describes how to remove and replace a tape drive assembly from the back of the XLS. Depending on the capabilities of your software application, tape drives are hot swappable; that is, you can remove and replace them while the library is powered on.

[Table B-1](#) provides an overview of replacing a tape drive.

Step	Description	Refer to...
1	Take the tape drive offline	<a href="#">Section B.1</a>
2	Power off the tape drive	<a href="#">Section B.2 on page B-3</a>
3	Remove the tape drive from the drive bay	<a href="#">Section B.3 on page B-5</a>
4	Install the tape drive in the drive bay	<a href="#">Section B.4 on page B-7</a>
5	Power on the tape drive	<a href="#">Section B.5 on page B-9</a>
6	Calibrate the tape drive, if required	<a href="#">Section B.6 on page B-10</a>
7	Bring the tape drive online	<a href="#">Section B.7 on page B-12</a>

**Table B-1** Overview of replacing a tape drive

Depending on your requirements and the permissions you have been assigned, you can replace a tape drive using options available from the Logical Libraries portlet or the Physical Library portlet, as follows:

- If you use the options available from the Logical Libraries portlet, you specify a SCSI element address for the tape drive.
- If you use the options available from the Physical Library portlet, you specify a physical address for the tape drive.

In both cases, the logical libraries can remain online and the XLS can be in logical mode when you remove and replace a tape drive.

**Important:** For safety and UL compliance, the XLS handler will not move if a tape drive assembly or a blank drive cover is removed. Although it is not required, you may want to put the XLS in physical mode to prevent the software applications from timing out when a tape drive is removed.

## B.1 Taking a Tape Drive Offline

When you take a tape drive *offline*, the physical location becomes inaccessible to the logical library. For this reason:

- Cartridges cannot be moved to an offlined tape drive by the software application that controls the logical library.
- Cartridges cannot be moved to an offlined tape drive by logical library commands that have the tape drive as their destination.

**Important:** Taking a tape drive offline prevents the logical library from moving cartridges to the tape drive. This action does not affect the tape drive's ability to communicate with the software application or to read and write data.

To take a tape drive offline, follow these steps:

1. Access either of the following pages:
  - The View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
  - The View/Manage Tape Drives page for the physical library, as described in [Section 11.1 on page 11-1](#).
2. In the Status–Offline column of the tape drives table, select **Online**.

**Important:** As an alternative, you can select **Offline Tape Drive** from the list of options below the table. However, if you select **Offline Tape Drive**, you must enter the address of the tape drive.

The Take Tape Drive Offline page opens, as shown in [Figure B-1](#).



**Figure B-1** Take Tape Drive Offline page (logical library version shown)

3. Press **Yes** to take the tape drive offline.
4. Confirm that **Offline** is now reported in the Status–Offline column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

## B.2 Powering Off a Tape Drive

Before removing a tape drive assembly, you must power off the tape drive.

### CAUTION

To avoid damaging the electronics within the tape drive, power off the tape drive from X-Link before attempting to remove the tape drive assembly from the back of the library. Do not remove the tape drive if the drive carrier LED is green.

To power off a tape drive, follow these steps:

1. Access either of the following pages:
  - The View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
  - The View/Manage Tape Drives page for the physical library, as described in [Section 11.1 on page 11-1](#).

## B.2 Powering Off a Tape Drive

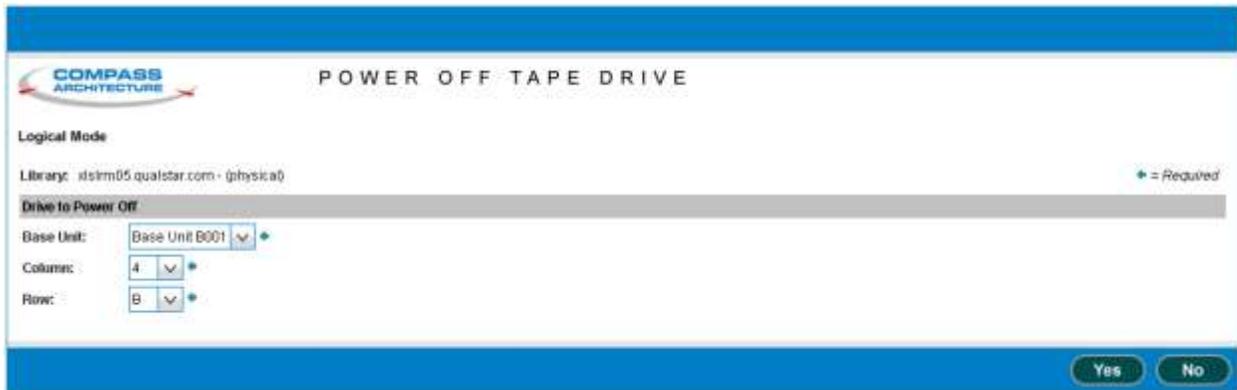
2. If the tape drive contains a cartridge and you want to move it before powering off the drive, eject and unload the cartridge from the tape drive.

**Note:** It is not an error to remove a tape drive that contains a cartridge.

3. In the Status–Power column of the tape drives table, select **On**.

**Important:** As an alternative, you can select **Power Off Tape Drive** from the list of options below the table. However, if you select **Power Off Tape Drive**, you must enter the address of the tape drive.

The Power Off Tape Drive page opens, as shown in [Figure B-2](#).



**Figure B-2** Power Off Tape Drive page (physical library version shown)

4. Press **Yes** to power off the tape drive.
5. Confirm that **Off** is now reported in the Status–Power column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

6. When the drive carrier LED on the back of the tape drive assembly turns yellow, it is safe to remove the tape drive. See [Figure B-3](#).

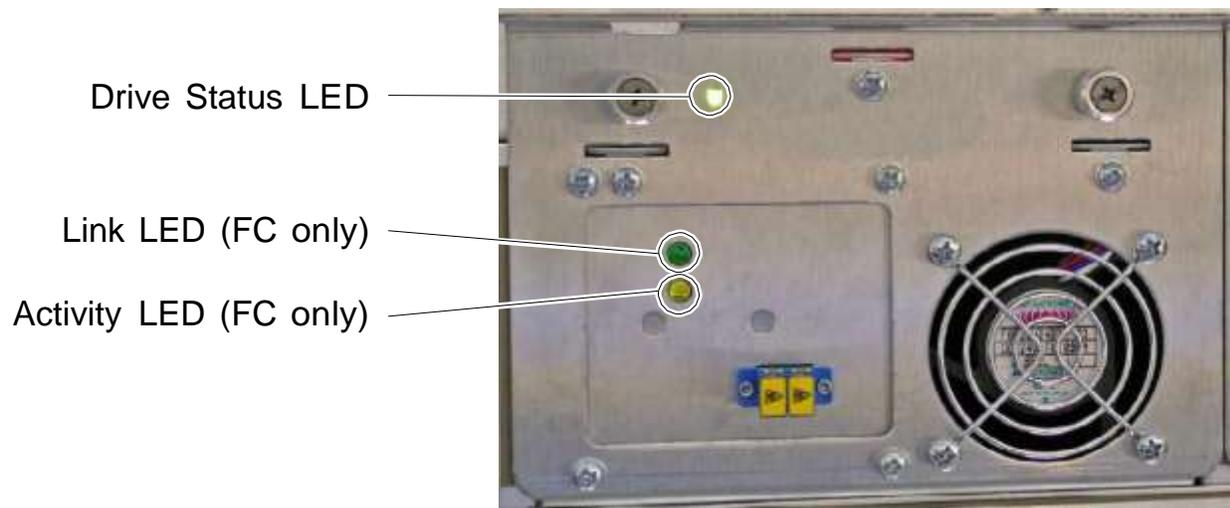


Figure B-3 Status LEDs on Fibre Channel drive carrier

### B.3 Removing a Tape Drive

To remove a tape drive, follow these steps:

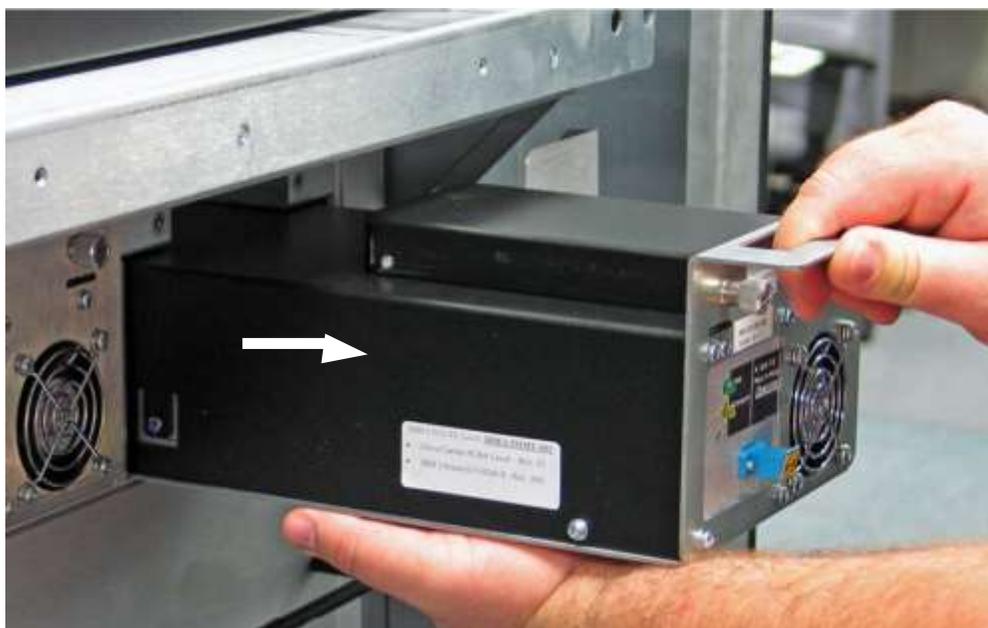
1. Check to ensure that the drive carrier LED is yellow or off.
2. Disconnect any cables and terminators from the tape drives.

- Using a Phillips screwdriver, turn the two captive screws counterclockwise until loose. See [Figure B-4](#).



**Figure B-4** Loosening the tape drive assembly screws

- Using one hand to support the tape drive's weight at the front of the carrier, carefully slide the drive carrier out of the drive bay, as shown in [Figure B-5](#)



**Figure B-5** Removing a drive carrier from a drive bay

5. As soon as possible, install a replacement tape drive or a drive blank cover in the empty slot, as described in [Section B.4](#).

**CAUTION**

For safety and UL compliance, the XLS handler is prevented from moving if any tape drive slots are empty.

**CAUTION**

To avoid damaging the equipment and voiding your warranty, do not attempt to remove a tape drive from a drive carrier. The tape drives used in the XLS must be installed into drive carriers at the factory.

## B.4 Installing a Tape Drive

To install a tape drive assembly in the library, follow these steps:

1. Using one hand to support the tape drive's weight at the front of the carrier, carefully slide the tape drive assembly into the drive bay, as shown in [Figure B-6](#).



**Figure B-6** Inserting a tape drive assembly into a drive bay

## B.4 Installing a Tape Drive

---

2. Push on the back of the tape drive to ensure that the connectors are fully seated and that the carrier's gasket has made a good seal against the drive bay. If the tape drive is installed correctly, the drive carrier LED will turn yellow. See [Figure B-3 on page B-5](#).
3. Using a Phillips screwdriver, turn the two captive screws clockwise until tight. See [Figure B-7](#).



**Figure B-7** Tightening the tape drive assembly screws

4. As required, repeat steps 1–3 to install a blank drive cover (shown in [Figure B-8](#)) in any unused tape drive slot.



**Figure B-8** Blank drive cover

5. Reconnect the cables and terminators.

## B.5 Applying Power to a Tape Drive

To power on a tape drive, follow these steps:

1. Access either of the following pages:
  - The View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
  - The View/Manage Tape Drives page for the physical library, as described in [Section 11.1 on page 11-1](#).
2. In the Status–Power column of the tape drives table, select **Off**.

**Important:** As an alternative, you can select **Power On Tape Drive** from the list of options below the table. However, if you select **Power On Tape Drive**, you must enter the address of the tape drive.

The Power On Tape Drive page opens, as shown in [Figure B-11 on page B-11](#).



**Figure B-9** Power On Tape Drive page (physical library version shown)

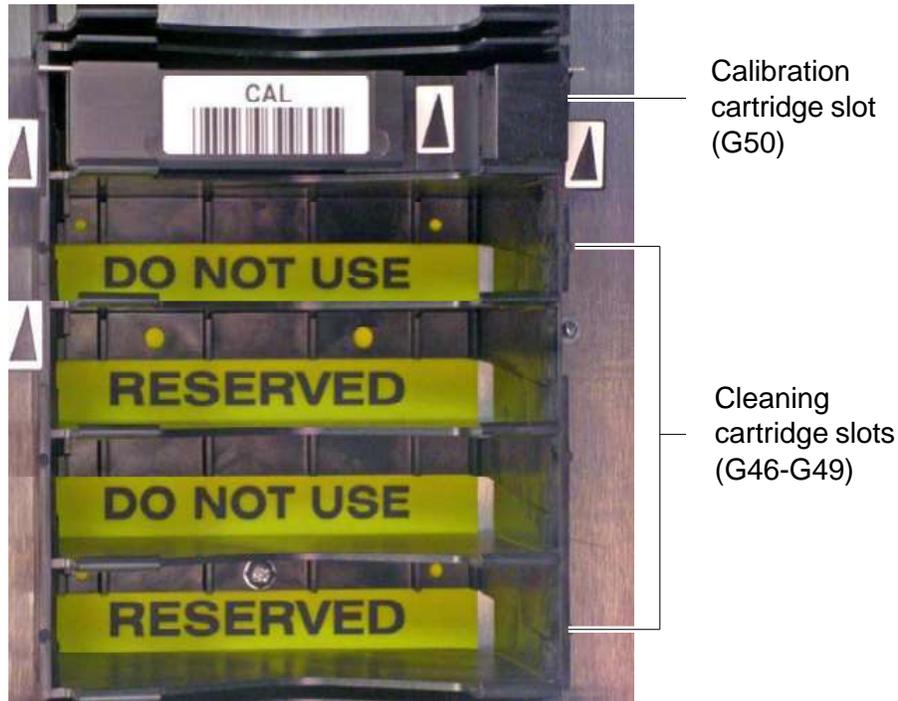
3. Press **Yes** to power on the tape drive.
4. Confirm that **On** is now reported in the Status–Power column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

5. Check the status LEDs on the back of the tape drive assembly. If the drive carrier LED is green (may take up to 45 seconds), the tape drive has been successfully powered on.

## B.6 Calibrating a Tape Drive (if required)

Whenever a tape drive is installed in the XLS, its position needs to be exactly calibrated to ensure accurate pick and place operations. During calibration, the handler moves the calibration cartridge to the tape drive and scans the triangular target on the cartridge. It then returns the calibration cartridge to its reserved slot. See [Figure B-10](#)



**Figure B-10** Location of the reserved slot for the calibration cartridge

The XLS can detect when a tape drive is installed or replaced and automatically performs calibration when that tape drive is brought online.

- Important:** The XLS does not always calibrate a tape drive's position when the tape drive is brought online. For example, it does not recalibrate the position before onlining the tape drive:
- If the tape drive was taken offline but not physically replaced
  - If the position was already calibrated manually

You may need to manually calibrate a tape drive in some circumstances. For example, if you intend to move cartridges to and from the tape drive *before* bringing it online to the logical library, you need to calibrate it manually. Or, you may want to “force” the XLS to recalibrate the location of an existing drive whether or not it was replaced.

To calibrate a tape drive, follow these steps:

1. Access either of the following pages:
  - The View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
  - The View/Manage Tape Drives page for the physical library, as described in [Section 11.1 on page 11-1](#).
2. In the Status–Calibrate column of the tape drives table, select **Uncalibrated**

**Important:** As an alternative, you can select **Calibrate Tape Drive** from the list of options below the table. However, if you select **Calibrate Tape Drive**, you must enter the address of the tape drive.

The Calibrate Tape Drive page opens, as shown in [Figure B-11](#).



**Figure B-11** Calibrate Tape Drive page (physical library version shown)

3. Press **Yes** to calibrate the tape drive.
4. Confirm that **Calibrated** is now reported in the Status–Calibrated column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

## B.7 Bringing a Tape Drive Online

When you bring a tape drive *online*, the physical location becomes accessible to the logical library. A tape drive must be online before you can use the software application or logical library commands to move cartridges to it. Bringing a tape drive online does not affect the tape drive's ability to communicate with the software application or to read and write data.

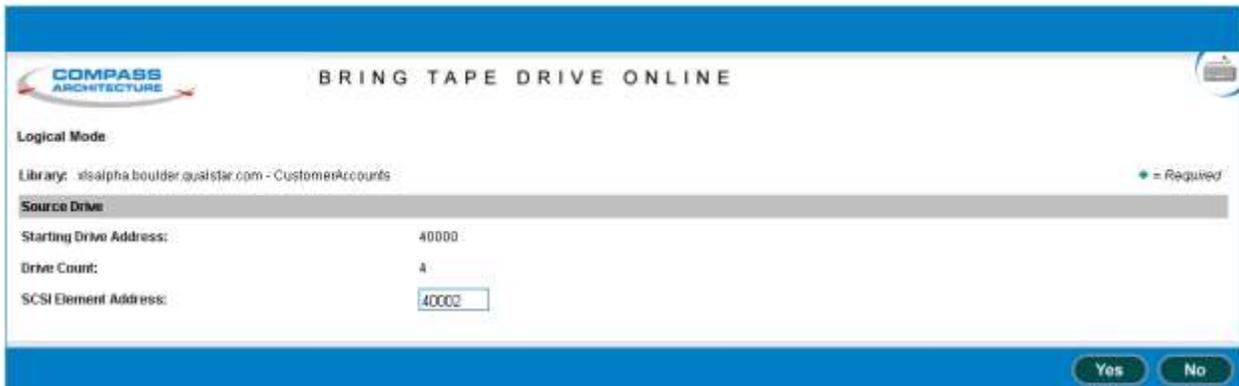
**Important:** When you bring a new or replaced tape drive online, the XLS automatically calibrates its position unless you have already performed a manual calibration. See [Section B.6 on page B-10](#).

To bring a tape drive online, follow these steps:

1. Access either of the following pages:
  - The View/Manage Tape Drives page for the logical library, as described in [Section 7.1 on page 7-1](#).
  - The View/Manage Tape Drives page for the physical library, as described in [Section 11.1 on page 11-1](#).
2. In the Status–Offline column of the tape drives table, select **Offline**.

**Important:** As an alternative, you can select **Online Tape Drive** from the list of options below the table. However, if you select **Online Tape Drive**, you must enter the address of the tape drive.

The Bring Tape Drive Online page opens, as shown in [Figure B-12](#).



The screenshot shows the 'BRING TAPE DRIVE ONLINE' page. At the top left is the 'COMPASS ARCHITECTURE' logo. The page title is 'BRING TAPE DRIVE ONLINE'. Below the title, it says 'Logical Mode' and 'Library: xisalpha.boulder.qualstar.com - CustomerAccounts'. There is a small icon of a tape drive in the top right corner. A legend indicates that a green asterisk (\*) means 'Required'. The 'Source Drive' section contains three fields: 'Starting Drive Address' with the value '40000', 'Drive Count' with the value '4', and 'SCSI Element Address' with the value '40002'. At the bottom right, there are two buttons: 'Yes' and 'No'.

Figure B-12 Bring Tape Drive Online page (logical library version shown)

3. Press **Yes** to bring the tape drive online.
4. Confirm that **Online** is now reported in the Status–Offline column of the tape drives table.

**Important:** You may need to press **Refresh** to update the contents of the table.

**Notes:**

# Glossary

---

<b>alert</b>	A notification sent to specified users when an event occurs in the library.
<b>barcode reader</b>	The device on the library's robotic handler that scans and reads barcode labels on the cartridges.
<b>calibration cartridge</b>	A special cartridge containing a triangular target ( <i>fiducial</i> ) that is inserted into each tape drive during the calibration process.
<b>carousel</b>	The rotating mechanism in a Media Expansion Module (MEM) that holds the cartridges.
<b>cartridge bay</b>	The removable hardware that contains slots for 30 cartridges and is interchangeable with a drive bay.
<b>cartridge inventory</b>	The internal data base of cartridge locations that is maintained by the system controller.
<b>cartridge slot</b>	Any of the locations in the library that can store a cartridge. A cartridge slot is referred to as a storage element in the SCSI standard.
<b>door slot</b>	Any of the cartridge slots that can be installed on the inside of the library's doors.
<b>drive bay</b>	The removable hardware in the library that can contain up to four tape drives and that is interchangeable with a cartridge bay.
<b>drive carrier</b>	The hardware that encloses the tape drives and provides power, SCSI or Fibre Channel connectors, communications with the system controller, status LEDs, and cooling fans.
<b>controller/power bay</b>	The library assembly that contains the system controller, two cooling fans, the power supplies, the AC power switch, and the AC power connector.
<b>elements</b>	The addressable locations in the library, including the tape drives, the cartridge slots, the handler, and the I/O ports slots.

<b>EMI</b>	Electro magnetic interference.
<b>Ethernet</b>	A local area networking technology. Ethernet can transport any of several upper layer protocols, the most popular of which is TCP/IP.
<b>event</b>	A change of condition to a library component or a change of state that can be recorded in the event log. When an event occurs, an e-mail or pager alert can be sent to specified users.
<b>facet</b>	One of the columns of cartridge slots in a Media Expansion Module (MEM).The carousel in a MEM contains 18 facets, with 60 slots (rows) per facet.
<b>Fibre Channel</b>	One of the communication protocols supported by the library. Fibre Channel is a set of standards for a serial I/O bus.
<b>front panel slot</b>	Any the cartridge slots that can be installed on the inside of the library's front panel instead of an I/O port.
<b>handler</b>	The library assembly that includes the picker mechanism and the barcode reader. The handler moves side to side on the x-axis, up and down on the y-axis, and in and out on the z-axis. It rotates on the theta-axis. The handler is referred to as a medium transport element in the SCSI standard.
<b>HBA</b>	Host bus adapter card.
<b>host bus adapter card (HBA)</b>	A circuit board installed in one of the system controller's four expansion slots that allows the library to attach to and communicate with a SCSI bus or Fibre Channel network. The HBAs supported by the library have two ports, which means you can connect two networks or SCSI buses to each card.
<b>hot swappable</b>	A library component, such as tape drive assemblies, fans, and power supplies, that can be replaced without removing system power.
<b>I/O port</b>	An opening on the front of the library through which cartridges can be inserted or removed without exposing internal library components.
<b>Inventory Sentry</b>	The pairs of LED emitters and detectors in the front of the library that detect whether a cartridge is protruding from a slot or whether someone has reached into the library. Also referred to as the <i>light curtain</i> .
<b>LED</b>	Light emitting diode. The library contains five LEDs on its front panel to indicate its operating status. Additional LEDs are used on each power supply and tape drive assembly.

---

<b>library</b>	A robotic media handler that is capable of storing multiple pieces of removable media and loading and unloading them from one or more tape drives in arbitrary order.
<b>Library Resource Module (LRM)</b>	The main library module that contains the system controller, touch screen, status LEDs, controller/power bay, handler, tape drives, I/O ports, cartridge slots, and optional equipment rack.
<b>light curtain</b>	See <i>Inventory Sentry</i> .
<b>logical library</b>	One of up to eight partitions of the physical library. Logical libraries ensure that each software application has dedicated and secure access to specific tape drives, cartridge slots, and I/O ports. The handler is shared among all logical libraries.
<b>LRM</b>	Library Resource Module. The XLS base unit.
<b>LTO</b>	Linear Tape Open. An industry standard 1/2-inch tape format also known as Ultrium.
<b>LUN</b>	Logical unit number. A number between 0 and 7 assigned to each logical library.
<b>Management Information Base (MIB)</b>	The specification and formal description of a set of objects and variables that can be read and possibly written using the SNMP protocol.
<b>Media Expansion Module (MEM)</b>	The auxiliary library module that contains a motor-driven carousel with storage for 1,080 cartridges. You can connect one or two MEMs to each LRM, or you can place an LRM between two MEMs.
<b>medium changer</b>	The library's SCSI controller. The medium changer responds to SCSI commands sent by initiators (or host applications) and sends instructions to the system controller to move cartridges between tape drives, cartridge slots, and I/O ports.
<b>MEM</b>	Media Expansion Module. The XLS expansion unit that contains a carousel.
<b>MIB</b>	Management Information Base.
<b>nexus setting</b>	A unique combination of port ID, target (or SCSI) ID, and logical unit number (LUN) that describes each logical library connection.
<b>parallel SCSI</b>	One of the communication protocols supported by the library. The parallel SCSI protocol defines the rules and processes for transmitting and receiving data over a parallel (multi-signal) I/O bus.

<b>physical library</b>	The entire library, including all tape drives, cartridge slots, the robotics, and the I/O ports.
<b>portlet</b>	One of the following sections on the Home page: Configuration, Events, Logical Libraries, Physical Library, Settings & Policies, Users & Groups, and Service. The portlets on the Home page can be rearranged or closed to suit the needs of each user.
<b>robotics</b>	Any part of the library that moves automatically, including the carousel, the gripper, the I/O ports, and the handler.
<b>SCSI</b>	Small Computer System Interface.
<b>Simple Mail Transfer Protocol (SMTP)</b>	A protocol for sending e-mail messages between servers and between a mail client and a mail server.
<b>Simple Network Management Protocol (SNMP)</b>	A protocol for monitoring and managing systems and devices in a network. The data being monitored and managed is defined by a MIB. The functions supported by the protocol are the request and retrieval of data and the setting or writing of data.
<b>SMTP</b>	Simple Mail Transfer Protocol.
<b>SNMP</b>	Simple Network Management Protocol.
<b>stylus</b>	A pen shaped instrument that can be used when inputting data or accessing menus on the libraries touch-screen display.
<b>system controller</b>	The PC within the library that manages and controls all library activities.
<b>tape drive</b>	The devices used to write and read data. Tape drives are mounted in drive carriers. Tape drives are referred to as data transfer elements in the SCSI standard.
<b>tape drive assembly</b>	The tape drive plus the drive carrier. Tape drive assemblies are installed into the drive bays.
<b>touch screen</b>	The 15-inch color page on the library's front panel used to display X-Link.
<b>user group</b>	A collection of library users that has been assigned a common set of permissions.
<b>virtual keyboard</b>	A feature of the library's touch-screen display that allows you to enter text without needing a real keyboard.

**World Wide Node Name (WWN)** The WWN value indicates the unique hardware address of a Fibre Channel tape drive that is used when communicating in a network environment and it is not editable.

**XMI** The X-Link interface.



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