

Quantum.



User's Guide User's Guide User's Guide User's Guide User's Guide

Quantum PX720

PX720

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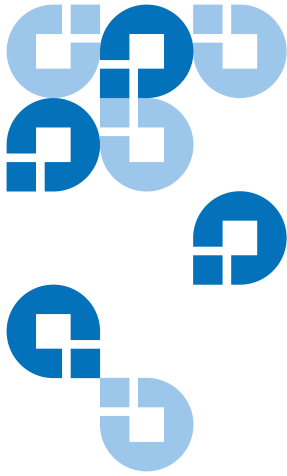
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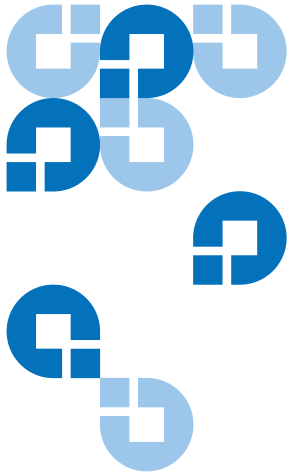
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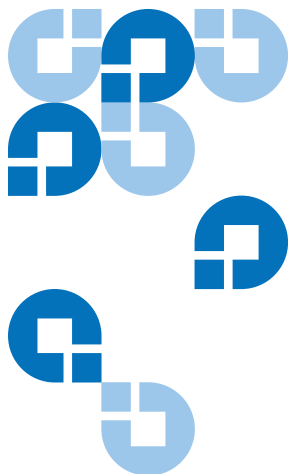
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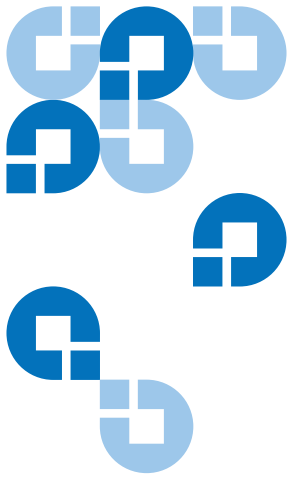


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Preface

This manual introduces the Quantum PX720 library and discusses:

- Library operations
- Configuration
- Relocation
- Basic troubleshooting

Audience

This manual is written for library operators and field service engineers.

Purpose

This document provides information about the PX720 including:

- Description
- Basic library operations
- Operator commands

Document Organization

Following is a brief description of chapter contents.

- [Chapter 1, Library Description](#) provides an overview of the procedures to get your library up and running.
- [Chapter 2, Basic Library Operations](#) provides an overview of the library and orients the operator or field service engineer to the numbering conventions for slots and tape drives.
- [Chapter 3, Quantum PX720 Remote Management](#) provides an overview of the library GUI and introduces the operator to the basic procedures for placing the library on line.
- [Chapter 4, Troubleshooting](#) discusses problems you may encounter during the setup and operation of the PX720 library.
- The Appendixes provide library specifications, relocation and repacking instructions, automatic drive cleaning instructions, laser regulations, regulatory statements, and event reporting.

Notational Conventions

This manual uses the following conventions:

Caution: Caution indicates potential hazards to equipment or data.

Warning: Warning indicates potential hazards to personal safety.

Note: Note emphasizes important information related to the main topic.

Tech Tip: Tech tip provides additional technical information that may assist in installation and configuration.

This manual uses the following conventions:

- Right side of the library – Refers to the right side as you face the component being described.
- Left side of the library – Refers to the left side as you face the component being described.
- *b* – All binary numbers are succeeded by “b.”
- *h* – All hexadecimal numbers are succeeded by “h.”

- Error or attention conditions are represented in parenthesis that translate as follows:

(SK=S ASC=AA ASCQ=QQ)

where:

S — hexadecimal sense key value

AA — hexadecimal additional sense code

QQ — hexadecimal additional sense code qualifiers

Related Documents

The following Quantum documents are also available for the Quantum PX720 library:

Document No.	Document Title	Document Description
6444602	Quantum PX720 Library Unpacking Instructions	Describes unpacking and moving a Quantum PX720
6434603	Quantum PX720 Library Software Interface Guide	For programmers writing Quantum PX720 control software

Refer to the appropriate product manual(s) for information about your tape drive and cartridges.

SCSI-2 Specification

The SCSI-2 communications specification is the proposed American National Standard for information systems, dated March 9, 1990. Copies may be obtained from:

Global Engineering Documents
 15 Inverness Way, East
 Englewood, CO 80112
 (800) 854-7179 or (303) 397-2740

Contacts

Quantum company contacts are listed below.

Quantum Corporate Headquarters

To order documentation on the PX720 Series or other products contact:

Quantum Corporation
P.O. Box 57100
Irvine, CA 92619-7100
(949) 856-7800
(800) 284-5101

Technical Publications

To comment on existing documentation send e-mail to:

doc-comments@quantum.com

Quantum Home Page

Visit the Quantum home page at:

<http://www.quantum.com>

Getting More Information or Help

StorageCare™, Quantum's comprehensive service approach, leverages advanced data access and diagnostics technologies with cross-environment, multi-vendor expertise to resolve backup issues faster and at lower cost.

Accelerate service issue resolution with these exclusive Quantum StorageCare services:

- **Service and Support Website** - Register products, license software, browse Quantum Learning courses, check backup software and operating system support, and locate manuals, FAQs, firmware downloads, product updates and more in one convenient location. Benefit today at:

<http://www.quantum.com/ServiceandSupport/Index.aspx>.

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- **eSupport** - Submit online service requests, update contact information, add attachments, and receive status updates via email. Online Service accounts are free from Quantum. That account can also be used to access Quantum's Knowledge Base, a comprehensive repository of product support information. Sign up today at:

<http://www.quantum.com/ServiceandSupport/eSupport/Index.aspx>

- **StorageCare Guardian** - Securely links Quantum hardware and the diagnostic data from the surrounding storage ecosystem to Quantum's Global Services Team for faster, more precise root cause diagnosis. StorageCare Guardian is simple to set up through the internet and provides secure, two-way communications with Quantum's Secure Service Center. More StorageCare Guardian information can be found at:

<http://www.quantum.com/ServiceandSupport/Services/GuardianInformation/Index.aspx>

For further assistance, or if training is desired, contact Quantum Technical Assistance Center:

North America:	+1-800-284-5101
UK, France and Germany	00800 4 QUANTUM
EMEA	+44 1256 848 766

For worldwide support:

<http://www.quantum.com/ServiceandSupport/Index.aspx>

StorageCare Guardian



StorageCare Guardian is a remote monitoring and diagnostic solution that enables Quantum to proactively monitor the health of Quantum products, use diagnostic data to predict possible failures, and determine whether or not the problem involves a Quantum product or other critical component in the environment.

Benefits

StorageCare Guardian gives the customer added assurance that Quantum will make sure its products are running optimally to ensure maximum operational efficiency. Deploying this solution is easy and enables

customers to minimize the costs associated with system downtime and service issues should a problem arise.

More Reliable Backups

Through continuous 24x7x365 monitoring, **StorageCare Guardian** proactively checks Quantum systems for common errors and alerts the customer when a Quantum product is underperforming. By proactively identifying red flags, the risk of failed backups and machine downtime can be mitigated.

Faster Resolution Time

When the system is down, **StorageCare Guardian** provides the necessary diagnostics data that enables Quantum to identify the root cause and expedite the problem resolution process. Problems that used to take days to fix can now be fixed in minutes. When problems require onsite support, field engineers will have better information along with the right parts necessary to fix the problem.

StorageCare Guardian allows Quantum to:

- Monitor diagnostic data related to Quantum products
- Receive alarms that notify Quantum of issues at the customer site
- Run diagnostic utilities to more quickly determine the root cause of issues
- Initiate remote connection to remote management interface to get more in-depth information about the health of your Quantum product.
- Distribute software/firmware upgrades - this will be available as a future enhancement

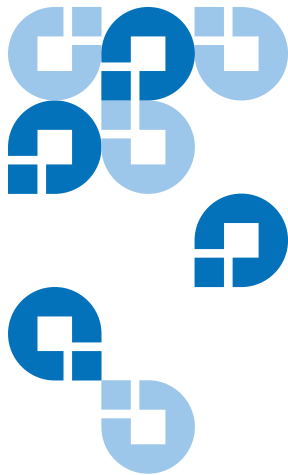
Product Features

- Continuous Monitoring - Proactive 7x24x365 monitoring of Quantum products enabling Quantum Support to be alerted on events such as errors or marginal conditions that are defined by the user.
- Root Cause Diagnosis - Allows Quantum to quickly isolate and identify the root cause of a problem.

- Rapid Problem Resolution- Quantum can rapidly recommend and/or implement the corrective actions needed to resolve a problem ensuring minimal impact to the IT environment.
- Quantum Remote Software Update - Distributed software update capability allows fast updates to agent software and Quantum hardware installed at customer sites
- Real-time Data Collection - Instant on-demand or scheduled diagnostic data collection from Quantum products as well as the ability to run user-defined data collection scripts from agent.
- Access Management - Customer has full control over Quantum's access rights and privileges.
- Audit Logging - Audit logs are kept for all communications to and from the agent.

How it works:

- 1 Customers can download the **StorageCare Guardian** agent software from <http://www.quantum.com/guardiandownload>.
- 2 Customer installs the **StorageCare Guardian** agent on any Windows 2000/2003/XP or Solaris 8/9 server located at the customer's site.
- 3 The **StorageCare Guardian** agent monitors Quantum products, and provides information and updates to the Quantum Enterprise Server that resides at Quantum Support.
- 4 If an error or problem is detected, Quantum queues a request to the **StorageCare Guardian** agent for data collection or real-time access to the system.
- 5 The **StorageCare Guardian** agent checks access policy settings to determine if access is allowed.
- 6 If approved, the information is transferred to Quantum, or a remote connection is initiated.
- 7 Quantum Support will diagnose the problem and, if necessary, send the needed parts and/or field personnel to resolve the issue.
- 8 Quantum can identify if the backup problem is not associated with the Quantum device and then direct the customer to resolve the issue with appropriate third-party vendor.



Chapter 1

Library Description

This chapter describes both the Quantum PX720 and its components. The chapter consists of:

- [Overview](#)
- [Features and Benefits](#)
- [DLTSage™ Tape Security](#)
- [Mixed Media Support](#)
- [SMI-S Support](#)
- [Library Components](#)
 - [Cabinet](#)
 - [OCP](#)
 - [CHM](#)
 - [Tape Drives](#)
 - [Load Port and Magazines](#)
- [Getting Started](#)
 - [Cabling the Quantum PX720](#)
 - [Loading the Tape Cartridges](#)
 - [Initial Configuration](#)

Overview

The PX720 library revolutionizes how IT professionals meet demanding requirements by providing reliability for maximum up-time, flexible architecture for investment protection, and scalability for fast data growth environments. All this coupled with superior price/performance by providing installation, Web-based management and full redundancy at no extra cost! The PX720 supports Super DLT[™] and LTO[™] Ultrium technology with single frame combinations of up to 20 drives/642 slots with SDLT or 726 slots with LTO.

Tape drive choices include the:

- Quantum SDLT320, SDLT600 (LVD)
- Quantum SDLT600 (native Fibre Channel)
- Quantum DLT-S4 (LVD)
- Quantum DLT-S4 (native Fibre Channel only)
- HP LTO-2, LTO-3 (Linear Tape Open) (LVD)
- HP LTO-2, LTO-3, LTO-4 (native Fibre Channel)

Throughput capabilities for these drives are:

- 16 MB/sec (SDLT-320)
- 36 MB/sec (SDLT-600)
- 60 MB/sec (DLT-S4)
- 30 MB/sec (LTO-2)
- 80 MB/sec (LTO-3)
- 120 MB/sec (LTO-4)

Note: When referring to storage slots within the cabinet, LTO refers to both LTO-2, LTO-3, and LTO-4 tape cartridges.



Capacity on Demand (CoD)

Capacity on Demand (CoD) allows you to increase the number of available bins in your library, depending on your current library capacity. There are three capacity levels available in the PX720 library:

Note: All levels of capacity on demand do NOT include the available bins located on the back wall of the PX720 library. The back wall bins will increase the overall number of bins in the library. Available upgrades include: Entry to Intermediate level, Entry to Full level, and Intermediate to Full level. Contact *Quantum Sales* for upgrade information.

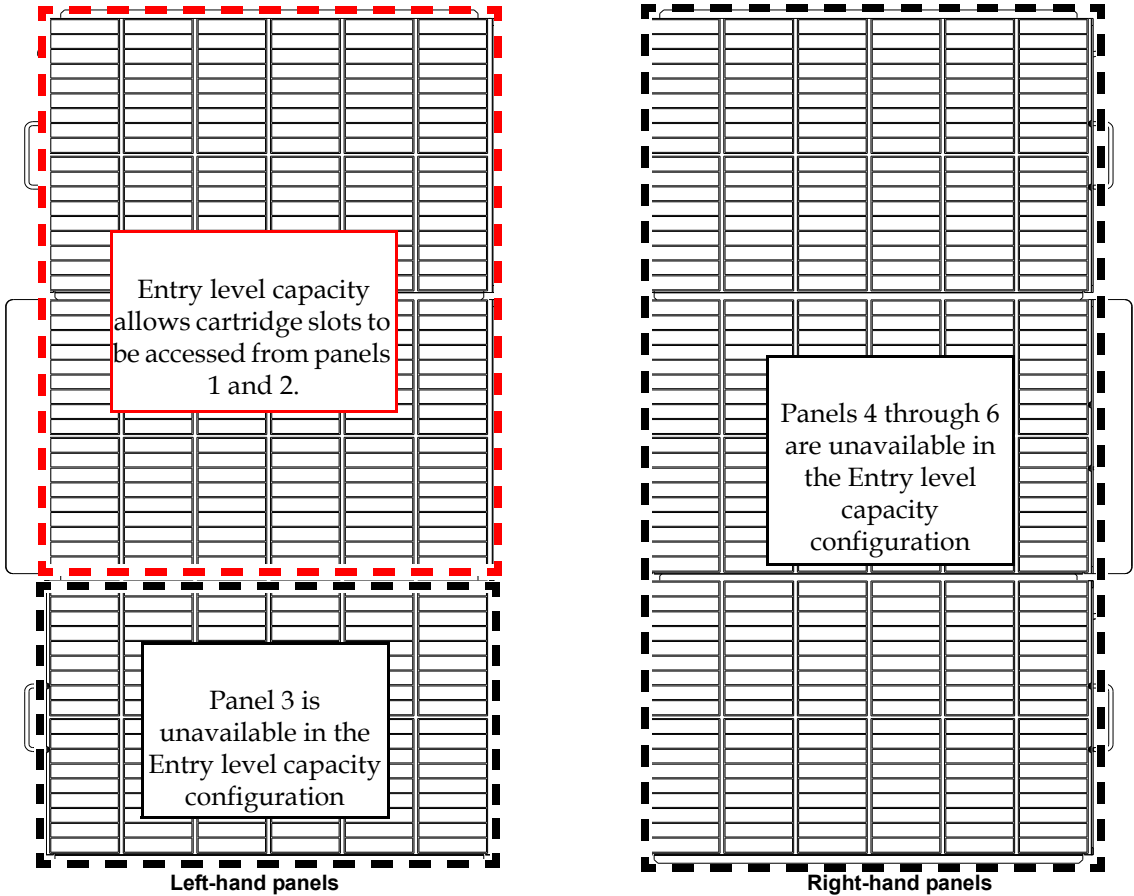
- [Entry Level Capacity](#)
- [Intermediate Level Capacity](#)
- [Full Capacity](#)

Entry Level Capacity

The entry level capacity PX720 (see [figure 1](#)) allows cartridge slots to be accessed from bin panels one and two.

Drive Type	Available Slots (with removable load ports)
SDLT	190
LTO	214

Figure 1 Entry Level Capacity

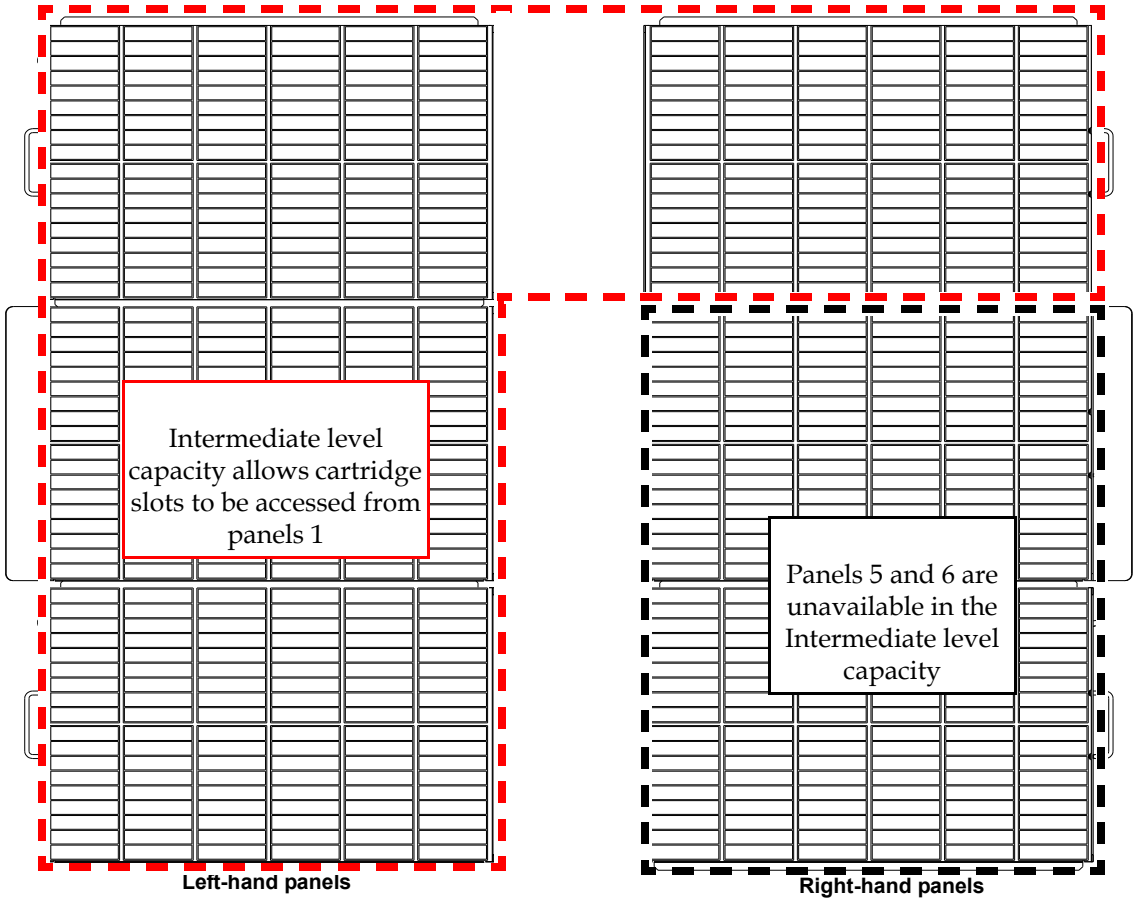


Intermediate Level Capacity

The intermediate level capacity PX720 (see [figure 2](#)) allows cartridge slots to be accessed from bin panels one through four.

Drive Type	Available Slots (with removable load ports)
SDLT	382
LTO	430

Figure 2 Intermediate Level Capacity



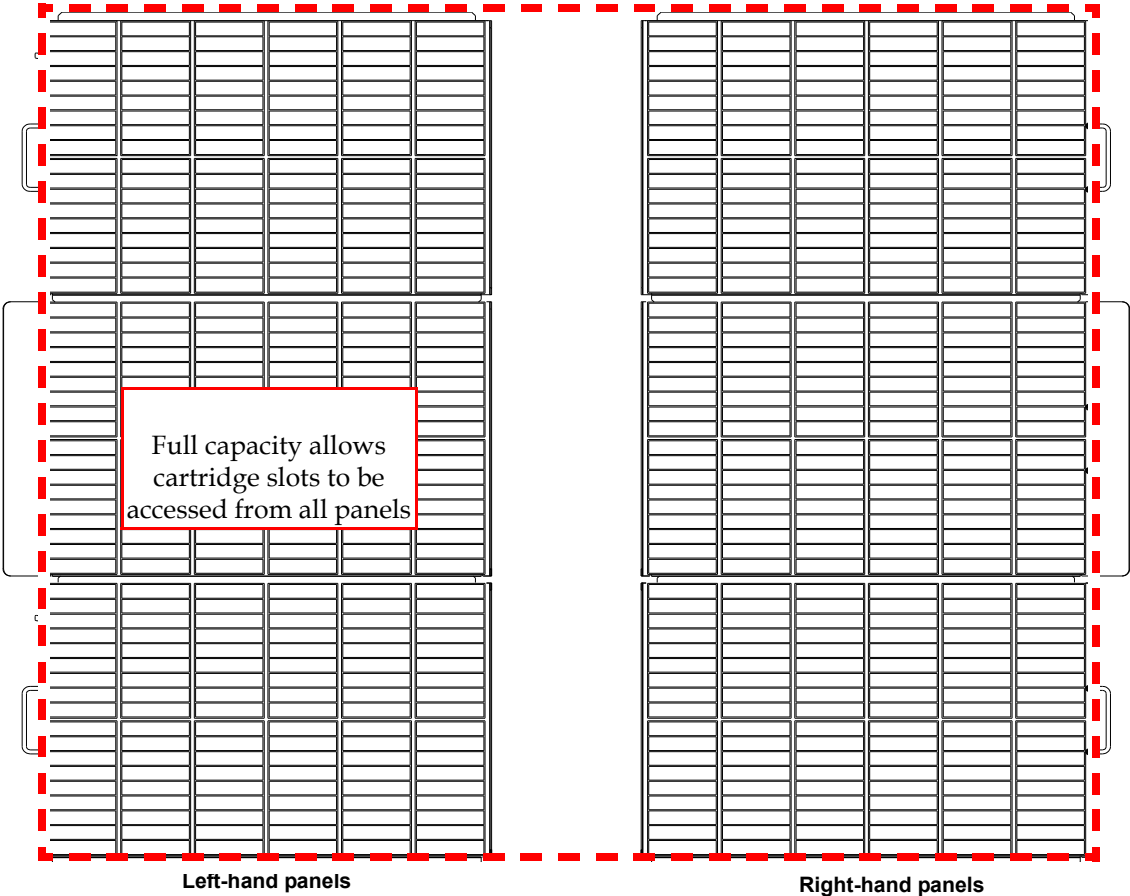
Full Capacity

The full capacity PX720 (see [figure 3](#)) allows cartridge slots to be accessed from all six bin panels.

Drive Type	Available Slots (with removable load ports)
SDLT	642

Drive Type	Available Slots (with removable load ports)
LTO	726

Figure 3 Full Capacity



Library Models

The Quantum PX720 library is comprised of three models that support a wide range of storage and performance requirements and connectivity options including SCSI and Fibre Channel (see [figure 4](#) through [figure 9](#) for bin panel locations).

Tape Drive Types

The Quantum PX720 can be configured with up to 20 tape drives and up to 648 SDLT or 732 LTO tape cartridges slots.

Table 1 SDLT320
Performance Characteristics

Quantum PX720 SDLT Model (drives/slots)	20/648
Capacity in Terabytes (TB) (160 GB per cartridge)	103
Throughput (GB/hr) based on 16 MB/sec transfer rate	1152

Table 2 SDLT 600
Performance Characteristics

Quantum PX720 SDLT Model (drives/slots)	20/648
Capacity in Terabytes (TB) (300 GB per cartridge)	194
Throughput (GB/hr) based on 36 MB/sec transfer rate	2592

Table 3 DLT - S4 Performance
Characteristics

Quantum PX720 SDLT Model (drives/slots)	20/648
Capacity in Terabytes (TB) (800 GB per cartridge)	518
Throughput (GB/hr) based on 60 MB/sec transfer rate	4320

Table 4 HP LTO-2
Characteristics

Quantum PX720 HP LTO-2 Model (drives/slots)	20/732
Capacity in Terabytes (TB) (200 GB per cartridge)	145
Throughput (GB/hr) based on 30 MB/sec transfer rate	2160

Table 5 HP LTO-3
Characteristics

Quantum PX720 HP LTO-3 Model (drives/slots)	20/732
Capacity in Terabytes (TB) (400 GB per cartridge)	292
Throughput (GB/hr) based on 80 MB/sec transfer rate	5760

Table 6 HP LTO-4
Characteristics

Quantum PX720 HP LTO-4 Model (drives/slots)	20/732
Capacity in Terabytes (TB) (800 GB per cartridge)	586
Throughput (GB/hr) based on 120 MB/sec transfer rate	8640

Shelf Slot Numbering Conventions

The library slot numbering conventions differ depending on the library model:

- [Quantum PX720 SDLT Model](#)
- [Quantum PX720 LTO Model](#)

Note: A card cage is used to accommodate FC470 Fibre Channel bridges if required. Both with and without card cage storage elements are reflected in the following tables.

Quantum PX720 SDLT Model

The Quantum PX720 SDLT model stores cartridges in the following locations:

- Up to 20 tape drives
- 648 storage slots on interior walls (see [table 7](#))
- 2 programmable load ports with 14/28 SDLT slots each

Table 7 Storage Elements
(SDLT)

Number of Tape Drives	Number of Storage Elements (Slots- both Storage and Load Ports)	
	No Cardcage	With Cardcage
1-4	642	630
5-8	630	618
9-12	618	606
13-16	606	594
17-20	588	582

[Figure 4](#), [figure 5](#), and [figure 6](#) show the storage slot, load port slot, and tape drive numbering conventions. These conventions are used by the library GUI and the diagnostic software program.

Figure 4 Slot Shelf Numbering,
PX720 SDLT (Left Panels)

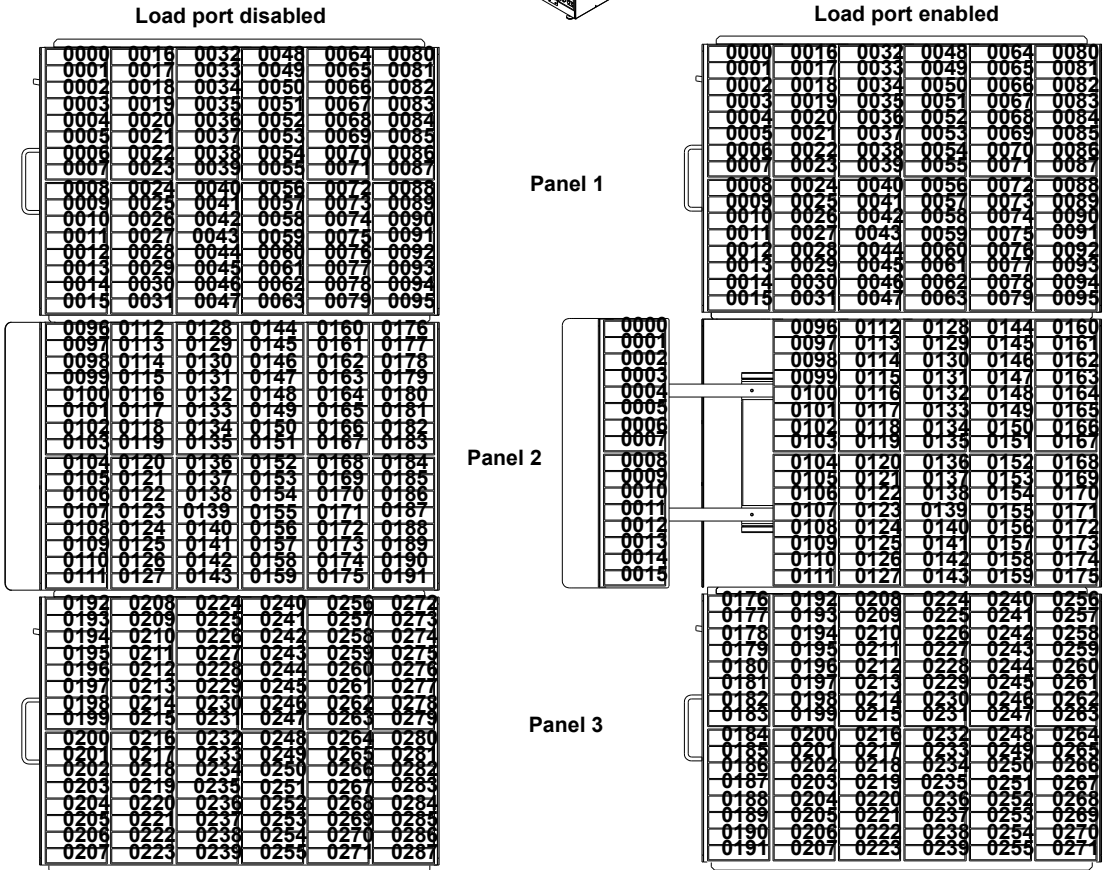
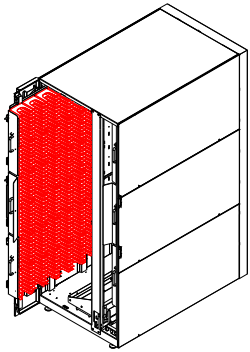
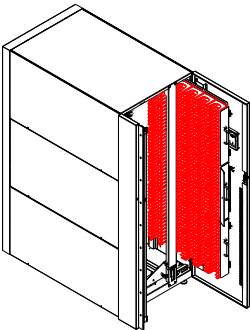


Figure 5 Slot Shelf Numbering,
PX720 SDLT (Right Panels)



Load port disabled						Load port enabled					
0290	0306	0322	0338	0354	0370	0274	0290	0306	0322	0338	0354
0291	0307	0323	0339	0355	0371	0275	0291	0307	0323	0339	0355
0292	0308	0324	0340	0356	0372	0276	0292	0308	0324	0340	0356
0293	0309	0325	0341	0357	0373	0277	0293	0309	0325	0341	0357
0294	0310	0326	0342	0358	0374	0278	0294	0310	0326	0342	0358
0295	0311	0327	0343	0359	0375	0279	0295	0311	0327	0343	0359
0296	0312	0328	0344	0360	0376	0280	0296	0312	0328	0344	0360
0297	0313	0329	0345	0361	0377	0281	0297	0313	0329	0345	0361
0298	0314	0330	0346	0362	0378	0282	0298	0314	0330	0346	0362
0299	0315	0331	0347	0363	0379	0283	0299	0315	0331	0347	0363
0300	0316	0332	0348	0364	0380	0284	0300	0316	0332	0348	0364
0301	0317	0333	0349	0365	0381	0285	0301	0317	0333	0349	0365
0302	0318	0334	0350	0366	0382	0286	0302	0318	0334	0350	0366
0303	0319	0335	0351	0367	0383	0287	0303	0319	0335	0351	0367
0304	0320	0336	0352	0368	0384	0288	0304	0320	0336	0352	0368
0305	0321	0337	0353	0369	0385	0289	0305	0321	0337	0353	0369
0386	0402	0418	0434	0450	0466	0370	0386	0402	0418		
0387	0403	0419	0435	0451	0467	0371	0387	0403	0419		
0388	0404	0420	0436	0452	0468	0372	0388	0404	0420		
0389	0405	0421	0437	0453	0469	0373	0389	0405	0421		
0390	0406	0422	0438	0454	0470	0374	0390	0406	0422		
0391	0407	0423	0439	0455	0471	0375	0391	0407	0423		
0392	0408	0424	0440	0456	0472	0376	0392	0408	0424		
0393	0409	0425	0441	0457	0473	0377	0393	0409	0425		
0394	0410	0426	0442	0458	0474	0378	0394	0410	0426		
0395	0411	0427	0443	0459	0475	0379	0395	0411	0427		
0396	0412	0428	0444	0460	0476	0380	0396	0412	0428		
0397	0413	0429	0445	0461	0477	0381	0397	0413	0429		
0398	0414	0430	0446	0462	0478	0382	0398	0414	0430		
0399	0415	0431	0447	0463	0479	0383	0399	0415	0431		
0400	0416	0432	0448	0464	0480	0384	0400	0416	0432		
0401	0417	0433	0449	0465	0481	0385	0401	0417	0433		
0482	0498	0514	0530	0546	0562	0434	0450	0466	0482	0498	0514
0483	0499	0515	0531	0547	0563	0435	0451	0467	0483	0499	0515
0484	0500	0516	0532	0548	0564	0436	0452	0468	0484	0500	0516
0485	0501	0517	0533	0549	0565	0437	0453	0469	0485	0501	0517
0486	0502	0518	0534	0550	0566	0438	0454	0470	0486	0502	0518
0487	0503	0519	0535	0551	0567	0439	0455	0471	0487	0503	0519
0488	0504	0520	0536	0552	0568	0440	0456	0472	0488	0504	0520
0489	0505	0521	0537	0553	0569	0441	0457	0473	0489	0505	0521
0490	0506	0522	0538	0554	0570	0442	0458	0474	0490	0506	0522
0491	0507	0523	0539	0555	0571	0443	0459	0475	0491	0507	0523
0492	0508	0524	0540	0556	0572	0444	0460	0476	0492	0508	0524
0493	0509	0525	0541	0557	0573	0445	0461	0477	0493	0509	0525
0494	0510	0526	0542	0558	0574	0446	0462	0478	0494	0510	0526
0495	0511	0527	0543	0559	0575	0447	0463	0479	0495	0511	0527
0496	0512	0528	0544	0560	0576	0448	0464	0480	0496	0512	0528
0497	0513	0529	0545	0561	0577	0449	0465	0481	0497	0513	0529

Panel 4

Panel 5

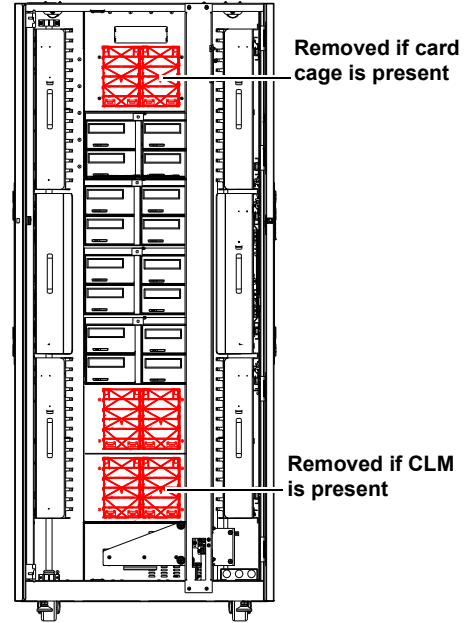
Panel 6

Figure 6 Slot Shelf Numbering,
PX720 SDLT (Back Slots)

•	•	0578	0584	•
•	•	0579	0585	•
•	•	0580	0586	•
•	•	0581	0587	•
•	•	0582	0588	•
•	•	0583	0589	•

•	•	0588	0594	•
•	•	0589	0595	•
•	•	0590	0596	•
•	•	0591	0597	•
•	•	0592	0598	•
•	•	0593	0599	•

•	•	0600	0606	•
•	•	0601	0607	•
•	•	0602	0608	•
•	•	0603	0609	•
•	•	0604	0610	•
•	•	0605	0611	•



Note: The number of slots located on the back of the library varies with the number of installed tape drive clusters (see [table 7](#)) and if a card cage or CLM is present in the library.

Quantum PX720 LTO Model

The Quantum PX720 LTO model stores cartridges in the following locations:

- Up to 20 tape drives
- 732 storage slots on interior walls (see [table 8](#))
- 2 programmable load ports with 16/32 LTO slots each

Table 8 Storage Elements
(LTO)

Number of Tape Drives	Number of Storage Elements (Slots- both Storage and Load Ports)	
	No Cardcage	With Cardcage
1-4	726	712
5-8	712	698
9-12	698	676
13-16	676	662
17-20	662	648

[Figure 7](#), [figure 8](#), and [figure 9](#) show the storage slot, load port slot, and tape drive numbering conventions. These conventions are used by the library GUI and the diagnostic software program

Figure 7 Slot Shelf Numbering,
PX720 LTO (Left Panels)

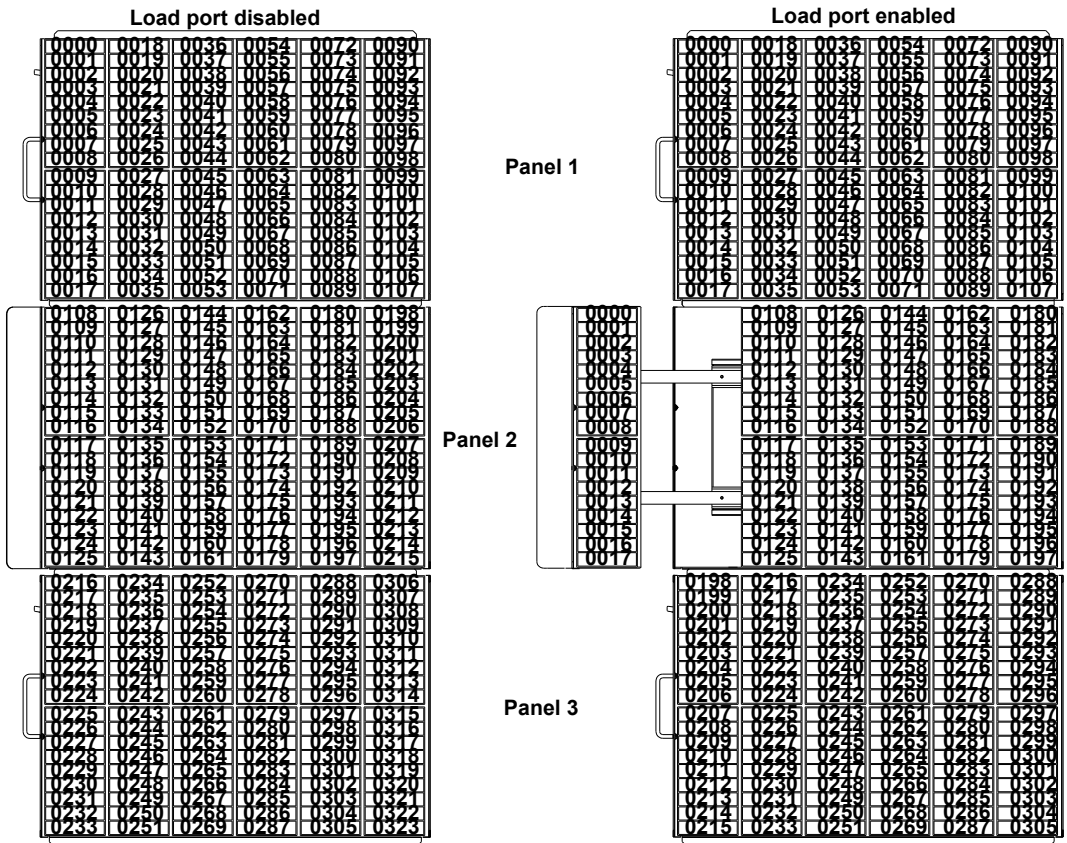
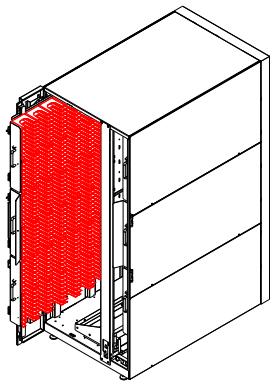
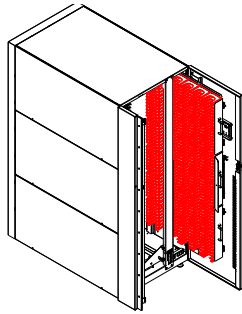


Figure 8 Slot Shelf Numbering,
PX720 LTO (Right Panels)



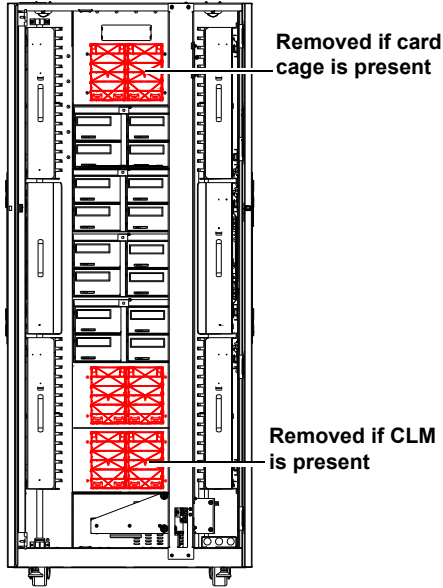
Load port disabled						Load port enabled					
0324	0342	0360	0378	0396	0414	0306	0324	0342	0360	0378	0396
0325	0343	0361	0379	0397	0415	0307	0325	0343	0361	0379	0397
0326	0344	0362	0380	0398	0416	0308	0326	0344	0362	0380	0398
0327	0345	0363	0381	0399	0417	0309	0327	0345	0363	0381	0399
0328	0346	0364	0382	0400	0418	0310	0328	0346	0364	0382	0400
0329	0347	0365	0383	0401	0419	0311	0329	0347	0365	0383	0401
0330	0348	0366	0384	0402	0420	0312	0330	0348	0366	0384	0402
0331	0349	0367	0385	0403	0421	0313	0331	0349	0367	0385	0403
0332	0350	0368	0386	0404	0422	0314	0332	0350	0368	0386	0404
0333	0351	0369	0405	0423	0315	0333	0351	0369	0405	0423	
0334	0352	0370	0387	0406	0424	0316	0334	0352	0370	0387	0406
0335	0353	0371	0388	0407	0425	0317	0335	0353	0371	0388	0407
0336	0354	0372	0389	0408	0426	0318	0336	0354	0372	0389	0408
0337	0355	0373	0390	0409	0427	0319	0337	0355	0373	0390	0409
0338	0356	0374	0391	0410	0428	0320	0338	0356	0374	0391	0410
0339	0357	0375	0392	0411	0429	0321	0339	0357	0375	0392	0411
0340	0358	0376	0393	0412	0430	0322	0340	0358	0376	0393	0412
0341	0359	0377	0394	0413	0431	0323	0341	0359	0377	0394	0413
0432	0450	0468	0486	0504	0522	0414	0432	0450	0468	0486	0504
0433	0451	0469	0487	0505	0523	0415	0433	0451	0469	0487	0505
0434	0452	0470	0488	0506	0524	0416	0434	0452	0470	0488	0506
0435	0453	0471	0489	0507	0525	0417	0435	0453	0471	0489	0507
0436	0454	0472	0490	0508	0526	0418	0436	0454	0472	0490	0508
0437	0455	0473	0491	0509	0527	0419	0437	0455	0473	0491	0509
0438	0456	0474	0492	0510	0528	0420	0438	0456	0474	0492	0510
0439	0457	0475	0493	0511	0529	0421	0439	0457	0475	0493	0511
0440	0458	0476	0494	0512	0530	0422	0440	0458	0476	0494	0512
0441	0459	0477	0495	0513	0531	0423	0441	0459	0477	0495	0513
0442	0460	0478	0496	0514	0532	0424	0442	0460	0478	0496	0514
0443	0461	0479	0497	0515	0533	0425	0443	0461	0479	0497	0515
0444	0462	0480	0498	0516	0534	0426	0444	0462	0480	0498	0516
0445	0463	0481	0499	0517	0535	0427	0445	0463	0481	0499	0517
0446	0464	0482	0500	0518	0536	0428	0446	0464	0482	0500	0518
0447	0465	0483	0501	0519	0537	0429	0447	0465	0483	0501	0519
0448	0466	0484	0502	0520	0538	0430	0448	0466	0484	0502	0520
0449	0467	0485	0503	0521	0539	0431	0449	0467	0485	0503	0521
0540	0558	0576	0594	0612	0630	0486	0504	0522	0540	0558	0576
0541	0559	0577	0595	0613	0631	0487	0505	0523	0541	0559	0577
0542	0560	0578	0596	0614	0632	0488	0506	0524	0542	0560	0578
0543	0561	0579	0597	0615	0633	0489	0507	0525	0543	0561	0579
0544	0562	0580	0598	0616	0634	0490	0508	0526	0544	0562	0580
0545	0563	0581	0599	0617	0635	0491	0509	0527	0545	0563	0581
0546	0564	0582	0600	0618	0636	0492	0510	0528	0546	0564	0582
0547	0565	0583	0601	0619	0637	0493	0511	0529	0547	0565	0583
0548	0566	0584	0602	0620	0638	0494	0512	0530	0548	0566	0584
0549	0567	0585	0603	0621	0639	0495	0513	0531	0549	0567	0585
0550	0568	0586	0604	0622	0640	0496	0514	0532	0550	0568	0586
0551	0569	0587	0605	0623	0641	0497	0515	0533	0551	0569	0587
0552	0570	0588	0606	0624	0642	0498	0516	0534	0552	0570	0588
0553	0571	0589	0607	0625	0643	0499	0517	0535	0553	0571	0589
0554	0572	0590	0608	0626	0644	0500	0518	0536	0554	0572	0590
0555	0573	0591	0609	0627	0645	0501	0519	0537	0555	0573	0591
0556	0574	0592	0610	0628	0646	0502	0520	0538	0556	0574	0592
0557	0575	0593	0611	0629	0647	0503	0521	0539	0557	0575	0593

Figure 9 Slot Shelf Numbering,
PX720 LTO (Back Slots)

0648	0655
0649	0656
0650	0657
0651	0658
0652	0659
0653	0660
0654	0661

0662	0669
0663	0670
0664	0671
0665	0672
0666	0673
0667	0674
0668	0675

0676	0683
0677	0684
0678	0685
0679	0686
0680	0687
0681	0688
0682	0689

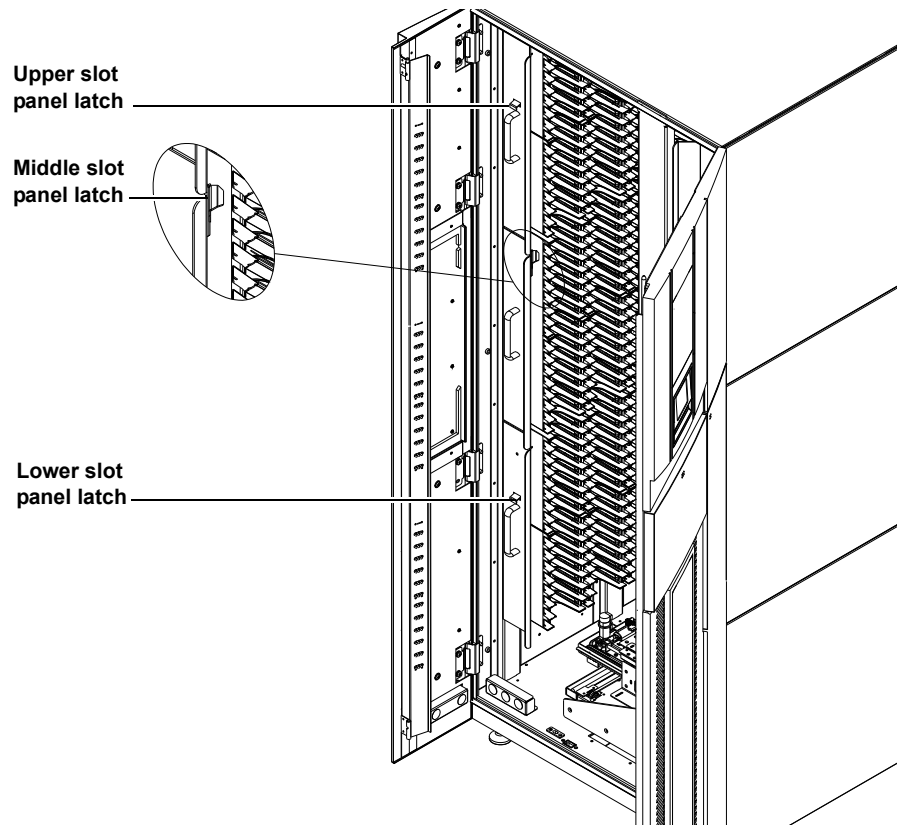


Note: The number of slots located on the back of the library varies with the number of installed tape drive clusters (see [table 8](#)) and if a card cage or CLM is present in the library.

Sliding Out the Slot Panels

To slide the slot panels out of the cabinet, press the slot panel latches down and pull the slot panel out of the cabinet (see [figure 10](#)).

Figure 10 Sliding the Slot
Panels Out of the Cabinet



Features and Benefits

The Quantum PX720 provides the following features and benefits:

- High-capacity, high-performance data storage and retrieval
 - The library may house up to:
 - 648 SDLT tape cartridges and 20 SDLT tape drives
 - or
 - 732 LTO-2 tape cartridges and 20 LTO-2 tape drives

- Hot-swappable, redundant DC power supplies ensure library operations against power supply failure
- On-line cartridge exchanges: two removable load ports with:

Enabled Load Ports	# of SDLT Cartridges	# of LTO Cartridges
None	0	0
Left	14	16
Right	30	32
Both	42	48

- Either 7 bin SDLT or 8 bin LTO removable cartridge magazines for easy insertion of cartridges without interrupting library operations
- Mixed Media (SDLT and LTO) supported in the same library
- Mixed interfaces (SCSI and Fibre Channel) supported in the same library
- Library partitioning option available
- SMI-S (Storage Management Initiative Specification) support
- Easy serviceability and manageability
 - Hot-swappable drives and DC power supplies enable field service engineers to make repairs without taking the library off-line
 - Easy access and replacement of critical components
 - A user-friendly OCP (operator control panel) provides a wide range of configuration and service-related functions
 - Web based management system provides the ability to remotely access the library status and administer library functions

DLTSage™ Tape Security



The PX720 tape library with DLT-S4 tape drives are capable of utilizing DLTSage Tape Security. DLTSage Tape Security is a unique solution designed to prevent unauthorized access to tape cartridges which is particularly valuable when protecting tapes that are transported offsite. DLTSage Tape Security is a firmware feature designed into the DLT-S4 tape drive which uses an electronic key to prevent or allow reading and writing of data on to a tape cartridge. This key is managed through the remote management pages of the PX720 tape library (see [chapter 3, “Quantum PX720 Remote Management.”](#)). DLTSage Tape Security is available at no additional cost as an integrated feature in of the DLT-S4 tape drive and PX720 tape library (firmware revision 4.5 or later).

Mixed Media Support

The PX720 tape library is capable of supporting mixed media in the same library (SDLT and LTO media) tape drives and media in the same library frame. You must have at least one bin panel (SDLT or LTO) for each tape drive type (SDLT or LTO).

SMI-S Support

SMI-S refers to the Storage Management Initiative Specification, which is a interface standard that enables inter operability in both hardware and software between storage products from different vendors in a SAN environment. The interface provides common protocols and data models that storage product vendors can use to ensure end user manageability of the SAN environment.

SMI-S was developed by the Storage Networking Industry Association (SNIA) in 2002.

Tape Drive and Media Analysis

The PX720 library provides the ability to proactively monitor tape drive and media health by continuously tracking dozens of critical tape drive and media performance parameters. If a critical operating parameter exceeds its predetermined threshold the PX720 remote management pages (see [Tape Alert Page](#) on page 103) automatically notify you, allowing you to take corrective action.

In the event of a backup failure, the **Tape Alert** page can tell you what happened and why, answering questions such as: Where is the problem? Is it with the drive or media? Does the tape drive need to be returned for service? Has the media reached end-of-life?

The **Tape Alert** page provides a comprehensive set of drive and media statistics that facilitates preventative maintenance planning. With up-to-the-minute statistics on drive and media usage you can avoid unplanned downtime and proactively plan maintenance such as head cleaning or media retirement.

Library Components

The Quantum PX720 library consists of the following major components:

- [Cabinet](#)
- [OCP](#)
- [CHM](#)
- [Tape Drives](#)
- [Load Port and Magazines](#)
- [Cross Link Mechanism \(CLM\)](#)

Cabinet

The cabinet houses all library components including:

- CHM (Cartridge Handling Mechanism)
- Storage slots
- Control electronics
- Power supply and distribution equipment
- Tape drives

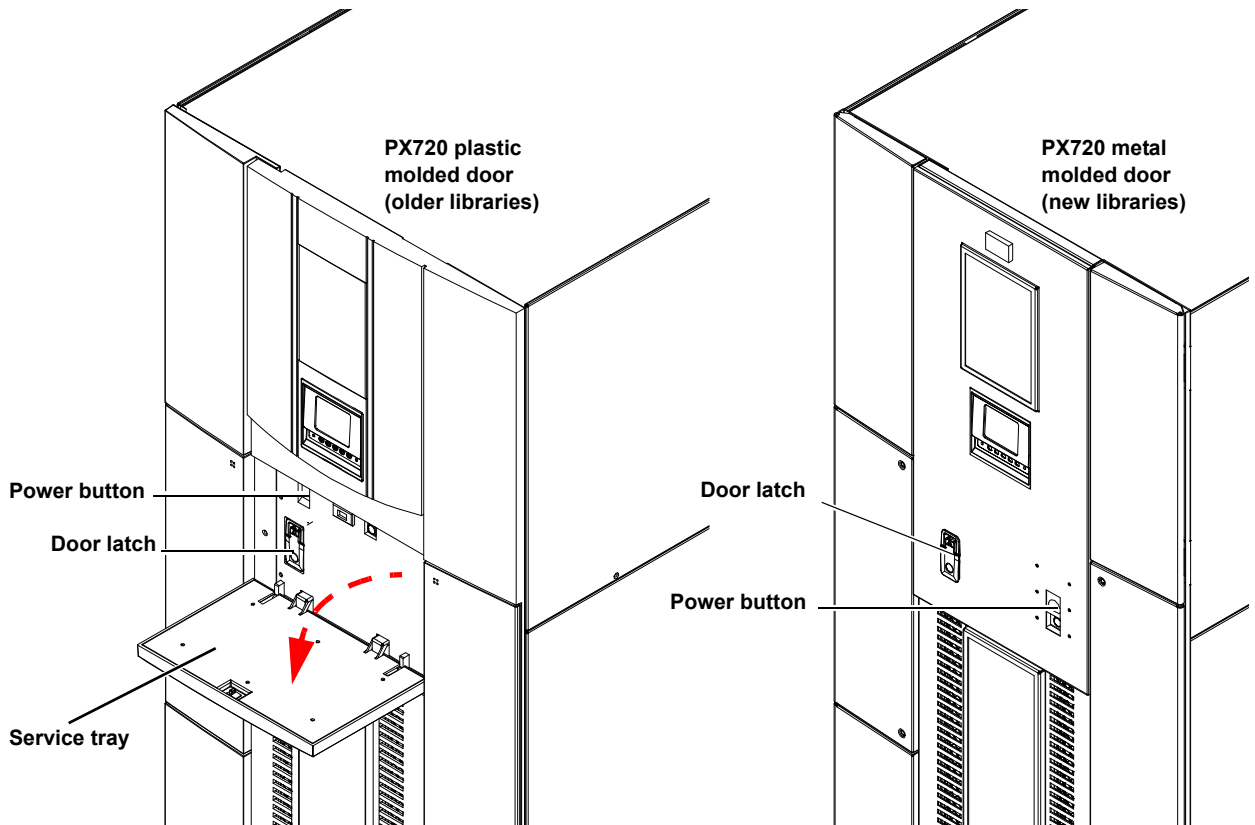
You can access these components to monitor and control library operation through the front and back doors of the library cabinet.

Front Panel

The front of the library cabinet (see [figure 11](#)) provides the following:

- Front door provides easy access to the CHM and the storage array
- The viewing window makes it possible to visually monitor library operations
- An OCP in the center of the cabinet enables you to monitor and control library operations
- Power button located under the service tray (older libraries may have plastic molded doors and newer libraries have metal molded doors)

Figure 11 PX720 Cabinet-Front View



- Two configurable load ports with either 16 SDLT or 18 LTO cartridge magazines for easy insertion of cartridges without interrupting library operations

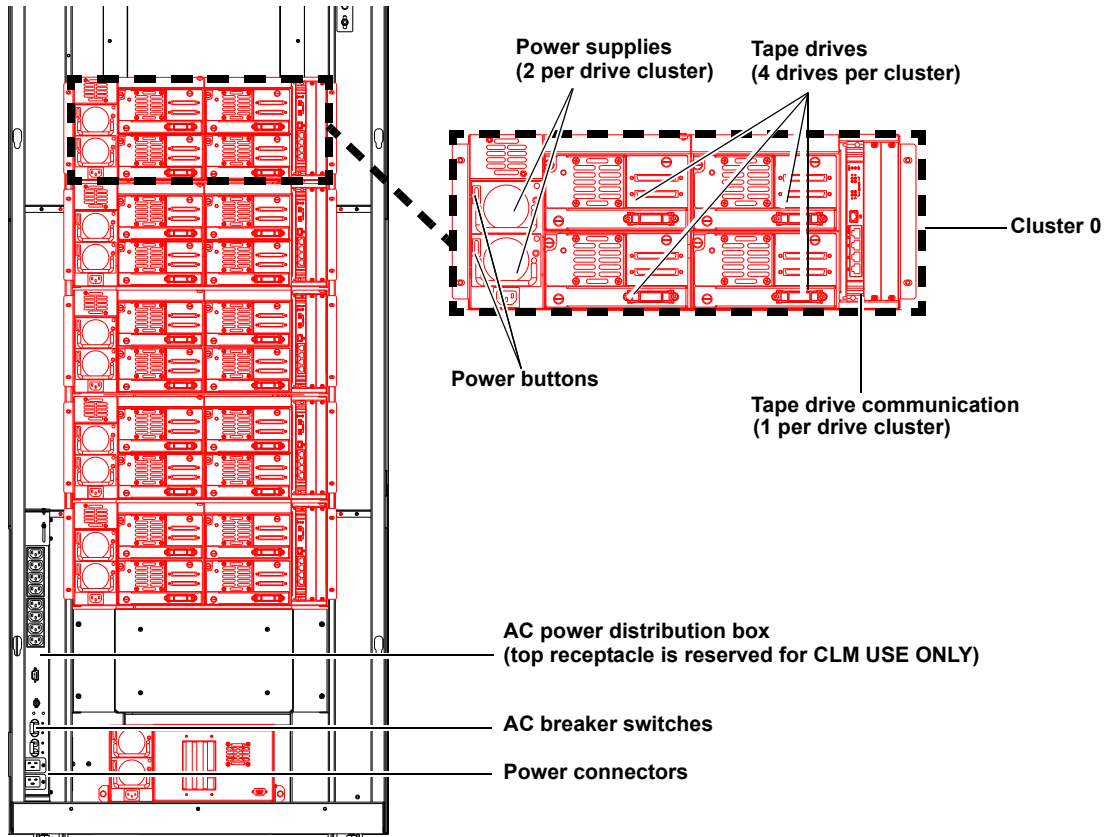
Cabinet-Back

The back of the cabinet (see [figure 12](#)) provides easy accessibility to:

- Cooling fans
- Power, control, and data interfaces
- Tape drives

- Tape drive communication
- AC power distribution box. The top plug is reserved for the cross link mechanism (CLM) used to connect multiple cabinets. Power connectors and breaker switches are located on the front of the unit.

Figure 12 PX720 Cabinet-Back Panels



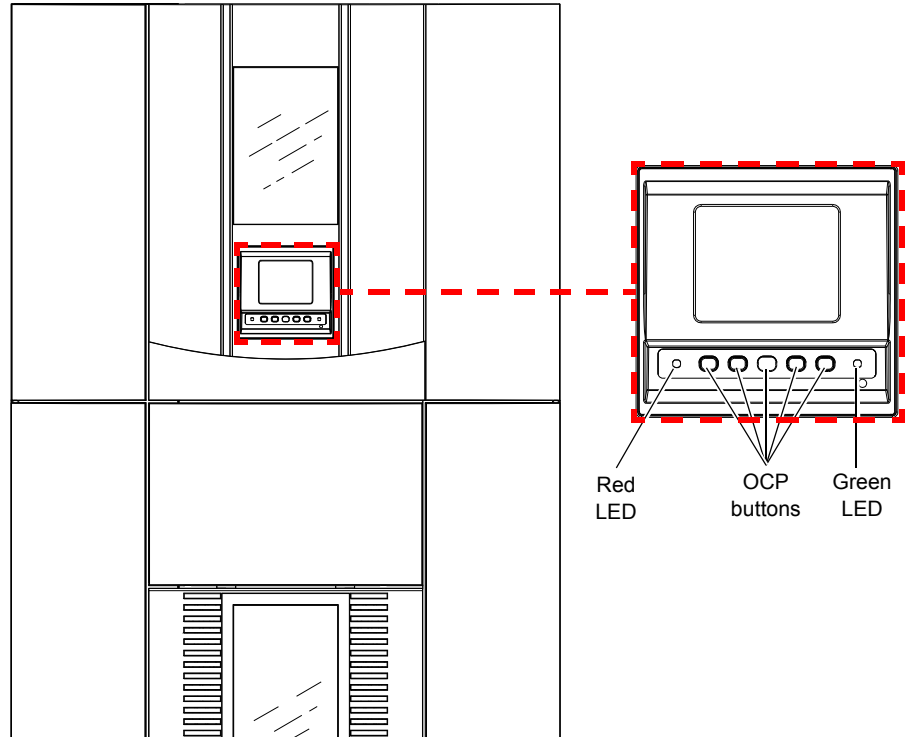
OCP

The OCP features a menu system for determining library status, configuring the library, and performing certain diagnostic functions. The OCP (see [figure 13](#)) consists of the following features (see [table 9](#):

Table 9 OCP Features

Feature	Description
OCP	<p>The OCP consists of the following elements:</p> <ul style="list-style-type: none"> <li data-bbox="315 395 1308 604"> <p>• OCP</p> <p>The OCP displays library status information and allows you to access the library menus. These menus allow you to view or change the library settings, run demonstration programs, or run diagnostic tests.</p> <p>The OCP is discussed in detail in this book (see chapter 2 on page 40).</p> <li data-bbox="315 621 1229 751"> <p>• Five OCP buttons</p> <p>Use these buttons in combination with the OCP to scroll through screens and select options or commands. The functionality of these buttons changes depending on the currently displayed OCP screen.</p> <li data-bbox="315 769 1293 1090"> <p>• Light emitting diode (LED) indicators</p> <p>The operator control panel has two LED indicators:</p> <ul style="list-style-type: none"> <li data-bbox="572 821 1279 1012"> <p>• The green LED lights when the library is fully operational and ready to accept host commands. It flashes while the library is transitioning from a READY state to a NOT READY state. The library will be NOT READY during power-on self-tests, when magazines are being released, or during access to certain menu items.</p> <li data-bbox="572 1029 1272 1090"> <p>• Both LEDs flash when there is a library fault that requires operator attention.</p>

Figure 13 OCP—Initial Screen

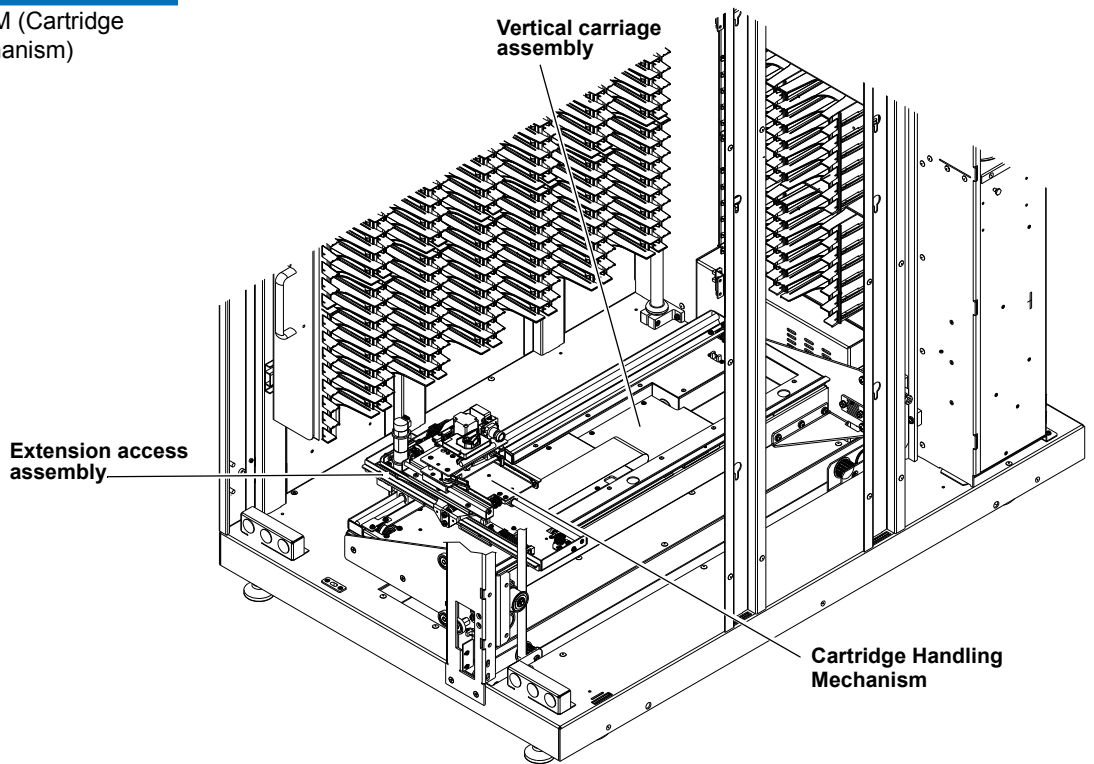


CHM

The CHM consists of the following components:

- CHM (Cartridge handling mechanism)
- Vertical carriage assembly
- Horizontal drive motor
- Extension axis assembly

Figure 14 CHM (Cartridge Handling Mechanism)



The vertical and horizontal actuators move the CHM into position to pick and place tape cartridges. The rotary actuator rotates the CHM 180°, allowing the CHM to pass cartridges between the side storage slots and the back storage slots or tape drives. The extension actuator extends the CHM forward to make contact with the desired cartridge and then retracts the CHM to remove the cartridge from a slot or drive.

The CHM includes an optical scanner that reads standard six-character (7 characters for SDLT and 8 characters for LTO), 3 of 9 barcode labels. The scanner is used to maintain an inventory of the tape cartridges within the library. An inventory occurs automatically whenever the library is turned on or when the doors have been opened. An inventory can also be initiated from the host computer.

Although the library does not require tape cartridges to have barcode labels, properly labeled tape cartridges and full storage slots speed up the inventory process.

Tape Drives

The Quantum PX720 can hold up to 20 SDLT-320, SDLT-600, LTO-2, LTO-3, and LTO-4 tape drives.

Table 10 Tape Drive and Cartridge Specifications

Tape Cartridge	Transfer Rate	Cartridge Capacity	Cartridge Capacity (compressed)	Total Library (PX720) Capacity	Library Capacity (compressed*)
Quantum SDLT320	16 MB/sec	160 GB	320 GB	104 TB	208 TB
Quantum SDLT600	36 MB/Sec	300 GB	600 GB	194 TB	389 TB
Quantum DLT-S4	60 MB/Sec	800 GB	1600 GB	518 TB	1.03 PB (Petabytes)
HP LTO Ultrium Gen II	30 MB/sec	200 GB	400 GB	146 TB	292 TB
HP LTO Ultrium Gen III	80 MB/sec	400 GB	800 GB	292 TB	584 TB
HP LTO Ultrium Gen IV	120 MB/sec	800 GB	1600 GB	584 TB	1.17 PB (Petabytes)

* Compressed capacity assumes a 2:1 compression ratio.

When fewer than 20 drives are installed in a Quantum PX720, the tape drives must occupy consecutive drive clusters, beginning with drive cluster 0 (refer to the label located on the inside of the back door for tape drive cluster locations).

The drives used in Quantum PX720 are more reliable than standard drives due to the automated environment.

If a drive experiences read/write errors when the AutoClean function is enabled, the library issues an error message stating that drive cleaning is required. Without user intervention, the CHM (cartridge handling

mechanism) replaces the data cartridge with a cleaning cartridge. When the cleaning procedure finishes, the CHM returns the data cartridge to the drive.

Note: When a cleaning cartridge has completed its 20-use limit, it is automatically exported from the library, requiring a new one to be loaded through the load port.

Load Port and Magazines

The load ports are mechanical devices in the front panel of the library that enable you to import or export tape cartridges to and from the library via three tape cartridge magazines without interrupting library operations. If removable bin packs are installed in the load ports, the bin packs can be removed from cabinet (see [Inserting Tape Cartridges into the Load Port](#) on page 82 for more information).

Note: To open the load ports, see the [Load Ports Screen](#) on page 73. Ensure the load port doors are open prior to unlocking the load ports.

Warning: Keep fingers and other body parts away from the load port doors when open. The stop button is available from the operator control panel to use in case of an emergency that requires stopping moving robotic parts.

Warning: Achten Sie darauf, dass Sie mit Ihren Fingern oder anderen Körperteilen nicht zu nahe an die Türen des Ladeports gelangen, wenn diese offen sind. Die Stopp-Taste befindet sich auf der Bediener-Systemsteuerung, falls die Roboter in einem Notfall angehalten werden müssen.

Figure 15 Left Load Port Bin Packs

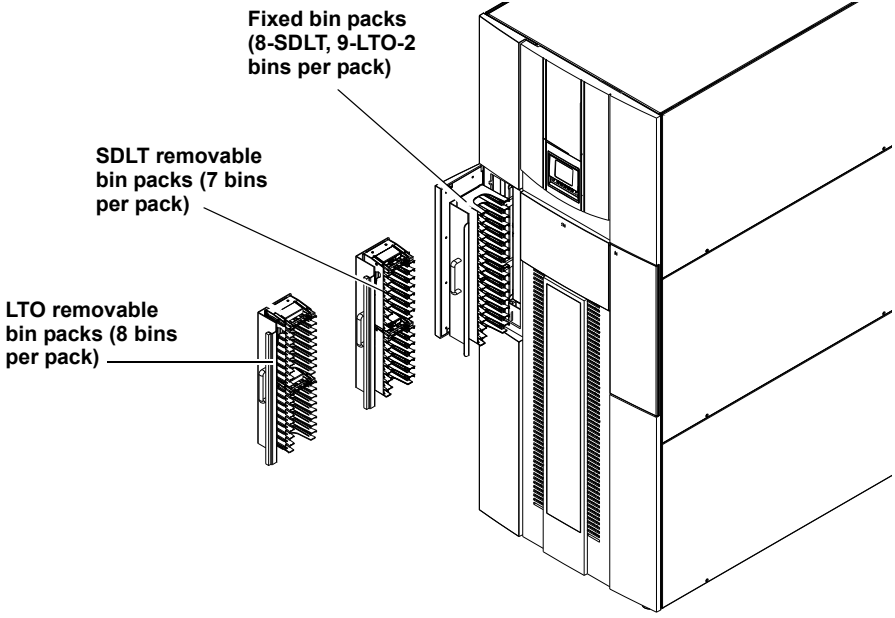
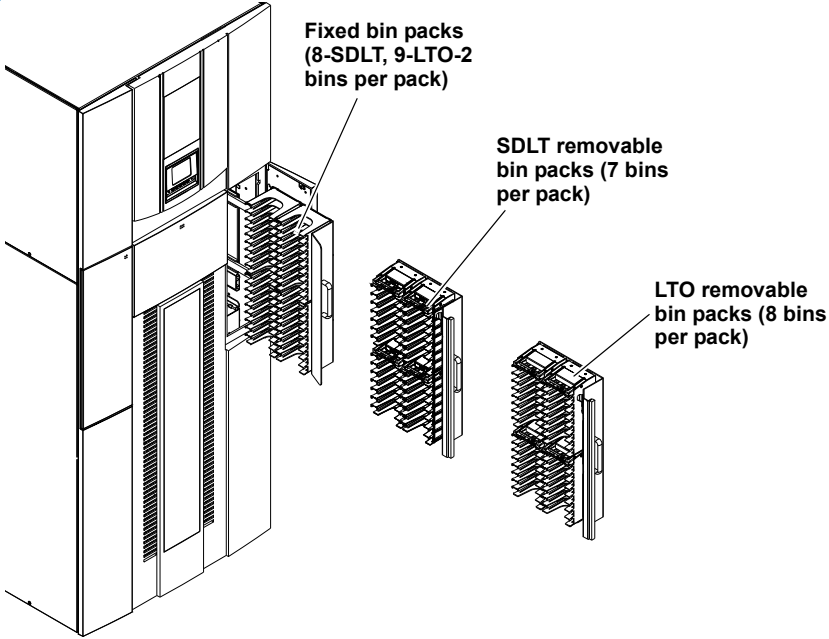


Figure 16 Right Load Port Bin Packs



Cross Link Mechanism (CLM)

The Quantum PX720 cross link mechanism (CLM) allows you to connect up to five libraries together and allow multiple libraries to appear as one to the host system. If a CLM is installed in the library, the CLM and all connected cabinet status displays in the **Operations** section of the OCP (see [Operations Screen](#) on page 74) and the **Overview** section of the remote management pages (see [Cross Link Mechanism \(CLM\)](#) on page 94).

Note: To connect multiple PX720 cabinets together requires optional *Quantum PX720 Cross Link Mechanism Upgrade Kits* to be installed in your library. To add this upgrade kit, please contact your Quantum Enterprise Storage Partner (reseller or VAR), your Quantum sales representative or Quantum Corporate at 1-800-677-6268 (or 949-856-7800 for international) or quantuminfo@quantum.com.

Getting Started

This chapter describes the procedures necessary to get your Quantum PX720 up and running. Ensure you have the following equipment and accessories available before installing the library:

- Sufficient SCSI cables to support 2 host bus adapters (HBAs) per drive cluster
- Sufficient HBAs
 - 1 for the media changer (CHM)
 - 2 per drive cluster (2 tape drives per SCSI bus)

Note: SDLT 600 tape drives require a dedicated SCSI bus for every tape drive (1 tape drive per SCSI bus).

- Power source (see [appendix A](#) on page 193 for power requirements)
- Tape cartridges (LTO or SDLT)

After the Quantum PX720 is in its final location, the following steps are required to complete the installation:

- [Cabling the Quantum PX720](#)
- [Loading the Tape Cartridges](#)
- [Initial Configuration](#)

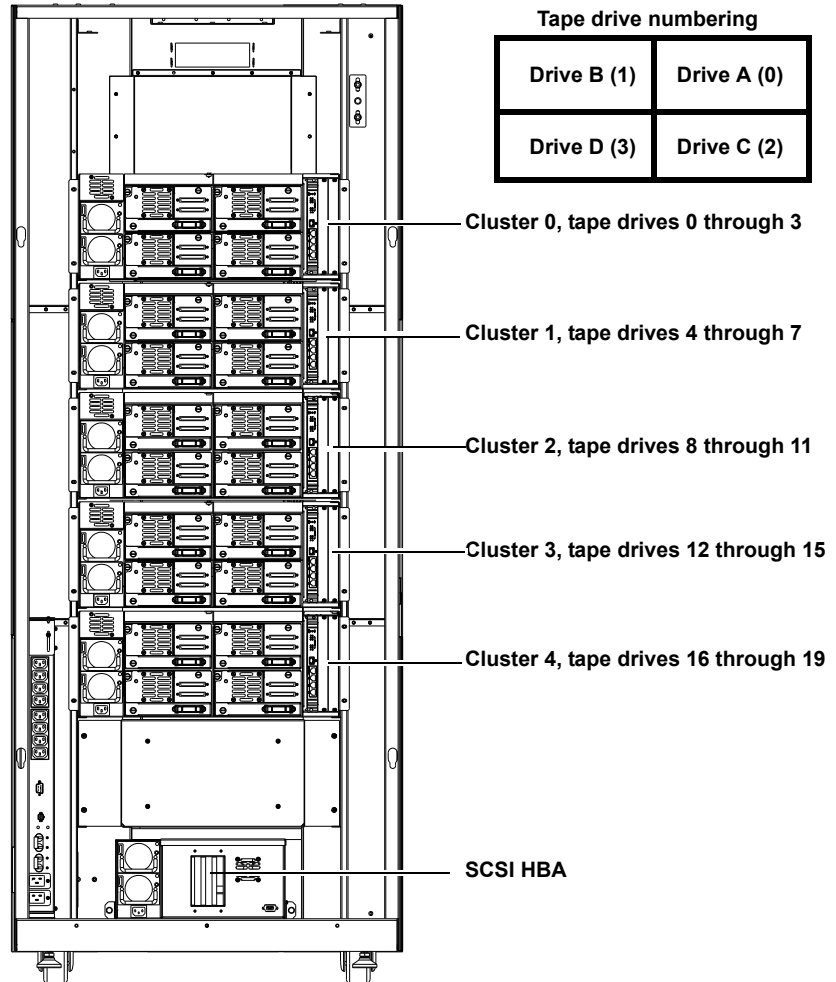
Cabling the Quantum PX720

After the Quantum PX720 is in its final location, the tape drives and robotics controller must be connected to the backup host system(s).

To cable the Quantum PX720:

- 1 Open the back door of the Quantum PX720 to gain access to the tape drives and robotics controller (see [figure 17](#)).

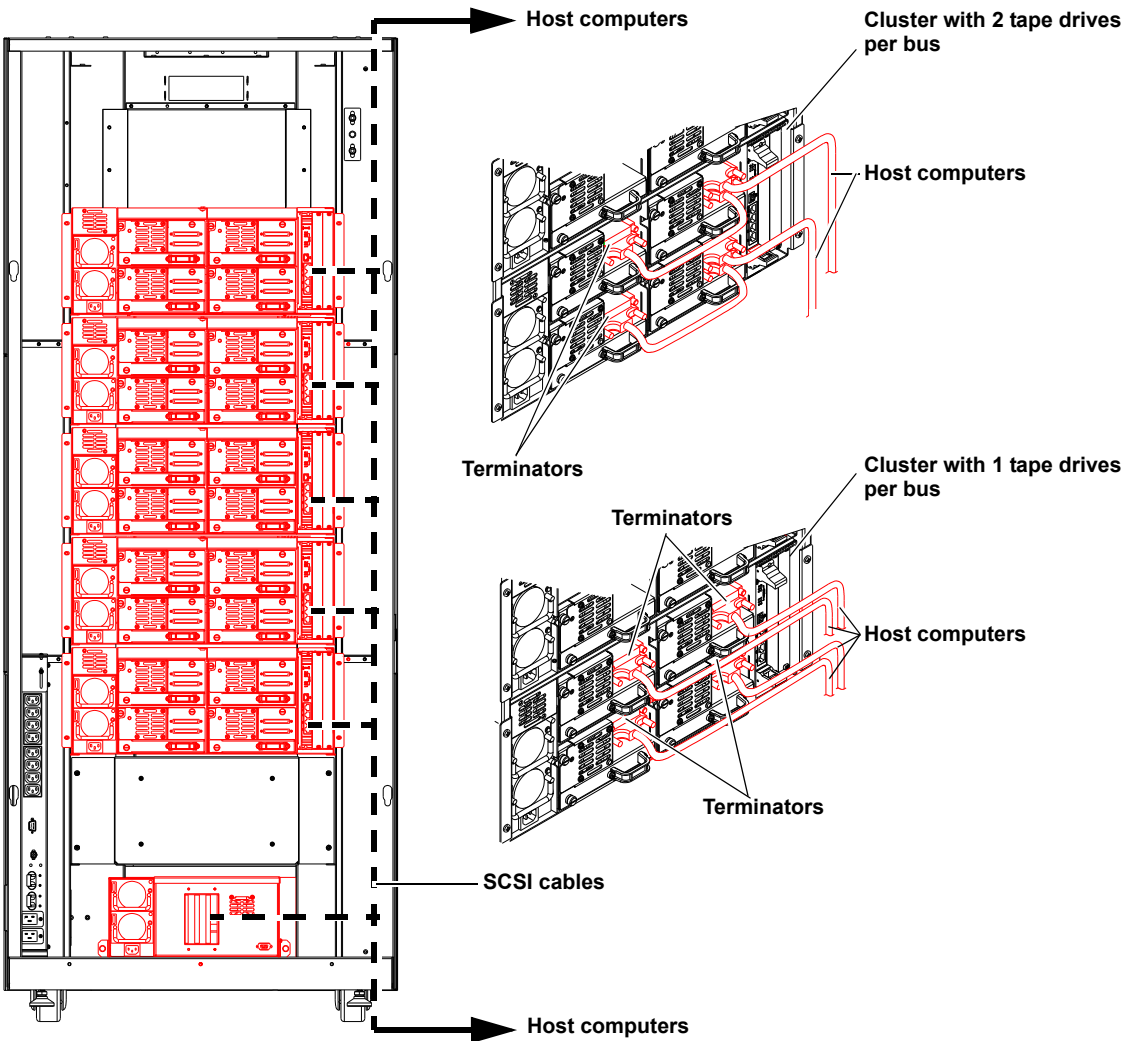
Figure 17 Tape Drives and Robotics Controller



- 2 Route a SCSI cable up through the base of the library on the right-hand side and connect the host computer to the robotics controller or include the robotics controller with two tape drives (see [figure 17](#)).
- 3 Connect the host computers to the tape drives by routing SCSI cables up through the base of the library and along the right-hand side of the cabinet (see [figure 18](#)).

Tech Tip: Start cabling with drive cluster 0 at the top of the library and work down.

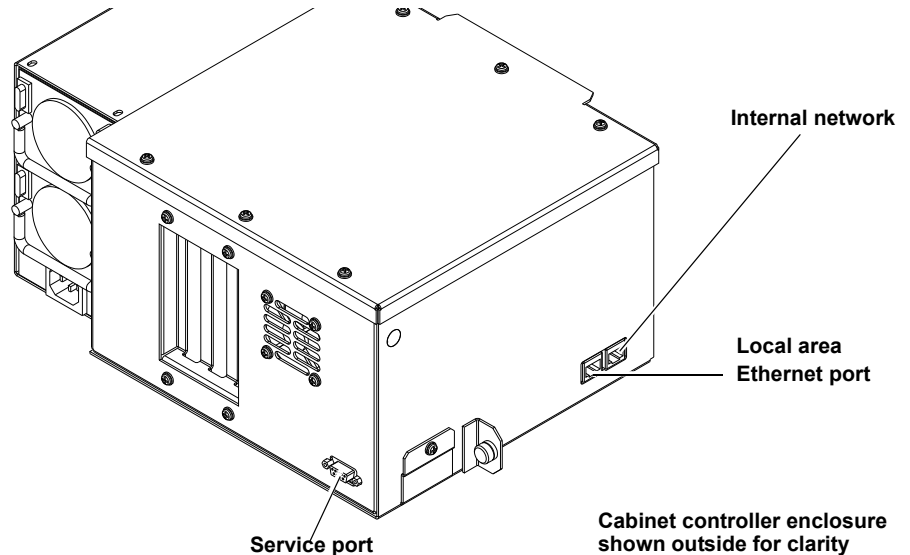
Figure 18 Connecting the Tape
Drives



Note: Make sure that all SCSI cables droop down slightly to ensure that the back door closes.

- 4 Route an Ethernet cable up through the base of the library and connect the front Ethernet port located on the right side of the cabinet controller to the local network (see [figure 19](#)).

Figure 19 Connecting the Library to the Local Area Network



- 5 Close the back door.

Loading the Tape Cartridges

Before operating the library, load the appropriate tape cartridges (LTO or SDLT) into the library starting with the left-hand panels (see [Shelf Slot Numbering Conventions](#) on page 8 for slot locations).

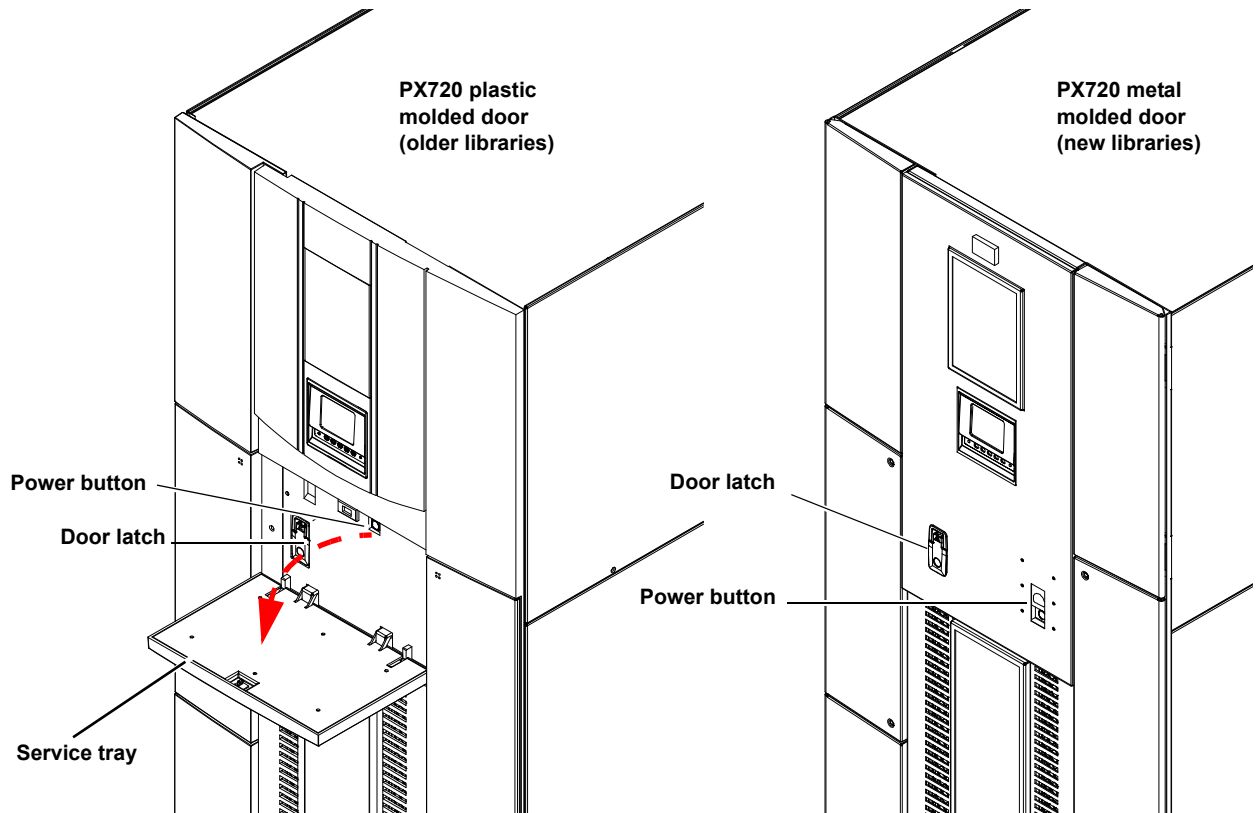
Initial Configuration

The Quantum PX720 must be initially configured with an IP address before the remote management software is available.

To configure the Quantum PX720 IP address:

- 1 Press on the top of the service tray to tip it down and press the power button to turn on the library (see [figure 20](#)).

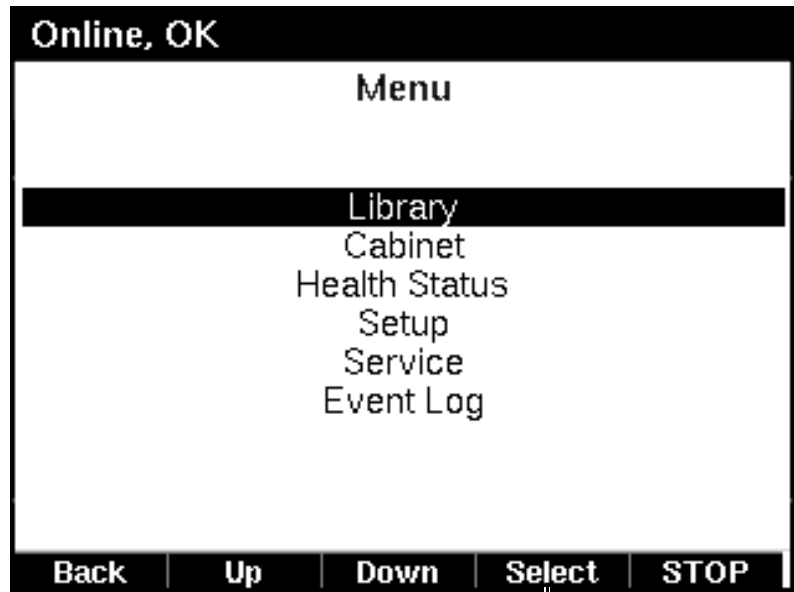
Figure 20 Turning on the Library



- 2 When the library completes the boot up sequence and the OCP is active, press **Menu** from the **Home** screen.

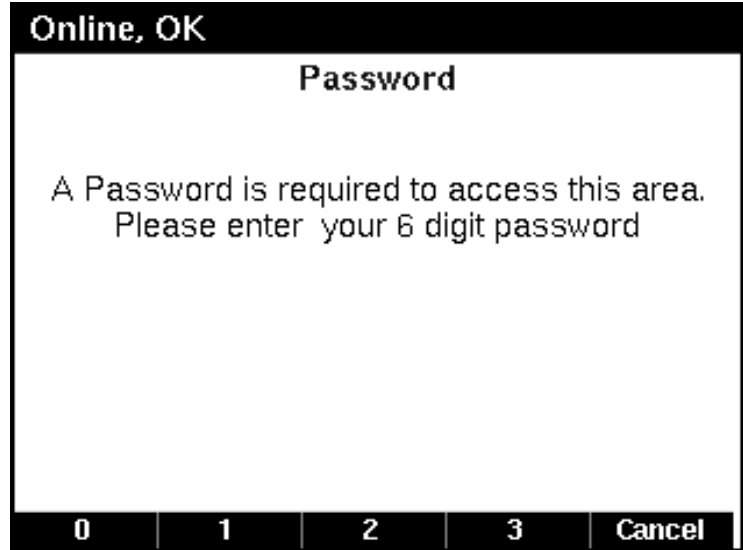
The OCP displays the **Menu** screen (see [figure 21](#)):

Figure 21 Menu Screen



- 3 From the **Menu** screen, use the up and down arrows to highlight **Setup** and press **Select**.
- 4 The library prompts you for your password (see [figure 22](#)).

Figure 22 Password Screen



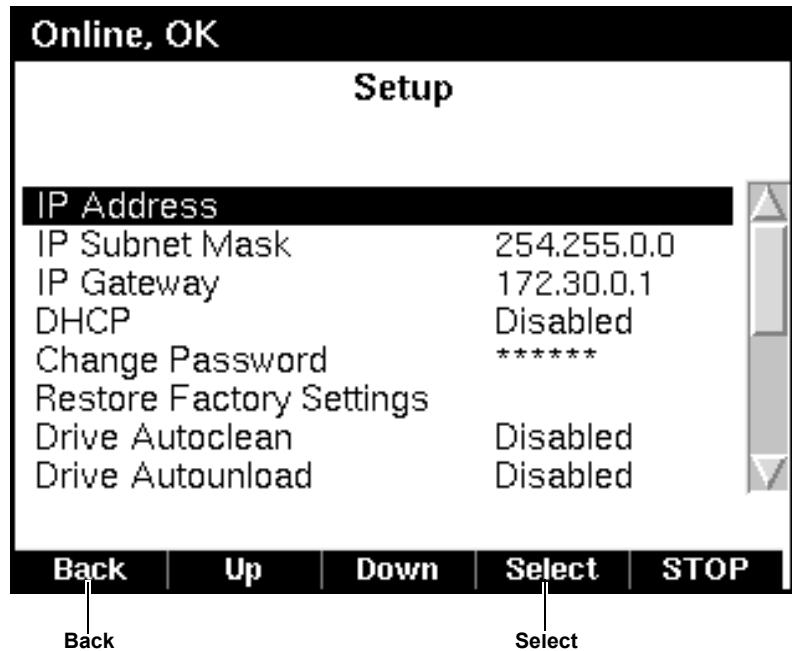
- 5 Enter the 6 digit password.

The password is accepted after the sixth digit is entered.

Note: The default password is 001122.

The **Setup** screen displays (see [figure 23](#)):

Figure 23 Setup Screen



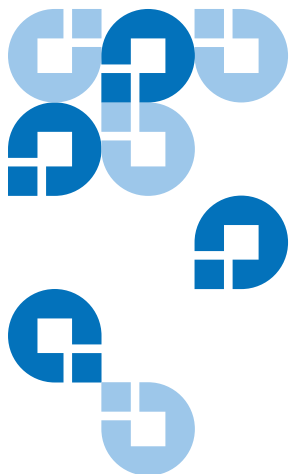
The **Setup** screen displays the following information:

- IP Address (requires cabinet reboot)
- IP Subnet Mask
- IP Gateway
- DHCP (default enabled)
- Change Password
- Restore Factory Settings
- Drive Autoclean (default disabled)
- Drive Autounload (default disabled)
- Configured Drives
- Configured Slots
- Left Load Port (16) (default enabled)
- Right Load Port (32) (default enabled)
- Service Mode

- 6 To edit the setup information, use the up and down arrows to highlight the section and press **Select**.
 - To set the IP address, subnet mask, and gateway, use the up and down arrows to select the appropriate number and press **Select** to accept.
 - To enable/disable DHCP, use the up and down arrows to toggle between enable/disable. Press **Select** to accept the setting. If your library is not connected to a network which uses a DHCP server to assign IP addresses, disable this function.
 - To change the password, use the up and down arrows to select Change Password and press **Select**. To change the password, enter a 6-digit password using the numbers provided on the OCP. Press **Select** to accept the new password. When prompted, re-enter the password to confirm.
 - To enable drive autoclean, use the up and down arrows to select Drive Autoclean and press **Select**.
 - To enable drive autounload, use the up and down arrows to select Drive Autounload and press **Select**.
 - To enable the left load port, use the up and down arrows to select Left Load Port (16) and press **Select**.
 - To enable the right load port, use the up and down arrows to select Right Load Port (32) and press **Select**.
- 7 When you are finished viewing/editing the setup information, press **Back** twice to return to the **Home** screen.
- 8 From the **Home** screen, press **Ops** to enter the operations screen.
- 9 Before the network information can become active, the cabinet must reboot. To reboot the cabinet, use the up and down arrows to highlight the cabinet and press **Select**.
- 10 Use the up and down arrows to select the reboot option and press **Select**.

The library reboots.

The library is now ready for operation. For more information on Quantum PX720 remote management, see [chapter 3](#) on page 86.



Basic Library Operations

This chapter describes the following basic library operating procedures:

- [Inserting Tape Cartridges](#)
- [Preparing the Cabinet for Operation](#)
- [Turning the Library On and Off](#)
- [Using the OCP \(Operator Control Panel\)](#)
- [Inserting Tape Cartridges into the Load Port](#)

Inserting Tape Cartridges

To insert tape cartridges:

- 1 Label each cartridge.
- 2 Set the write-protect switch.
- 3 Place cartridges (right side up) in the fixed slots.

Caution: Placing the cartridges in the bins upside down can cause damage to the library (see [figure 25](#) for SDLT cartridges and [figure 26](#) for LTO cartridges).

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

Taking ESD Precautions

Components within the PX720 contain static-sensitive parts. To prevent damage to these parts while performing installation, maintenance, or replacement procedures, observe the following precautions:

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

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

- Use an antistatic wrist strap when touching internal cabinet components. To use the wrist strap properly, place the band around your wrist and attach the clip to the cabinet frame. Keep the strap on until you are ready to close the cabinet doors.
- Keep static-sensitive parts in their shipping containers until ready for installation.
- Do not place static-sensitive parts on any metal surface. If you need to put down a static-sensitive part, place it inside its protective shipping bag or on a grounded antistatic mat.
- Avoid direct contact with static-sensitive parts. Avoid touching connectors and discrete components.
- Close cabinet door and access panel when not working on the cabinet.

- Be very careful when installing the cabinet or handling components in dry climates or environments where cold weather heating is used. Environments such as these with lower relative humidity have greater potential to produce static electricity.

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

SDLT Cartridges

The following section shows you how to label SDLT tape cartridges, as well as setting the write-protect switch and proper orientation.

Note: Quantum highly recommends using barcode labels provided by Quantum. Also, use the appropriate barcode labels for your drive type. Do not use older barcode labels on tape cartridges for newer drive types.

Labeling

The PX720 is a multi-media library, meaning multiple drive and tape cartridge types can be present in a single library. Barcode labels are attached to each tape cartridge to differentiate the different tape cartridge types (SDLT, LTO, and cleaning cartridges).

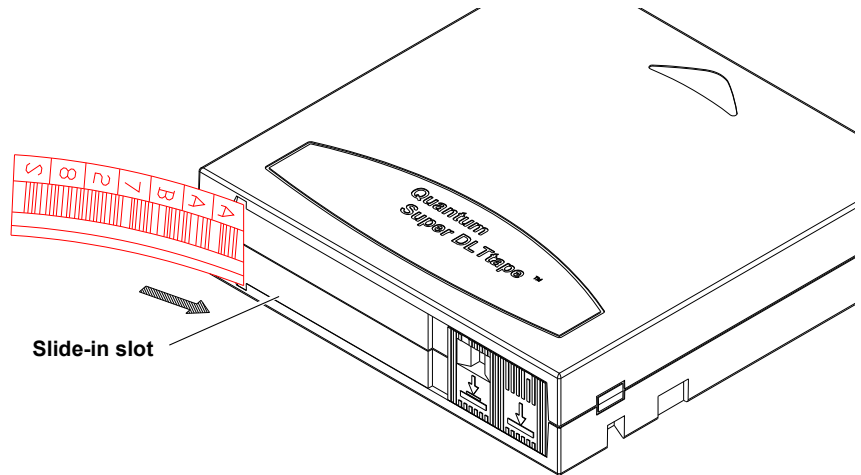
The SDLT cartridge label has eight characters (e.g. AAANNNS#). The first six characters are called the volume identifier which is made up of three alpha characters and three numeric characters. These characters allow each cartridge to have a unique identifier. The last two characters are called the media identifier and indicate the following media types:

- S1 = SDLT 220
- S2 = SDLT 320
- S3 = SDLT 600
- S4 = DLT-S4

Note: You cannot choose the sequence of labels inside the bar code label packs. No two packs are ever the same to avoid issues with duplicate bar code IDs.

Place the label in the slide-in slot on the front of the cartridge (see [figure 24](#)).

Figure 24 Inserting a Barcode Label (SDLT)



Note: Only use barcode labels that have been designed for cartridges. Do not adhere labels to a cartridge anywhere except the slide-in slot.

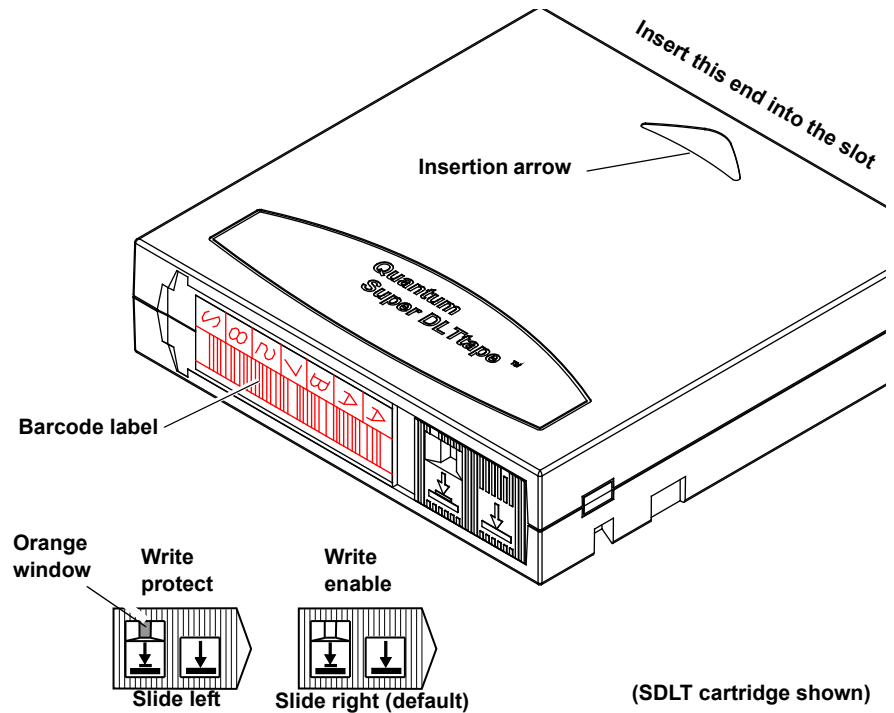
Setting the Write-Protect Switch

Each tape cartridge has a write-protect switch similar to that shown in [figure 25](#). This switch determines whether new data can be written to the cartridge (*write-enabled*) or whether data on the cartridge is protected from being erased or overwritten (*write-protected*). Set the write-protect switch to enabled when inserting new cartridges into the library. Set the write-protect switch to protected archiving tape cartridges.

Proper Insertion Orientation

Refer to [figure 25](#) for proper label placement, write protection settings and insertion orientation.

Figure 25 SDLT Cartridges



LTO Cartridges

The following section shows you how to label LTO tape cartridges, as well as setting the write-protect switch and proper orientation.

Note: Quantum highly recommends using barcode labels provided by Quantum. Also, use the appropriate barcode labels for your drive type. Do not use older barcode labels on tape cartridges for newer drive types.

The PX720 is a multi-media library, meaning multiple drive and tape cartridge types can be present in a single library. Barcode labels are attached to each tape cartridge to differentiate the different tape cartridge types (SDLT, LTO, and cleaning cartridges).

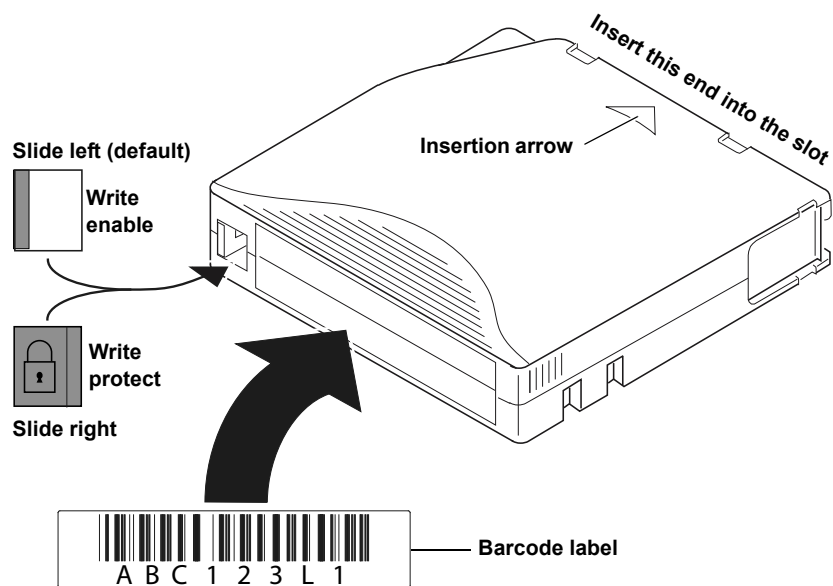
The LTO cartridge label has eight characters (e.g. AAANNL#). The first six characters are called the volume identifier which is made up of three alpha characters and three numeric characters. These characters allow each cartridge to have a unique identifier. The last two characters are called the media identifier and indicate the following media types:

- L1 = LTO generation 1 (LTO)
- L2 = LTO generation 2 (LTO-2)
- L3 = LTO generation 3 (LTO-3)
- L4 = LTO generation 4 (LTO-4)

Note: You cannot choose the sequence of labels inside the bar code label packs. No two packs are ever the same to avoid issues with duplicate bar code IDs.

Adhesive-backed barcode labels are used on LTO tape cartridges. Refer to [figure 26](#) for proper label placement, write protection settings and insertion orientation.

Figure 26 LTO Cartridges



Caution: LTO tape drive media cannot be degaussed due to the fact that it uses "magnetic servos." Do not attempt to degauss LTO tape drive media. If this media is degaussed, it will no longer work.

Cleaning Cartridges

Cleaning cartridges are used when a tape drive within the library requires cleaning. When Autoclean is enabled (either through the OCP or remote management screens), the library will automatically clean the tape drive when needed. A fixed bin (see [Library Models](#) on page 2 for bin locations) is generally used to store a cleaning cartridge, however, the cartridge can be placed anywhere in the library. When the library completes the inventory, the system stores the cleaning cartridge location so it will be available when a tape drive requires cleaning.

Note: You must attach the appropriate cleaning cartridge barcode label (SDLT, or LTO) to the cleaning cartridge or the library will mark it as unrecognizable media.

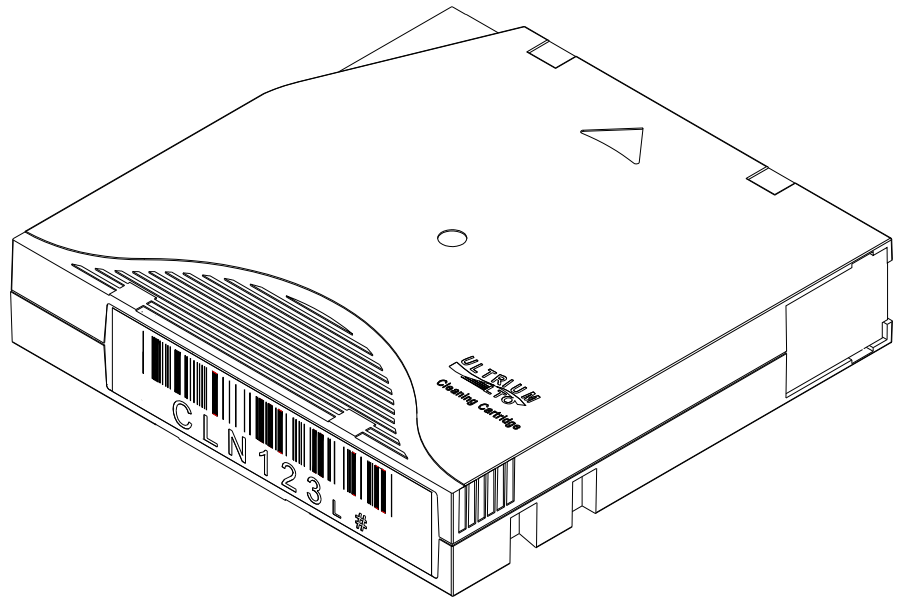
Both SDLT and LTO cleaning cartridge labels begin with CLN (see [figure 27](#) for SDLT and [figure 28](#) for LTO).

- SDLT cleaning cartridge labels are in the following format:
CLN###S#
- LTO cleaning cartridge labels are in the following format:
CLN###L#

Figure 27 SDLT Cleaning Cartridges



Figure 28 LTO Cleaning Cartridges



Placing Tape Cartridges in the Cabinet

Place a tape cartridge in each fixed storage slot on the back wall and the side walls of the cabinet and on the sides. Be sure all cartridges are properly oriented with the barcode facing you and that they are fully seated in the slots.

Preparing the Cabinet for Operation

To prepare the cabinet for operation:

- [Close the Cabinet Doors and Access Panels](#)
- [Connecting Host Workstations](#)

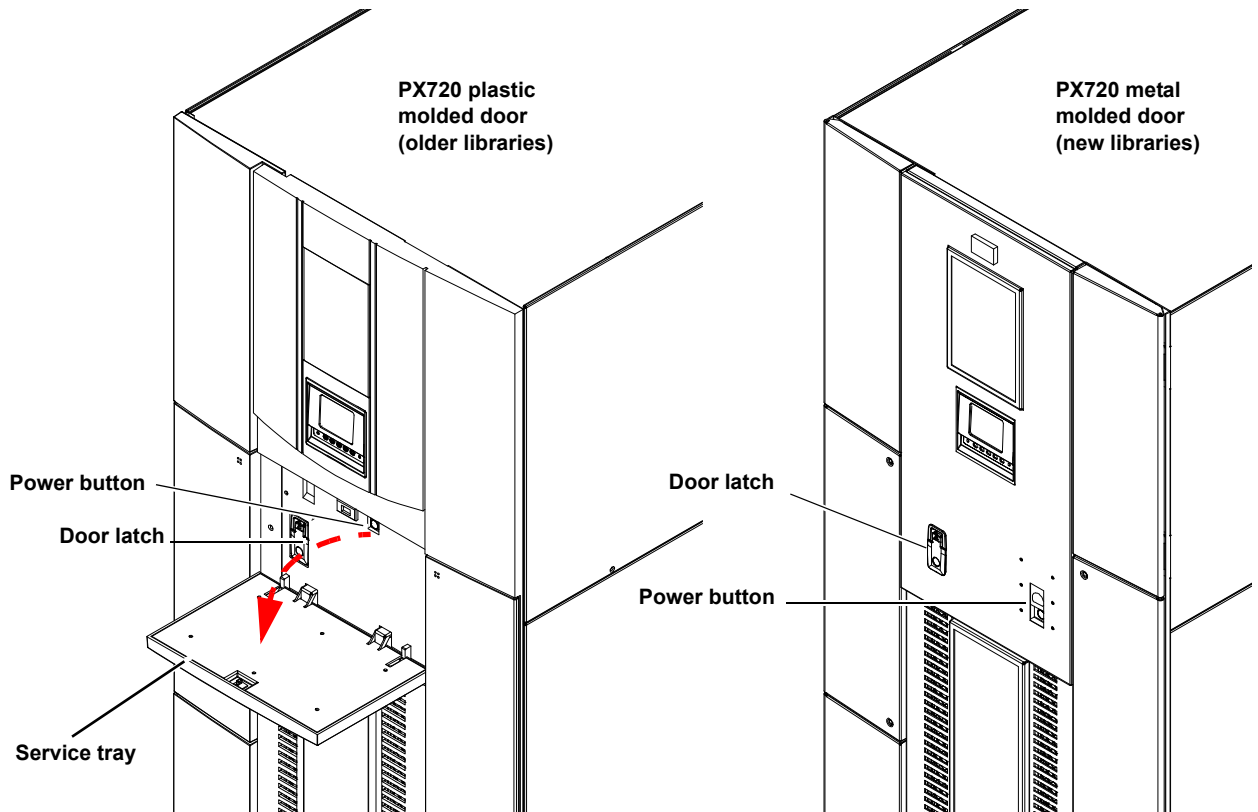
Close the Cabinet Doors and Access Panels

The PX720 has one front door and one back door.

- 1 Close and lock the front door using the key provided in the accessory kit (see [figure 29](#)).

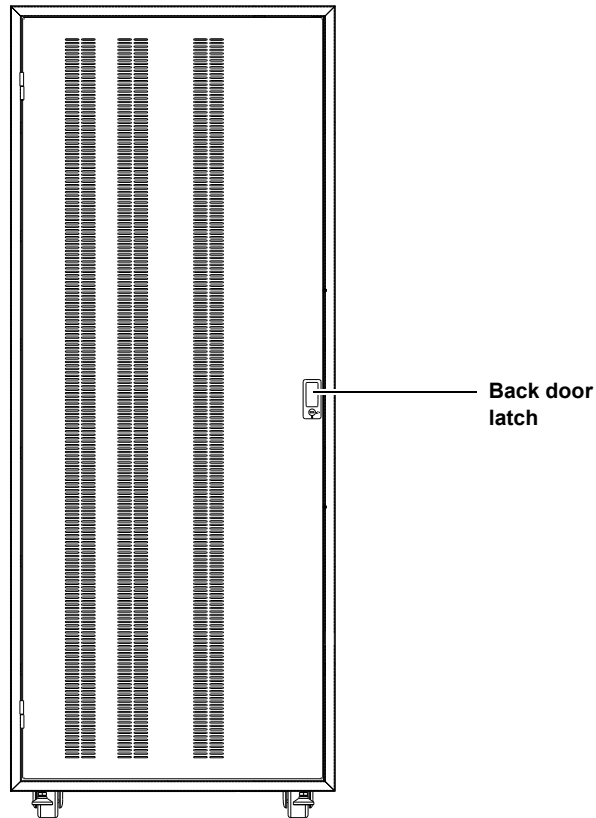
Note: The laptop tray must be lowered to access the front door latch.

Figure 29 Closing the Front Door



- 2 Close and lock the back door using the key provided in the accessory kit (see [figure 30](#)).

Figure 30 Closing the Back Door

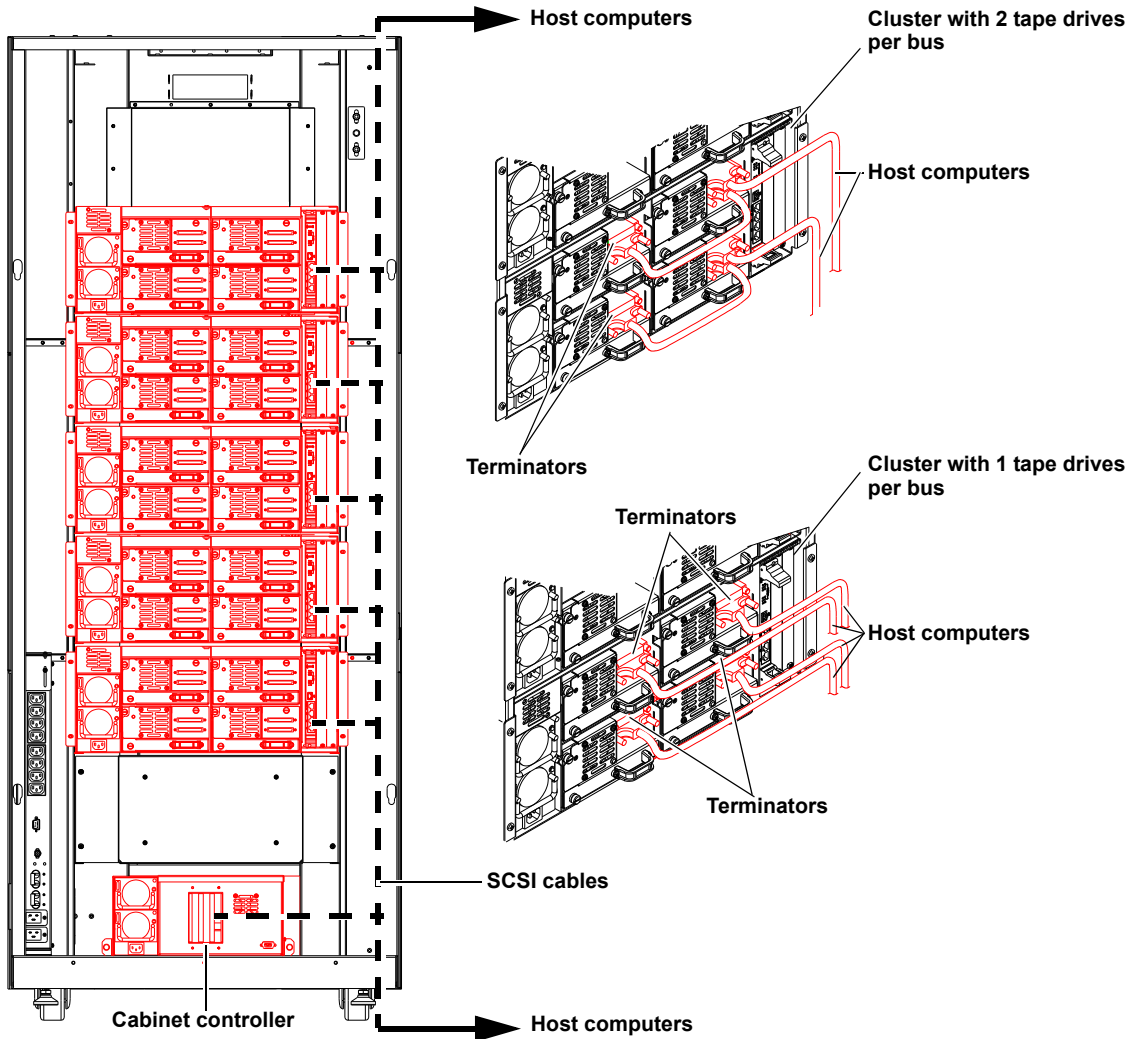


Connecting Host Workstations

Connect the SCSI cables and jumpers as shown in the following figure.

Note: Quantum ships sufficient SCSI cables and terminators with this cabinet to set up two-drives per SCSI bus. The cabinet controller SCSI HBA (media changer) can be included with one of the two drive connections or directly connected to the host.

Figure 31 PX720 Cabling Configuration



Note: Make sure that all SCSI cables droop down slightly to ensure that the back door closes.

Turning the Library On and Off

This section explains:

- [Turning On the Library](#)
- [Placing the Library On-line or Off-line](#)
- [Turning Off the Library](#)

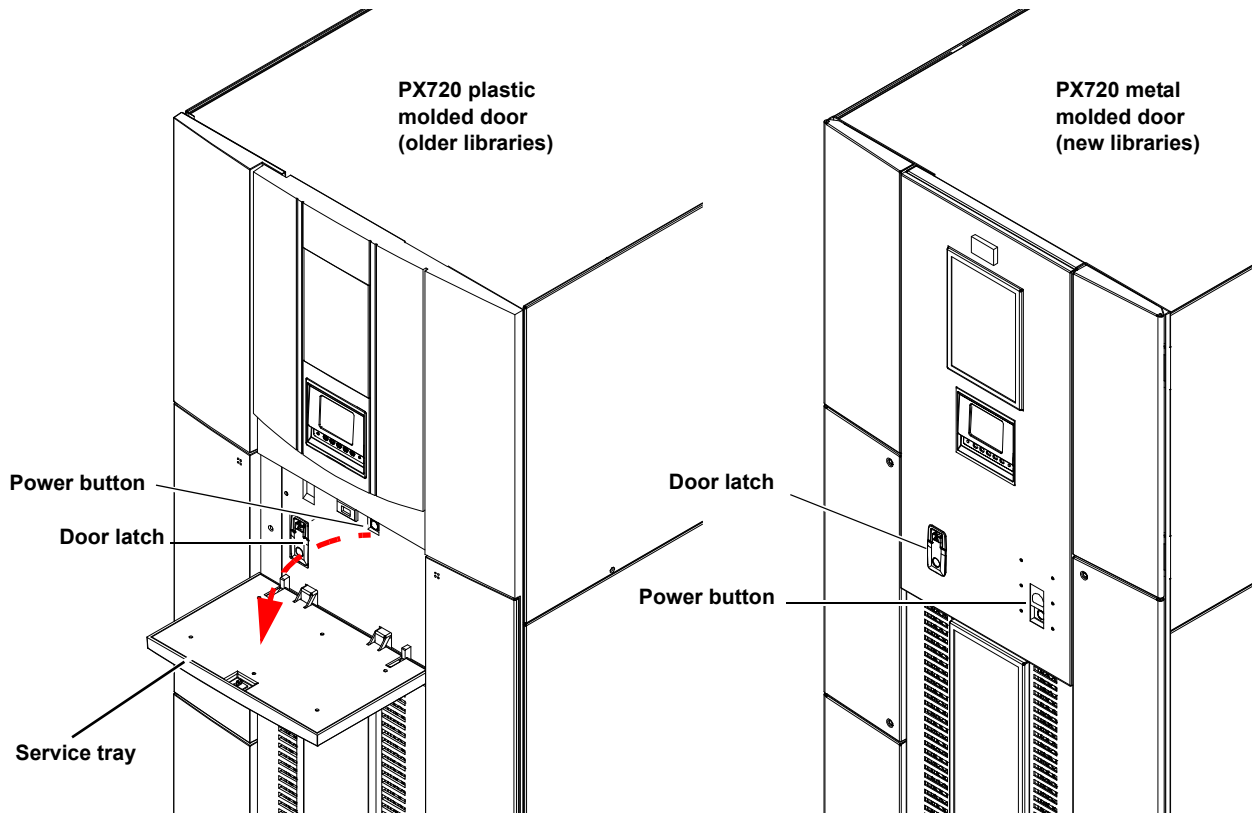
Turning On the Library

To turn on the library:

- 1 Verify that:
 - Power cables are firmly in place
 - All power buttons on the tape drive clusters are on
 - Both power buttons on the cabinet controller are on
 - All doors are closed
- 2 Turn on the power switch located behind the laptop tray (see [figure 32](#)).

During the power up sequence, the power button blinks while the library performs an inventory. The power up sequence can take several minutes.

Figure 32 Turning On the Library



Placing the Library On-line or Off-line

With the library turned on, press the button corresponding to **Ops** on the OCP to access the **Operations** screen. Select **Cabinet** and use the up and down arrows to turn the library off-line. For more information on the **Operations** screen, see [Operations Screen](#) on page 74.

Turning Off the Library

To turn off the library:

- 1 Place the library off-line, see [Placing the Library On-line or Off-line](#).

The library robotics completes any current commands and then stops.

- 2 Verify that the OCP display indicates “Off-line” from the **Operations** screen.
- 3 Verify that the CHM (robotic arm) is empty.
If there is a tape cartridge in the CHM, perform a **Move** command to place the cartridge in an available slot.
- 4 Turn off the power switch located on the front of the library (see [figure 32](#)).

Using the OCP (Operator Control Panel)

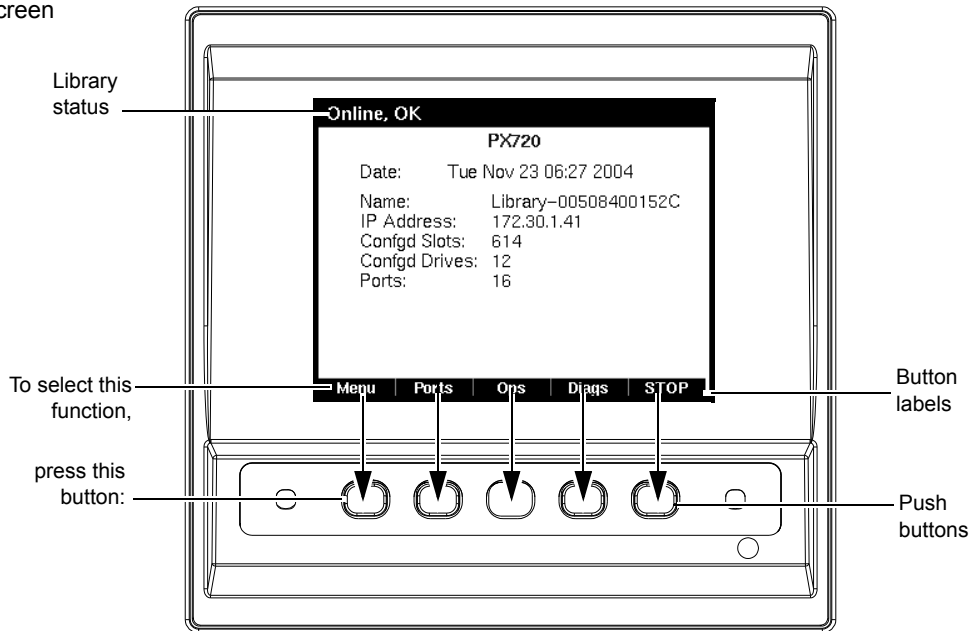
The OCP is located on the front of the library. The menus on the OCP allow you to obtain information about the library, execute library commands, and test library functions. Before using the OCP to perform library functions, familiarize yourself with the:

- [Home Screen](#)
- [OCP Buttons](#)
- [Library Status and Attention Messages](#)

Home Screen

The first screen the OCP displays after library initialization is the main screen. This screen displays library status and provides information on the number of tape drives, slots, and library name (see [figure 33](#)).

Figure 33 OCP Main Screen



Note: If the date and time is modified from the remote management pages (see [Quantum PX720 Remote Management](#) on page 86), the date and time on the OCP main screen may take up to three minutes to update with the new information.

OCP Buttons

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

Library Status and Attention Messages

The upper left-hand and right-hand corners of the OCP are reserved for library status and attention messages. The library status information consists of the cabinet state followed by the cabinet health (example

Online, OK). Refer to [table 11](#) for library status information. Refer to [table 12](#) for attention messages.

Note: If the OCP displays the “**Latest Cluster FPGA Revision is Required**” message, the tape drive cluster FPGA software revision does not meet the minimum requirement for the tape drive. Contact Quantum customer support for information on updating the tape drive cluster controller software.

Table 11 Library Status Information


Library Status Information Location	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">Library status — Online, OK</p> <p style="margin: 0; text-align: right;">PX720</p> <p style="margin: 0;">Date: Tue Nov 23 06:27 2004</p> </div>		
Cabinet State	Description	Cabinet Health	Description
Online	The cabinet is online and ready for backup jobs.	OK	The cabinet health is ok and ready for backup jobs.
Offline	The cabinet is offline and unavailable for backup jobs.	Warning	The cabinet health is in a warning state. Refer to the Health screen to determine the problem (see Health Status Information on page 63).
Going Online	The cabinet is in the process of going online.	Critical	The cabinet health is in a critical state and requires immediate attention. Refer to the Health screen to determine the problem (see Health Status Information on page 63).

Library Status Information Location	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Library status — Online, OK</p> <p style="text-align: center;">PX720</p> <p style="text-align: center;">Date: Tue Nov 23 06:27 2004</p> </div>
--	--

Cabinet State	Description	Cabinet Health	Description
Online Fail	The cabinet has failed to go online. Refer to the remote management pages to determine the problem (see chapter 3 on page 86).		
Reconnecting to Robot	The cabinet is attempting to reconnect to the robot.		
Reestablishing Library Communication	The cabinet is attempting to reestablish library communication.		

Table 12 Attention Messages

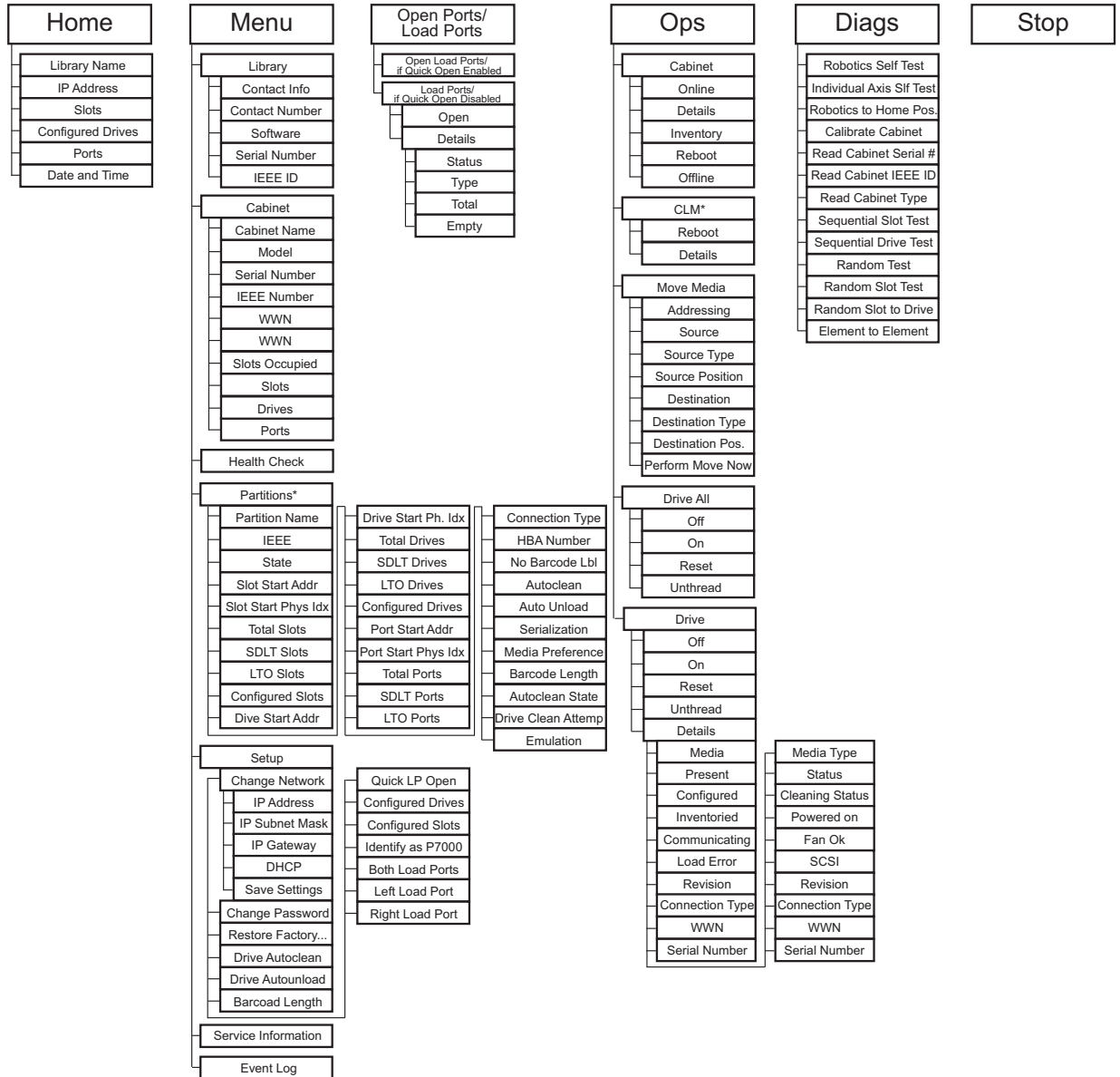
Attention Message Location	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Door Open — Attention message</p> <p style="text-align: center;">20</p> <p style="text-align: center;">29 09:22 2004</p> <hr/> <p style="text-align: center;">ary-00508400152C</p> <p style="text-align: center;">30 1 41</p> </div>
Attention Messages	Description
Stopped	The cabinet robot has stopped.
Door Open	The cabinet front door is open.
Slow Mode	The cabinet robot is operating in slow mode. Operating in slow mode is only possible when the door sensors have been disabled.

Attention Message Location	
Attention Messages	Description
User Needed	The cabinet needs user intervention. Refer to the remote management pages to determine the problem (see chapter 3 on page 81).
Upgrading FW	The cabinet is in the process of updating firmware. When the update is complete, the cabinet will go on-line.
Comm Mismatch	The robot and cabinet controller firmware are mismatched. Upload new firmware to the cabinet controller. Contact Quantum Customer support.
Diagnostics	A diagnostic test is running (system test or self-test).
Sift Sorting	A Sift Sort export is running.

OCP Components

The OCP allows the user to perform various functions on the Quantum PX720. [Figure 34](#) provides a list of the OCP functionality available from the **Home** screen.

Figure 34 OCP Components



* indicates components that require additional hardware.

The following sections provide information on each function available from the Quantum PX720 OCP:

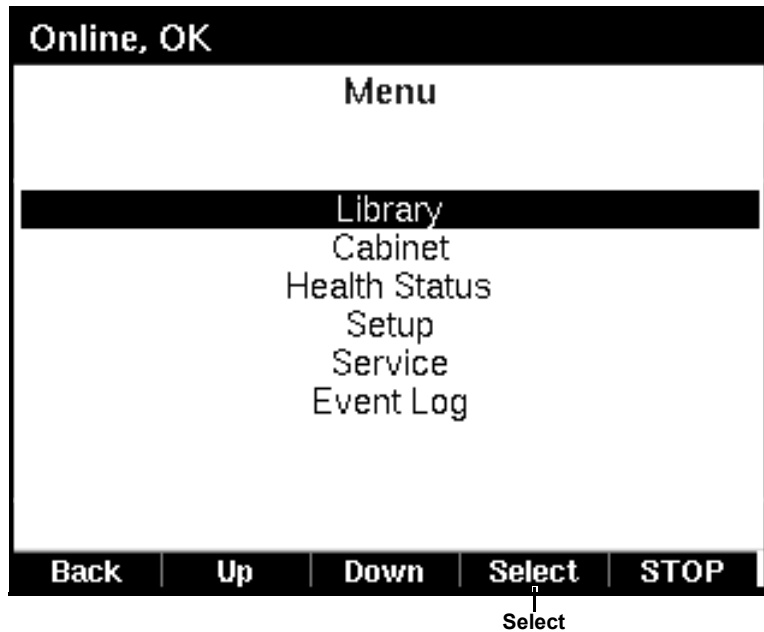
- [Menu Screen](#)
- [Load Ports Screen](#)
- [Operations Screen](#)
- [Diagnostics Screen](#)
- [Stop Button](#)

Menu Screen

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

To access the **Menu** screen, press **Menu** from the **Home** screen. The OCP displays the Menu screen (see [figure 35](#)):

Figure 35 Menu Screen



The **Menu** screen provides the following choices:

- [Library Information](#)

- [Cabinet Information](#)
- [Health Status Information](#)
- [Partitions †](#)
- [Setup Information/Options](#)
- [Service Information/Options](#)
- [Event Log Information](#)

† menu item only available with the library partitioning option installed.

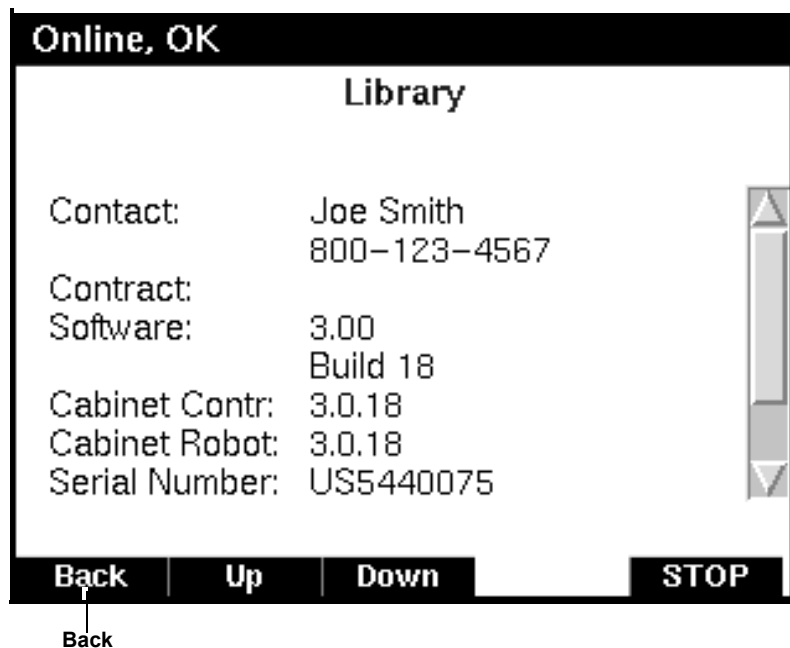
Library Information

To view library information:

- 1 From the **Menu** screen, use the up and down arrows to highlight **Library** and press **Select**.

The **Library** screen displays (see [figure 36](#)):

Figure 36 Library Screen



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

- Contact Info - customer contact information
 - Contact number - customer service contract number used to identify the library to Quantum customer support
 - Software - software version currently loaded on the library including the cabinet controller and cabinet robotics
 - Serial number - serial number of the library
- 2 When you are finished viewing library information, press **Back** to return to the **Menu** screen.

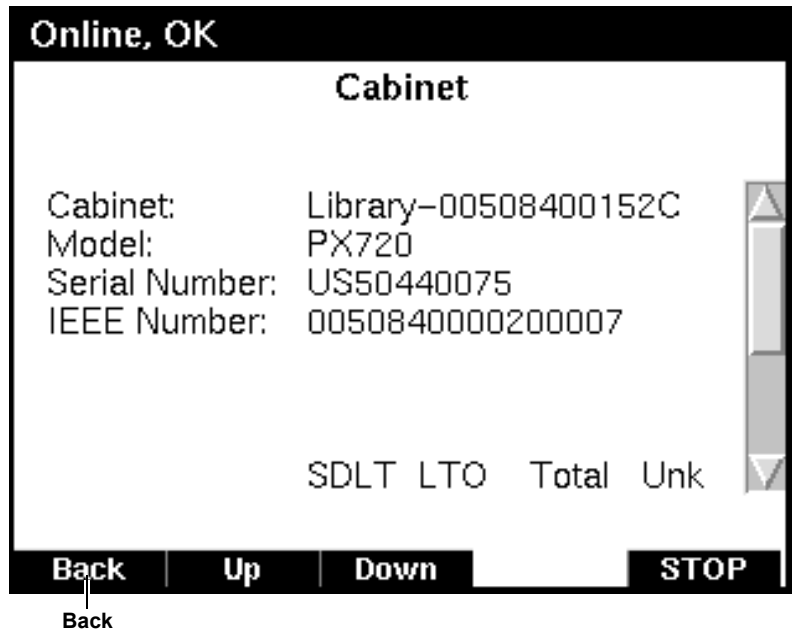
Cabinet Information

To view library cabinet information:

- 1 From the **Menu** screen, use the up and down arrows to highlight **Cabinet** and press **Select**.

The **Cabinet** screen displays (see [figure 37](#)):

Figure 37 Cabinet Screen



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

- Cabinet – name of the cabinet
 - Model – model number of the cabinet
 - Serial Number – serial number of the cabinet
 - IEEE ID – IEEE identification of the cabinet
 - Slots – number of slots configured in the cabinet for the specific drive type
 - Drives – number of drives configured in the cabinet for the specific drive type
 - Ports – number of load port slots configured in the cabinet for the specific drive type
- 2 When you are finished viewing cabinet information, press **Back** to return to the **Menu** screen.

Health Status Information

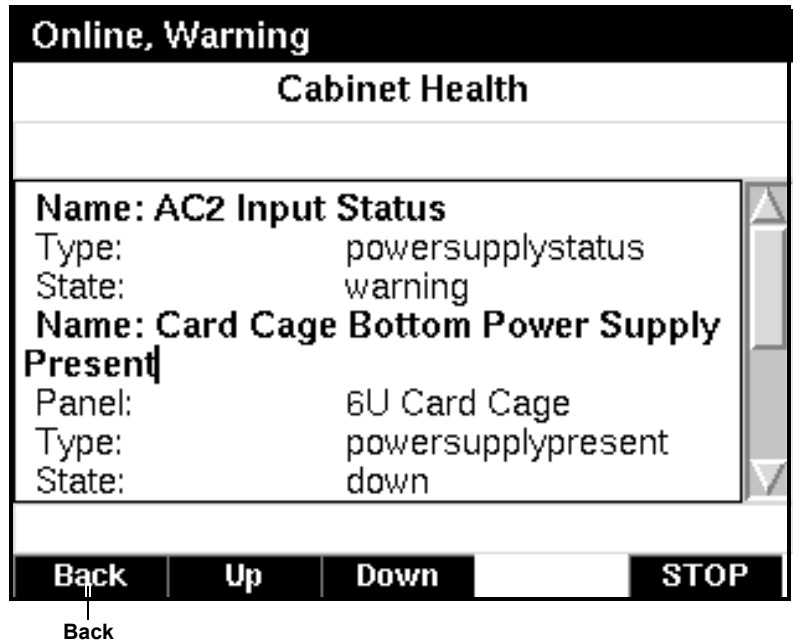
Note: Health status is only displayed if the library health is in a critical or warning state.

To view library health status information:

- 1 From the **Menu** screen, use the up and down arrows to highlight **Health Status** and press **Select**.

The **Health Status** screen displays (see [figure 38](#)):

Figure 38 Health Status
Screen



The **Health Status** screen displays the current library health.

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

Partitions †

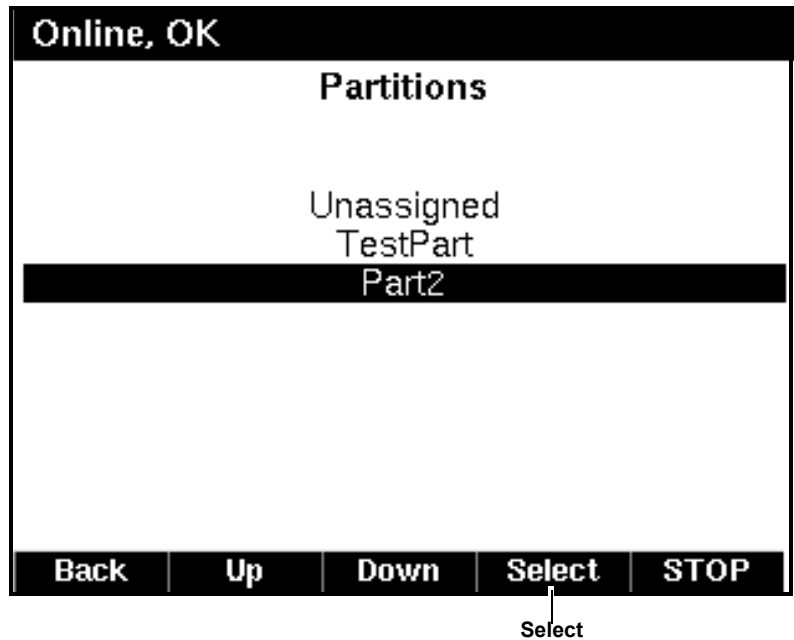
To view library partitions information:

Note: The partitions menu option is only available when the library partitioning option is installed in the library.

- 1 From the **Menu** screen, use the up and down arrows to highlight **Partitions** and press **Select**.

The **Partitions** screen displays (see [figure 39](#)):

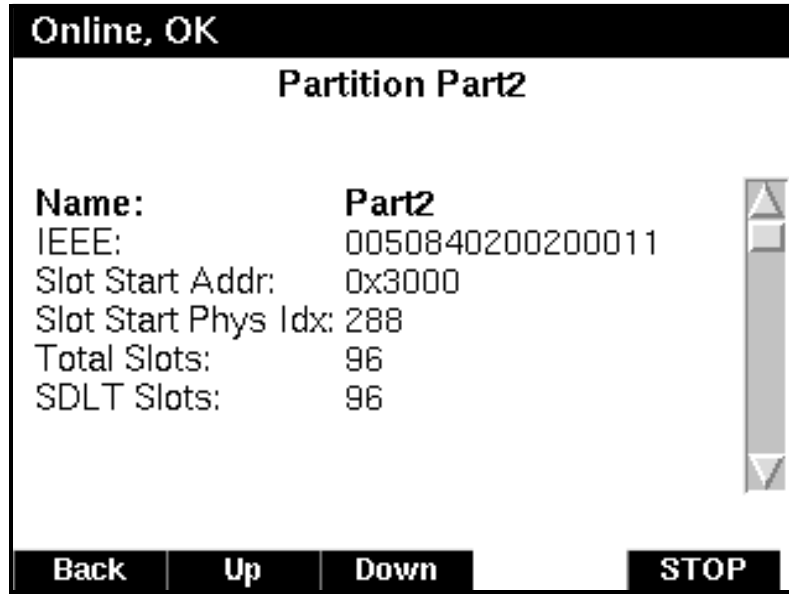
Figure 39 Partitions Screen



- 2 From the **Partitions** screen, use the up and down arrows to highlight a specific partition and press **Select** to view the partition details.

The **Partition Details** displays (see [figure 40](#)):

Figure 40 Partitions Details



The following partition details are available (see [table 13](#)).

Table 13 Partitions Details

Partitions Options		Description
Partitions	Name	Displays the name of the specific partition.
	IEEE	Displays the IEEE ID of the partition.
	State	Displays the library state (online/offline).
	Slot start addr	Displays the starting slot address for the partition.
	Slot start phys idx	Displays the physical starting slot address for the partition.

Partitions Options		Description
Partitions cont...	Total slots	Displays the total slot count in the partition.
	SDLT slots	Displays the total SDLT slot count in a mixed media environment (SDLT and LTO).
	LTO slots	Displays the total LTO slot count in a mixed media environment (SDLT and LTO).
	Configured slots	Displays the number of configured slots in the partition.
	Drive start addr	Displays the starting tape drive address for the partition.
	Drive start phys idx	Displays the physical starting tape drive address for the partition.
	Total drives	Displays the total number of tape drives in the partition.
	SDLT drives	Displays the number of SDLT tape drives in the partition in a mixed media environment (SDLT and LTO).
	LTO drives	Displays the number of LTO tape drives in the partition in a mixed media environment (SDLT and LTO).
	Configured drives	Displays the number of configured tape drives in the partition.
	Port start addr	Displays the starting load port slot address in the partition.
	Port start phys idx	Displays the physical starting load port slot address.
Total ports	Displays the total load port count in the partition.	

Partitions Options		Description
Partitions cont...	SLDT ports	Displays the total number of SDLT load port slots in the partition.
	LTO ports	Displays the total number of LTO load port slots in the partition.
	Connection type	Displays the library interface (SCSI or Fibre).
	HBA number	Displays the HBA (host bus adapter) number assigned to this partition.
	No barcode lbl	Displays the barcode status (enable/disable).
	Autoclean	Displays the tape drive autoclean status (enable/disable).
	Auto unload	Displays the tape drive auto unload status (enable/disable).
	Serialization	Displays the library serialization status (enable/disable).
	Media preference	Displays the media preference (SDLT/LTO).
	Barcode length	Displays the barcode length.
	Autoclean state	Displays the current autoclean status (active/idle).
	Drive clean attempts	Displays the number of drive clean attempts in the partition.
Emulation	Displays the current library emulation (quantum/ATL P7000).	

Setup Information/Options

To view or edit the setup information:

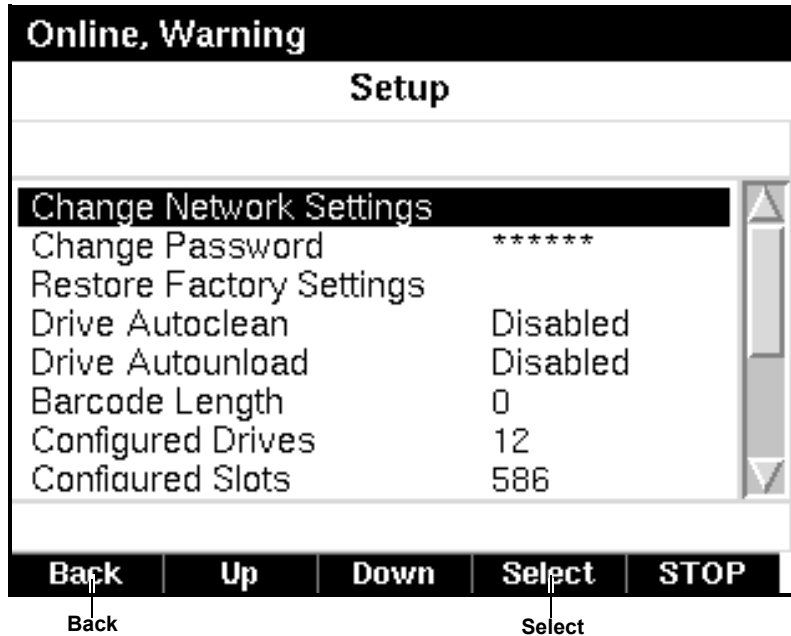
- 1 From the **Menu** screen, use the up and down arrows to highlight **Setup** and press **Select**.
- 2 The library prompts you for your password. Enter the 6 digit password.

The password is accepted after the sixth digit is entered

Note: The default password is 001122. To change the password, see [figure 41](#).

The **Setup** screen displays (see [figure 41](#)):

Figure 41 Setup Screen



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

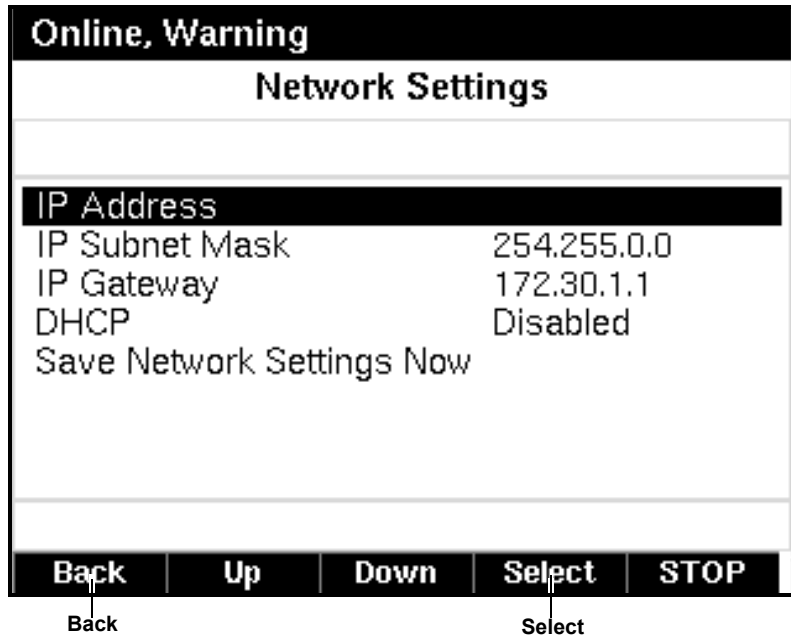
Note: If partitioning is enabled on this library, all setup options other than **Change Network Settings**, **Change Password**, and **Restore Factory Settings** are moved to the **Partitioning** options OCP screen (see [table 13](#) on page 65).

- Change Network Settings

- Change Password
 - Restore Factory Settings
 - Drive Autoclean (default disabled)
 - Drive Auto unload (default disabled)
 - Barcode Length
 - Configured Drives
 - Quick Load Port Open
 - Configured Slots
 - Identify as ATL P7000
 - Both Load Ports
 - Left Load Port (default enabled)
 - Right Load Port (default enabled)
- 3** To set the network information, use the up and down arrows to select **Change Network Settings** and press **Select**.

The **Change Network Settings** screen displays (see [figure 42](#)):

Figure 42 Change Network Settings Screen



- a To set the IP address, subnet mask, and gateway, use the up and down arrows to select the appropriate number and press **Select** to accept.
- b To enable/disable DHCP, use the up and down arrows to toggle between enable/disable. Press **Select** to accept the setting. If your library is not connected to a network which uses a DHCP server to assign IP information, disable this function.

Note: For the network information such as the IP address to be active, the library must reboot.

- 4 To edit the setup information, use the up and down arrows to highlight the section and press **Select**.
 - To change the password, use the up and down arrows to select Change Password and press **Select**. To change the password, enter a 6-digit password using the numbers provided on the OCP. Press **Select** to accept the new password. When prompted, re-enter the password to confirm.
 - To restore the factory defaults, use the up and down arrows to select Restore Factory Defaults and press **Select**.

- To set the barcode length, use the up and down arrows to select the barcode length and press **Select**.
 - To enable autoclean, use the up and down arrows to select Autoclean and press **Select**.
 - To enable auto unload, use the up and down arrows to select Auto unload and press **Select**.
 - To configure the number of tape drives in the cabinet, use the up and down arrows to select the number of drives and press **Select**.
 - To configure the number of slots in the cabinet, use the up and down arrows to select the number of slots and press **Select**.
 - To enable the both the left and right load ports, use the up and down arrows to select Both Load Ports and press **Select**. The library is automatically reconfigured.
 - To enable P7000 identity, use the up and down arrows to select Identify as ATL P7000 and press **Select**. This allows the host computer to identify the cabinet as a P7000 library.
 - To enable the left load port, use the up and down arrows to select Left Load Port and press **Select**. The library is automatically reconfigured.
 - To enable the right load port, use the up and down arrows to select Right Load Port and press **Select**. The library is automatically reconfigured.
- 5 When you are finished viewing/editing the setup information, press **Back** to return to the **Menu** screen.

Note: For the network information, tape drive configuration, and number of slots to be active, the library must reboot.

Service Information/Options

The Service Information screen is used by Customer Service only.

Event Log Information

To view the event log:

- 1 From the **Menu** screen, use the up and down arrows to highlight **Event Log** and press **Select**.

The OCP lists the events that have occurred on the library.

Load Ports Screen

The **Load Ports** screen allows the user to lock or unlock a load port.

Warning: Keep fingers and other body parts away from the load port doors when open. The stop button is available from the operator control panel to use in case of an emergency that requires stopping moving robotic parts.

Warning: Achten Sie darauf, dass Sie mit Ihren Fingern oder anderen Körperteilen nicht zu nahe an die Türen des Ladeports gelangen, wenn diese offen sind. Die Stopp-Taste befindet sich auf der Bediener-Systemsteuerung, falls die Roboter in einem Notfall angehalten werden müssen.

To access the **Load Ports** screen, press **Ports** from the **Home** screen. The OCP displays the **Load Ports** screen (see [figure 43](#)):

Figure 43 Load Ports Screen

Online, OK			
Load Ports			
Name	Status	Empty	Cmd
Left Load Port	OK	14	Open
Right Load Port	OK	30	Open
Both Load Ports			Open

Back	Up	Down	Select	STOP
------	----	------	--------	------

Select

- 1 To open a load port or view the load port details, use the up and down arrows to highlight the specific load port(s) and press **Select**.
 - a To open the load port, use the up and down buttons to select **Open** and then press **Select**.

A notification displays warning you to open the doors prior to opening the load port. Press **Ok** to open the load port.

- b To view the load port details, use the up and down buttons to select **Details** and then press **Select**.

The following load port details are available (see [table 14](#)):

Table 14 Load Port Details

Device Options		Description
Details	Status	The Status value can either be an OK or a error. A zero indicates that the last command to be executed on the tape drive completed successfully. If a 2 appears, a check condition (error) was sent to the host because a command did not complete successfully on the load port
	Type	This option lists the type of media (SDLT/LTO).
	Total	Total number of load port slots in the load port.
	Empty	Total number of empty slots in the load port.

- 2 Click **Abort** to return to the **Load Ports** screen.
- 3 When you are finished viewing the load port status, press **Back** to return to the **Menu** screen.

Operations Screen

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

To access the **Operations** screen, press **Ops** from the **Home** screen. The OCP displays the **Operations** screen (see [figure 44](#)):

Figure 44 Operations Screen

The screenshot shows a terminal window titled "Online, OK" with a sub-header "Operations". Below this is a table with two columns: "Cabinet" and "Online". The table lists several operations: "Move Media", "Drive All", "Drive 2", "Drive 3", "Drive 4", "Drive 6", and "Drive 7". The status for "Drive 2", "Drive 3", and "Drive 4" is "FULL". The status for "Drive 6" and "Drive 7" is "Details". At the bottom of the screen is a navigation bar with buttons: "Back", "Up", "Down", "Select", and "STOP". A vertical line points from the "Select" button to the word "Select" below it.

Cabinet	Online
Move Media	
Drive All	Unthread
Drive 2	FULL Details
Drive 3	FULL Details
Drive 4	FULL Details
Drive 6	Details
Drive 7	Details

Select

- 1 To change the status of the cabinet or tape drive(s), use the up and down arrows to highlight the specific device and press **Select**.

The following device options are available (see [table 15](#)):

Table 15 Device Options

Device Options		Description
Cabinet	Online	When the cabinet is online, the library is ready for host communication and for backup jobs to proceed.
	Offline	When the cabinet is offline, the host is no longer able to communicate with the library. Self tests, diagnostics, and inventory can only be performed when the library is off-line.
	Inventory	When the inventory command is given, the library inventories every slot, load port, and tape drive and reports back the location of every tape cartridge within the cabinet. Barcode labels are also reported if available.
	Reboot	A reboot shuts down the cabinet and re initializes the system. The cabinet will be temporarily unavailable to accept host commands until the cabinet is online.
	Details	<ul style="list-style-type: none"> • Robot communicating - yes/no • Robot last error - list errors • Enclosure Communicating - yes/no • Enclosure Last Error - list errors
CLM †	Reboot	A reboot shuts down the CLM and re initializes the system. The CLM will be temporarily unavailable to accept host commands until the cabinet is online.
	Details	Displays the CLM system details.
Move Media	See table 17 on page 79.	

Device Options		Description
Drive All	Off	This option shuts down all tape drives within the cabinet in preparation for tape drive removal.
	On	This option powers on all tape drives within the cabinet.
	Reset	This option re initializes all tape drives within the cabinet.
	Unthread	This option unspools the tape from the internal mechanism of the tape drives in preparation for tape cartridge ejection.
Drive	Off	This option shuts down a specific tape drive within the cabinet in preparation for tape drive removal.
	On	This option powers on a specific tape drive within the cabinet.
	Reset	This option re initializes a specific tape drive within the cabinet.
	Unthread	This option unspools the tape from the internal mechanism of a specific tape drive in preparation for tape cartridge ejection.
	Details	<ul style="list-style-type: none"> See table 16.

† this option is only available with the CLM option installed

Table 16 Tape Drive Details

Tape Drive Details	Description
Media	This option displays the barcode label if present.
Present	Is there a tape drive present in drive bay? (yes/no)
Configured	Is the tape drive configured with SCSI ID? (yes/no)

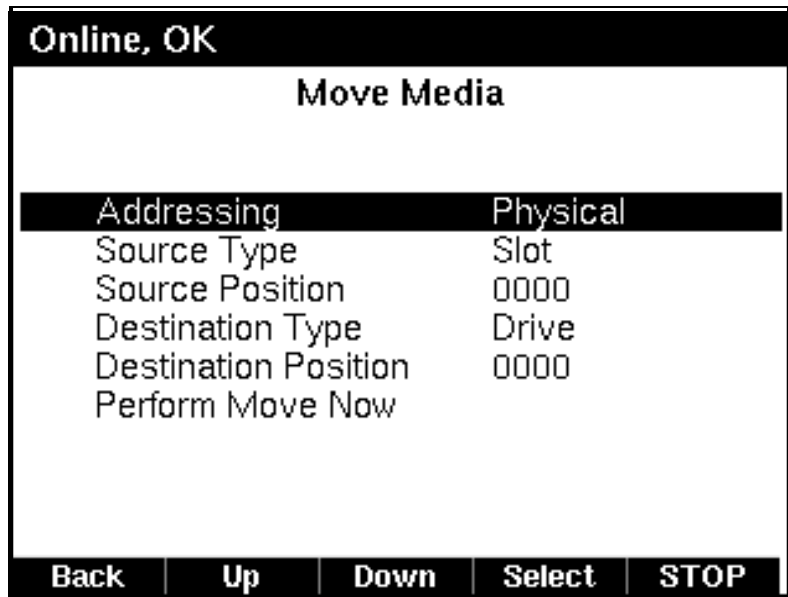
Tape Drive Details	Description
Inventoried	Has the tape drive been inventoried? (yes/no)
Communicating	Displays the current communication status of the tape drive.
Load error	Has a load error occurred on this drive? (yes/no)
Revision	Displays the current drive firmware revision.
Connect Type	The tape drive communications type (SCSI/Fibre Channel).
WWN	This option displays the unique world wide name for the tape drive.
Serial Number	This option lists the serial number for the tape drive.
Media Type	This option lists the type of media (SDLT/LTO).
Status	The Status value can either be a OK or a error. A zero indicates that the last command to be executed on the tape drive completed successfully. If a 2 appears, a check condition (error) was sent to the host because a command did not complete successfully on the drive.
Cleaning Req	Does the tape drive require cleaning? (yes/no)
Powered On	Is the tape drive powered on? (yes/no).
Fan Ok	Is the tape drive fan ok? (yes/no)
SCSI ID	Displays the tape drive SCSI ID.
ADI Enabled	Displays the tape drive ADI status if the tape drive is ADI capable (yes/no).
Sense Codes	Displays any sense code information for this tape drive.
Additional Sense Information	Displays any additional sense information for this tape drive.

- 2 To perform a **Move Media** command, use the up and down arrows to select **Move Media** and press **Select**.

Note: The library must be offline to perform a move media command.

The **Move Media** screen displays (see [figure 45](#)):

Figure 45 Move Media Screen



The following move media options are available (see [table 17](#)):

Table 17 Move Media Options

Move Media Options	Description
Addressing	Logical or physical addressing.
Source †	Cabinet number in a CLM environment that contains the source element.
Source Type	The source types can be a slot, drive, or load port.

Move Media Options	Description
Source Position	The source position is the numeric element address for the specific slot, drive or load port that is holding the cartridge you wish to move (see Shelf Slot Numbering Conventions on page 8 for element numbering).
Destination †	Cabinet number in a CLM environment that contains the destination element.
Destination Type	The destination type can be a drive, first available port, first available drive, first available slot, original slot, or load port.
Destination Position	The destination position is the numeric element address for the specific slot, drive or load port (see Shelf Slot Numbering Conventions on page 8 for element numbering).
Perform Move Now	Press select to execute the move media command.

† this option is only available with the CLM option installed

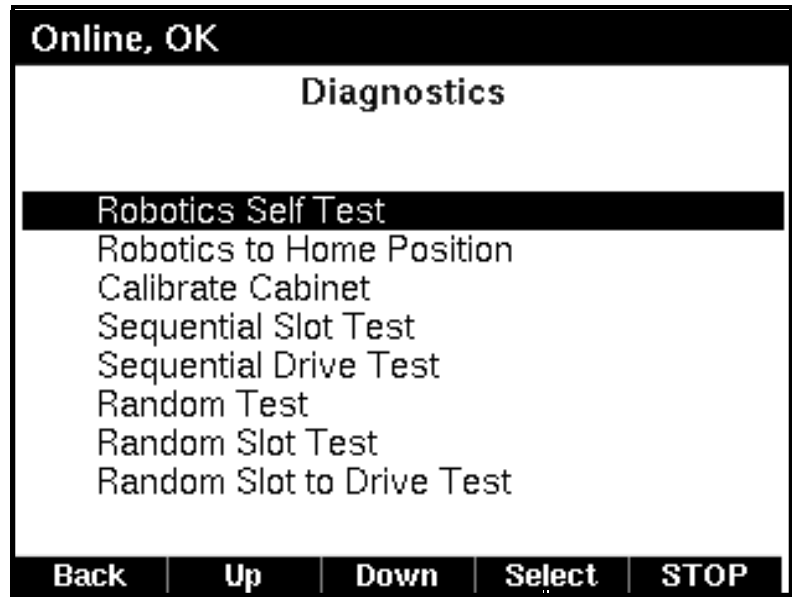
- 3 When you are finished viewing the **Operations** screen, press **Back** to return to the **Menu** screen.

Diagnostics Screen

The **Diagnostics** screen allows the user perform diagnostic test on the library.

To access the **Diagnostics** screen, press **Diags** from the **Home** screen. The OCP displays the **Diagnostics** screen (see [figure 46](#)):

Figure 46 Diagnostics Screen



Select

The following diagnostic tests are available from the OCP:

- Robotics Self Test
- Individual Axis Self Test
- Robotics to Home Position
- Calibrate Cabinet
- Read Cabinet Serial Number
- Read Cabinet IEEE ID
- Read Cabinet Type
- Sequential Slot Test
- Sequential Drive Test
- Random Test
- Random Slot Test
- Random Slot to Drive
- Element to Element

To perform a diagnostic test:

- 1 Use the up and down arrows to select the diagnostic test to perform and press **Select**.

Note: The cabinet must be off-line before the diagnostic test can complete.

- 2 The OCP displays a confirmation screen indicating the status of the test, either failed or passed.
- 3 When you are finished performing diagnostic tests, press **End** to end the test.

Stop Button

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

Inserting Tape Cartridges into the Load Port

This section explains how to insert tape cartridges using the load port mechanism.

Inserting SDLT and LTO-2 Tape Cartridges

SDLT/LTO-2 tape cartridges are inserted into either a removable 16-SDLT cartridge magazines or 18-LTO-2 cartridge magazine as shown in [figure 15](#) and [figure 16](#) on page 29.

To insert a tape cartridge into a magazine:

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

For more information about these procedures, refer to [Inserting Tape Cartridges](#) on page 40.

- 2 Open the load port through the OCP load port screen (see [Load Ports Screen](#) on page 72).

Caution: Ensure the load port doors are open prior to unlocking the load ports.

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

The proper orientation for tape cartridge insertion is shown in [SDLT Cartridges](#) on page 44 and [LTO Cartridges](#) on page 45.

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

Removing/Installing Removable Bin Packs

Both the left and right load ports on the front of the PX720 can have either fixed or removable bin packs. These bin packs can support both SDLT and LTO tape cartridges (see [table 18](#)).

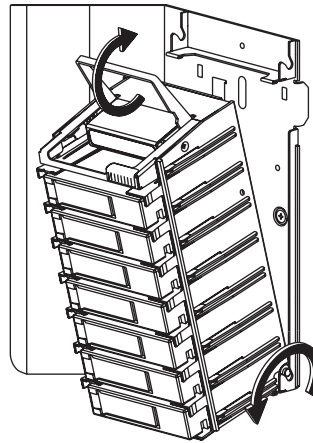
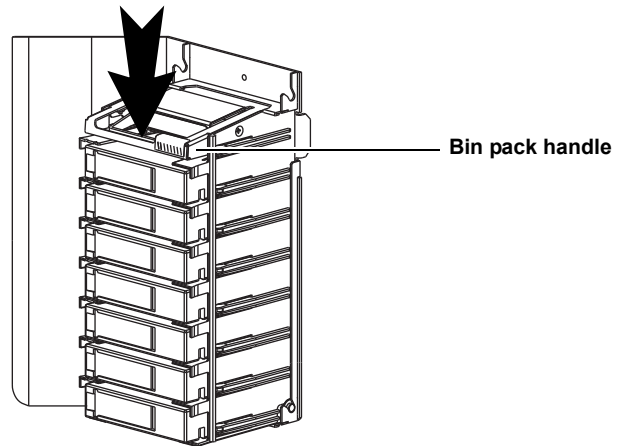
Table 18 Load Port Bin Pack Types

SDLT Fixed Bin Packs	LTO Fixed Bin Packs	SDLT Removable Bin Packs	LTO Removable Bin Packs
8 slots per pack (2 on left load port, 4 on right load port)	9 slots per pack (2 on left load port, 4 on right load port)	7 slots per pack (2 on left load port, 4 on right load port)	8 slots per pack (2 on left load port, 4 on right load port)

To remove/install a removable bin pack:

- 1 Press down on the bin pack handle to release bin pack from the load port and tip the bin pack out of the load port (see [figure 47](#)).

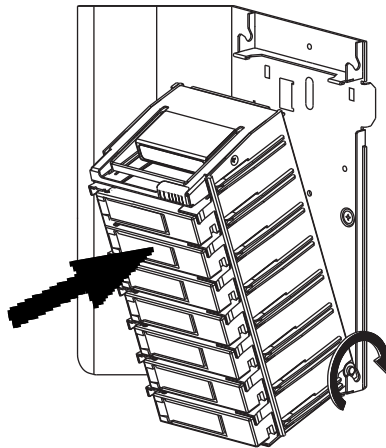
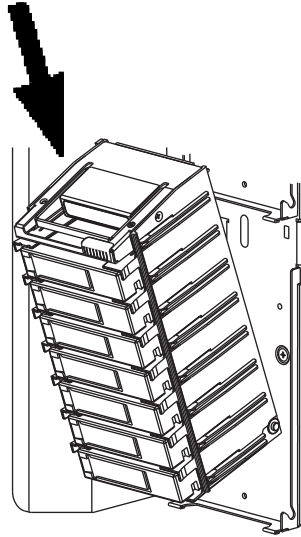
Figure 47 Removing the Bin Packs

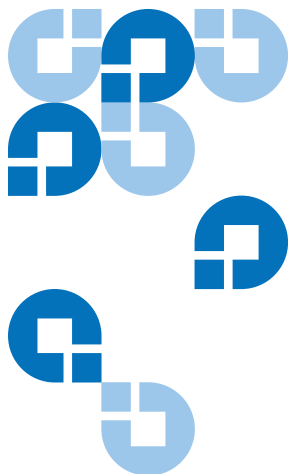


Note: The bin pack handle can be used to lift the bin pack out of the library.

- 2 To install the removable bin packs, place the base of the bin back into the bin panel and snap into place as shown in [figure 48](#).

Figure 48 Installing the
Removable Bin Packs





Chapter 3

Quantum PX720 Remote Management

The Quantum PX720 utilizes a web-based interface which allows you to configure and manage the Quantum PX720 from a remote workstation on the same network. The Quantum PX720 is managed through the following web pages (accessible using Internet browser software installed on the host computer):

- [Status](#) allows you to view the following: error and cabinet status, tape alerts, event logs, and statistics.
- [Operations](#) allows you to perform cabinet operations remotely such as cartridge movement and inventory requests and drive operations.
- [Setup](#) allows you to setup cabinet identification, user information, SCSI IDs, network information, events, date and time information, and partitioning (if applicable).
- [Utilities](#) allows the user to run cabinet utilities remotely.
- [About](#) links to related sites, and library characteristics.

Quantum PX720 Web Pages

The internet browser software is not supplied with the Quantum PX720; you must obtain and install it independently. The Quantum PX720 supports the following internet browsers:

- Microsoft Internet Explorer 6.1 or later
You can download this software from <http://www.microsoft.com>

Note: To optimize performance, all browsers should have both cookies and pop-ups enabled. This allows the refresh activities of the remote management web pages to work appropriately. Java 2.1v available from <http://www.java.com> should also be installed to support applets that automatically refresh pages and display pop-ups for warnings and critical events.

- Mozilla Suite 1.7 on Solaris 10
You can download this software from <http://www.mozilla.org>
- Firefox 1.0.6 on Windows
You can download this software from <http://www.mozilla.org>
- Java Plug-in 1.5.0 or later
You can download this software from <http://www.java.com>

Quantum PX720 Web Page Menu Items

The following figures depicts the menu items available from the Quantum PX720 Web Pages:

- [Figure 49](#) and [figure 50](#) provide the default menus for the PX720 Series web pages
- [Figure 51](#) provides an additional menu for tape security features available with the DLT-S4 tape drives. When this feature is enabled, the menu displays as part of the **Setup** page.

Figure 49 Quantum PX720
Web Page Menu Items

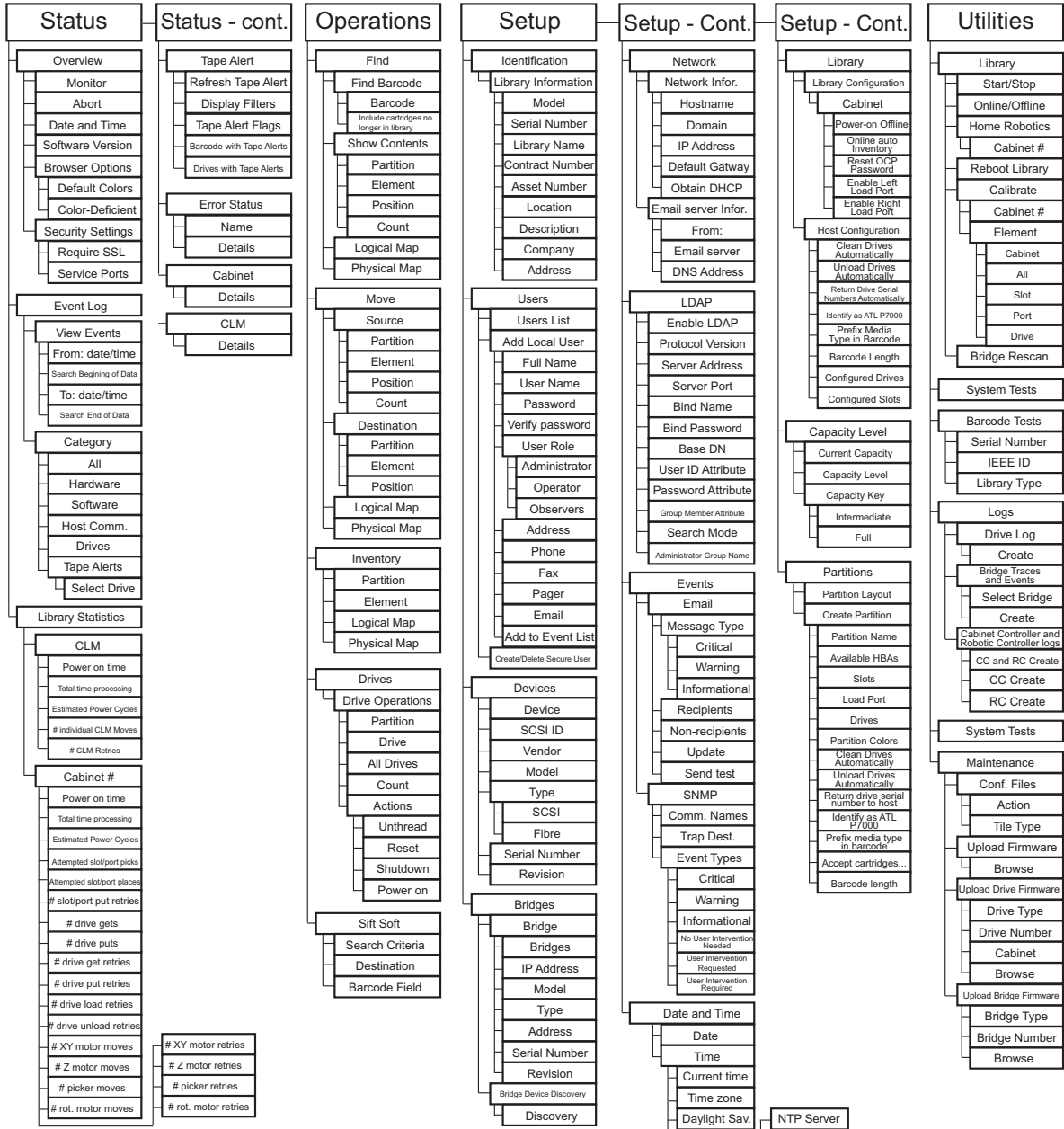


Figure 50 Quantum PX720
Web Page Menu Items
(Continued)

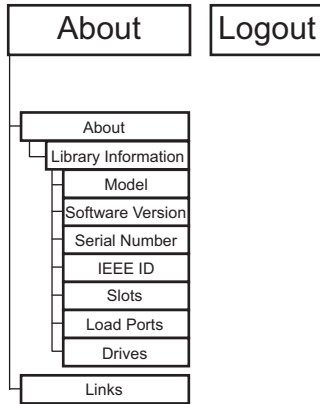
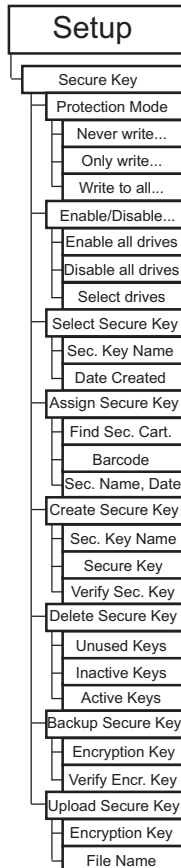


Figure 51 Quantum Tape
Security Menus



Accessing PX720 Web Pages

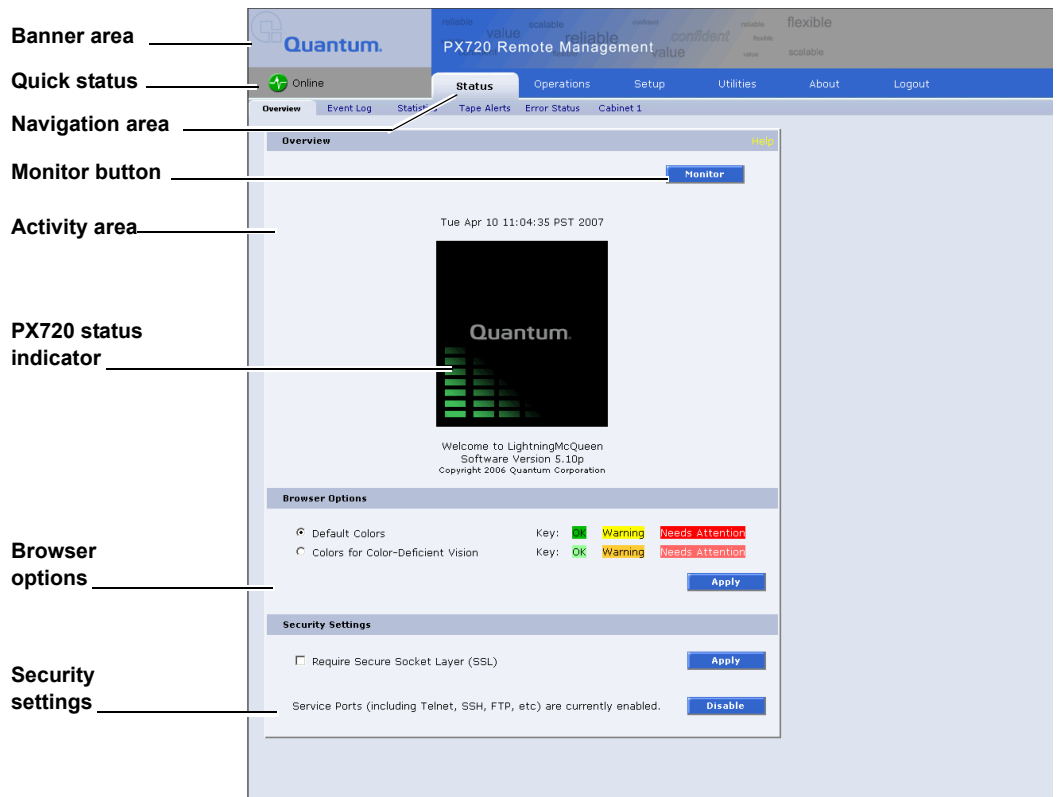
To access the Quantum PX720 web pages:

- 1 On the host computer, open the internet browser software.
- 2 In the **Address** field, type `http://IPaddress/` where IP address is the IP address for the Quantum PX720. (see [Setup](#) on page 123).
- 3 Enter the username and password and click **OK**.

Note: The default username and password is **admin**.

The **Overview** page displays (see [figure 52](#)):

Figure 52 Overview Page



Using the Quantum PX720 Web Pages

The first page that displays when you access the Quantum PX720 web pages is the Quantum PX720 **Overview** page (see [figure 52](#)). This page includes information on the Quantum PX720 such as library name, date and time, and includes a dynamic graphic which changes colors depending on the library health.

The **Overview** page is divided into five distinct sections:

- Banner
- Quick status
- Navigation area
- Activity area
- Monitor button
- PX720 status indicator
- Browser options
- Security Settings

The banner frame displays the corporate logo and product name. The contents frame displays a list of the Quantum PX720 web pages. To view a page, click its corresponding link. The management frame displays the page you selected.

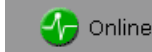
The **Monitor** button lists the previous 10 events that occurred in the library. This information displays in a separate window and updates when new events are recorded.

To return to a previous web page, click the browser's **Back** button.

Quick Status

The **Quick Status** icon provides the current health status for the library. Refer to the following tables ([table 19](#) and [table 20](#)) for quick status library health conditions.

Table 19 Quick Status Library Health Conditions

Quick Status Icon	Library Health	Description
	Library health: OK.	The library health is OK.



Quick Status Icon	Library Health	Description
 Online	Library health: Warning	The library health is in a Warning state (may need attention)
 Online	Library health: Critical	The library health is in a Critical state (needs attention)

Table 20 Quick Status Health Messages

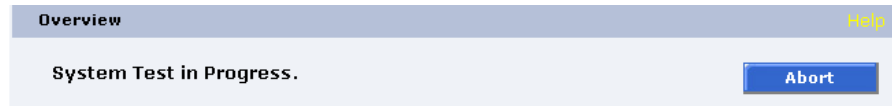
Quick Status Messages	Description
Online, Offline, Going Online	These messages indicate the current availability status of the library. Going Online indicates that the library is in the process of going online. Diagnostics or Observer Mode display under the Quick Status message indicating that a diagnostics test is running or the user logged in is an Observer .
Online Fail	The library has failed to go online and requires user intervention. Check the error log and contact Quantum Customer Support if necessary.
Online Fail, Door Open	The library has failed to go online because a door is open. Close the library doors.
Internal Communication Error	An internal communication error has occurred in the library and requires user intervention. Check the error log and contact Quantum Customer Support if necessary.

Quick Status Messages	Description
Stopped	The CHM (cartridge handling mechanism) has stopped. Check the error log and contact Quantum Customer Support if necessary.
Door Open	A library door (front) is open.
Robot Not Communicating	The library has lost communications with the robot (CHM). Check the error log and contact Quantum Customer Support if necessary.
Reconfiguring Library	The library is in the process of reconfiguring. Wait until the process is complete.
Upgrading Firmware	The library is in the process of upgrading the system firmware. Wait until the process is complete.
Rebooting Library	The library is in the process of rebooting. Wait until the library becomes online.
Diagnostics	A diagnostic test is running on the library.
Sift Sort Running	A Sift Sort action is being performed in the library.

Activity Area

The activity area is located directly below the overview area (see [figure 53](#)).

Figure 53 Activity Area



Note: When a library reconfiguring activity (partition setting, host configuration setting, load port settings, or capacity on demand setting) is in process, the browser redirects to a reconfiguring status page.

This area displays messages such as:

- Firmware upgrade in progress...
- Fibre Channel bridge firmware upgrade in progress...
- System test in progress... (with **Abort** button)
- Host configuration options modified (with **Activate** button)
- Partition settings in edited state (with **Activate** button)
- Excessive # of bad blocks on Smart Media

Cross Link Mechanism (CLM)

The Quantum PX720 cross link mechanism (CLM) allows you to connect up to five libraries together and allow them to appear as one library to the host system. If a CLM is installed in the library, the CLM and all connected cabinet status is displayed in the **Overview** section (see [table 21](#)).

Note: To connect multiple PX720 cabinets together requires optional *Quantum PX720 Cross Link Mechanism Upgrade Kits* to be installed in your library. To add this upgrade kit, please contact your Quantum Enterprise Storage Partner (reseller or VAR), your Quantum sales representative or Quantum Corporate at 1-800-677-6268 (or 949-856-7800 for international) or quantuminfo@quantum.com.

Note: If a CLM is installed, the “master” library loses 12 SDLT bins or 14 LTO bins from the back wall of the cabinet.

Table 21 CLM Information

Overview	
Cabinet	Status
Cross Link Mechanism (CLM)	OK
Cabinet 1 'Library-005084440510' (Master)	OK , Online
Cabinet 2 'Library-005084440510-slv19'	OK , Online

The cabinet designated as the “Master” contains the CLM electronics and controls the other attached “Slave” libraries. The status information for each cabinet (master and slave) is displayed in the respective cabinet **Status** page. The **Error Status** page lists any sensors or drives that are not in an “ok” condition. Clicking on the **Quick Status** icon redirects the browser to the **Error Status** page.

[Table 22](#) lists the possible CLM health messages.

Table 22 CLM Status Health Messages

CLM Health Status Messages	Description
OK	The CLM status is operational.
Not Communicating	An internal communication error has occurred on the CLM and requires user intervention. Check the error log and contact Quantum Customer Support if necessary.

Browser Options

The **Browser Options** area is located directly below the **PX720 status area** (see [figure 54](#)).

Figure 54 Browser Options

Select either **Default Colors** or **Color-deficient Vision** as desired and click **Apply**. The selection is stored for the browser session. If the browser is closed and a new session started, the default colors are applied.

Session Timeout - If the PX720 remote management pages are inactive for more than the specified time, the session will timeout and you will be required to log back into the system. The default timeout is 5 minutes.

Security Settings

The **Security Settings** area is located directly below the **Browser Options** area (see [figure 55](#)).

Figure 55 Security Settings



Require SSL - When selected, the remote management pages are not available to browser sessions that are not using **Secure Socket Layer (SSL)**. **Enable** or **Disable** SSL and click **Apply**. The setting is saved across browser sessions and the library reboots.

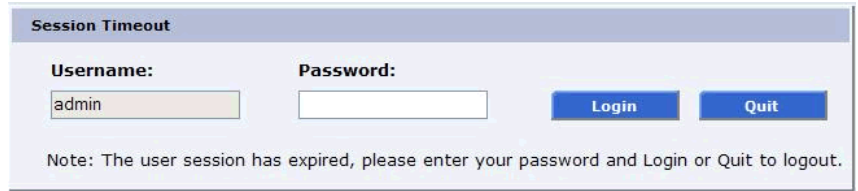
Status of Service Ports (including Telnet, FTP...) - If the service ports are enabled, the **Disable** button is displayed and can be clicked to disable the ports. The setting will be saved across browser sessions and library reboots.

Note: Users with a role of **Operator** may view the current security settings, but cannot modify the settings.

Session Timeout

If the PX720 remote management pages are inactive for more than 5 minutes, the session will time out and you will be required to log back into the system (see [figure 56](#)).

Figure 56 Session Timeout
Screen



Session Timeout

Username: admin **Password:**

Note: The user session has expired, please enter your password and Login or Quit to logout.

Status

The **Status** page displays the general status or health of the library as well as specific hardware status. The page also provides access to event logs as well as library statistics.

The **Status** page is divided into the following sections:

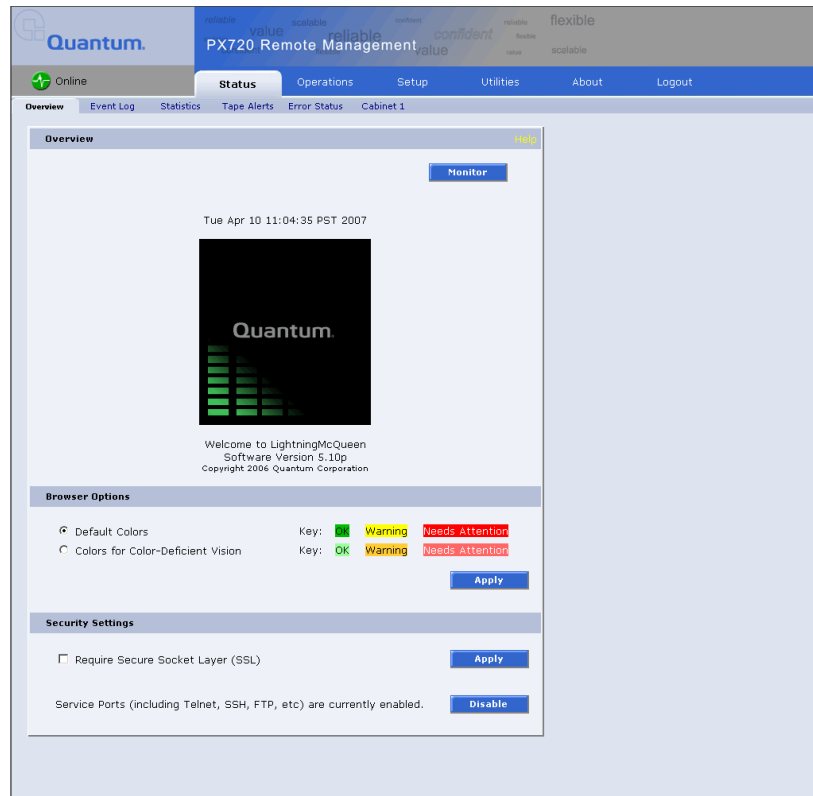
- [Overview Page](#)
- [Event Log Page](#)
- [Statistics Page](#)
- [Tape Alert Page](#)
- [Error Status Page](#)
- [Cabinet Page](#)

Overview Page

To access the **Overview** page, from any page, click **Status** from the navigation bar.

The management frame displays the **Status** page (see [figure 57](#)).

Figure 57 Status Page



Event Log Page

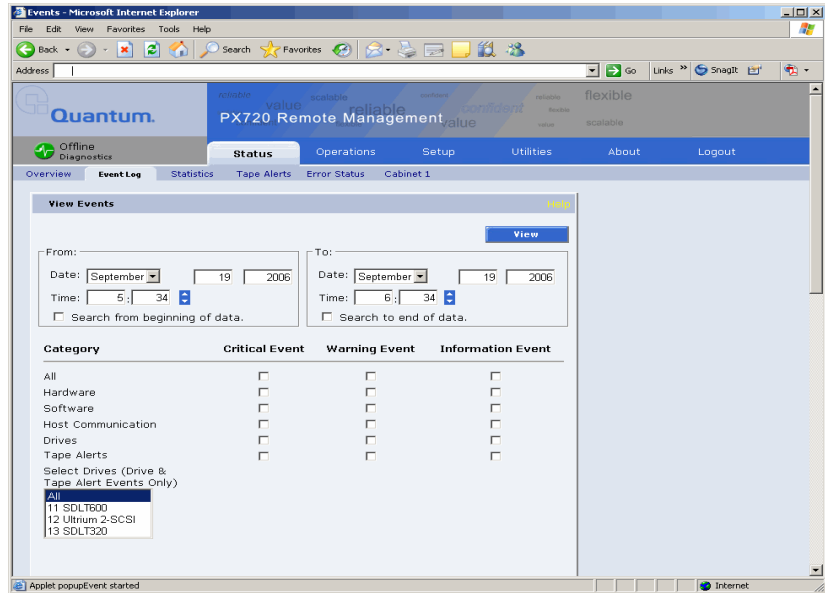
The **Event Log** page allows the user to view events that occur on the library. These events are divided into the following categories:

- All categories - views all events in all categories
- Hardware - views only hardware related events
- Software - views only software related events
- Host Communication - views only events related to host communications
- Drives - views only events related to the tape drives
- Tape alerts - view only events related to tape alerts

To access the **Event Log** page, from the **Status** page, click on the **Event Log** tab at the top of the page.

The **Event Log** page displays (see [figure 58](#)):

Figure 58 Event Log Page



To view an **Event Log**:

- 1 In the **Event Log** page, change the **From** and **To** areas to reflect the time range of the event log you wish to view. Click the up and down arrows to change the hour and/or minute values by increments of one. Double-clicking will increment or decrement the value by 5. You may also type in a valid hour (0 - 24) or minute (0 - 59).

Note: The default date/time range is one hour prior to the current time and day.

- 2 Select desired categories and priority levels (critical, warning, or informational) for the event list.
- 3 Click **View** to display the list.

Note: Search time will vary depending on the time range entered.

A smaller window displays the information matching the range, category, and priority specified.

- 4 Click **Save As...** to save the event information to a local destination. Use the **Send...** button to email the event list or event detail to one or more recipients.
- 5 Click on an event summary to open another window containing details about the particular event. The detail windows also contains a **Save As...** and **Send** buttons.

Statistics Page

The **Statistics** page allows the user to view library statistics for the entire library or certain components within the library.

The following table shows the statistics available from the **Statistics** page:

Table 23 Statistics Information

Cabinet or Component	Statistical Information
CLM (cross link mechanism)	Total time powered-on (seconds)
	Total time processing CLM commands (seconds)
	Estimated number of Power Cycles
	Number of Individual CLM moves
	Number of CLM move retries

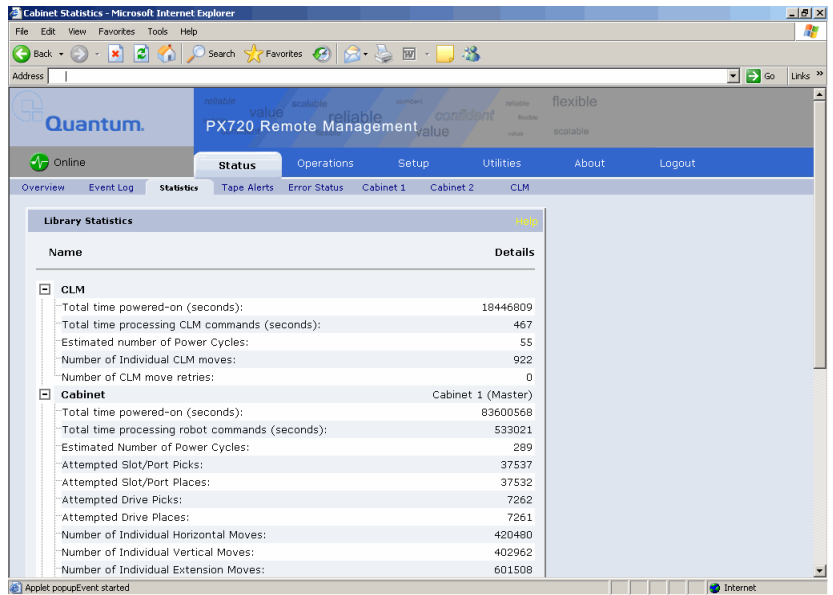
Cabinet or Component	Statistical Information
Cabinet (library)	Time since last power-on (seconds)
	Time processing robot commands (seconds)
	Estimated number of power cycles
	Attempted slot/port picks
	Attempted slot/port places
	Attempted drive picks
	Attempted drive places
	Number of individual horizontal moves
	Number of individual vertical moves
	Number of individual extension moves
	Number of individual gripper moves
	Number of individual depth moves
	Number of individual rotary moves
	Number of horizontal retries
Number of vertical retries	

Cabinet or Component	Statistical Information
	Number of extension retries
	Number of gripper retries
	Number of depth retries
	Number of rotary retries
	Number of drive place retries
	Number of drive pick retries
	Number of partially gripped cartridge retries
	Number of drive load retries
	Number of barcode scan retries
	Number of slot/port pick retries
	Number of slot/port place retries

To access the **Statistics** page, from the **Status** page, click on the **Statistics** tab at the top of the page.

The **Statistics** page displays (see [figure 59](#)):

Figure 59 Statistics Page



Note: Statistics for individual elements (a specific drive, slot, or port) are included in the element detail window and can be viewed by clicking on a drive, slot, or port link from zoom windows accessed via the **Operations** pages. The zoom windows are opened by clicking on the panel or cluster name from physical or logical maps.

Click **Save As...** to save the statistic information to a local destination. Use the **Send...** button to email the statistic information to one or more recipients.

Tape Alert Page

The **Tape Alert** page lists all tape/ drive alerts that have occurred within the library. **Tape Alerts** are used for notifying host applications and the library of current or impending problems with the tape drive or media.

To access the **Tape Alert** page, from the **Status** page, click on the **Tape Alert** tab at the top of the page.

The **Tape Alert** page displays (see [figure 60](#)):

Figure 60 Tape Alert Page

The screenshot shows the Quantum PX720 Remote Management interface. The top navigation bar includes 'Online', 'Status', 'Operations', 'Setup', 'Utilities', 'About', and 'Logout'. The 'Status' section is active, with sub-tabs for 'Overview', 'Event Log', 'Statistics', 'Tape Alerts', 'Error Status', and 'Cabinet 1'. The 'Tape Alerts' section is expanded, showing several sub-sections:

- Refresh Tape Alert Data:** Shows 'Last Refresh: May 21, 2007 14:10' and a 'Refresh' button.
- Display Filters:** Includes a dropdown for 'Display Tape Alerts From: All', and checkboxes for 'Include Barcodes No Longer in Library' and 'Include Drives No Longer in Library', with an 'Apply Filter' button.
- Tape Alert Flags:** Shows a key: Informational (white), Warning (yellow), and Critical (red).
- Barcode with Tape Alerts:** A table listing barcodes, media serial IDs, total alerts, and last occurrence times.
- Drives with Tape Alerts:** A table listing drive serial numbers, total alerts, and last occurrence times.

Callouts on the left side of the image point to these sections:

- Refresh tape alert data:** Points to the 'Refresh Tape Alert Data' section.
- Display filters:** Points to the 'Display Filters' section.
- Tape alert flags:** Points to the 'Tape Alert Flags' section.
- Barcode with tape alerts:** Points to the 'Barcode with Tape Alerts' table.
- Drives with Tape Alerts:** Points to the 'Drives with Tape Alerts' table.

The **Tape Alert** pages is divided into the following sections:

- [Refresh Tape Alert Data](#)
- [Display Filters](#)
- [Tape Alert Flags](#)
- [Barcode with Tape Alert Flags](#)
- [Drives with Tape Alert Flags](#)
- [Details](#)

Refresh Tape Alert Data

The tape alerts data is generated and stored internally for quick reporting and viewing. If the data files do not exist (i.e. factory default), they will be generated automatically. To update the files, click **Refresh**.

Display Filters

Barcodes and/or drives no longer in the library can be excluded from the tape alerts listing by unchecking the appropriate checkbox. Also, the user can select whether to display tape alerts from the last 1 or 24 hours; or 7, 14, 30, or 60 days only.

Tape Alert Flags

The **Tape Alert Flags** section lists all tape alerts that have been detected in the system along with total occurrences and when it last occurred. To view details of a tape alert, including which drive and barcode the tape alert was detected in, click the **Alert Flag's View Details**.

Barcode with Tape Alert Flags

The **Barcode with Tape Alert Flags** section lists all tape cartridges that have a tape alert detected. A total alerts count and last occurrence for each cartridge is also displayed. To view details of a cartridge's tape alert data, including which drive and tape alert was detected with, click the **Barcode's View Details**.

Note: An asterisk '*' after the barcode indicates the cartridge is no longer in the library.

Drives with Tape Alert Flags

The **Drives with Tape Alert Flags** section lists all drives that have a tape alert detected. A total alerts count and last occurrence for each drive is also displayed. To view details of a particular drive's tape alert data, including which tape alert flag and barcode association, click the **Drive View Details**.

Details

Upon clicking **View Details** for a **Tape Alert Flag**, **Barcode**, or **Drive**, a new window is displayed listing all tape alerts, barcodes, or drive associations. Clicking on an associated tape alert, barcode, or drive from the resulting window will display all events for that tape alert.

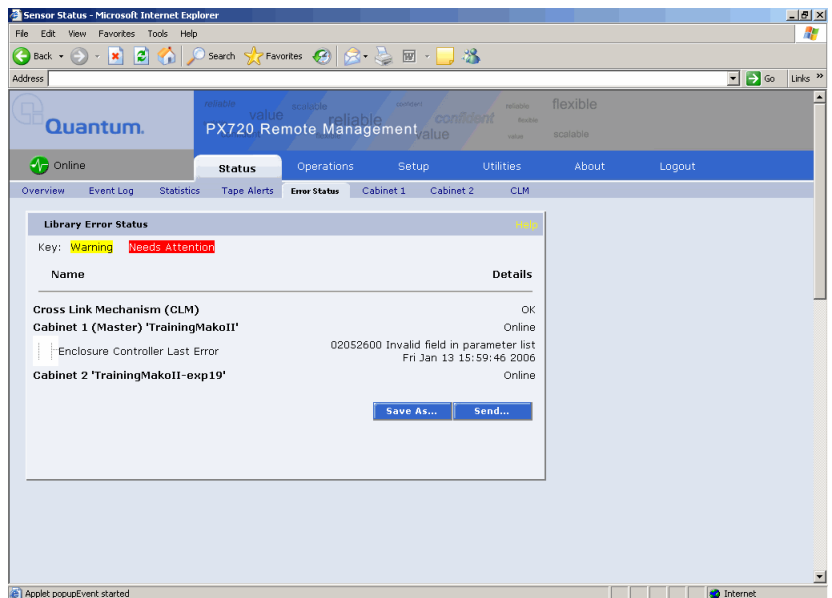
Error Status Page

The **Error Status** page lists all drives/sensors within the library that are not in a normal operational condition.

To access the **Error Status** page, from the **Status** page, click on the **Error Status** tab at the top of the page.

The **Error Status** page displays (see [figure 61](#)):

Figure 61 Event Log Page



Note: A yellow background indicates that the library may need attention. A red background indicates that the library needs attention.

Click **Save As...** to save the error status information to a local destination. Use the **Send...** button to email the error status information to one or more recipients.

Note: The **Error Status** page can be accessed from any page by clicking **Quick Status** icon located in the upper-left portion of the page.

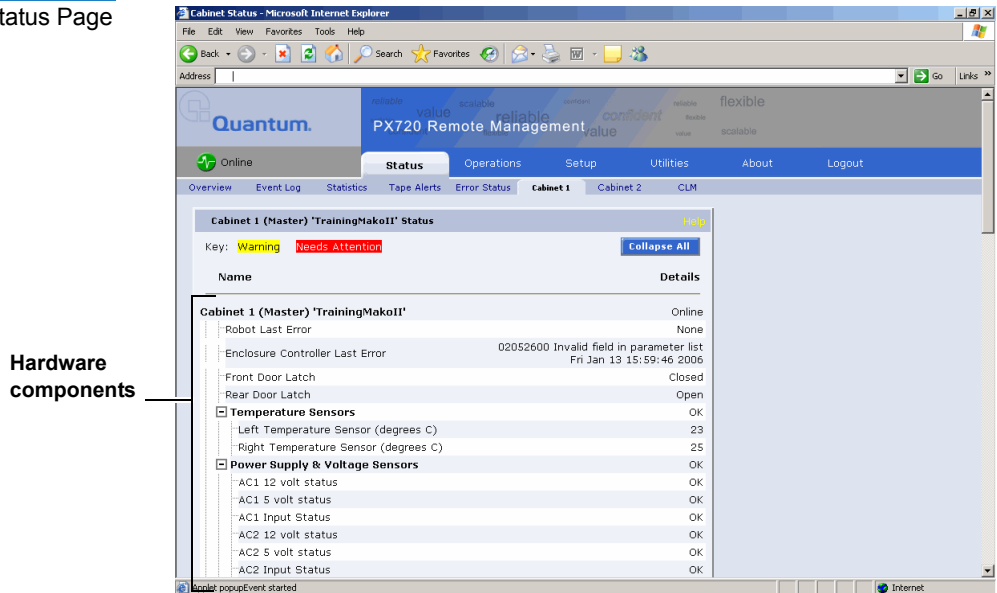
Cabinet Page

The **Cabinet** status page displays the drive/sensor status within each cabinet. If this library is in a CLM environment with multiple cabinets, the CLM and the available cabinet numbers display.

To access the **Cabinet** page, from the **Status** page, click on the **Cabinet** tab at the top of the page.

The **Cabinet** status page displays (see [figure 62](#)):

Figure 62 Cabinet Status Page



Library components within the cabinet are displayed in a tree-like fashion. A red background indicates critical or failed condition and requires user attention. A yellow background indicates a warning

condition and may require user attention. Related values or error messages are listed under details.

To view the status of a library component:

- 1 Click **Expand All/Collapse All** to expand or collapse all branches.
Click **Save As...** to save the hardware status information to a local destination. Use the **Send...** button to email the hardware status information to one or more recipients.

CLM (If Installed)

The **CLM** status page displays the CLM component status within the library. This tab is only active in the library is in a CLM environment.

To access the **CLM** page, from the **Status** page, click on the **CLM** tab at the top of the page.

The **CLM** status page displays (see [figure 63](#)):

Figure 63 CLM Status Page

The screenshot shows the 'CLM Status' page. At the top, there is a 'Key:' section with 'Warning' in yellow and 'Needs Attention' in red, and a 'Collapse All' button. Below this is a table with columns for 'Name' and 'Details'. The table lists components under the heading 'Cross Link Mechanism (CLM)'. A bracket on the left side of the table is labeled 'Hardware components'. At the bottom of the page, there are 'Save As...' and 'Send...' buttons.

Name	Details
Cross Link Mechanism (CLM)	
Top Power Supply Status	OK
Bottom Power Supply Status	OK
AC Power Status	OK
Top Power Supply Fan Status	OK
Bottom Power Supply Fan Status	OK
Chasis Fan 0 Status	OK
Chasis Fan 1 Status	OK
CPU Fan Status	OK
+55v Status	OK

CLM components within the library are displayed in a tree-like fashion. A red background indicates critical or failed condition and requires user attention. A yellow background indicates a warning condition and may require user attention. Related values or error messages are listed under details.

Click **Save As...** to save the CLM status information to a local destination. Use the **Send...** button to email the hardware status information to one or more recipients.

Operations

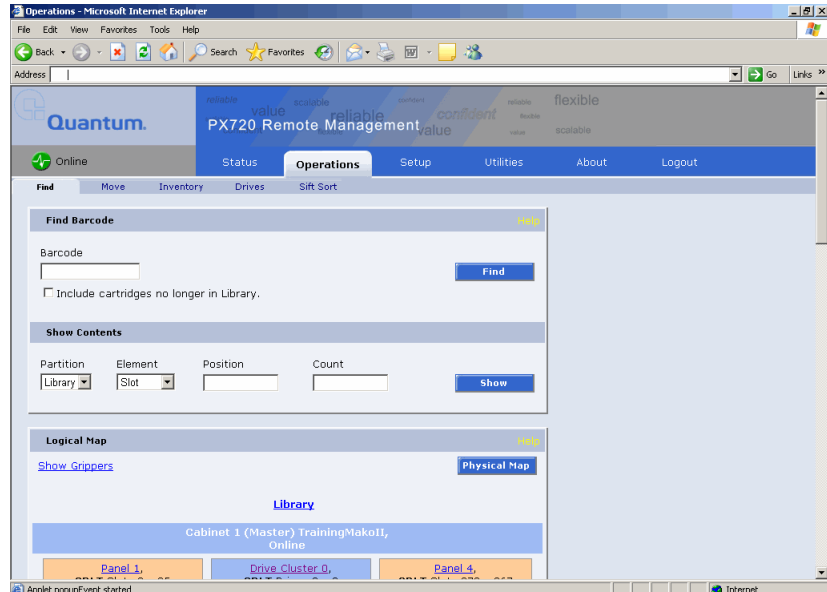
The **Operations** page is divided into the following sections:

- [Find Page](#)
- [Move Page](#)
- [Inventory Page](#)
- [Drives Page](#)
- [Sift Sort](#)

Accessing the Operations Page

To access the **Operations** page, click **Operations** from the contents frame. The management frame displays the **Operations** page (see [figure 64](#)).

Figure 64 Operations Page



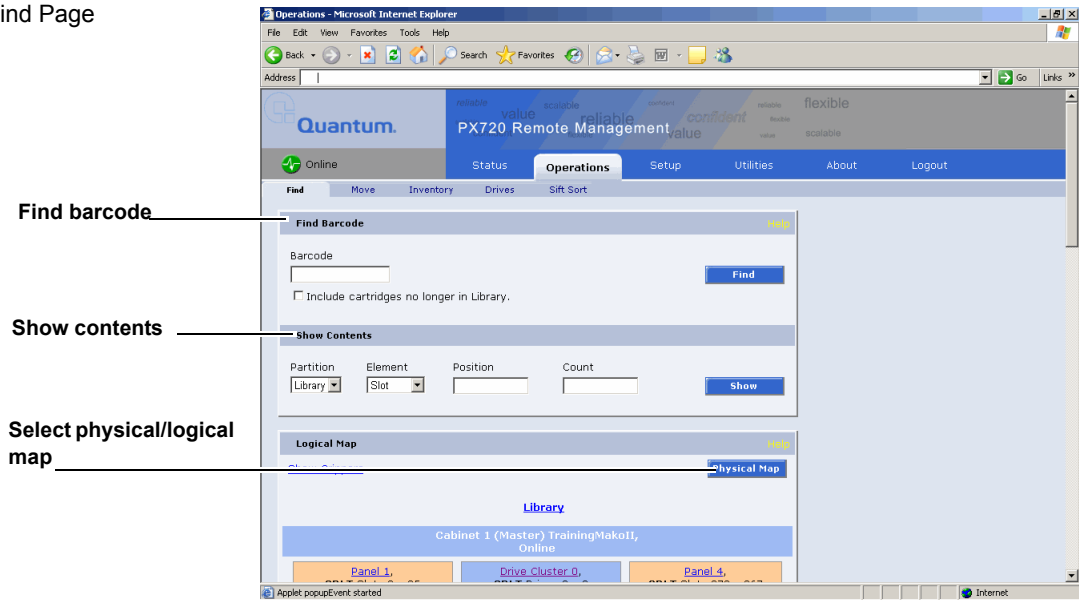
Find Page

The **Find** page allows the user to find and locate specific barcodes within the library as well as view the library contents (slots, ports, drives, gripper, or address).

To access the **Find** page, from the **Operations** page, click on the **Find** tab at the top of the page.

The **Find** page displays (see [figure 65](#)):

Figure 65 Find Page



The **Find** page is divided into the following sections:

- [Find Barcode](#)
- [Show Contents](#)
- [Select Map](#)
- [Partition Layout](#)
- [Show Grippers](#)

Find Barcode

The find barcode section allows the user to find a specific barcode (or partial barcode) within the library(s) and view its location.

To find a barcode or partial barcode:

- 1 Enter a barcode, or partial barcode with wildcards (*, ?) in the barcode field.

Note: Leaving the barcode field empty will result in listing all barcode labels within the library.

2 Click **Find**.

A separate window displays the barcode(s) sharing the barcode string entered in the barcode field and it's location within the library. Click the individual barcode label to display the corresponding cartridge detail page.

Show Contents

The show contents section allows the user to show the contents of any element within a library or partition (slots, ports, drives, gripper, or address).

To show the contents of a library element:

- 1 Select the library or partition, element, and enter a position and count if desired.

Note: To show the contents of a range of elements, enter a start element (example: 0 for slot 0) in the position field and the number of elements you wish to show (example: 10 would show slot 0 through slot 9).

2 Click **Show**.

A separate window displays the contents of the elements selected. Click the individual barcode label to display the corresponding cartridge detail page.

Select Map

The select map section allows the user to view the library in either a physical or logical view. To toggle between physical and logical map, click the **Physical/Logical Map** button in the map section.

Note: The **Physical/Logical Map** information is displayed at the bottom of each **Operations** page.

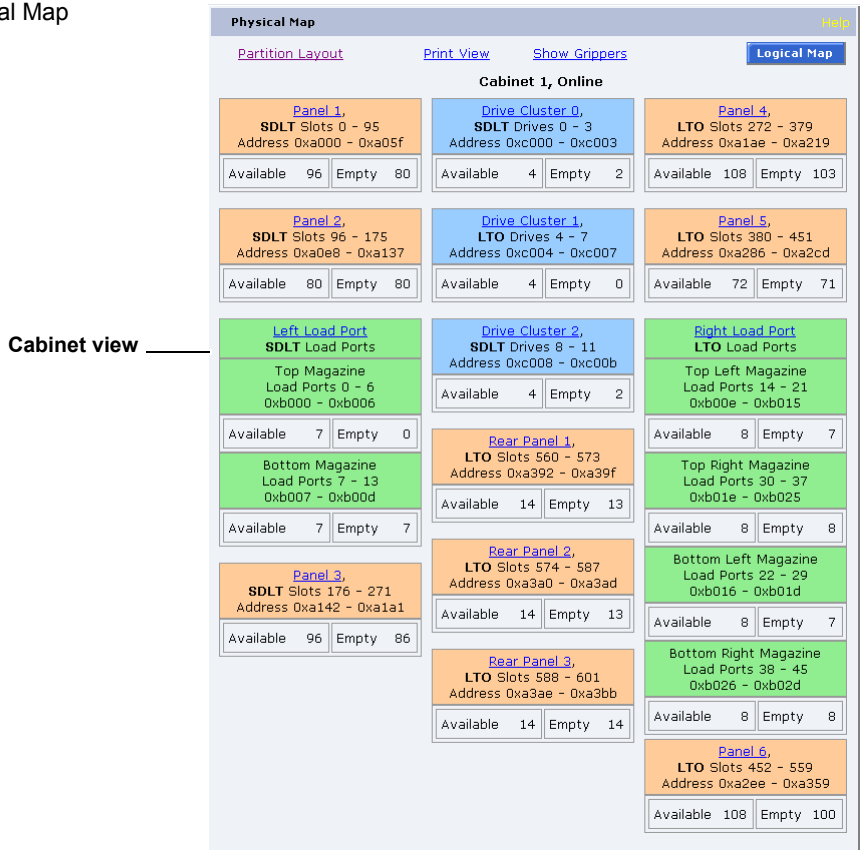
Physical Map: A physical map (see [figure 66](#)) displays a high level physical representation of the library. Each drawer, load port, or drive cluster is displayed as a panel located on either the left, rear, or right wall of the library. Clicking on the panel name opens a zoom view of the panel

(i.e. similar to pulling out a loadport or drawer) displaying all elements (slots, ports, or drives) in a spreadsheet format.

Note: The physical map shows gaps in the element addressing depending on the load port configuration.

Note: Under the **Physical Map** view, an option to print the view to a local printer is available by clicking on the **Print View** link located in the upper left-hand corner of the **Physical Map** section.

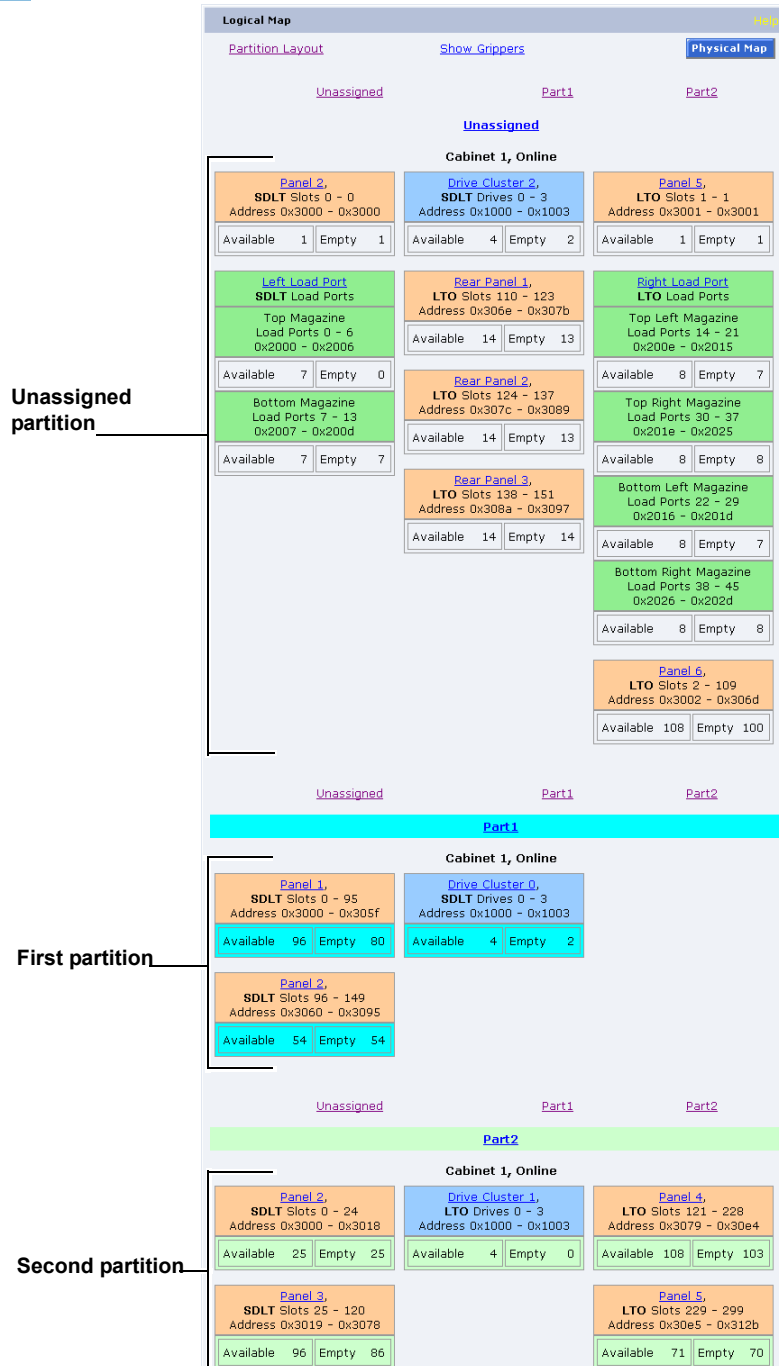
Figure 66 Physical Map



Logical Map: A logical map (see [figure 67](#)) displays panels, clusters, and load ports within a partition. Clicking on the panel name opens a zoom

view of the panel (i.e. similar to pulling out a loadport or drawer) displaying all elements (slots, ports, or drives) belonging to the partition in a spreadsheet format. From the zoom view, clicking on an element opens a detail window. Use partition links (if enabled) to move from one partition map to another.

Figure 67 Logical Map



Partition Layout

The partition layout displays a map of all elements within the library color coded to designate the partitions (see [Partition Layout](#) on page 151).

Show Grippers

Click this link to list all available grippers and their contents including a “virtual” gripper for each partition.

Move Page

The **Move** page allows the user to move a cartridge or range of cartridges from a source (slot, port, drive, or address) to a destination (slot, port, drive, or address).

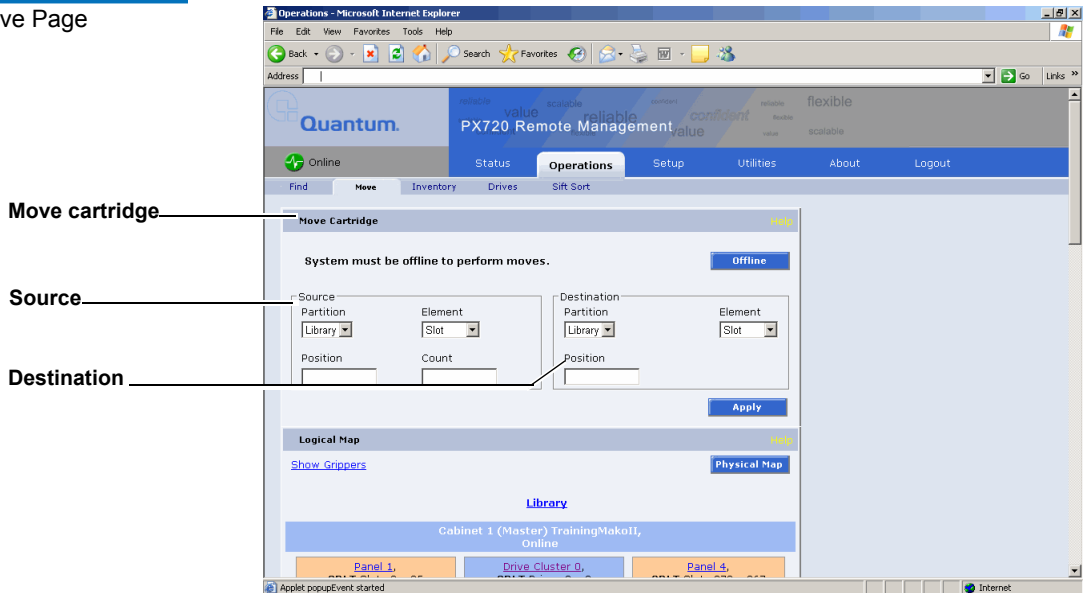
Note: The library must be off-line to move a cartridge.

To access the **Move** page, from the **Operations** page, click on the **Move** tab at the top of the page.

Note: Moving more than one cartridge requires cartridges in consecutive source positions and consecutive empty destination positions.

The **Move** page displays (see [figure 68](#)):

Figure 68 Move Page



To move a cartridge:

- 1 Select a source cabinet (or partition), source element (slot, port, drive, or address), and enter a starting position and count. If the count field is left empty, only the starting cartridge is moved.

Note: The **Physical Map** allows you to move tape cartridges to or from the library gripper or CLM gripper. The **Logical Map** allows you to move a tape cartridge across partitions. A confirmation message prompts before proceeding with the move.

- 2 Select a destination cabinet (or partition), element, and position. If more than one cartridge is moved, the position entered in as a destination is the first one filled, consecutive elements must be empty.

Caution: Use care when moving cartridges from the physical view on a partitioned library. It is possible to move cartridges across partitions without a confirmation message.

- 3 Click **Apply** to perform the move. The progress of the move displays in a separate window.

Inventory Page

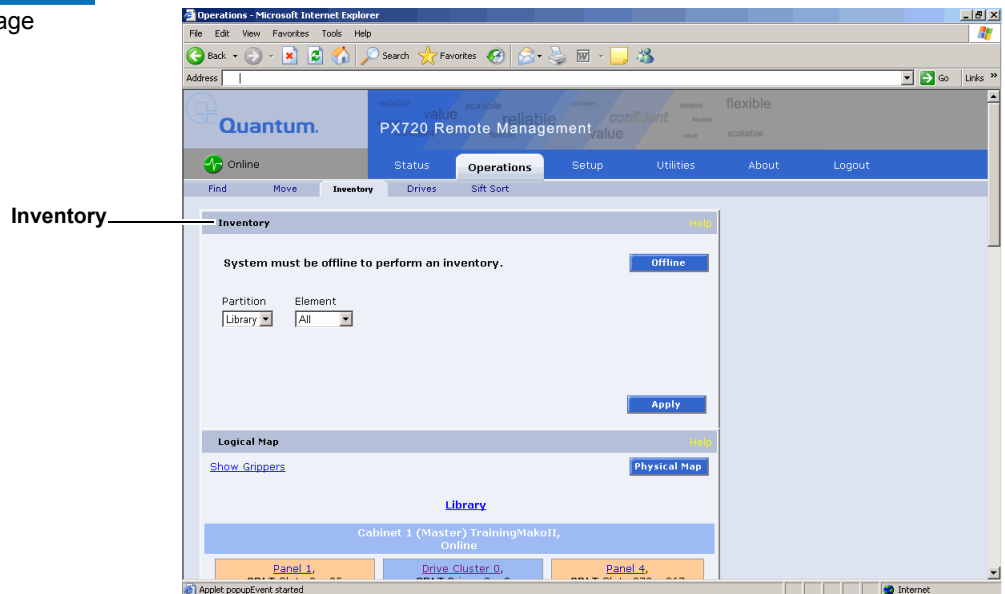
The **Inventory** page allows the user to perform an inventory on all elements within the library or specific element ranges.

Note: The library must be off-line to perform an inventory.

To access the **Inventory** page, from the **Operations** page, click on the **Inventory** tab at the top of the page.

The **Inventory** page displays (see [figure 69](#)):

Figure 69 Inventory Page



To perform an inventory:

- 1 Select either a partition (logical map) or a cabinet (physical map) and elements to inventory (slot, port, drive, or address).

- 2 Enter the starting position and count (range).

Note: The edit boxes for the starting position and count are invisible until you select slot, port, drive, or address. If the starting position and count are left blank, all elements of the selected type will be inventoried. If a starting position is entered, but count is left blank, inventory will start at the starting position and include all remaining elements of that type. If address is selected, enter a hex address in the position field.

- 3 Click **Apply** to perform the inventory.

The progress of the inventory displays in a separate window.

Drives Page

The **Drives** page allows the user to perform the following actions on the tape drives within the library:

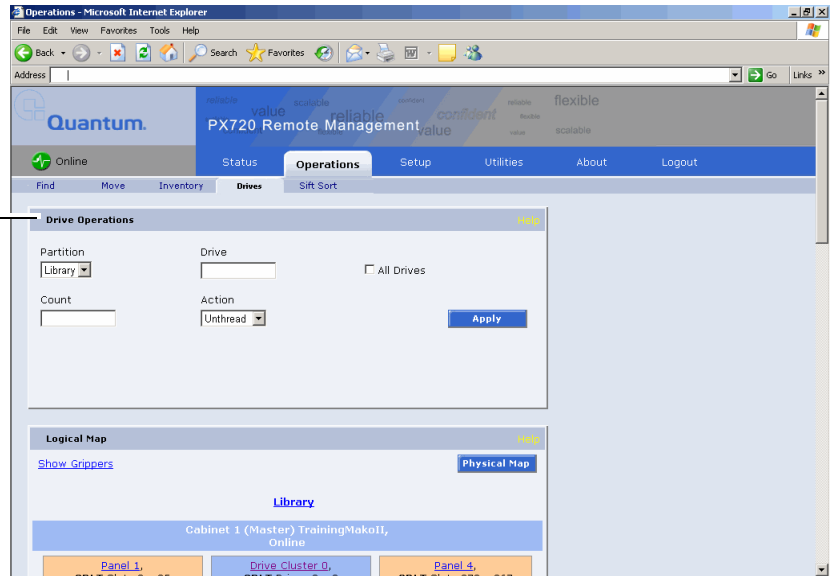
- Unthread - unthreads the tape cartridge within the tape drive
- Reset - re initializes the tape drive
- Shutdown - shuts down the tape drive
- Power on - powers on the tape drive

To access the **Drives** page, from the **Operations** page, click on the **Drives** tab at the top of the page.

The **Drives** page displays (see [figure 70](#)):

Figure 70 Drives Page

Drive operations



To perform an action on a tape drive(s)

- 1 Select a partition or cabinet, drive (or all drives), and a count.

Note: The count indicates the range of drives where the action is performed.

- 2 Select the action to perform (unthread, reset, shutdown, or power on).
- 3 Click **Apply** to perform the action.

Caution: If auto-unload is disabled, move any cartridges in a tape drive to another element before powering the drive off.

The drive actions are performed.

Sift Sort

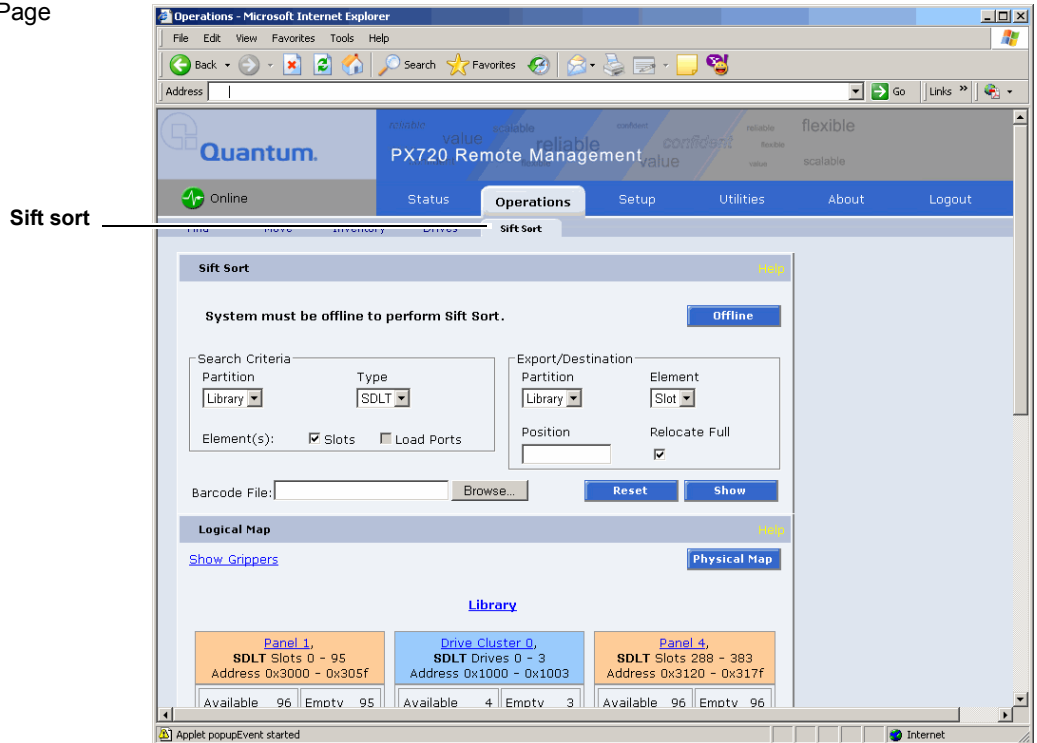
The **Sift Sort** page provides the capability for bulk movement of tape cartridges from their standard locations to load port elements (**Sift Sort Export**). The **Sift Sort** page also provides the ability to relocate tape cartridges in sorted order within the library based on slot number or other logical grouping. This facilitates the quick location of similar

cartridge ID's, provides easier visualization of daily/weekly/monthly tapes, and enhances the library view from the remote management pages.

To access the **Sift Sort** page, from the **Operations** page, click on the **Sift Sort** tab at the top of the page.

The **Sift Sort** page displays (see [figure 71](#)):

Figure 71 Sift Sort Page



To sort the tape cartridges:

Note: The library must be off-line to perform a **Sift Sort** operation.

- 1 Select the search criteria that the system will use to sort the tape cartridges (**Partition, Cartridge Type, Slots, or Load Ports**).

Note: Only barcodes in slots and load ports can be used for **Sift Sort** (drives not supported).

- 2 Select the destination for the sorted tape cartridges (**Partition, Element Type, and Position**).

Note: If the **Relocate Full** check box is checked and a destination element contains a cartridge, that cartridge will be relocated to an empty bin or port depending on the destination element selected. If **Relocate Full** is unchecked that cartridge will be skipped.

- 3 Click **Reset** to sort the tape cartridges.

Barcode File Option

Instead of searching the library, a barcode list can be uploaded for the **Sift Sort** operation. The barcode file must be a text file with one barcode per line. If you are uploading mixed-media barcodes, the destination element position will determine which barcode type to be used for sift sorting.

Show Sift Sort Barcode Table

Click the **Show** button to generate a barcode table for further sorting and filtering. To apply filters, select the filter type follow by a string (case sensitive and wildcards not required). To specify exclusion, use the character ~ (tilde) in front of the filter string. Logical and Physical Index filter types can use a range, i.e. 1-30.

Note: The final order for sift sorting is the barcode listed and checked on the **Sift Sort Barcode Table**.

Setup

The **Setup** page is divided into the following sections:

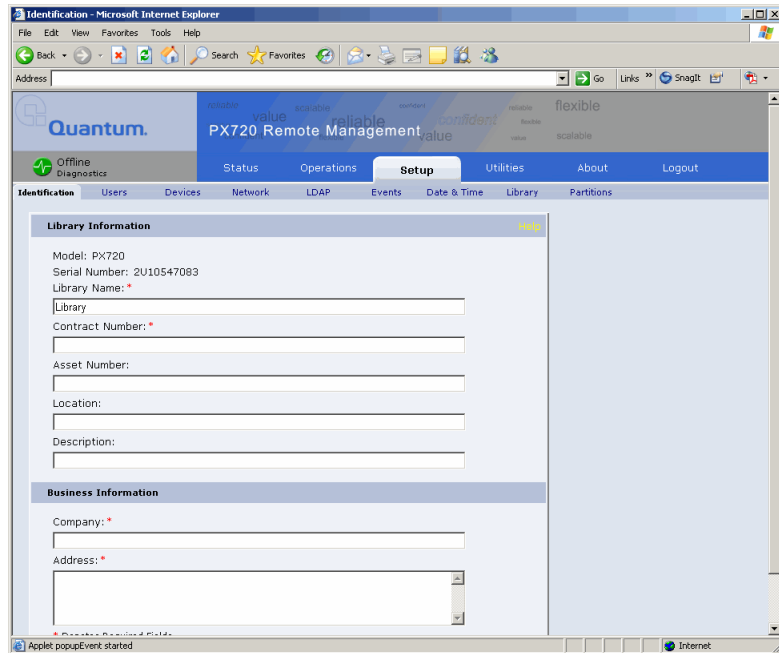
- [Identification](#)
- [Users](#)
- [Devices](#)
- [Bridges](#) - Only if a Fibre Channel bridge is present
- [Network](#)
- [LDAP](#)
- [Events](#)
- [Date & Time](#)
- [Library](#)
- [Partitions](#) - Only available if partitioning option is installed
- [Secure Key](#) - Only available if enabled.

Accessing the Setup Page

To access the **Setup** page, click **Setup** from the main navigation menu.

The management frame displays the **Setup** page (see [figure 72](#)).

Figure 72 Setup Page



Identification

The identification information is used to identify the library to assist customer support when servicing the library.

- 1 To access the **Identification** page, from the **Setup** page, click on the **Identification** tab at the top of the page.

The **Identification** page displays (see [figure 72](#)).

- 2 Edit the identification information as desired (see [table 24](#) for a description of the fields).
- 3 Click **Save** when complete.

Table 24 Identification Information

Field	Description
Model	Display only. Not entered by user
Serial Number	Display only. Not entered by user
Library Name*	Enter a name to identify this specific library

Field	Description
Contract Number*	Enter the contract number for the library. This is used to identify the library to customer support.
Asset Number	Customer internal tracking number.
Location	Enter the location of the library. This helps to identify the library when remotely controlling multiple machines.
Description	Enter a short description of the library.
Company*	Enter the company name where the library is located
Address*	Enter the company address where the library is located
*	Indicates a required field.

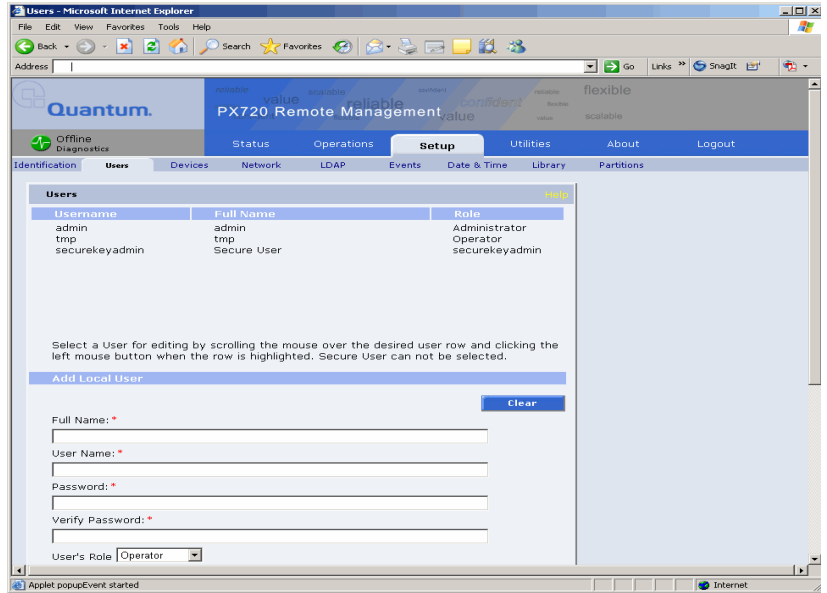
Users

This section allows users to be added to the library configuration. The user access is also controlled from this section as well as email notification.

- 1 To access the **Users** page, from the **Setup** page, click on the **Users** tab at the top of the page.

The **Users** page displays (see [figure 73](#)).

Figure 73 Users Page



- 2 Edit the user information as desired (see [table 25](#) for a description of the fields).
- 3 Click **Save** when complete.

Table 25 User Information

Field	Description
Full Name*	Enter the full name of the user
User Name*	Enter a user name
Password/Verify Password*	Enter a password

Field	Description
User Role	<p>There are three User Roles available:</p> <ul style="list-style-type: none"> • Administrators have access to all pages. • Operators have access to all pages except the pages under the Operations, Setup, or Utilities tabs. • Observers have access to all pages but is unable to make any modifications. They do have the privileges to download logs and retrieve, save, and send statistical information. When logged in as an observer, editable fields are grayed out.
Address*	Enter an address for the user's location
Phone	Enter the users phone number
Fax	Enter the users fax number
Pager	Enter the users pager number
E-mail*	Enter the users email address
Add to Events E-mail List	Adds this user to the email events list.
*	Indicates a required field.

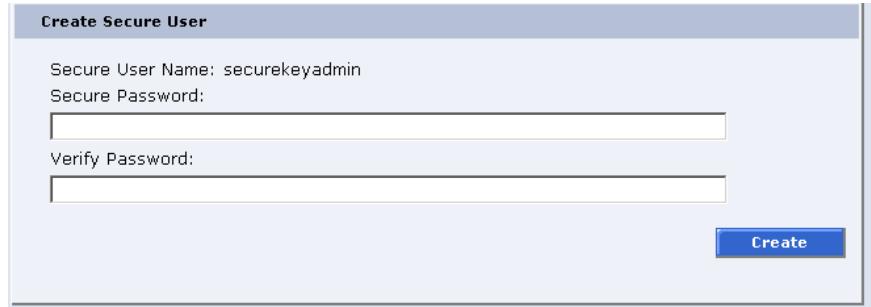
- 4 Click **New** to enter another user.
- 5 To remove a previously entered user, select the user from the list at the top of the page and click **Delete**.

Secure Users

The **Secure User** is the only user that has the ability to create, modify, and delete a **Secure Key** for the Library. The **Secure User** also has the ability to enable and disable **Secure Capable Drives** for reading and writing data to and from tapes using the **Secure Key**.

When a user is created with administrator privileges (other than the default admin user), the **Create Secure User** section appears at the bottom of the **Users** page (see [figure 74](#)).

Figure 74 Create Secure User



The screenshot shows a web form titled "Create Secure User". The form contains the following elements:

- Title: **Create Secure User**
- Text: Secure User Name: securekeyadmin
- Text: Secure Password: [input field]
- Text: Verify Password: [input field]
- Button: **Create**

To create a secure user:

Note: Only users with administrator privileges (other than the default administrator) can create a secure user.

There is only one **Secure User** and the username is always **securekeyadmin**.

- 1 Enter a secure password.

Note: **Secure Passwords** must be alphanumeric strings of at least one character. A blank secure password will be rejected. **Secure Password** and **Verify Password** must match.

- 2 Verify the secure password by entering the password a second time in the **Verify Password** box.
- 3 Click **Create** to create the secure key password.

Once the secure key administrator password is added, the **Delete Secure User** section displays at the bottom of the **Users** page (see [figure 75](#)).

Figure 75 Delete Secure User



To update the secure key password:

Note: Only the **Secure User** can change the secure user password.

- 1 Enter a secure password.

Note: **Secure Passwords** must be alphanumeric strings of at least one character. A blank secure password will be rejected. **Secure Password** and **Verify Password** must match.

- 2 Verify the secure password by entering the password a second time in the **Verify Password** box.
- 3 Click **Update** to update the secure key password.

The secure key password is updated.

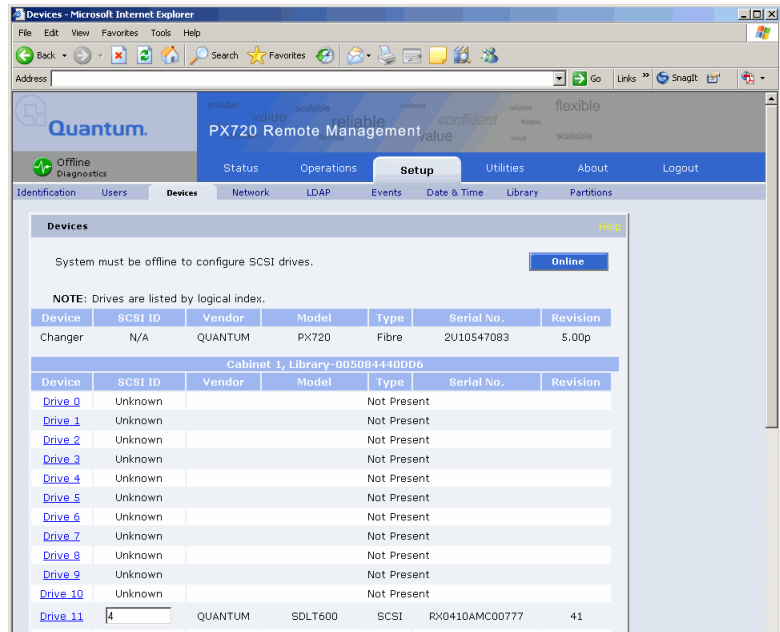
Devices

This section allows the user to set the SCSI IDs for the changer (library) and every tape drive within the library.

- 1 To access the **Devices** page, from the **Setup** page, click on the **Devices** tab at the top of the page.

The **Devices** page displays (see [figure 76](#)).

Figure 76 Devices Page



- 2 To change a SCSI ID, enter the ID number in the field next to the device and click **Apply**.

Note: The drives are listed by logical index starting at 0 for each partition.

To change a drive SCSI ID, the cabinet must be off-line. To change a cabinet (changer) SCSI ID, the library must be rebooted before the new ID takes effect.

- 3 Click the drive link to view the drive details.
- 4 Click **Save As...** to save the SCSI setup information to a local destination. Use the **Send...** button to email the SCSI setup information to one or more recipients.

Native Fibre Channel Tape Drives

Native Fibre Channel tape drives such as the HP LTO-2/-3 and Quantum SDLT600/DLT-S4 can be directly connected to a Fibre Channel host or network without a SCSI to Fibre Channel bridge. When native Fibre

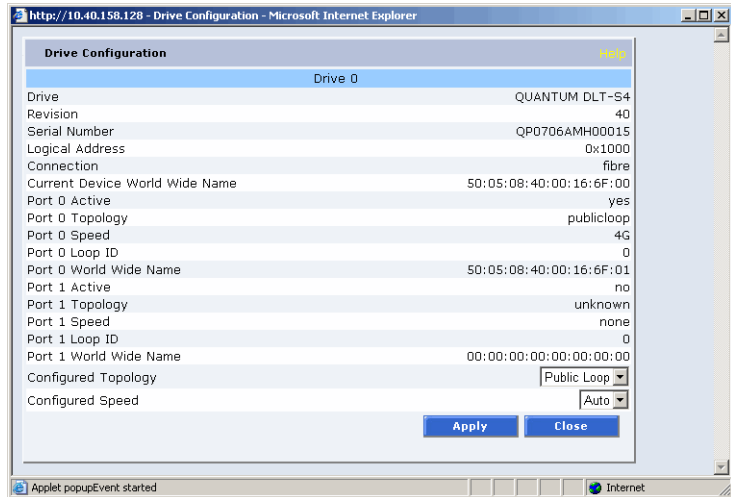
Channel tape drives are installed in the library, a link for Fibre appears in the connectivity type column that displays the drive configuration.

To configure native Fibre Channel tape drive:

- 1 Under the **Drives** page, click **Fibre** in the connectivity column.

The **Drive Configuration** screen displays (see [figure 77](#)).

Figure 77 Native Fibre Channel Drive Configuration



- 2 Select the **Configured Topology (Loop, Fabric, Public Loop, or Auto Fabric)** from the drop down box. If you click the **Help** link the following **Configured Topology Help** screen displays (see [figure 78](#)).

Figure 78 Configured Topology Help Screen



- 3 Select the **Configured Speed (Auto, 1G, 2G, or 4G)** from the drop down box and click **Apply**.

Note: 4G speed is only available on the Quantum DLT-S4 tape drive and the HP LTO-4 tape drive.

The drive is configured.

Bridges

This section allows users to manage the FC470 Fibre Channel bridge(s) installed in the cabinet.

Note: The FC bridge tab and information only displays when a Fibre Channel bridge is installed in the library.

- 1 To access the **Bridges** page, from the **Setup** page, click on the **Bridges** tab at the top of the page.

The **FC Bridge** page displays (see [figure 79](#)).

Figure 79 Fibre Channel Page

The screenshot shows the Quantum PX720 Remote Management web interface. The 'Bridges' tab is selected in the top navigation bar. Below the navigation bar, there is a table with the following data:

Devices	IP Address	Model	Type	Address	Serial No.	Revision
Bridge_0	192.168.19.78	FC470	FC-SCSI	0x100000E00202AD30	3F42LV7138RS	5.6.19
Bridge_1	192.168.19.79	FC470	FC-SCSI	0x100000E00202AD84	3F42LV7148U4	5.6.19

Below the table, there are 'Refresh' and 'Rescan' buttons. The 'Bridge Device Discovery' section contains a message: 'System must be offline to issue Bridge Device Discovery.' with an 'Offline' button and a 'Discovery' button. A dropdown menu is set to 'All Bridges'. A warning message is displayed at the bottom: 'Warning: Issuing Bridge Device Discovery in the middle of a backup or restore job for a drive on the selected bridge may cause the job to fail.'

Labels on the left side of the image point to the following elements:

- Bridge links:** Points to the links in the table (e.g., [Bridge_0](#)).
- Refresh:** Points to the Refresh button.
- Rescan:** Points to the Rescan button.

- 2 Click on the Fibre bridge you want to manage.

The FC470 web interface displays. For more information on the FC470 Fibre Channel bridge and the web interface, see the *Quantum FC470 User's Guide Addendum* (PN 6513505) included on the Quantum PX720 documentation CD.

- Click **Refresh** to update all known Fibre Channel bridges. If any bridges are discovered that are not communicating, it will be listed as **Not Communicating**.
- Click **Rescan** to re-discover any recently installed Fibre Channel bridges. Rescan will also remove any non-communicating bridges.
- Click **Discovery** to issue a discovery command on all SCSI buses and Fibre Channel ports on the selected bridge.

Note: The library must be offline to issue a bridge discovery command.

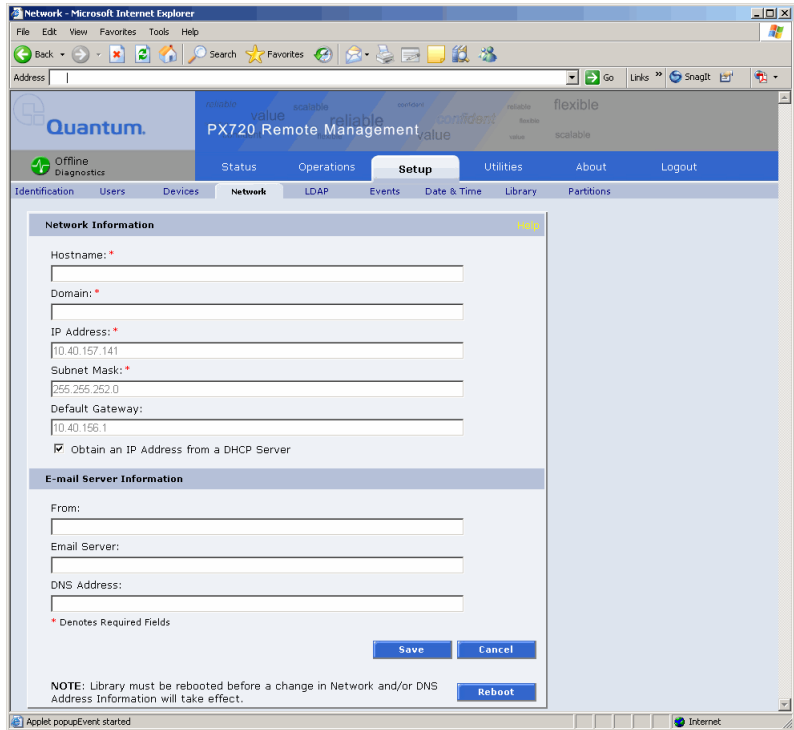
Network

The network information section allows the user to enter network information so the library can be controlled remotely via an Ethernet network.

- 1 To access the **Network** page, from the **Setup** page, click on the **Network** tab at the top of the page.

The **Network** page displays (see [figure 80](#)).

Figure 80 Network Page



- 2 Edit the network information as desired (see [table 26](#) for a description of the fields).
- 3 Click **Save**.

The Quantum PX720 will not use the new network information until it has been rebooted. The **Reboot** button is available at the bottom of the **Network** page.

Table 26 Network Configuration Fields

Field	Description
Hostname*	View or set the hostname for the library (for example, the DNS name)
Domain*	View or set the domain name for the library
IP Address*	View or set the IP address for the library

Field	Description
Subnet Mask*	View or set the subnet mask for the library
Default Gateway*	View or set the default gateway for the library
Obtain IP from DHCP Server	If your network uses a DHCP server to assign device IP addresses dynamically, select this box. When this box is selected, the IP address, subnet mask, and default gateway fields are greyed out.
Email Server	View or set the email server information
DNS Address	View or set the DNS address
*	Indicates a required field.

LDAP

The **LDAP** page allows the user to configure the PX720 library to utilize an LDAP server. **LDAP** (Lightweight Directory Access Protocol) provides the ability to access and honor user logins and privileges that are managed in a centralized LDAP server.

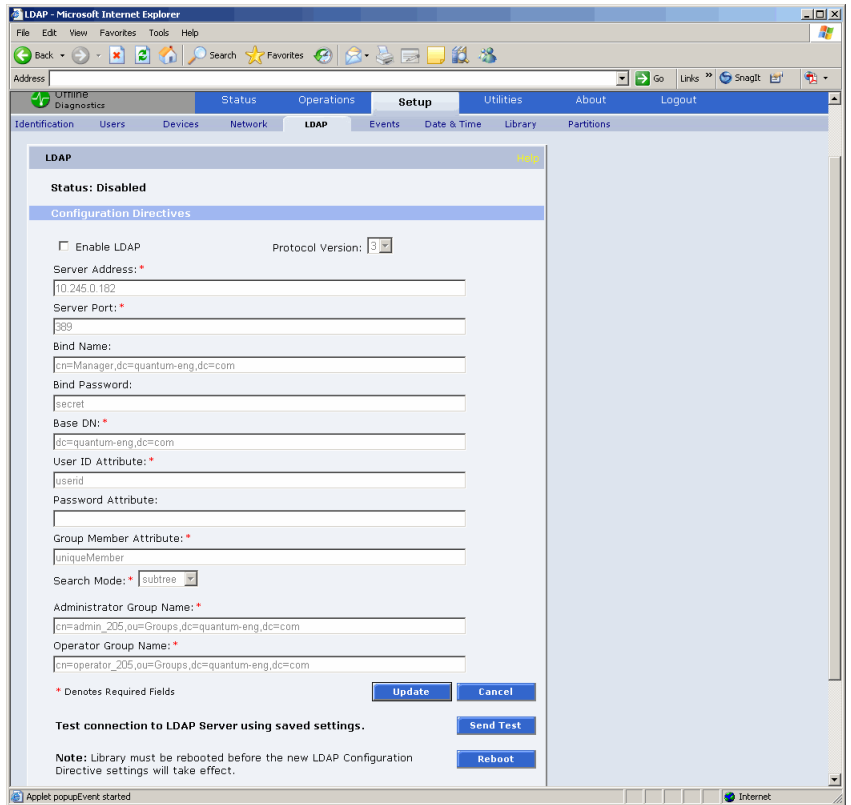
Note: The administrator of the LDAP server should be aware of the following items:

- An admin user must be a member of both the admin and operator user groups.
- The secure key administrator (see [Secure Users](#) on page 127) is only authenticated from the library and should not be defined on the LDAP server.

1 To access the **LDAP** page, from the **Setup** page, click on the **LDAP** tab at the top of the page.

The **LDAP** page displays (see [figure 81](#)).

Figure 81 LDAP Page



- 2 Edit the LDAP configuration information as desired (see [table 27](#) for a description of the fields).

Note: The local users database created in the **Users** setup tab and the LDAP users database created remotely on the LDAP server can be used at the same time.

Table 27 LDAP Configuration Information

Field	Description
Enable LDAP (checkbox)	Select the Enable LDAP checkbox to enable LDAP authentication.
Protocol Version	Select the LDAP version to use. LDAPv2 or LDAP v3. LDAP v3 is the default setting.

Field	Description
Server Address	Enter the LDAP server address. This address can be either an IP address or a host name.
Server Port	Enter the LDAP server port to be used. The default port is 389 .
Bind Name	Enter the name used to authenticate on the LDAP server.
Bind Password	Enter the password to authenticate on the LDAP server.
Base DN	Enter the base DN (Distinguished Name) used for all LDAP searches. Example: dc=quantum-eng,dc=com
User ID Attribute	Enter the attribute name that is used to compare with the supplied username. The default attribute is userid .
Password Attribute	Enter the attribute password used to compare with the supplied password. If your LDAP server contains encrypted passwords, this field must be blank.
Group Member Attribute	Enter the attribute name your LDAP servers uses to store the individual members of a group. The default attribute uniquemember which is used by Netscape's directory server.
Search Mode	Select the search mode to be used in LDAP searches. The choices are base , onelevel (default setting), or subtree . Mode Compare is equivalent to base and is included to allow backward compatibility. For more information, refer to your LDAP server documentation.
Administrator Group Name	Enter the administrator group DN to allow access to the system administrators's privileges.

Field	Description
Operator Group Name	Enter the operator group DN to allow access to the system operator's privileges.
Send Test	To test the LDAP server connectivity, click Send Test .

- 3 When you have completed entering the LDAP configuration information, click **Update**.
- 4 Click **Reboot** to reboot the library. The library must be rebooted before the new LDAP configuration settings will take effect.

Events

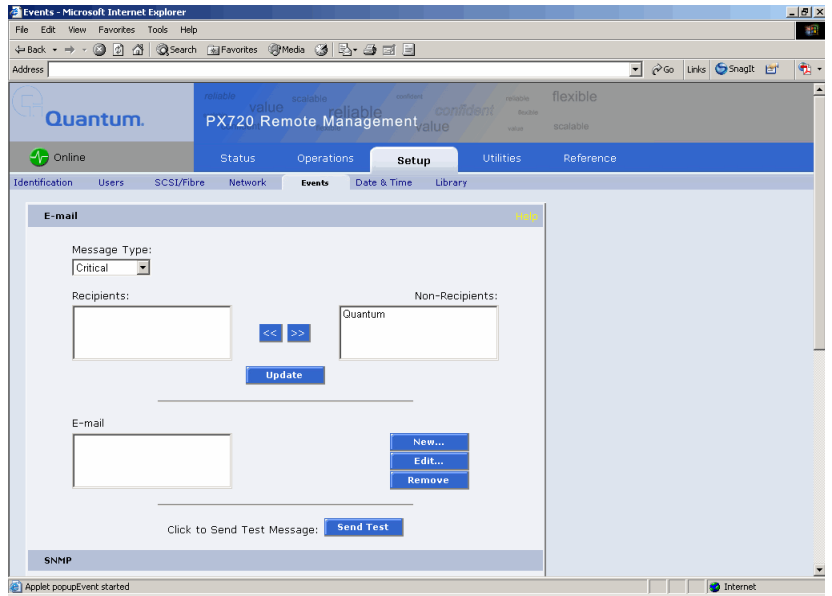
The **Events** page allows the user to designate what library events are emailed to users as well as setup SNMP traps.

Note: For a complete list of available library events, see [Appendix C](#) on page 210.

- 1 To access the **Events** page, from the **Setup** page, click on the **Events** tab at the top of the page.

The **Events** page displays (see [figure 82](#)).

Figure 82 Events Page



- 2 Edit the Email information as desired (see [table 28](#) for a description of the fields) and click **Update**.

Note: Only valid email addresses should be configured on the **Events** page.

- 3 After editing the Email information, click the **Send** button to test the notification system. If the test is not successful, verify the email server information and the administrative recipients list and try again.

The **Email** area details are shown in [table 28](#), [table 29](#), and [table 30](#).

Table 28 Email Notification

Field	Description
Message Type: Critical	When a hardware failure occurs on the Quantum PX720 system such as a transition to a degraded, limited access, or failed system state, an email is sent to everyone on the critical failure recipient list.

Field	Description
Message Type: Warning	When a warning state exists on the Quantum PX720 system such as an overtemp condition, an email is sent to everyone on the warning recipient list.
Message Type: Informational	When an informational event has occurred on the Quantum PX720 system such as starting up or shutting down the system, an email is sent to everyone on the operator access recipient list.
New	To add a new recipient to a specific list, type the email address of the new recipient in the field and click Save .
Edit	To edit a recipient, select the individual email address from the list and click Edit .
Remove	To remove an email notification type from the E-mail list, select the E-mail type and click Remove .

Table 29 Send Email Test

Field	Description
Send Test	To test the email notification system, click Send Test . An email is sent to the critical e-mail recipients list. If the test email is not successful, verify the email server information and the critical recipients list and try again.

SNMP

If the customer wishes to use the Quantum PX720 system with a network framework application such as HP OpenView, or CA Unicenter, the SNMP configuration must be defined. SNMP stands for Simple Network Management Protocol, a set of [protocols](#) for managing complex [networks](#). SNMP works by sending messages, called protocol data units (PDUs), to

different parts of a network. SNMP-compliant devices, called agents, store data about themselves in [Management Information Bases \(MIBs\)](#) and return this data to the SNMP requesters.

- 1 Under **Community Names** (see [figure 83](#)), click **New** to enter the new community information:
 - a A unique name in the **Name** field, the field holds up to 20 characters (a-z, A-Z), no special characters or blank spaces are allowed

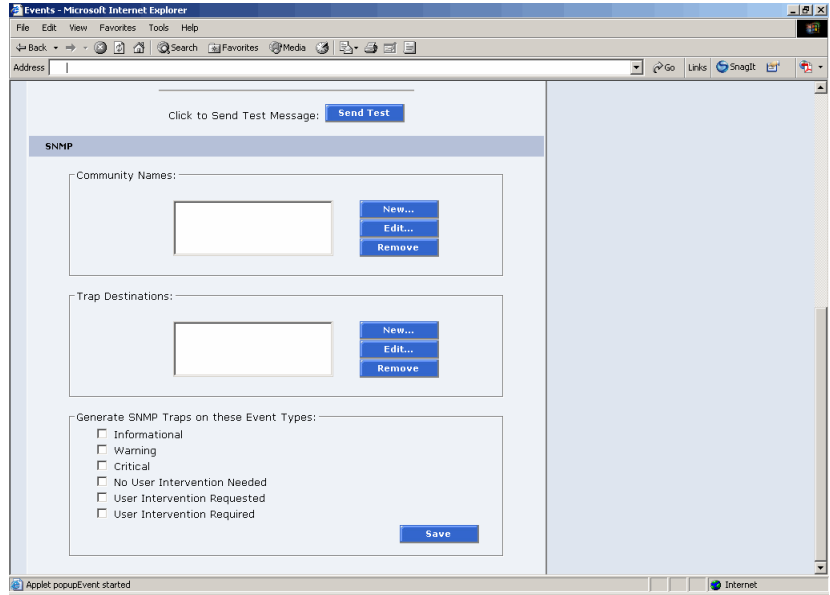
Caution: If no communities are defined, the Quantum PX720 is universally accessible through a “public” community (read-only).

- b IP address in the **IP Address** field, if the value in the Network Mask edit box ends in a zero, the value in the IP address edit box must also end in a zero
 - c Subnet mask in the **Network Mask** field

Note: A single community with an IP address or network mask set to 0.0.0.0, or left blank, indicates that IP-address-based access control is disabled.

- d Access rights for the new community:
 - **Read Only** allows SNMP **read** operations:
 - **Read/Write** allows both SNMP **read** and **write** operations
- 2 Click **Save**.
- 3 Click **New** in the Trap Destination area (see [figure 83](#)), to set the IP addresses that are to receive the traps generated by the Quantum PX720, for example, 12.34.56.78.

Figure 83 SNMP Section of Event Page



4 Enable the trap selections to be reported (see [table 30](#)):

Table 30 SNMP Trap Selections

Field	Description
Informational	If selected, Informational Traps are enabled.
Warning	If selected, Warning Traps are enabled.
Critical	If selected, Critical Traps are enabled.
No User Intervention Needed	If selected, a trap is generated whenever an event does NOT require user intervention.
User Intervention Requested	If selected, a trap is generated whenever an event requests user intervention.
User Intervention Required	If selected, a trap is generated whenever an event requires user intervention.

5 Click **Save**.

Date & Time

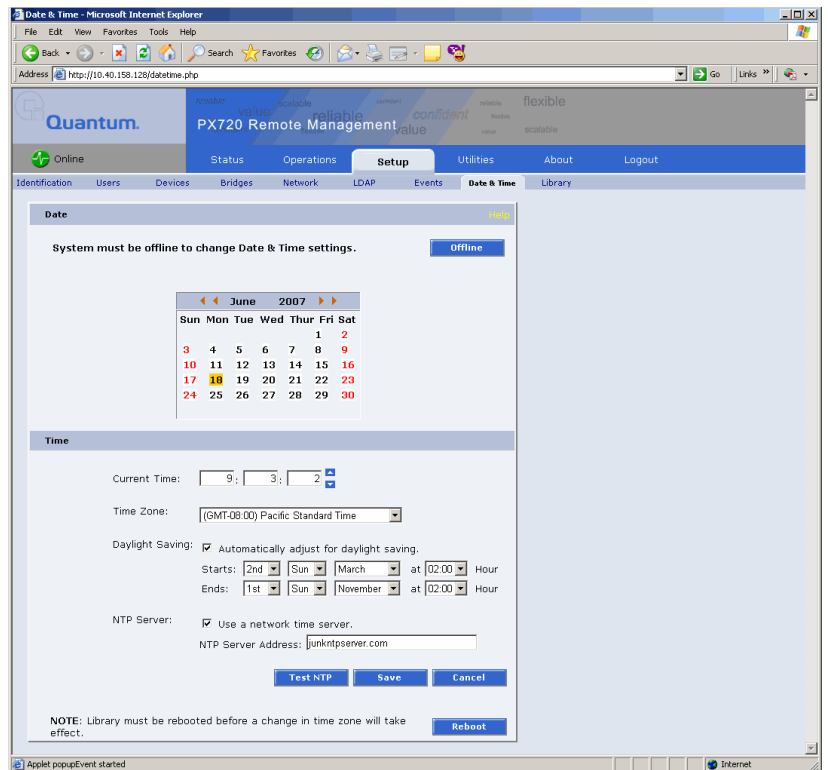
The date and time page allows the user to view and set the date and time on the library. This allows the library to time stamp any events that occur.

Note: The Quantum PX720 must be offline to adjust the time and date.

- 1 To access the **Date & Time** page, from the **Setup** page, click on the **Date & Time** tab at the top of the page.

The **Date & Time** page displays (see [figure 84](#)).

Figure 84 Date & Time Page



- 2 There are two options for setting the system date and time:

- a To manually set the system date, use the outer arrows at the top of the calendar to display the next or previous year and use the inner arrows to display the next or previous month. Click on the correct day within the calendar. To change the hour, minute,

and/or second values using the up and down arrows, click on the desired field, then click the up and down arrow to change the value by 1. Double-clicking will increment or decrement the value by 5. You may also type in a valid hour (0 - 23), minute (0-59), or second (0-59). Use the scroll list to select the correct time zone.

- b** To automatically adjust for daylight savings time, select the checkbox to automatically adjust for daylight savings time. You can customize the starting and ending period for **Daylight Saving Time** by using the appropriate pull-down options to set the start and end period.

Note: The default starting and ending times are automatically selected when changing time zone.

- c** Select **Use NTP** (Network Time Protocol) to synchronize the Quantum PX720 system clock with an outside time server. To set the date and time using a network server, select NTP server check box and enter an NTP server. Click **Test NTP** to verify the NTP Server.
- 3** Click **Save** when complete.

The Quantum PX720 will not use the new date and time zone information until it has been rebooted. The **Reboot** button is available at the bottom of the page.

Library

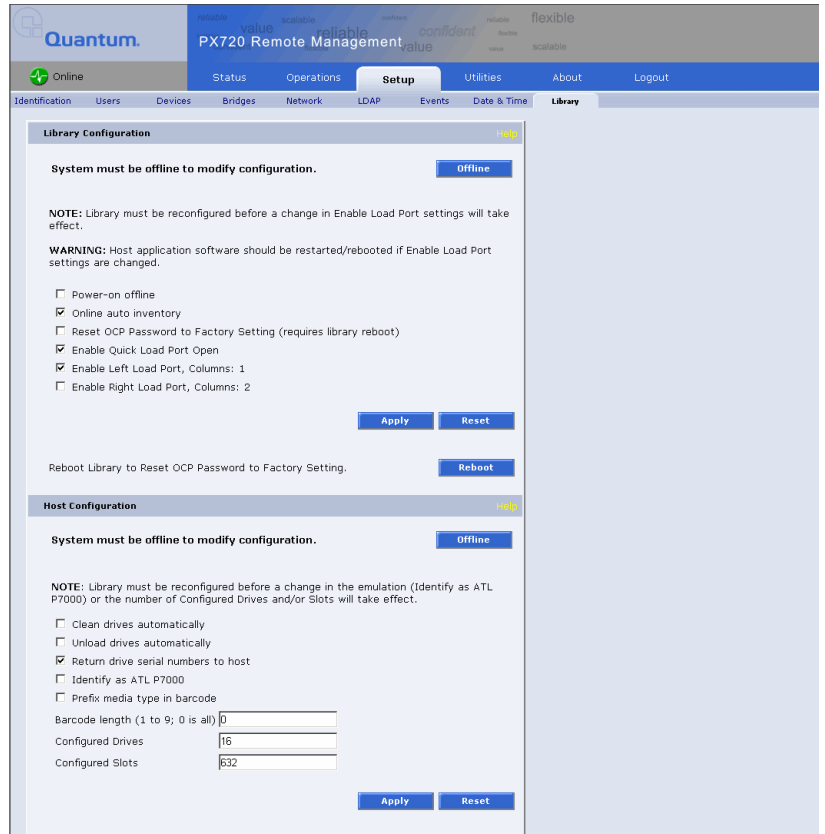
The library configuration section allows the user to configure automatic library settings.

Note: The library must be offline to change the library settings.

- 1** To access the **Library** page, from the **Setup** page, click on the **Library** tab at the top of the page.

The **Library** page displays (see [figure 85](#)).

Figure 85 Library Page



- 2 Edit the library settings (for each cabinet in a CLM configuration) as desired (see [table 31](#) and [table 32](#) for a description of the fields) and click **Apply**.

Note: If the partitioning option is enabled, the host configuration information appears on the partitions page (see [Partitions](#) on page 149).

Note: The **Activate** button displays at the top of the page after a setting that requires reconfiguration is applied.

Table 31 Library Configuration

Field	Description
Power-on Offline	When enabled, the library powers on in the offline mode.
Online auto inventory	When enabled, the library performs an inventory when the library is returned online.
Reset OCP Password to Factory Setting	When enabled, the password from the operator control panel will be reset to the original factory password which is 001122. Resetting the OCP password requires a library reboot (master library only in a CLM configuration).
Enable Quick Load Port Open	When the Quick Load Port Open button is enabled, the Ports button on the OCP is replaced with OpenPorts to enable a 1-button push to open all configured load ports. Note: The Quick Load Port Open button does not require system to be offline.
Enable Left Load Port/Right Load Port	When enabled, the Left Load Port/Right Load Port will act as load ports. When disabled, they will be used as regular slots. Changing the load port settings causes the library to automatically reconfigured when you click Apply . See Features and Benefits on page 17 for information on number of load port slots available.

Note: If partitioning is enabled, the fields in [table 32](#) are available from the Partitions page. Refer to [Partitions](#) on page 149 for more information on partitioning.

Table 32 Host Configuration

Field	Description
Clean drives automatically	When enabled, the tape drives will automatically load a cleaning cartridge and clean the tape drive.

Field	Description
Unload drives automatically	<p>When enabled, the library will automatically send an unload command to the drive prior to the application moving the cartridge back to a bin.</p> <p>Note: This option should be enabled if the application does not issue the unload command to the drive prior to sending the move command.</p>
Return drive serial numbers to host	<p>When enabled, the tape drive automatically returns the serial number for each tape drive to the host.</p>
Identify as ATL P7000	<p>When enabled, an identifier of ATL P7000 will be included in the inquiry message sent to the host. Changing the library identification requires activation.</p>
Prefix media type in barcode	<p>Enables/disables swapping media type prefix from the back of barcode to the beginning.</p>
Barcode length	<p>Configures the number of maximum characters of tape cartridge barcode label to return to the host; valid values are 1 through 9; 0 indicates to return all characters in the barcode.</p>
Configured Drives	<p>Only available in a NON-partitioned library. Enter the number of configured drives and click Apply. Click Activate to reconfigure the library with the new drive count. The default number of configured drives is the number of potential drive bays within the cabinet. This number may exceed the actual number of installed tape drives.</p>
Configured Slots	<p>Only available in a NON-partitioned library. Enter the number of configured slots and click Apply. Click Activate to reconfigure the library with the new slot count. This will be the number of slots available and reported to the host.</p>

3 Click **Reset** to return the library to its original settings.

Capacity Level

Capacity level is available in the library configuration area if the library has this option enabled from Quantum (see [figure 86](#)).

Figure 86 Capacity Level

The screenshot shows the 'Library Configuration' window. At the top right is a 'Help' link. Below the title bar, it states 'System must be offline.' with an 'Offline' button. There are three checkboxes: 'Power-on offline' (unchecked), 'Online auto inventory' (checked), and 'Reset OCP Password to Factory Setting (requires library reboot)' (unchecked). The 'Current Capacity' is set to 'Intermediate'. The 'Capacity Level' is a dropdown menu currently set to 'Full'. The 'Capacity Key' is a text input field containing '3070676616'. Below these fields are two notes: a 'NOTE' stating the library will be automatically reconfigured if capacity is increased, and a 'WARNING' stating host application software should be restarted/rebooted if capacity is increased. At the bottom right are 'Apply', 'Reset', and 'Reboot' buttons. At the bottom left, it says 'Reboot Library to Reset OCP Password to Factory Setting.' with a 'Reboot' button.

Enter the capacity level (Intermediate or Full) to enable in the option box and enter the Capacity Key to enable the slots. The Capacity Key is found either in an e-mail or letter from Quantum. Changing the capacity level causes the library to automatically reconfigured when you click **Apply**.

To add more capacity, please contact your Quantum Enterprise Storage Partner (reseller or VAR), your Quantum sales representative or Quantum Corporate at 1-800-677-6268 (or 949-856-7800 for international) or quantuminfo@quantum.com.

Partitions

Library partitioning provides the capability to divide the library's storage elements into separate partitions, usable by separate host computers on the same network.

Note: Library partitioning requires the optional *Quantum PX720 Library Partitioning Upgrade Kit* to be installed in your library. To add this upgrade kit, please contact your Quantum Enterprise Storage Partner (reseller or VAR), your Quantum sales representative or Quantum Corporate at 1-800-677-6268 (or 949-856-7800 for international) or quantuminfo@quantum.com. If this upgrade kit is not installed, the library partitioning pages are not available from the remote management pages.

The **Partitions** page is divided up into the following sections:

- [Partition Layout](#)
- [Creating a Library Partition](#)
- [Editing a Library Partition](#)
- [Deleting a Library Partition](#)

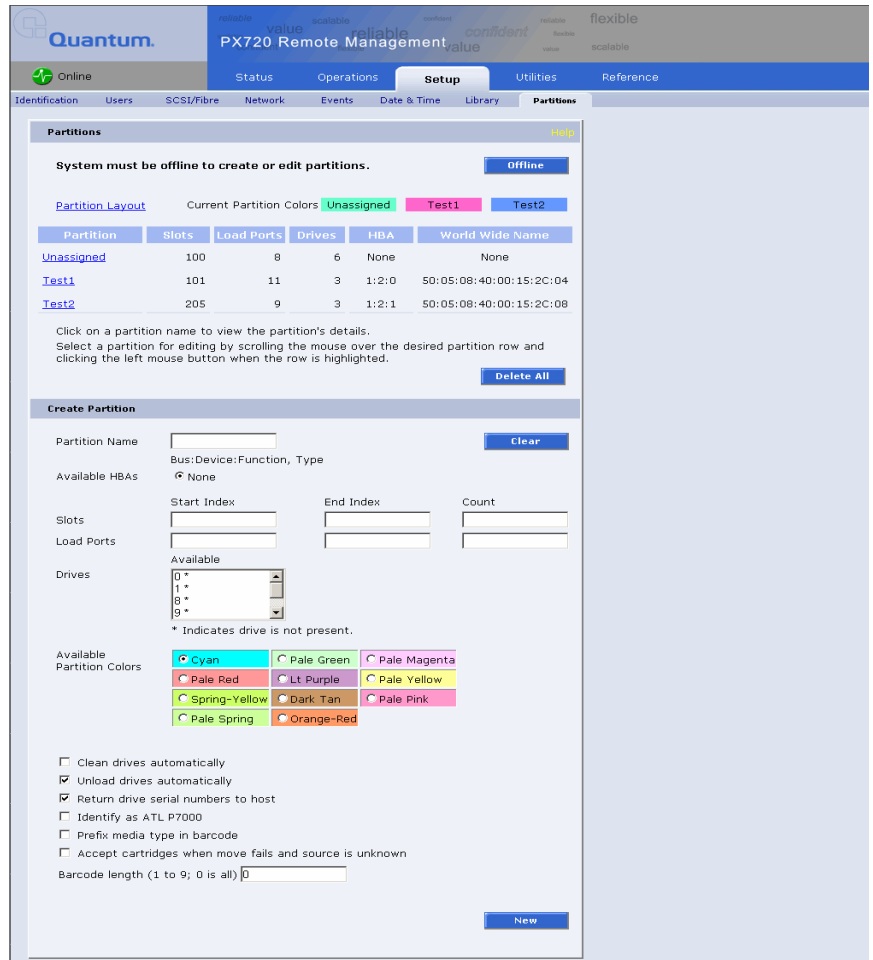
To access the **Partitions** page, from the **Setup** page, click on the **Partitions** tab at the top of the page.

The **Partitions** page displays (see [figure 87](#)).

Note: After creating, editing, or deleting a partition, an **Activate** button displays at the top of the page. Click **Activate** when ready to reconfigure the library.

Note: Library partitioning is not compatible with the cross link mechanism.

Figure 87 Partitions Page



The **Partitions** page contains a list of all user defined partitions and a section for either creating a partition or changing a partition's configuration and options. Newly created or edited partitions are designated by an *, and are not available for operations such as **Move**, **Inventory**, and **System Tests**. Partitions marked for deletion are designated with an X. Click **Update** to activate any changes.

Clicking on a partition name in the **Partition** list displays a detail window listing all details for the selected partition (see [figure 88](#)).

Figure 88 Partition Details

Detail View	
MIXED_LIB Partition Details	
Name	MIXED_LIB
IEEE	0050840100200034
State	Online
Slot Start Address (hex)	0x3000
Slot Start Physical Index	0
Total Slots	198
SDLT Slots	0
LTO Slots	198
Unknown Slot Count	0
Drive Start Address (hex)	0x1000
Drive Start Physical Index	2
Total Drives	5
SDLT Drives	4
LTO Drives	1
Unknown Drive Count	0
Load Port Start Address (hex)	0x2000
Load Port Start Physical Index	0
Total Load Ports	44
SDLT Load Ports	28
LTO Load Ports	16
Unknown Load Port Count	0
Type of Connection	scsipcihba
HBA number	0
No Barcode Label	true
Autoclean	disabled
Auto Unload	enabled
Serialization	enabled
Media Preference	disabled
Barcode Length	0
Autoclean State	idle
Drive Clean Attempts	0
Emulation	quantum
Configured Drives	5
Configured Slots	198
Fibre HBA Details	
SCSI Device	0
Device Type	hba
Target ID	0
Logical Unit Number	0
World Wide Name	50:05:08:40:00:15:2C:04
Vendor	QUANTUM
State	exist
Device ID	0x2312
Connection	fibre
PCI Bus	1
PCI Device	2
PCI Function	0

Partition Layout

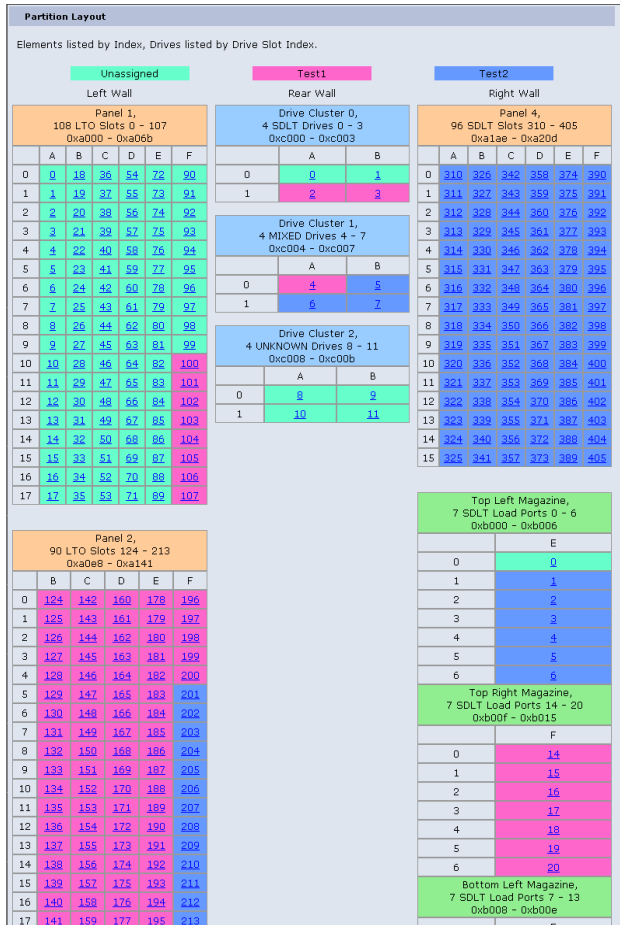
The partition layout displays a map of all elements within the library color coded to designate the partitions.

To view the partition layout, click the **Partition Layout** link.

Note: Use the **Partition Layout** link when creating or editing partitions. Click on any slot, port, or tape drive to open an element details window.

The **Partition Layout** screen displays (see [figure 89](#)).

Figure 89 Partition Layout



Creating a Library Partition

To create a library partition:

Note: The library must be offline to create or edit a library partition.

- 1 Enter the partition information listed in [table 33](#) and click **New** to create the partition.

Table 33 Creating a Partition

Field	Description
Partition Name	Enter a unique name for the partition. Partition names must start with a letter (a-z or A-Z), cannot be longer than 12 characters, and cannot contain spaces or special characters. The partition name cannot be changed once it has been activated. Library, Global, and Unassigned are reserved and cannot be used.
Available HBAs	Select an available HBA to act as the media changer for this partition.
Slot count	Enter the physical starting slot index and number of slots under count. A partition MUST contain at least one slot.
Load Port Count	Enter the physical starting load port index and number of load port slots under count.
Drives	Select a drive or drives from the available drives list. Use the <CTRL> and <SHIFT> keys to select multiple drives. A partition MUST contain at least one drive. Empty drives and slots may be selected.
Partition Color	Select a color from the color list to identify the new partition.
Clean Drives Automatically	Select this box to automatically clean the drives in the partition when needed.

Field	Description
Unload Drives Automatically	Select this box to automatically unload the tape drives in the partition when the backup job is complete.
Return Drive Serial Numbers to the Host	Select this box to return the tape drive serial numbers to the host connected to this partition.
Identify as ATL P7000	Select this box to return an ATL P7000 inquiry string to the host connected to this partition. The partition will appear to the host as an ALT P7000 tape library.
Prefix Media Type in Barcode	Select this box to move the media type prefix (LTO or SDLT) from the end of the barcode to the beginning of the barcode.
Accept Cartridges when Move Fails and Source is Unknown	Select this box to allow the media changer to place tape cartridges from an unknown source in the partition if a move has failed. Only one partition can have this setting active. This partition must have available elements (cartridge bins) within the partition.
Barcode Length	Set the Set the barcode length from 1-9 or 0 for all.

Editing a Library Partition

To edit a library partition:

Note: The library must be offline to create or edit a library partition.

- 1 Select the partition line under the **Partitions** section.

The area below the **Partitions** section displays the current partition settings.

Note: If this is the initial partitioning of the library after the partitioning upgrade has been added, select the default “library” partition and change the HBA assignment to 0. This allows all HBAs to be available for partitions.

- 2 Edit the partition information as desired (refer to [table 33](#)) and click **Update** to activate the changes.
- 3 Click **Clear** to clear the partition settings and return to [Creating a Library Partition](#).

Deleting a Library Partition

To delete a library partition:

- 1 Select the partition link under the **Partitions** section.
The area below the **Partitions** section displays the current partition settings.
- 2 Click **Delete** to mark the partition for deletion or click **Delete All Partitions** to mark all partitions for deletion. Partitions marked for deletion are still available for moves and inventory until you click **Activate**.
- 3 Click **Delete All** to mark all partitions for deletion. Partitions marked for deletion are still available for moves and inventory until you click **Activate**.

Secure Key

The **Secure Key** tab displays when a secure user has been added to the library and the secure user is logged in.

Caution: If the secure key information is lost, any tape cartridges that were secured with the lost key will be unavailable for reading or writing.

To access the **Secure Key** page, from the **Setup** page, click on the **Secure Key** tab at the top of the page.

The **Secure Key** page displays (see [figure 90](#)).

Figure 90 Secure Key Page

Quantum PX720 Remote Management

Secure Key

Protection Mode for Cartridges

System must be offline to Modify Secure Key Mode. [Offline](#)

Current Library Secure Key Name: None

When enabled for a drive, the Secure Key will always be used for reading data from a cartridge in the drive.

Protection Mode Options for Writing a Secure Key to a Cartridge:

- Never Write Secure Key to a Cartridge.
- Only Write Secure Key to Blank Cartridges.
- Write Secure Key to All Cartridges (Blank & Formatted with Data).

NOTE: If all Cartridges is selected, drives enabled for Secure Keys will write an encrypted secure key to all cartridges placed in the drive, including blank cartridges and formatted cartridges containing data. The data on these cartridges will only be accessible via drives using the same secure key.

[Apply](#)

Enable/Disable Secure Key for Drives

System must be offline to Enable/Disable Secure Key for Drives. [Offline](#)

- Enable Secure Key for All Drives.
- Disable Secure Key for All Drives.

Drive	Model	Type	Serial No.	Secure Key
8	DLT-54	Fibre	C10551AND00450	<input type="checkbox"/>

[Update](#)

Select Secure Key for Library

System must be offline to Select Secure Key. [Offline](#)

Current Library Secure Key Name: None

Secure Key Name, Date Created

None	
8f8e4ad6c, Thu Dec 8 14:03:30 2005	<input type="text"/>
8e9e9e9f1, Wed Dec 14 14:33:14 2005	<input type="text"/>
11111111, Fri Jan 13 09:01:23 2006	<input type="text"/>

[Update](#)

Assign Secure Key to Cartridge

Find Secured Cartridges [Find](#)

Assign a selected Secure Key to one or more cartridges (i.e. a cartridge imported from another system). Separate barcodes by spaces or commas. Selecting 'Remove' removes any association between a cartridge and a Secure Key.

Barcode:

Secure Key Name, Date Created

None	
8f8e4ad6c, Thu Dec 8 14:03:30 2005	<input type="text"/>
8e9e9e9f1, Wed Dec 14 14:33:14 2005	<input type="text"/>
11111111, Fri Jan 13 09:01:23 2006	<input type="text"/>

[Update](#)

Create Secure Key Name/Secure Key Pair

Secure Key Name:

Secure Key:

Verify Secure Key:

[New](#)

Delete Secure Key & Secure Key Name

WARNING: Deleting a Secure Key removes it from the system's memory. Any cartridges requiring this Secure Key will be unreadable on this system unless the Secure Key is restored. Backing up the Secure Key file is strongly recommended before deleting any Secure Keys.

Unused Keys:

Secure Key Name, Date Created

None	
8f8e4ad6c, Thu Dec 8 14:03:30 2005	<input type="text"/>
8e9e9e9f1, Wed Dec 14 14:33:14 2005	<input type="text"/>
mu22, Wed Jun 14 05:44:31 2006	<input type="text"/>

Inactive Keys:

Secure Key Name, Date Created

None	
11111111, Fri Jan 13 09:01:23 2006	<input type="text"/>
2222222, Wed Jan 18 05:26:39 2006	<input type="text"/>
3333333, Tue Jun 13 01:47:46 2006	<input type="text"/>

Active Keys:

Secure Key Name, Date Created

None	
------	--

[Delete](#)

Backup Secure Key File

NOTE: The Encryption Key of the file from the originating Library is required when restoring a Secure Key File to a different Library. Please keep the Secure Key File's associated Encryption Key in a secure, but accessible location.

Encryption Key:

Verify Encryption Key:

[Save As...](#)

Upload Secure Key File

Encryption Key (Required):

File Name: [Browse...](#)

[Upload](#)

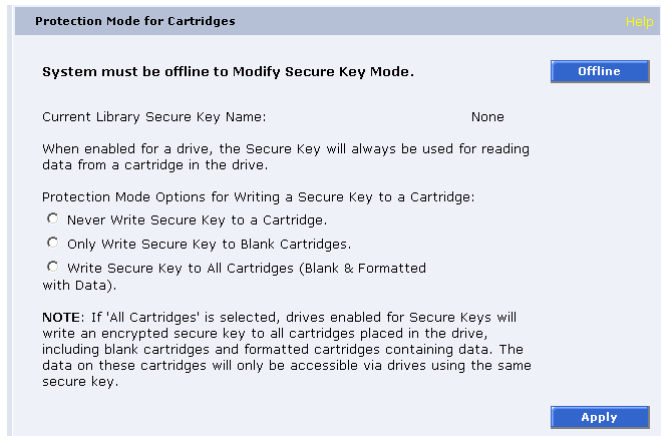
The Secure Key page is divided into the following sections:

- [Protection Mode for Cartridges](#)
- [Enable/Disable Secure Key for Drives](#)
- [Modify Secure Key for Library](#)
- [Assign Secure Key to Cartridge](#)
- [Create Secure Key Name/Secure Key Pair](#)
- [Delete Secure Key Name](#)
- [Backup Secure Key File](#)
- [Upload Secure Key File](#)

Protection Mode for Cartridges

Refer to [figure 91](#) for information on **Protection Mode for Cartridges**.

Figure 91 Protection Mode for Cartridges



The **Protection Mode for Cartridges** area defines when the secure key is used for a cartridge in a tape drive with a secure key enabled. In all modes, the secure key is used to read data from cartridges that have a pre-existing secure key. If the secure key on the cartridge does not match the current secure key on the library, the data on the cartridge can not be read.

Three write protection modes are available:

- **Never Write Secure Key to a Cartridge** - The secure key will never be written to a cartridge placed in a secured tape drive.
- **Only Write Secure Key to Blank Cartridges** - The secure key will only be written to blank, unformatted cartridges.
- **Write Secure Key to All Cartridges** - The secure key will be written to all cartridges, including blank and formatted cartridges containing data. This mode may be used to apply a secure key to cartridges with pre-existing data.

Enable/Disable Secure Key for Drives

Refer to [figure 92](#) for information on **Enable/Disable Secure Key for Drives**.

Figure 92 Enable/Disable Secure Key for Drives

Enable/Disable Secure Key for Drives

System must be offline to Enable/Disable Secure Key for Drives. Offline

Enable Secure Key for All Drives.
 Disable Secure Key for All Drives.

Cabinet	Drive	Model	Type	Serial No.	Secure Key
Cabinet 1	3	DLT-S4	Fibre	CX0544AMD00104	<input type="checkbox"/>

Update

The secure key can only be used with tape drives that are secure key capable. This section lists the tape drives in the library that are secure key capable. A checkmark in the **Secure Key** column indicates a secure key is enabled for the tape drive.

- 1 The secure key can be enabled or disabled for all tape drives by clicking the corresponding radio button.
- 2 Click the **Secure Key** check box for individual tape drives to enable/disable secure key for a tape drive.
- 3 Click **Update** to activate the changes.

Note: The system must be offline to Enable/Disable Secure Key setting for drives.

Modify Secure Key for Library

Refer to [figure 93](#) for information on **Modify Secure Key for Library**.

Figure 93 Modify Secure Key for Library

Select Secure Key for Library

System must be offline to Select Secure Key. Offline

Current Library Secure Key Name: None

Secure Key Name, Date Created

None
training1, Thu Jan 12 19:55:33 2006

Update

To modify the secure key used by the library:

- 1 Select the secure key name from the list of available names.

Note: Selecting **None** will cause the library to NOT use a secure key.

- 2 Click **Update**.

Note: The system must be offline to modify a secure key.

Assign Secure Key to Cartridge

Refer to [figure 94](#) for information on **Assign Secure Key to Cartridge**.

Figure 94 Assign Secure Key to Cartridge

Assign Secure Key to Cartridge

Find Secured Cartridges **Find**

Assigns a selected Secure Key to one or more cartridges (i.e. a cartridge imported from another system). Separate barcodes by spaces or commas. Selecting 'Remove' removes any association between a cartridge and a Secure Key.

Barcode

Secure Key Name, Date Created

Remove	training1, Thu Jan 12 19:55:33 2006
--------	-------------------------------------

Update

Click **Find** to list all secured cartridges and their assigned secure key names.

To assign a secure key to a cartridge:

- 1 Enter the barcode of the cartridge. Separate multiple barcodes with either spaces or commas.
- 2 Select a secure key name from the list of available names.
- 3 Selecting **Remove** will remove the association between the cartridge and a secure key name in the cartridge database.
- 4 Click **Update** to accept the changes.

Create Secure Key Name/Secure Key Pair

Refer to [figure 95](#) for information on **Create Secure Key Name/Secure Key Pair**.

Figure 95 Create Secure Key Name/Secure Key Pair

The screenshot shows a web form titled "Create Secure Key Name/Secure Key Pair". It contains three input fields: "Secure Key Name", "Secure Key", and "Verify Secure Key". A blue button labeled "New" is positioned in the bottom right corner of the form.

To create a secure key name/secure key pair:

- 1 Enter the **Secure Key Name**.

Note: The secure key name must be less than 12 characters, may include spaces, but cannot contain the following characters: () = ;

- 2 Enter a securekey in the protected **Secure Key** field.
- 3 Enter the same secure key in the **Verify Secure Key** field.

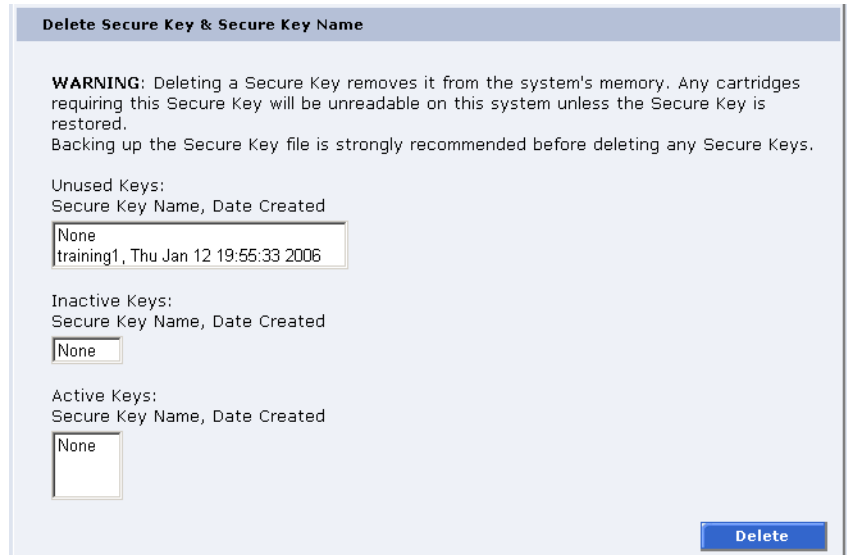
Note: The Secure Key must be at least 8 characters and no more than 32 characters.

- 4 Click **New** to create the secure key name/key pair.

Delete Secure Key Name

Refer to [figure 96](#) for information on **Delete Secure Key Name**.

Figure 96 Delete Secure Key Name



The **Secure Key Names** maintained on the library are displayed in one of three lists:

- **Unused Secure Keys** - keys not associated with any cartridges or tape drives currently in the system.
- **Inactive Secure Keys** - keys associated with cartridges in the library, or currently assigned to the library, but not assigned to any tape drives.
- **Active Secure Keys** - keys currently assigned to a tape drive.

To delete a **Secure Key Name/Secure Key** pair from the library:

- 1 Select the desired **Secure Key Names** from the available lists.
- 2 Click **Delete**.

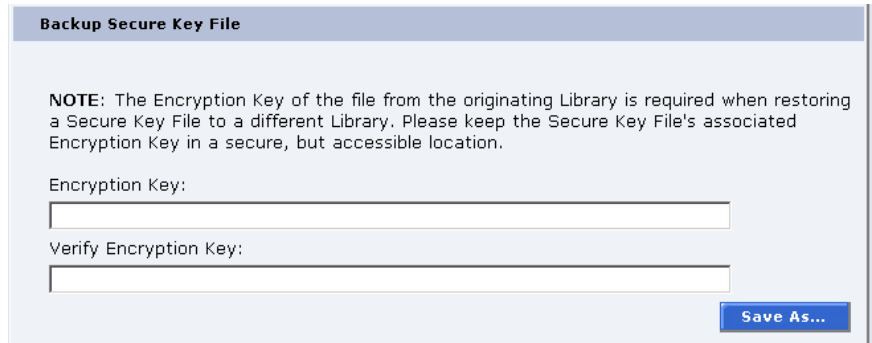
A confirmation message will be displayed, click **Yes** to continue.

Any tape drives that have been secure key enabled will remain enabled, but the secure key will not be used to read or write cartridges.

Backup Secure Key File

Refer to [figure 97](#) for information on **Backup Secure Key File**.

Figure 97 Backup Secure Key File



Backup Secure Key File

NOTE: The Encryption Key of the file from the originating Library is required when restoring a Secure Key File to a different Library. Please keep the Secure Key File's associated Encryption Key in a secure, but accessible location.

Encryption Key:

Verify Encryption Key:

[Save As...](#)

The list of **Secure Key Name/Secure Key Pairs** maintained on the library should be backed up to a local device whenever a change is made to the security keys.

Note: Note the library's **Encryption Key**. The **Encryption Key** is required when restoring the file to any library.

1 Enter and verify the **Encryption Key**.

The **Encryption Key** is required when restoring the backup secure key file to any library.

2 Click **Save As...**

The browser displays a download link.

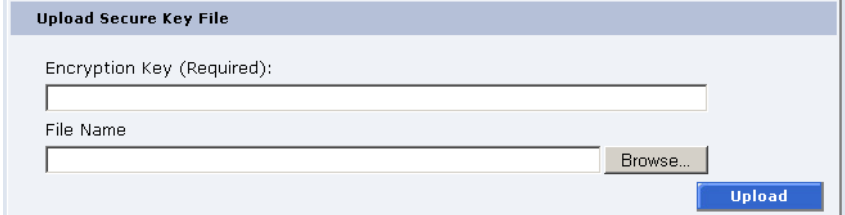
3 Right-click on the download link and select **Save As...** to select a path and name the file.

4 Click **OK**.

Upload Secure Key File

Refer to [figure 98](#) for information on **Upload Secure Key File**.

Figure 98 Upload Secure Key File



The screenshot shows a web form titled "Upload Secure Key File". It features two text input fields. The first is labeled "Encryption Key (Required):" and is empty. The second is labeled "File Name" and is also empty, with a "Browse..." button to its right. At the bottom right of the form is a blue "Upload" button.

A file containing a list of **Secure Key Name/Secure Key Pairs** can be restored to the library.

Note: The user defined encryption key of the library originally maintaining the list is required to restore the file.

To upload (restore) a **Secure Key File**:

- 1 Enter the encryption key of the original library.
- 2 Enter the path and file name of the file to be uploaded (click **Browse...**)
- 3 Click **Upload** button.

A progress window is displayed indicating when the upload is complete or if any errors occurred during the upload or restoration of the file.

The **Secure Key** page is refreshed listing restored secure keys.

Note: An error is displayed if the encryption key provided does not match the encryption key used to encode the secure keys.

Utilities

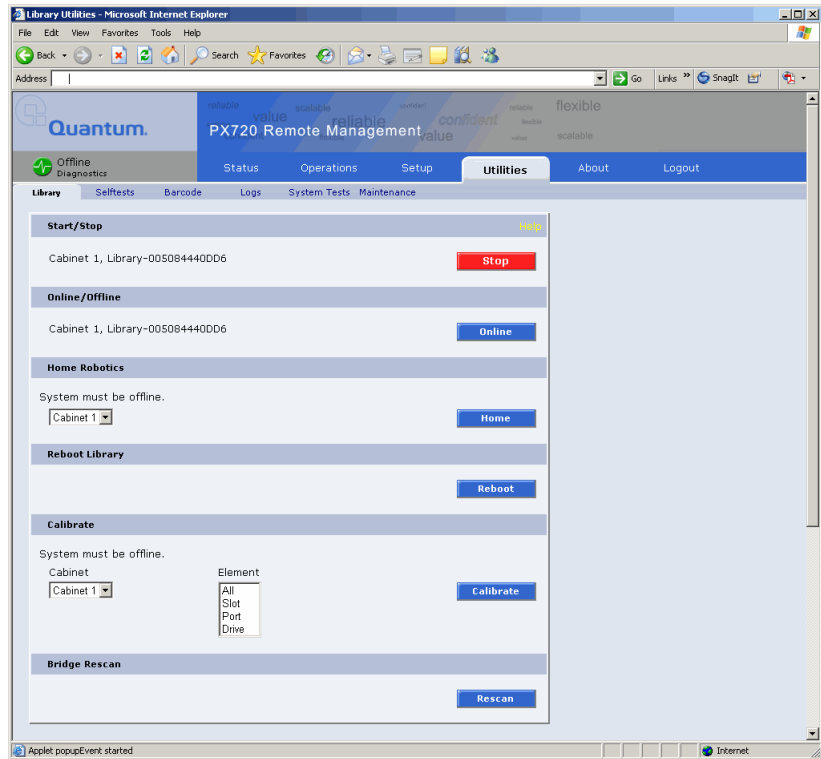
The **Utilities** page is divided into the following sections:

- [Library](#)
- [Selftests](#)
- [Barcode Tests](#)
- [Logs](#)
- [System Tests](#)
- [Maintenance](#)

To access the **Utilities** page, from the **Overview** page, click on the **Utilities** tab at the top of the page.

The **Utilities** page displays (see [figure 99](#)):

Figure 99 Utilities Page



Library

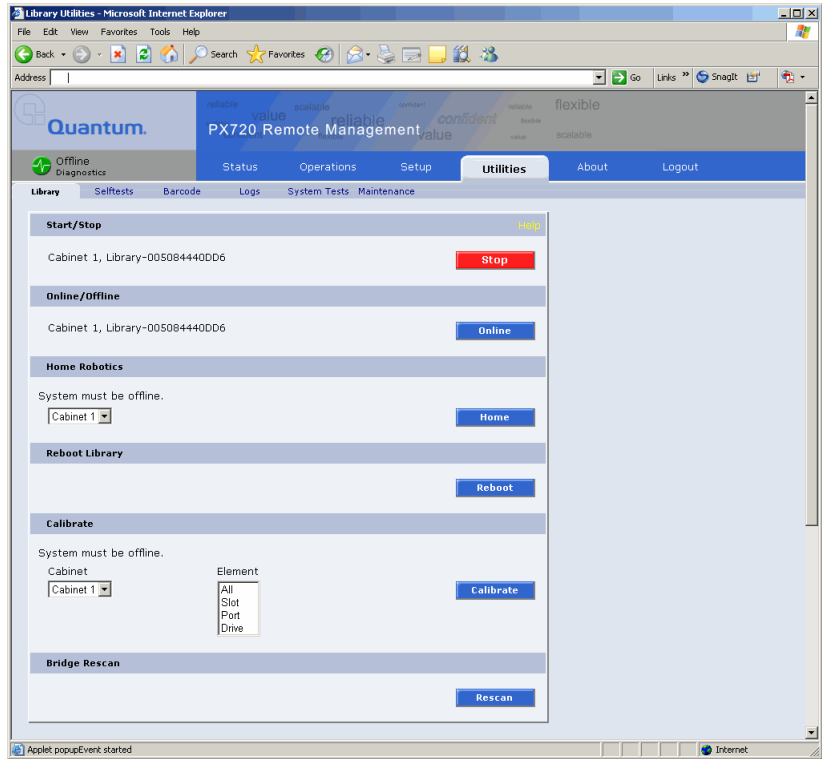
The library page is divided into the following sections:

- [Start/Stop Library](#)
- [Online/Offline](#)
- [Home Robotics](#)
- [Reboot Library](#)
- [Reboot CLM](#)
- [Remove Cabinet \(CLM Only\)](#)
- [Calibrate](#)
- [Fibre Channel Bridge Rescan](#)

To access the **Library** page, from the **Utilities** page, click on the **Library** tab at the top of the page.

The **Library** page displays (see [figure 100](#)):

Figure 100 Library Page



Start/Stop Library

The **Start/Stop Library** button allows the user to start or stop the cabinet remotely. The action displayed on the button depends on the current state of the cabinet. If the cabinet is running, a **Stop** button will be displayed. If the cabinet is in the stop state, a **Start** button will be displayed. If multiple libraries are attached, separate **Start/Stop** buttons display for every frame.

To start/stop the library:

- 1 Click the **Start/Stop** button to change the library state to start or stop.

Note: After clicking **Stop**, the robotics are disabled until you click the **Start** button.

Online/Offline

The **Online/Offline** button allows the user to turn the cabinet online or offline remotely. The action displayed on the button will depend on the current state of the library or cabinet. If the library (cabinet) is online, an **Offline** button will be displayed. If the library (cabinet) is in the offline state, an **Online** button will be displayed. If multiple libraries are attached, separate **Online/Offline** buttons display for every frame.

Note: If a CLM is installed in the library, you can change the online/offline state in the entire library configuration (multiple libraries) or in an individual library. Click the respective online/offline button to change the library state.

To change the library online/offline:

- 1 Click the button to change the library state to online or offline.
The library changes state to online or offline.

Home Robotics

The **Home** button homes all axis of the robot and moves the robot platform to the home position.

Note: The library must be off-line before homing the robotics.

Note: If a CLM is installed in the library, you can home the individual library robotics or the CLM robotics.

To home all robot axis:

- 1 Click **Home**.
The robot returns to the home position.

Reboot Library

The **Reboot Library** button allows you to remotely reboot the library.

To reboot the library:

1 Click Reboot.

The library reboots. The browser is redirected to a Rebooting page.

Reboot CLM

The **Reboot CLM** button allows you to remotely reboot the cross link mechanism (CLM).

Note: The **Reboot CLM** option is only available if a CLM is installed in the library.

To reboot the library:

1 Click Reboot.

The CLM reboots.

Note: As the CLM reboots, the CLM status transitions from **Not communicating** to OK. When the status is **OK**, the reboot is complete.

Remove Cabinet (CLM Only)

The **Remove Cabinet** button is only available if a CLM is installed. Both the CLM system and attached cabinet must be powered down for the **Remove Cabinet** button to display. When the cabinet has been physically removed from the CLM configuration, the **Remove Cabinet** option can be used to remove the cabinet from the remote management pages.

Calibrate

The calibrate utility allows the user to calibrate the following elements within the library:

- Cabinet – select the cabinet to calibrate.
- All – calibrates all elements within the cabinet
- Slot – calibrates the slots within the cabinet
- Port – calibrates the load ports within the cabinet

- Drive – calibrates the tape drives within the cabinet

Note: The library must be off-line before calibrating any element.

To calibrate an element within the cabinet:

- 1 Select the element to calibrate and click **Calibrate**.

The element calibrates.

Fibre Channel Bridge Rescan

The Fibre Channel bridge rescan button re-discovers any FC bridges installed in the cabinet. Details of the scan will be presented under **FC Bridge** tab.

To rescan Fibre Channel bridges installed in the cabinet:

- 1 Click **Rescan**.

The Fibre Channel bridges are scanned.

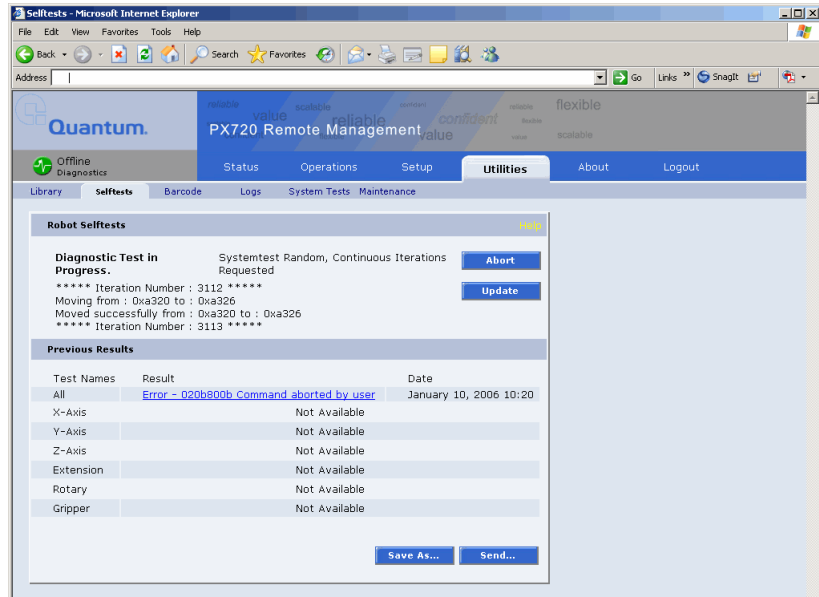
Selftests

The Selftest section allows the user to run a series of tests on individual cabinet axis.

- 1 To access the **Selftests** page, from the **Utilities** page, click on the **Selftests** tab at the top of the page.

The **Selftests** page displays (see [figure 101](#)).

Figure 101 Selftests Page



To run a selftest on a cabinet:

Note: The library must be off-line before executing any selftests.

Note: If a CLM is installed in the library, you run selftest on the entire system or individual libraries or CLM. Click the respective **Selftest** button run a selftest on an individual library.

- 1 Select the cabinet, type of test to run, and the number of time to run test.
- 2 Click the **Apply** button.

The system performs a selftest on the selected axis or motor. Previous test results can be viewed below. Click **Save As...** to save the selftest information to a local destination. Use the **Send...** button to email the selftest information to one or more recipients.

Barcode Tests

Barcode tests are used to test the integrity of the barcode reader on the CHM. The barcode reader is used to identify the following items:

- **Serial number** - unique number for every cabinet
- **IEEE ID** - Institute of Electrical and Electronics Engineers identification.
- **Library type** - PX720 or emulated P7000

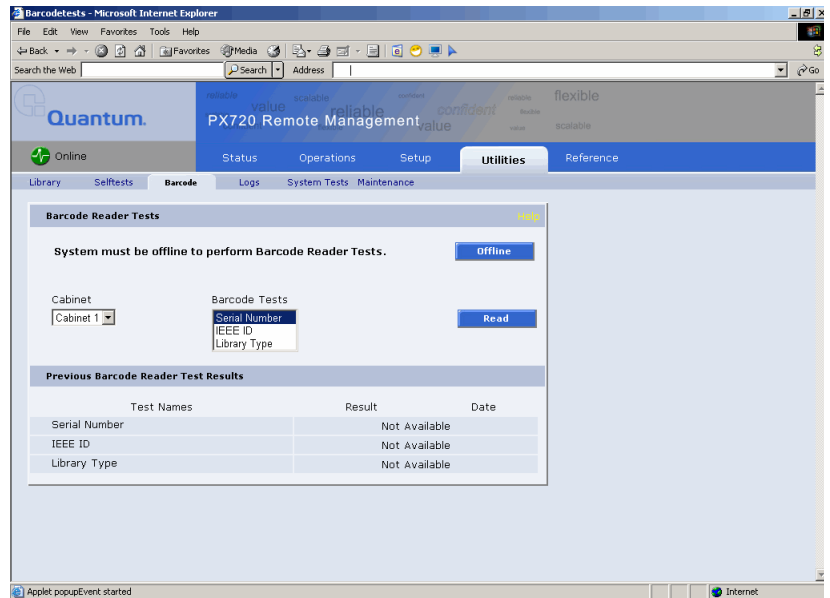
The barcode reader is also used to calibrate the robot's position during inventory.

Note: If a barcode test is in process (initiated by another remote browser), the input fields for system tests are replaced with “Barcode Test in Process.” The **Home** status page also displays this message.

- 1 To access the **Barcode Tests** page, from the **Utilities** page, click on the **Barcode Tests** tab at the top of the page.

The **Barcode Tests** page displays (see [figure 102](#)).

Figure 102 Barcode Tests Page



To perform a **Barcode Test**:

Note: The library must be offline to perform barcode tests.

- 1 Select a cabinet.
- 2 Select the type of test.
- 3 Click **Read**.

The results of the test are listed in the **Previous Barcode Reader Test Results** section. A **100 OK** at the end of the result indicates the test passed without errors. The test results may be downloaded to a workstation by clicking the test name in the list.

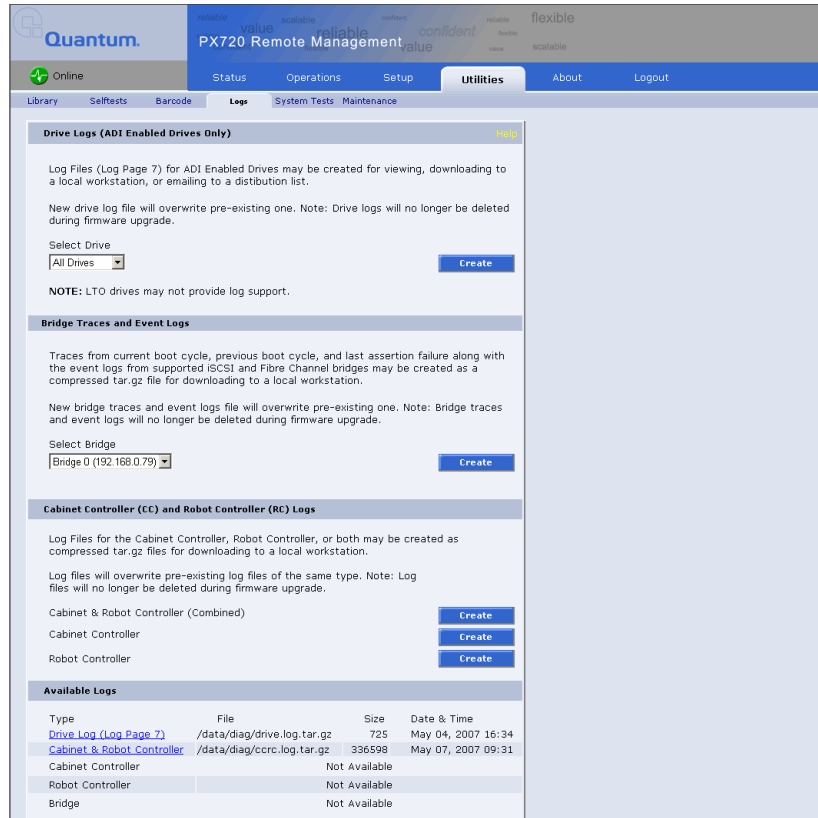
Logs

The **Logs** page allows you to retrieve diagnostic information from the PX720 library.

- 1 To access the **Logs** page, from the **Utilities** page, click on the **Logs** tab at the top of the page.

The **Logs** page displays (see [figure 103](#)).

Figure 103 Logs Page



There are three types of log files that can be retrieved from the PX720 library:

- [Tape Drive Logs \(ADI Enabled drives only\)](#)
- [Bridge Traces and Event Logs \(if bridges are present\)](#)
- [Cabinet/Robotic Controller Logs](#)
- [Available Logs](#)

Tape Drive Logs (ADI Enabled drives only)

Tape drive log files (Log Page 7) can be generated for ADI enabled tape drives. These logs are helpful for diagnostic purposes or for monitoring drive performance. After generating a tape drive log file, it is recommended that the file be saved to a local workstation with a unique

name which can be used later to identify the tape drive. Only the most recent tape drive log file is stored on the PX720 system.

Note: Selecting **All Drives** will create a compressed tar.gz file of all **ADI Enabled Drives** in the system. Individual **Drive Logs** will not be compressed and can be viewed immediately by clicking the **Drive Log** type in the **Available Logs** section.

To create a tape drive log file:

- 1 Select the individual tape drive or All from the **Drive** list and click **Create**.

The **Available Logs** area contains the compressed log files that are currently available, including the file type, name, size, and date and time the file was created. If a file exists, the type of file is displayed as a link.

- 2 Click on the file link to download the file to a local workstation.

Bridge Traces and Event Logs (if bridges are present)

Bridge Traces may be generated for any supported Fibre Channel bridges. These logs may be helpful for diagnostic purposes. After generating a bridge log file, it is recommended the file be saved to a local workstation with a unique name which can be used later to identify the bridge. Only the most recent bridge log file will be stored on the PX720 system.

To create a bridge trace log file:

- 1 Select the individual bridge or All from the **Bridge** list and click **Create**.

The **Available Logs** area contains the compressed log files that are currently available, including the file type, name, size, and date and time the file was created. If a file exists, the type of file is displayed as a link.

- 2 Click on the file link to download the file to a local workstation.

Cabinet/Robotic Controller Logs

The Cabinet Controller (CC) and Robotics Controller (RC) Log files contain large amounts of information and may be helpful for diagnostic purposes. CC and RC Log files may be created either individually or combined into one file. Have this information available prior to calling Customer Support.

When the files are created, they are automatically compressed into tar.gz files to save memory space. They can be downloaded to a local workstation where they can be uncompressed, emailed to service personnel, or saved for later use.

To create a log file:

Note: When a log file is created, the previous log files of the same type are overwritten.

- 1 Click **Create** for the CC and RC logs or for the individual Cabinet or Robot logs files.

The **Available Logs** area contains the compressed log files that are currently available, including the file type, name, size, and date and time the file was created. If a file exists, the type of file is displayed as a link.

- 2 Click on the file link to download the file to a local workstation.

Available Logs

The Available Logs section lists the log files that are currently available, including the file type, name, size, and date and time the file was created. If a file exists, the type of file is displayed as a link.

- 1 Click on the type of file (link) to download the file to a local workstation.

System Tests

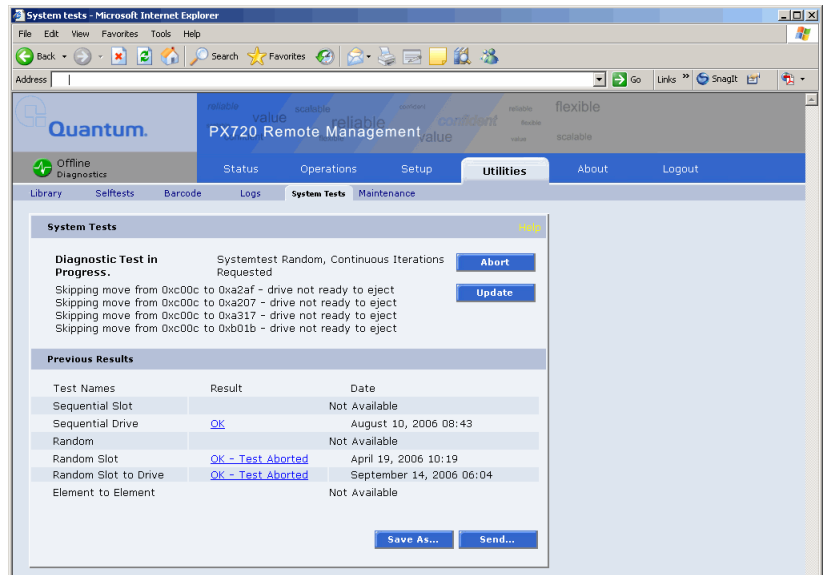
The system test section allows the user to run a series of tests on the library robotics and tape drives.

Note: If a system test is in process (initiated by another remote browser), the input fields for system tests are replaced with “System Test in Process.” The **Home** status page also displays this message.

- 1 To access the **System Tests** page, from the **Utilities** page, click on the **System Tests** tab at the top of the page.

The **System Tests** page displays (see [figure 104](#)).

Figure 104 System Tests Page



To run a system test on a cabinet:

Note: The library must be off-line before executing any system tests.

- 1 Select an action and a number of runs and click **Apply**.
 - a Select **Continuous** to continuously run the selected system test.
 - b Select **Perform Inventory** to perform an inventory of the library prior to running the system test.

The cabinet performs the system test. A progress window opens showing the progress of the system test. An **Abort** button is available to end the system test before it completes.

If you leave the runs field empty, the system test will run continuously until you abort the system test.

Previous test results can be viewed below. Click **Save As...** to save the system test information to a local destination. Use the **Send...** button to email the system test information to one or more recipients.

Maintenance

The maintenance section allows the user to backup or restore system configuration files as well as upload new cabinet firmware.

- 1 To access the **Maintenance** page, from the **Utilities** page, click on the **Maintenance** tab at the top of the page.

The **Maintenance** page displays (see [figure 105](#)).

Figure 105 Maintenance Page

Configuration Files

System must be offline to restore files. [Offline](#)

Action: Backup | File Type: All [Apply](#)

NOTE: After restoring from a backup file, the library must be rebooted before configuration changes will take effect.
NOTE: The Library will be automatically rebooted after resetting the Network factory setting or All factory settings. Resetting any other factory setting(s) will cause it to be automatically reconfigured. [Reboot](#)

Upgrade Library Firmware

System must be offline to upgrade firmware. [Offline](#)

WARNING: Upgrading firmware will reboot the library

File Name: [Browse...](#) [Upload](#)

Upgrade Drive Firmware

System must be offline to upgrade drive firmware. [Offline](#)

Drives may be unavailable for up to 30 minutes per drive while upgrading. Selecting multiple drives will cause drives to be upgraded one after the other. Do not select drives of different model and/or type to be upgraded with the same file. Drives will be reset after upgrade is complete.

Cabinet	Drive	Model	Type	Revision	Last Upgrade	Upgrade
3	0	SOLT600	SCSI	41		<input type="checkbox"/>

File Name: [Browse...](#) [Upload](#)

Upgrade Bridge Firmware

System must be offline to upgrade firmware. [Offline](#)

Bridge Refresh [Refresh](#)

Devices	IP Address	Model	Type	Serial No.	Revision	Upgrade
Bridge_0	192.168.19.78	FC470	FC-SCSI	3F42LV7138RS	5.6.19	<input type="checkbox"/>
Bridge_1	192.168.19.79	FC470	FC-SCSI	3F42LV7148U4	5.6.19	<input type="checkbox"/>
Bridge_2	192.168.19.99	HP e2400-160	FC-SCSI	9A34LV71H22K	5.6.19	<input type="checkbox"/>

File Name: [Browse...](#) [Upload](#)

NOTE: Bridge(s) will be unavailable until upgrade is complete.

The following maintenance functionality is supported:

- [Configuration Files](#)
- [Upload Library Firmware](#)
- [Upload Fibre Channel Bridge Firmware](#)
- [Upgrade Drive Firmware](#)

Configuration Files

Configuration files contain all of the configurable information on the library (see [table 34](#)). This configuration file should be saved on a local host on the same network. If the library configuration file is corrupted, this backup configuration file can be uploaded back to the library without reconfiguring the entire library.

Table 34 Configuration File Types

Configuration File Type	Description
All	Contains all user, network, and library configuration information. Use this file to replace all configurable options on the library.
User	Contains only the user configuration information (name, password, address, etc.). Use this configuration file to replace only the user information or to configure multiple libraries with the same user information.
Network	Contains only the network information (host name, IP address, etc.). Use this configuration file to replace only the network information or to configure multiple libraries with the same network information.
Library	Contains only the library configuration information (power-on offline, auto inventory, etc.). Use this configuration file to replace only the library information or to configure multiple libraries with the same library information.

- 1 Select **Backup** to save a configuration file to your computer. Select **Restore** to restore a configuration file from your computer to the library. Select **Factory** to restore the configuration file to the factory settings. Select file type and click on **Apply**.

Note: After restoring configuration files or factory default settings, the library must be rebooted.

Upload Library Firmware

The upload firmware section allows the user to remotely upload new firmware to the library.

Note: If a firmware upgrade is in process (initiated by another remote browser), the input fields for Upgrade Firmware are replaced with "Firmware Upgrade in Process." The **Home** status page also displays this message.

To upload firmware:

- 1 Enter a path and filename where the file exists, or click **Browse**.
- 2 Click **Upload** to upload the file.

The firmware image uploads to the library and reboots the library.

Upload Fibre Channel Bridge Firmware

Note: The Fibre Channel Bridge Firmware section is only available if and FC470 is installed in the library.

The upload Fibre Channel bridge firmware section allows the user to remotely upload new Fibre Channel bridge firmware to the library.

Note: If a Fibre Channel bridge firmware upgrade is in process (initiated by another remote browser), the input fields for Upgrade Firmware are replaced with "Fibre Channel Bridge Firmware Upgrade in Process." The **Home** status page also displays this message.

To upload Fibre Channel bridge firmware:

- 1 Select the **Upgrade** check box for each bridge to be updated.
- 2 Enter a path and filename where the file exists, or click **Browse**.
- 3 Click **Upload** to upload the file.

The firmware image uploads to the library and reboots the bridge. A progress window opens showing the current status of the firmware upgrade.

- 4 After all bridges have been upgraded, click **Refresh** to rediscover bridges and update the firmware revision.

Upgrade Drive Firmware

Note: The library must be offline to upgrade drive firmware.

The upload drive firmware section allows the user to remotely upload new drive firmware to the tape drive.

Note: Only ADI enabled tape drives can be updated remotely.

To upload tape drive firmware:

- 1 Enter a path and filename where the file exists, or click **Browse** to locate the file.
- 2 Select the tape drive(s) to upgrade with new firmware. The file to be uploaded must have a *img* extension.
- 3 Click **Upload** to upload the file.

After the file is uploaded, the drive(s) will be automatically upgraded and then reset.

Note: If multiple drives are selected, they must be of the same type (all SDLT or all LTO). The tape drive upgrade process takes approximately 30 minutes for each tape drive.

About

The **About** page contains the **About** page and **Links** page.

- 1 To access the **About** page, click on the **About** tab at the top of the page.

The **About** page displays the model number, software version, serial number, and slot/drive configuration. Cabinet and partition characteristics also display if the options are installed (see [figure 106](#)).

Figure 106 About Page

The screenshot shows the 'About' page of the Quantum PX720 Remote Management interface. The page is divided into three main sections:

- Library PX720 Information:**
 - Model: PX720
 - Software: Version, Build, Cabinet Controller Version, Cabinet Robot Version, VisionWare Build
 - Serial Number: FL0419AJB00293
 - IEEE ID: 0050843880120125
 - Slot/Drive Configuration Table:

	SDLT	LTO	Total	Unknown
Slots	284	348	632	0
Load Ports	0	16	16	0
Drives	3	7	16	6
- Cabinet 1 Shrek, Warning, Online, Physical Information:**
 - Robot Firmware Version: CabRobot.5.55.01
 - Serial Number: FL0419AJB00293
 - IEEE ID: 0050843880120125
 - Cluster FPGA: Cluster 0, 1, 2, 3 : Rev 5; Cluster 4, 5 : Not Present or Powered Off
 - Slot/Drive Configuration Table:

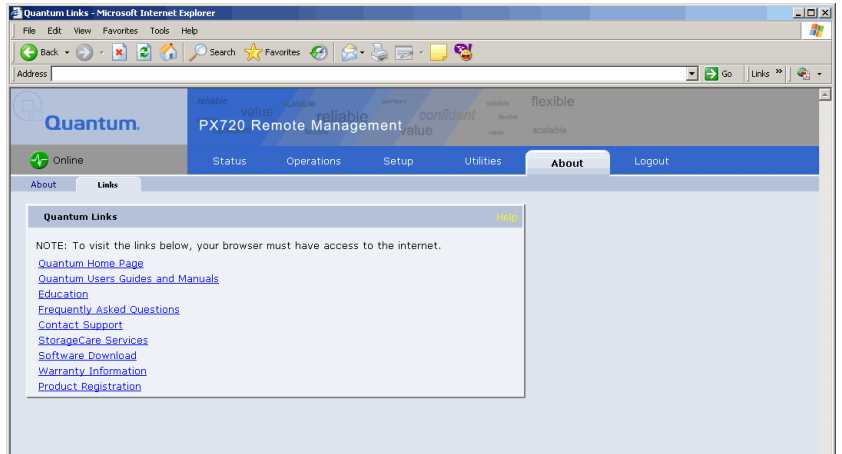
	SDLT	LTO	Total	Unknown
Slots	284	348	632	0
Load Ports	0	16	16	0
Drives	3	7	16	6
- Library Partition, Logical Information:**
 - Serial Number: FL0419AJB00293
 - Slot/Drive Configuration Table:

	SDLT	LTO	Total	Unknown
Slots	284	348	632	0
Load Ports	0	16	16	0
Drives	3	7	16	6

- 2 To access the **Links** page, click **Links**.

The **Links** page displays (see [figure 107](#)).

Figure 107 Links Page



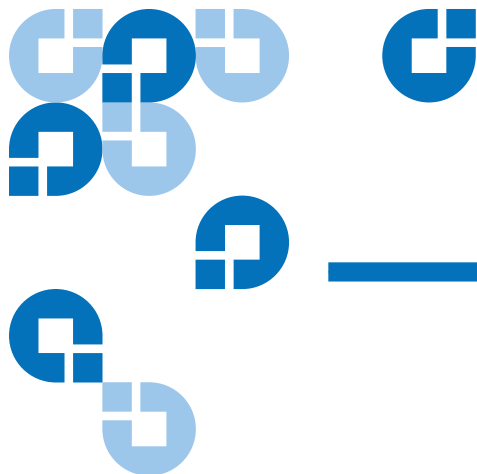
The links on this page provide access to various points of interest which may be helpful in the operation and support of your library. Your browser must have access to the internet for these links to operate.

Logout

The **Logout** page allows you to logout of the PX720 remote management pages.

To logout of the library remote management pages, click **Logout**.

The browser closes.



Chapter 4

Troubleshooting

This chapter describes problems you may encounter during the setup and operation of the Quantum PX720. Corrective information is provided to help you resolve the problems.

Several of these problems produce error messages on the OCP called *sense data values*. Sense data value messages consist of a number and a description of the error.

Common Problems and Solutions

The troubleshooting information in this section covers the following topics:

- [Start-up Problems](#)
- [OCP Problems](#)
- [Robotics Problems](#)
- [Operating Problems](#)
- [Tape Drive LED Conditions](#)

Start-up Problems

[Table 35](#) describes corrective actions for problems which occur during start-up.

Table 35 Start-up Problems

Problem	Corrective Action
The library does not power on.	Make sure the power cord is connected to a grounded electrical outlet, the power distribution assembly (left rear corner of cabinet) circuit breaker is on, and the power switch behind the service tray is on.
The library or tape drives do not respond on the SCSI bus.	Make sure each SCSI device on the same SCSI bus has a unique address and the last device is properly terminated.
During initialization, the library reports "not ready."	Determine the failure type by checking any previous error codes returned to the host computer. Correct the cause of the error.
One or more tape drives fail to spin up during start-up.	Check all SCSI cabling and termination behind the center rear access door. If necessary, contact your field service representative about replacing the drives.
Internal Communication Error	Communication error between the robot controller and cabinet controller has been lost. Reboot the library. If the problem continues, contact an authorized Quantum field service engineer.
Tape drive cluster is not recognized after cluster was powered off and then back on.	Turn both switches on the tape drive cluster power supplies off and wait a minimum of 15 minutes. After 15 minutes, turn the power supply switches back on. The tape drive cluster should be recognized. If the problem continues, contact an authorized Quantum field service engineer.
The master library OCP in a multiple cabinet environment does not display "Master".	The libraries in a multiple cabinet environment can take up to 5 minutes to initialize and display "Master" on the OCP. If the problem continues, contact an authorized Quantum field service engineer.

OCP Problems

[Table 36](#) describes corrective actions for OCP problems.

Table 36 OCP Problems

Problem	Corrective Action
The OCP is blank.	Confirm that power is on, then contact an authorized Quantum field service engineer.
The OCP does not respond to buttons.	Contact an authorized Quantum field service engineer.
An error message is displayed.	Write down the details of the error message, including the SK, ASC, and ASCQ numeric values. Press Ok to clear the message.

Robotics Problems

[Table 37](#) describes corrective actions for robotics problems.

Table 37 Robotics Problems

Problem	Corrective Action
The robot does not move at power up.	Make sure that all internal packing materials (foam pads and tie wraps) have been removed. Check the library state on the OCP or remote management pages. If Door Open is displayed, make sure the front door is closed. If Stop is displayed, press Start .
The gripper partially grips a tape cartridge.	Issue a Move Cartridge command to move the cartridge from the gripper to an empty storage slot from the remote management pages only.
The barcode reader on the gripper fails.	Verify that nothing obstructs the reader. Then, restart the library. If the problem continues, contact an authorized Quantum field service engineer.

Problem	Corrective Action
The robot times out or fails during an operation.	<p>Check that the tape cartridge involved in the operation is properly positioned in the slot or drive and ready to be picked.</p> <p>Check that the robot is not obstructed in any way.</p> <p>Retry the operation. If it still fails, contact a field service engineer.</p>
The robot drops a cartridge.	<p>Open the doors.</p> <p>Retrieve the cartridge, orient it properly, and place the cartridge in an empty storage slot. (Do not try to place the cartridge in the gripper.)</p> <p>Perform an inventory (see Inventory Page on page 118).</p> <p>If the operator manually places a cartridge in an empty slot, he must then run an inventory so the library records the position of the manually placed cartridge.</p>

Operating Problems

[Table 38](#) describes the corrective action for problems which occur during library operation.

Table 38 Problems During Library Operation

Problem	Corrective Action
The host computer cannot communicate with the library.	<p>This may be a SCSI bus time-out or a premature disconnect problem.</p> <p>Check cable connections, cable length, SCSI addresses, and termination.</p> <p>Restart the host and the library.</p> <p>If the host and library still are not communicating, contact an authorized Quantum field service engineer.</p>

Problem	Corrective Action
A cable or terminator is disconnected from the SCSI bulkhead.	Reconnect the cable or terminator according to the guidelines found in the cabling section in of this guide.
A tape cartridge (medium) is reported not present.	<p>This indicates that the gripper could not sense a tape cartridge in a particular storage slot even though the inventory reports that it is present.</p> <p>Check to see if the designated cartridge is present. If it is, make sure it is properly seated. (For a tape drive, make sure the cartridge is completely unloaded.) Then retry the command.</p> <p>If the error persists, contact an authorized Quantum field service engineer.</p>
A move command failed.	<p>Check the source and destination slots. The source slot should hold the cartridge to be moved; the destination slot should be empty.</p> <p>Make sure the gripper is empty and all actuators are free of obstruction.</p> <p>Also, make sure the library is on-line and the Stop button is displayed. If using the remote management pages, the library must be off-line.</p> <p>Retry the command.</p>
A flash memory error is reported.	Contact an authorized Quantum field service engineer.
A maximum temperature exceeded warning is displayed.	<p>Turn off the library and allow it to cool down. Lower the room temperature, if possible, and increase ventilation around the library.</p> <p>(If the operating temperature is too high, the library will automatically shut down until the temperature drops.)</p>

Problem	Corrective Action
A drive cluster has been removed, but the tape drives are still show present on the OCP and remote management present.	If a tape drive cluster has been removed, you must replace it with a back wall bin panel. To add back wall bin panel upgrade kit, please contact your Quantum Enterprise Storage Partner (reseller or VAR), your Quantum sales representative or Quantum Corporate at 1-800-677-6268 (or 949-856-7800 for international) or quantuminfo@quantum.com.

Tape Drive LED Conditions

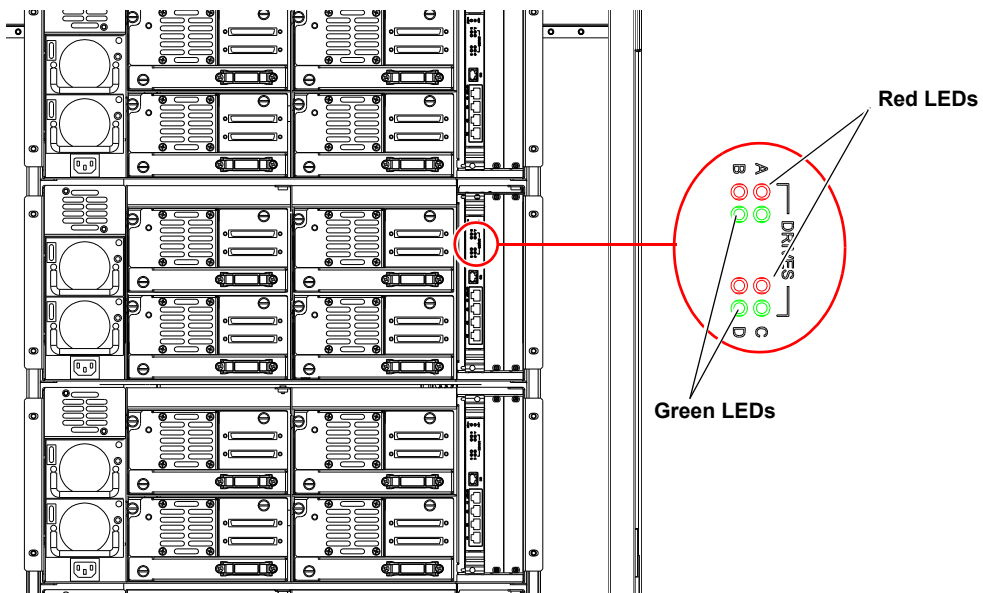
These actions are to be performed based on the LED displays on the cluster controller located on the right-hand side of the tape drive clusters. The tape drive clusters are viewed from the back of the library. [Table 39](#) and [figure 108](#) show the diagnostic table of tape drive conditions as indicated by the two LEDs on the cluster controller.

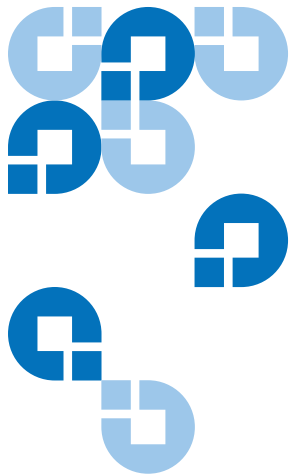
Table 39 Tape Drive LED Conditions (SDLT and LTO)

Red LED	Green LED	Condition	Action
ON	ON	Reserved	Contact an authorized Quantum field service engineer
ON	Flashing	Reserved	Contact an authorized Quantum field service engineer
ON	OFF	Drive power fail (detected by firmware)	Reset the tape drive power from the OCP. If the LED reappears, contact an authorized Quantum field service engineer
OFF	ON	Good	No action
OFF	Flashing	Reserved	Contact an authorized Quantum field service engineer.

Red LED	Green LED	Condition	Action
OFF	OFF	No power to tape drive interface board	Ensure that: <ul style="list-style-type: none"> • Be sure that the library power is ON. • Check library configuration on the GUI to see if the library is configured with the correct number of drives. • If the condition persists, call an authorized Quantum field service engineer.
Flashing	ON	Drive unhealthy (detected by firmware). Detects hardware errors in DLT and SDLT drives. It also detects the absence of a tape cartridge; and in DLT and SDLT drives, the drive is not ready to accept a new cartridge. In LTO drives, this condition is a warning of a snapped tape.	Contact an authorized Quantum field service engineer.
Flashing	Flashing	Drive inserted (under hardware control, upon the first firmware command, the LEDs will turn off and obey the firmware command).	This condition should terminate shortly after the library is turned ON. If the condition persists, call an authorized Quantum field service engineer.
Flashing	OFF	Microbridge incompatibility (under hardware control).	Contact an authorized Quantum field service engineer.

Figure 108 Tape Drive LEDs





Library Specifications

This appendix lists characteristics and specifications of the Quantum PX720. These characteristics and specifications are categorized as follows:

- [Physical Characteristics](#)
- [Performance and Reliability Characteristics](#)
- [Environmental Specifications](#)

Note: For tape drive specifications see the appropriate tape drive product manual.

Physical Characteristics

[Table 40](#) provides dimensions and other physical characteristics of the library unit.

Table 40 Physical Characteristics

Quantum PX720 Dimensions and Weight	
Width	30 in. (76 cm), packaged: 48 in. (122 cm)
Depth	50 in. (127 cm), packaged: 56 in. (142 cm)
Footprint	30 x 50 in. (76 x 127 cm), packaged: 48 x 56 in. (122 x 142 cm)
Height	75 in. (191 cm), packaged: 82 in. (208 cm)
Weight	Library: 910 lbs. (413 kg), packaged 1075 lbs. (487.6 kg) Drives: 8 lbs. (3.63 kg) each Cartridges: 7.7 oz. (.218 kg) each
Tape Drives and Cartridges	
Tape Drives, Max. No.	Up to 20 tape drives
Cartridges, Max. No.	0-648 SDLT tapes/732 LTO-2 tapes

Table 41 Interfaces

Host to Library Interfaces	
Software	SCSI-2 medium changer command set
Power Input	
Power cord	1 or 2 standard US, IEC 320 C19 female connector rated at 125VAC (NEMA 5-20 P connector included)
Host to Tape Drive Interface	
Software	SCSI-2

Performance and Reliability Characteristics

[Table 42](#) and [table 43](#) list performance and reliability characteristics of the library.

Table 42 Performance Characteristics

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

Table 43 Reliability Characteristics

MTBF	250,000 power-on hours
MSBF	3 million load/unload cycles
MTTR	Less than 30 minutes

Environmental Specifications

[Table 44](#) provides various library environmental specifications.

Table 44 Environmental Specifications

Power Environment		
Electrical inputs	Voltage	200 VAC to 240 VAC
	Rated Frequency	50/60Hz
	Rated Current	9A
	Power consumption	VA max 1600W

	Electrical connection to power	IEC 320 C19 male connector inside back door
Climatic Environment		
Temperature (operating)	Dry Bulb	15°C to 32°C (59°F to 90°F)
	Wet bulb	25°C (77°F) maximum
	Thermal transition	11°C (19.8°F) per hour
Temperature (shipping and storage)	Dry bulb	-40°C to 66°C (-40°F to 151°F)
	Wet bulb	46°C (115°F) maximum
	Thermal transition	30°C (86°F) per hour
Relative humidity	Operating	20% to 80%, non-condensing
	Shipping and storage	5% to 95%, non-condensing
Altitude	Operating	Sea Level to 10,000 ft. (3,048 m)
	Shipping and storage	Sea Level to 12,000 ft. (3,658 m)
Heat dissipation	Operating	5500 BTU/hr (1386KCal/hr or 1612 watts)
Direct ESD	Contact discharge	@ 2, 4, 6, 8 kV to all external metal panels and doors
	Air discharge	@ 2, 4, 6, 8, 10, 12, 15kV to the front OCP display
Indirect ESD	Contact discharge	@ 2, 4, 6, 8kV to the VCP
Radiated fields per IEC-801-3	Unmodulated	27MHz to 500MHz@ 3 V/m
Fast transients (EFT or Burst) per IEC801-4	Data cables	@ 0.5kV
	Power cables	@ 1kV

Sound power level	Operating	8.10Bel
	Idle	7.83Bel
Sound pressure @ bystander	Operating	63db

Table 45 Electromagnetic Interference/ Electromagnetic Compatibility

Electromagnetic Interference/ Electromagnetic Compatibility

RF Emissions per CISPR 22 (FCC) EN55022 (European Union) VCCI (Japan) AS/NZS 3548 (Australia/ New Zealand) CNS13438 (Taiwan)	Conductive Emissions 150kHz - 5MHz 5MHz - 30MHz	Legal Limits: 66dBuV, Class A 60dBuV, Class A
RF Emissions per CISPR 22 (FCC) EN55022 (European Union) VCCI (Japan) AS/NZS 3548 (Australia/ New Zealand) CNS13438 (Taiwan)	Radiated Emissions 30MHz - 230MHz 230MHz - 1000MHz 1GHz - 10GHz	Legal Limits: 40dBuV/m, Class A 47dBuV/m, Class A 60dBuV/m, Class A
RF Emissions per CFR47, Part 15 (FCC)	Radiated Emissions 1GHz - 10GHz	Legal Limits 60dBuV/m, Class A (3 meters)

Electromagnetic Interference/ Electromagnetic Compatibility

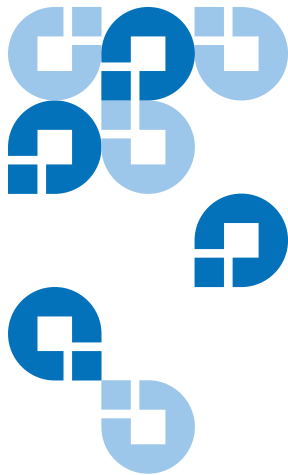
<p>ESD per EN55024 (European Union, Limits) EN61000-4-2 (Test Procedure)</p>	<p>Contact Discharge (External Conductive surfaces) Air Discharge (External Non-Conductive surfaces) Indirect Discharge (Vertical Coupling Plane)</p>	<p>Legal Limits: $\pm 2\text{kV}$, $\pm 4\text{kV}$ Quantum Limits: $\pm 6\text{kV}$, $\pm 8\text{kV}$ Legal Limits: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 6\text{kV}$, $\pm 8\text{kV}$ Quantum Limits: $\pm 10\text{kV}$, $\pm 12.5\text{kV}$, $\pm 15\text{kV}$ Legal Limits: $\pm 2\text{kV}$, $\pm 4\text{kV}$ Quantum Limits: $\pm 6\text{kV}$, $\pm 8\text{kV}$</p>
<p>RF Radiated Fields per EN55024 (European Union, Limits) EN61000-4-3 (Test Procedure)</p>	<p>Radiated Fields 80MHz - 1000MHz</p>	<p>Legal Limits: 3V/m, 80% AM Modulation Quantum Limits 10V/m, 80% AM Modulation</p>

Electromagnetic Interference/ Electromagnetic Compatibility

<p>Electrical Fast Transient (EFT) per EN55024 (European Union, Limits) EN61000-4-4 (Test Procedure)</p>	<p>Power Line Coupling</p> <p>External Data Lines</p>	<p>Legal Limits: $\pm 1\text{kV}$ (5/50ns, 5kHz rep.)</p> <p>Quantum Limits $\pm 4\text{kV}$ (5/50ns, 5kHz rep.)</p> <p>Legal Limits: $\pm 0.5\text{kV}$ (5/50ns, 5kHz rep.)</p> <p>Quantum Limits $\pm 2\text{kV}$ (5/50ns, 5kHz rep.)</p>
<p>Surge per EN55024 (European Union, Limits) EN61000-4-5 (Test Procedure)</p>	<p>Power Line Coupling</p>	<p>Legal Limits: 3Vrms, 80% AM Modulation</p> <p>Quantum Limits 10V/m, 80% AM Modulation</p> <p>Legal Limits: 3Vrms, 80% AM Modulation</p> <p>Quantum Limits 10V/m, 80% AM Modulation</p>

Electromagnetic Interference/ Electromagnetic Compatibility

<p>RF Conductive Fields per EN55024 (European Union, Limits) EN61000-4-6 (Test Procedure)</p>	<p>Power Line Coupling 150kHz- 80MHz</p> <p>External Data Lines 150kHz- 80MHz</p>	<p>Legal Limits: 3Vrms, 80% AM Modulation</p> <p>Quantum Limits 10V/m, 80% AM Modulation</p> <p>Legal Limits: 3Vrms, 80% AM Modulation</p> <p>Quantum Limits 10V/m, 80% AM Modulation</p>
<p>Power Frequency Susceptibility per EN55024 (European Union, Limits) EN61000-4-8 (Test Procedure)</p>	<p>H-Field @ 50Hz</p>	<p>Legal Limits: 1A/m (3 Axis)</p> <p>Quantum Limits 3A/m (3 Axis)</p>
<p>Voltage Dips & Interruptions per EN55024 (European Union, Limits) EN61000-4-11 (Test Procedure)</p>	<p>Power Line Coupling</p>	<p>Legal Limits: 0V for 0.5 cycle (10ms) 70% for 0.5 seconds (500ms) 0V for 5 seconds</p>
<p>Harmonic Current Emissions per EN61000-3-2</p>	<p>Harmonic Emissions 100Hz - 2000Hz (Up to 40th Harmonic)</p>	<p>Legal Limits: Class A Limit per Specification</p>
<p>Voltage Flicker per EN61000-3-3</p>	<p>Power Line Coupling</p>	<p>Legal Limits: per Specification</p>



Relocating the Library

Caution: Quantum highly recommends that a Quantum authorized service representative relocate a Quantum PX720 to another location.

This appendix explains how to relocate the Quantum PX720. As used in this appendix, the term *relocate* means either to ship the library or simply to move it to a nearby location (for example, from one area in a building to another).

The instructions in this appendix are divided into the following sections:

- [Checking the New Installation Site](#)
- [Preparing the Library for Relocation](#)
- [Crating the Library](#)
- [Preparing the Library for Operation](#)

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

To move the library to a new location within the same building or facility, follow all instructions in this appendix except for those found in [Crating the Library](#) on page 206.

Note: These procedures require the original packing materials of the library. If you do not have the original packing materials, contact the Quantum Customer Support Department.

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

Checking the New Installation Site

Check the new installation site for the library using the guidelines found in the *Quantum PX720 Pre-Installation Site Survey Instructions*. Make sure the new location meets all applicable clearance, environmental, and power requirements.

Preparing the Library for Relocation

To prepare the library for relocation:

- Removing tape cartridges
- Installing internal packing materials
- Disconnecting library cables

Caution: Always prepare the library for relocation before any move.

Removing Tape Cartridges

To remove tape cartridges:

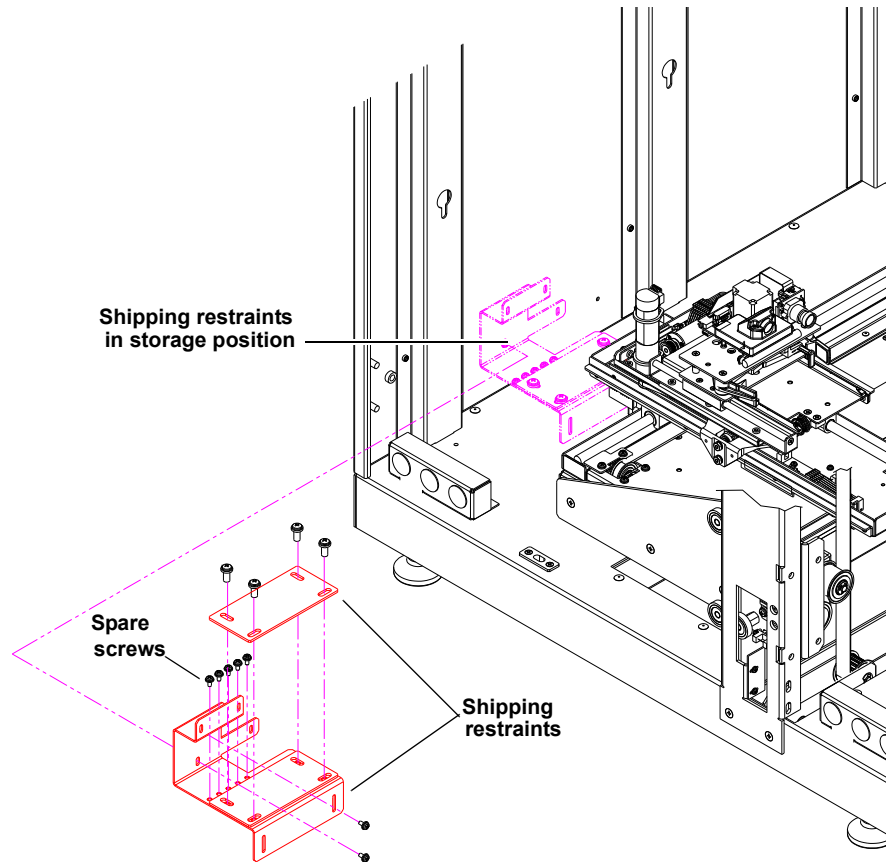
- 1 Unload all tape cartridges from the tape drives.
- 2 Stop all library operation.
 - a Press **Stop** on the OCP. This places the library off-line after the completion of any currently executing operations.
 - b Turn the library off.
- 3 Unlock and open both front doors.
- 4 Remove all tape cartridges from the library slots.
- 5 Carefully pack all tapes for shipment.

Installing Shipping Restraints and Packing

To install internal shipping restraints:

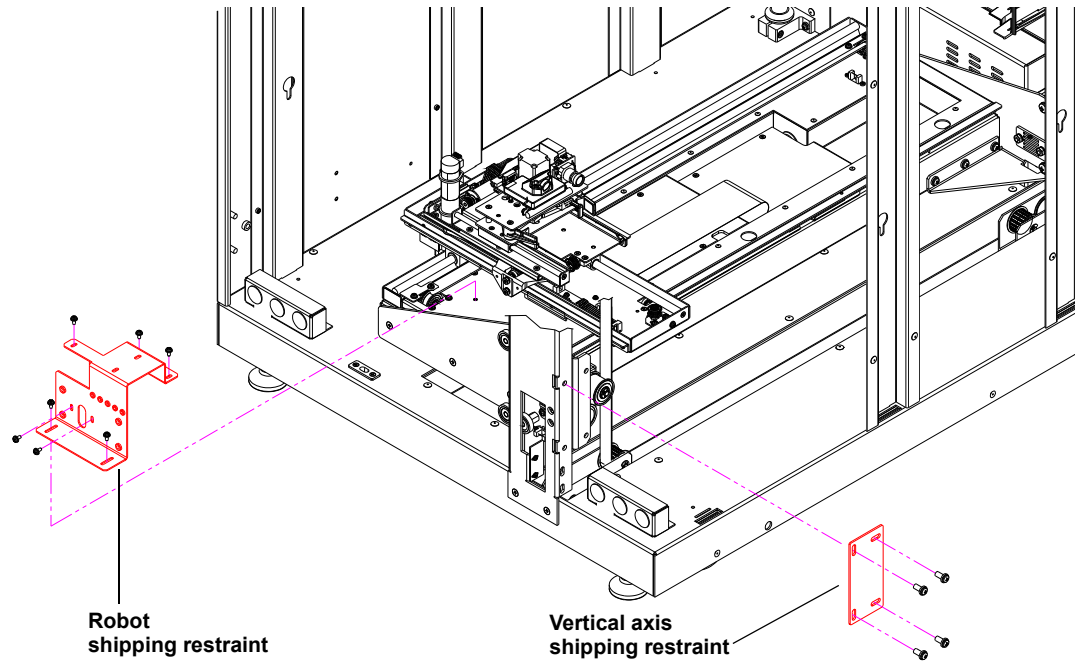
- 1 Remove the robot shipping restraints from their storage location under the left cartridge slot panel (see [figure 109](#)).

Figure 109 Shipping Restraints
- Storage Location



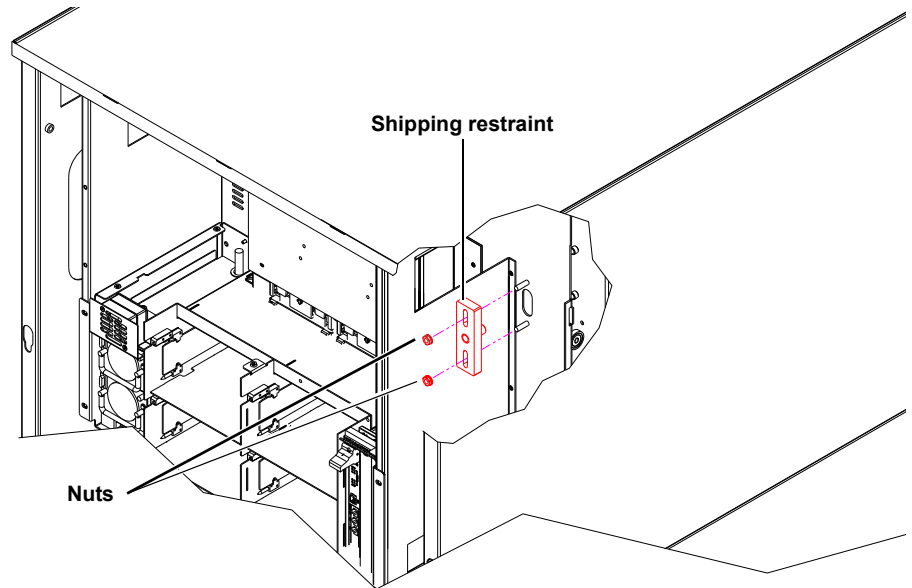
- 2 If the cartridge handling mechanism (CHM) is not in the far right position, gently move it along the horizontal carriage until it is as far front as possible.
- 3 Install the robotic shipping restraints as shown in [figure 110](#).

Figure 110 Installing the
Robotic Shipping Restraint



- 4 Open the back library door and install the counterweight as shown in [figure 111](#).

Figure 111 Installing the Counterweight



Disconnecting Library Cables

To disconnect library cables:

- 1 Disconnect SCSI cables and terminators, Fibre Channel, and Ethernet cables.
- 2 Disconnect the power cord from the outlet and the power distribution assembly of the library.
- 3 Pack all cables with other library accessories.

Crating the Library

Use this section:

- If you need to ship the library to the new site.
- If you need to transport the library by forklift or similar means.

If you are moving the library within a facility, refer to [Preparing the Library for Operation](#) on page 209.

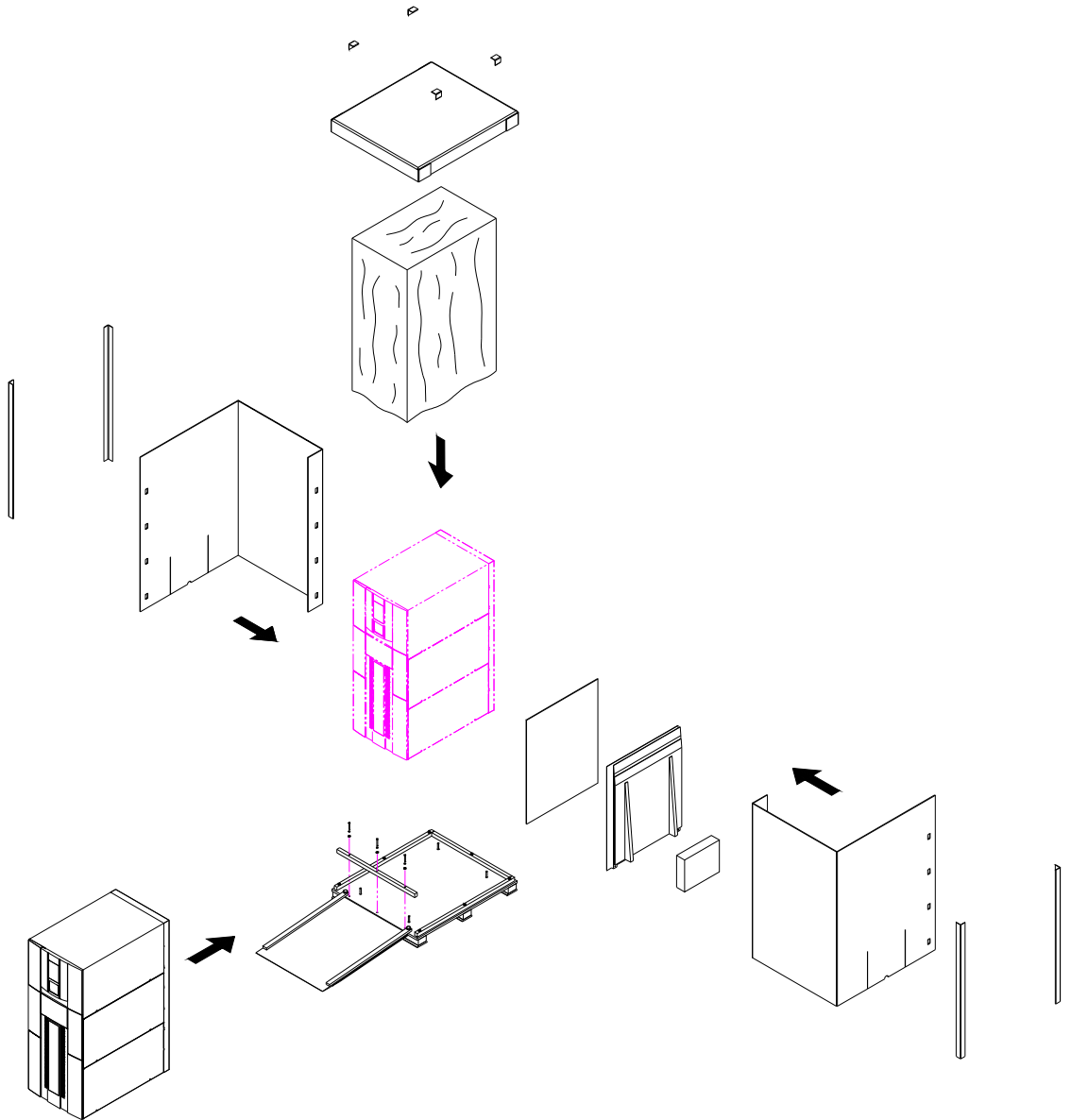
Crating the Library

To crate the library for a new site:

Warning: The library weighs approximately 1350 pounds (612 kg). Use at least two people to perform any steps that involve lifting or guiding the library. Use safe practices when lifting or guiding the library and handling the ramp.

- 1 Prepare the shipping pallet for the library by attaching the ramp to the pallet [figure 112](#).
- 2 Place the library on the pallet
 - a Raise the library support feet.
 - b With the help of at least one person, roll the library to a position in front of the pallet ramp.
 - c Roll the library onto the pallet.
- 3 Secure the library.
 - a Place the shipping bag over the library, and secure it into place.
 - b Use the four shipping bolts to secure the library to the pallet.
 - c Remove the ramp from the pallet and slide and lean it against the side of the library with a cardboard sheet between the library and the ramp.
- 4 Place the accessory kits onto the pallet.
- 5 Place the foam cap over the library.
- 6 Wrap the cardboard crate around the library (see [figure 112](#)) and fasten it using the plastic restraining clips.
- 7 Place the top onto the crate.
- 8 Secure the crate with two steel restraining bands.

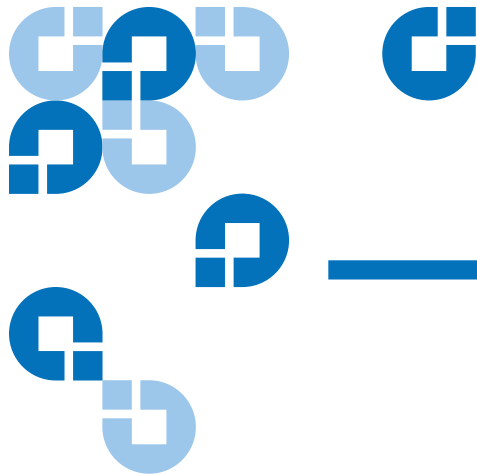
Figure 112 Crating the Library



Preparing the Library for Operation

After shipping or moving the library, refer to the *Quantum PX720 Pre-Installation Site Survey Instructions* and the *Quantum PX720 Unpacking Instructions* to:

- Prepare the new installation site
- Receive the library
- Uncrate the library (required in shipping the library)
- Position the library
- Prepare the library for operation



Appendix C

Event Reporting

The Quantum PX720 is capable of reporting a variety of events that occur within the cabinet. These events are either report through the OCP and remote GUI or through e-mail alerts.

Quantum PX720 Events are broken up into the following sections:

- [Information Events](#)
- [Warning Events](#)
- [Critical Events](#)

Information Events

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

[Table 46](#) lists the information events provided by the PX720.

Table 46 Information Events

Information Events
SCSI event
Abort SCSI command
Invalid CDB received
Added new user
Updated user
Removed user
Added new SNMP community
Updated SNMP community
Removed SNMP community
Added new trap destination
Updated trap destination
Removed trap destination
Updated date and time
Updated IP address
Updated subnet mask
Updated hostname
Updated domain
Updated default gateway
Updated email server
Updated DNS address
Library Name changed
Library shutdown requested from remote GUI
Library reboot requested from remote GUI
Contract number updated

Information Events

Upload configuration file complete

Upgrade firmware complete

OCP Password Reset

Updated Subnet Mask

Updated Default Gateway

Updated IP address

Bad status received for cabinet controller command

Upload firmware file complete

Library option * modified

Begin LoadPort unload

End LoadPort unload

Library shutdown requested from OCP

Library reboot requested from OCP

HP Interface Manager Present

Library Database Factory Settings Restored

Library Vendor Defaulted to Quantum

System Test Started

System Test Completed

System Test Aborted

Library reboot/shutdown via hardware switch

Library reboot/shutdown via hardware switch

Web admin account changed

Web admin account created

Information Events

* indicates a variable character. This will change depending on the specific item within the cabinet.

Warning Events

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

[Table 47](#) lists the warning events provided by the PX720.

Table 47 Warning Events

Warning Events

No mond connection

No HBAs found

Upgrade firmware failed, please reboot library

Upload firmware file failed

Upload configuration file failed

Upload firmware image file failed

LoadPort unload not completed

Event Monitor Connection Failure

Event Monitor Connection Lost

No Matching Frame Name Found

Software Communication Failure

No data read for event

Warning Events

No Matching Frame Name Found

OCP Unable to change http port forwarding

Restore Library Database Factory Settings Failed

Diagnostic Test stopped due to OCP communication error

System Test Error

Firmware upgrade failed

Firmware upgrade failed, please reboot library

* indicates a variable character. This will change depending on the specific item within the cabinet.

Critical Events

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

[Table 48](#) lists the critical events provided by the PX720.

Table 48 Critical Events

Critical Events

Fork new ted failed

Initialization failed for partition

Parse error

Cabinet Controller Connection Failure

Cabinet Controller Connection Lost

Critical Events

Cabinet unable to start new thread

Cabinet Not Found

Unable to communicate with cabinet task process

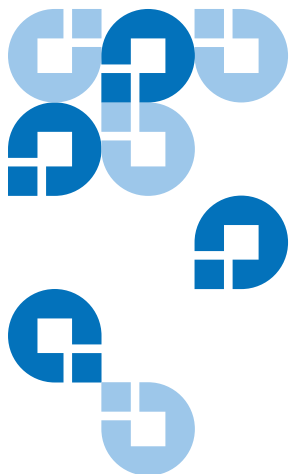
Cabinet Controller Connection Failure

Cabinet Controller Connection Lost

HP Interface Manager Not Present

Event Monitor Failure

* indicates a variable character. This will change depending on the specific item within the cabinet.



Regulatory Statements

FCC Statement

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

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

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

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

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

Taiwan Statement

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Japan Statement (VCCI)

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

DEN-AN Notice (Japan Industry Canada Digital Apparatus)

すべての電源コードが同じ定格電流を使用するとは限りません。同封されている電源コードを他の製品と一緒に使用しないでください。また、家庭用の延長コードをQuantum製品と一緒に使用しないでください。複数の電源コードを必要とする製品の電源を完全に切るには、システムに接続しているすべての電源コードを外してください。

Industry Canada (Digital Apparatus)

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

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

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

CISPR-22 WARNING!

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

ACHTUNG!

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

ATTENTION!

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

Notice for USA and CANADA Only

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

Plug Cap NEMA twist-lock plug with ground pin (NEMA L6-20P configuration)

Cord Type: SJT, three 12 AWG (3 x 2.50 mm²) or
18 AWG (1.0 mm²) wires

LengthMaximum 15 feet (4.5m)

RatingMinimum 25 A, 125 V

Cette remarque ne concerne que les États-Unis et le Canada

En cas d'envoi aux États-Unis, utiliser le cordon d'alimentation CERTIFIÉ UL indiqué ci-dessous convenant pour 200-240 V. En cas d'envoi au Canada, utiliser le cordon d'alimentation CERTIFIÉ CSA indiqué ci-dessous et convenant pour 200-240 V.

Fiche	NEMA L6-20P à verrouillage par rotation avec broche de mise à la terre
Cordon	Type SJT, trifilaire 12 AWG (3 x 2,50 mm ²) ou 18 AWG (1,0 mm ²)
LongueurMaximum	4,5 m (15 pi)
CapacitéMinimum	25 A, 125 V

Battery Statement

Battery Contained in Product:

“Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.”

- The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33, Best Management Practices for Perchlorate Materials. This product/part includes a lithium battery which contains a perchlorate substance.



滂措珍惠能潤



ST Micro M4Z28-BR00SH1

CAUTION

This product contains Lithium batteries. Lithium battery ST Micro M4Z28-BR00SH1 is located on the robotic board. Lithium battery Renata CR1225FH, Panasonic BR1225/1HC or Ray-O-Vac BR1225T2 is located on the cabinet controller board. Embedded lithium battery Callas Semiconductor DS17887-3 is located on the Fibre Channel controller board. Dispose of this battery in accordance with local, state, and federal laws.

WAARSCHUWING

Dit product bevat lithiumbatterijen. De lithiumbatterij ST Micro M4Z28-BR00SH1 bevindt zich op de robot-board. De lithiumbatterij Renata CR1225FH, Panasonic BR1225/1HC of Ray-O-Vac BR1225T2 bevindt zich op de kastcontroller-board. De ingebedde lithiumbatterij Dallas Semiconductor DS17887-3 bevindt zich op de glasvezelcontroller-board. Gooi de batterij weg in overeenstemming met de gemeentelijke, provinciale en nationale wetgeving.

VAROITUS

Tämä tuote sisältää litiumparistoja. ST Micro M4Z28-BR00SH1 -litiumparisto sijaitsee robottitaulussa. Renata CR1225FH-, Panasonic BR1225/1HC- tai Ray-O-Vac BR1225T2-litiumparisto sijaitsee kotelon ohjaintaulussa.

Upotettu Dallas Semiconductor DS17887-3 -litiumparisto sijaitsee kuitukanavan ohjaintaulussa. Hävitä paristo paikallisten ja valtakunnallisten säädösten mukaan.

ATTENTION

Ce produit contient des piles au lithium. La pile au lithium ST Micro M4Z28-BR00SH1 est située sur la carte de l'automate. Les piles au lithium Renata CR1225FH, Panasonic BR1225/1HC ou Ray-O-Vac BR1225T2 sont situées sur la carte du contrôleur de l'armoire. La pile au lithium intégrée Dallas Semiconductor DS17887-3 est située sur la carte du contrôleur Fibre Channel. Mettez ces piles au rebut conformément aux lois locales, nationales et fédérales.

VORSICHT

Dieses Produkt enthält Lithium-Batterien. Die Lithium-Batterie ST Micro M4Z28-BR00SH1 befindet sich auf der Platine des mechanischen Systems.

Die Lithium-Batterien Renata CR1225FH, Panasonic BR1225/1HC und Ray-O-Vac BR1225T2 befinden sich auf der Controller-Platine des Gehäuses.

Die integrierte Lithium-Batterie Dallas Semiconductor DS17887-3 befindet sich auf der Fibre Channel-Controller-Platine. Die Entsorgung dieser Batterie muss unter Einhaltung aller lokalen, regionalen und bundesweiten Gesetze und Vorschriften erfolgen.

ATTENZIONE

Questo prodotto contiene batterie al litio. La batteria al litio ST Micro M4Z28-BR00SH1 si trova sulla scheda Robotica. La batteria al litio Renata CR1225FH, Panasonic BR1225/1HC o Ray-O-Vac BR1225T2 si trova sulla scheda controller del cabinet. La batteria al litio incorporata Dallas Semiconductor DS17887-3 si trova sulla scheda controller Fibre Channel. Smaltire la batteria secondo quanto previsto dalle leggi locali, regionali e nazionali.

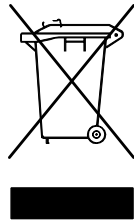
ATENCIÓN

Este producto contiene baterías de litio. La batería de litio ST Micro M4Z28-BR00SH1 se encuentra ubicada en la placa del sistema robótico. Las baterías de litio Renata CR1225FH, Panasonic BR1225/1HC o Ray-O-Vac BR1225T2 se encuentran ubicadas en la placa del controlador del armario. La batería de litio incorporada Dallas Semiconductor DS17887-3 se encuentra ubicada en la placa del controlador de canal de fibra. Deseche la batería conforme a la norma local, estatal y federal vigente.

VARNING



Produkten innehåller litiumbatterier. Litiumbatteriet ST Micro M4Z28-BR00SH1 sitter på robotkortet. Litiumbatteriet Renata CR1225FH, Panasonic BR1225/1HC eller Ray-O-Vac BR1225T2 sitter på Cabinet-styrkortet. Det inbyggda litiumbatteriet Dallas Semiconductor DS17887-3 sitter på Fibre Channel-styrkortet. Kasta batteriet i enlighet med lokala och nationella lagar.

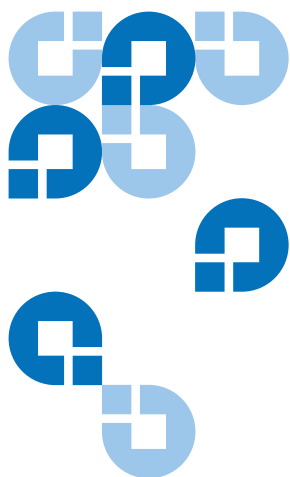
Electronic Waste, Recycling, and Disposal - WEEE



This symbol on the product or on its packaging indicates that this product should not be disposed of with your other waste. Instead, it should be handed over to a designated collection point for the recycling of electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please visit our website at: <http://qcare.quantum.com> or contact your local government authority, your household waste disposal service or the business from which you purchased the product.

Declaration of Conformity

Quantum	DECLARATION OF CONFORMITY According to EN45014
Manufacturer's Name:	Quantum Corporation
Manufacturer's Address:	141 Innovation Drive Irvine, CA 92612-3040 USA
Declares that the Product(s):	
Product Description	Automated Tape Library System
Product Name:	PX720 Series
Model Number(s):	PX720
Product Options:	All
Conforms to the following EC Directives and EC Standards:	
Low Voltage Directive 73/23/EEC	
Product Safety:	EN60950, 3 rd Edition: 2000
EMC Directive 89/336/EEC	
EMC:	EN55022: 1997, Class A EN61000-3-2: 1995, Class A EN61000-3-3: 1994 EN55024: 1998 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-8 EN61000-4-11
Authorizing Signature:	
 _____ Mitchell Gilbert Manager, Regulatory	Date Issued: 10/31/2003
European Headquarters: 7 Lindenwood, Chineham Business Park Basingstoke, Hampshire RG24 8WD, United Kingdom Telephone: +44 (1) 256 848 713 Fax: +44 (1) 256 848 700	



Glossary

A

Antistatic mat A mat made of antistatic material which includes a cabled connection to ground at a wall receptacle.

ASC The Additional Sense Code is part of the SCSI-2 specification. The additional sense code (ASC) field indicates further information related to the error or exception condition reported in the sense key field.

ASCQ Additional Sense Code Qualifier is part of the SCSI-2 specification. The additional sense code qualifier (ASCQ) indicates detailed information related to the additional sense code.

B

Bit The basic unit of data in a binary numbering system (*binary digit*), represented by a 0 or a 1. Eight bits equals one byte.

Byte The basic unit of computer memory which is large enough to hold one character.

C

Calibrate A process used by the library robotics to determine the exact position of storage, data transfer, and import/export elements.

Capacity on Demand (COD) This allows the user to add more available slots to the library.

Check Condition status Blocks of data are stored on the tape medium along with additional information that the library controller uses

to manage storage and retrieval. The format of the additional information is unique and is hidden from the initiator during normal read or write operations. This additional information is often used to identify the physical location of the blocks of data and the address of the logical block, and to provide protection against the loss of the user data.

The address of the first logical block is zero. The address of the last logical block is [n-1], where [n] is the number of logical blocks available on the medium. A Read Capacity command may be issued to determine the value of [n-1]. If a command is issued that requests access to a logical block not within the capacity of the medium, the command is terminated with CHECK CONDITION.

CHM (Cartridge Handling Mechanism) The CHM is a mechanical component of the extension axis assembly (robotics) which grips and holds a tape cartridge in transit.

CISPR 22 This standard describes the emissions testing methods and test limits for information technology equipment, such as computers, office machines, or telecommunications equipment connected to low - voltage power main networks (<600V). It does not apply to equipment whose primary function is radio transmission or reception as defined by the International Telecommunications Union (ITU) Radio Regulations.

The object of the standard is to establish uniform requirements for the conducted and radiated disturbance levels of the equipment covered by the standard. Disturbance limits are established for Class A and Class B equipment, and measurement methods, operating conditions, and interpretation of results are addressed.

Class A digital device Class A equipment is intended for Commercial installation.

Class I laser product Class 1 lasers are products where the power of the laser beam produced (the accessible emission) is always below the Maximum Permissible Exposure value. Therefore, for Class 1 lasers the output power is below the level at which it is believed eye damage will occur. Exposure to the beam of a Class 1 laser will not result in eye injury. Class 1 lasers may therefore be considered eye safe.

Class II laser product Class 2 lasers are limited to a maximum output power of 1 mW. A person receiving an eye exposure from a Class

2 laser, either accidentally or as a result of someone else's deliberate action (misuse) will be protected from injury by their natural blink reflex. This is a natural involuntary response which causes the individual to blink and avert their head thereby terminating the eye exposure.

D

- DHCP** Short for Dynamic Host Configuration Protocol, a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the device's IP address can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.
- DLT** Digital Linear Tape technology is owned, developed, and manufactured by Quantum Corporation. DLT tape drives use half-inch wide tape. DLT 8000 tape drives record on 208 tracks (uncompressed).
- DNS** Short for Domain Name System (or Service or Server), an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, therefore, a DNS service must translate the name into the corresponding IP address. For example, the domain name `www.example.com` might translate to `198.105.232.4`.

E

- Elements** SCSI designation for any device or bin in the library that can hold a cartridge. SCSI elements include storage slots, tape drives, load port slots, and the gripper.
- EMI** Electro-Magnetic Interference refers to unwanted electrical noise present on a power line. This noise may "leak" from the power lines and affect equipment that isn't even connected to the power line. Such "leakage" is called a magnetic field. Magnetic fields are formed when unwanted noise voltages give rise to noise currents. Such noise signals may adversely affect electronic equipment and cause intermittent data problems.
- ESD** Electrostatic Discharge

H

- Host** The device or devices to which the library is connected.

HVD High Voltage Differential or HVD (also called Differential SCSI). The benefit of using HVD cabling is that it works well in noisy areas and can reach up to 25 meters in distance. Quantum DLT8000 and SDLT tape drives can be HVD or LVD devices.

I

IEC The International Electrotechnical Commission is based in Geneva, Switzerland.

L

Load port The revolving assembly on a front door of enterprise libraries that incorporates a revolving drum and tape cartridge slots (stationary or removable) for loading and unloading tape cartridges.

LTO Linear Tape-Open is a tape drive specification backed by IBM, Hewlett-Packard, and Quantum.

LVD Low Voltage Differential or LVD is the newest type of SCSI cabling, and LVD SCSI specifications can reach distances up to 12 meters. LVD SCSI cabling requires "Twist and Flat" ribbon cable and an LVD/SE terminator or a "Twist and Flat" ribbon cable with built-in LVD termination. All HP LTO-2 tape drives are LVD devices. Quantum SDLT tape drives are also LVD devices.

M

MSBF Mean Swaps Before Failure

MTBF Mean Time Between Failures

MTTR Mean Time To Repair

N

NEMA National Electrical Manufacturers Association

Network interface Card (NIC) A NIC is a device that handles communication between a device and other devices on a network.

NVRAM Non-Volatile Random Access Memory is a type of memory that retains its contents when power is turned off. One type of NVRAM is SRAM that is made non-volatile by connecting it to a constant power source such as a battery. Another type of NVRAM uses EEPROM chips to save its contents when power is turned off. In this case, NVRAM is composed of a combination of SRAM and EEPROM chips.

NTP Short for Network Time Protocol, an Internet standard protocol (built on top of TCP/IP) that assures accurate synchronization to

the millisecond of computer clock times in a network of computers. Based on UTC, NTP synchronizes client workstation clocks to the U.S. Naval Observatory Master Clocks in Washington, DC and Colorado Springs CO. Running as a continuous background client program on a computer, NTP sends periodic time requests to servers, obtaining server time stamps and using them to adjust the client's clock.

O

OCP (Operator Control Panel) The OCP acts as the main user interface for the library. It consists of a viewing panel and 4 buttons allowing the user to receive information and input commands.

P

P7000 Identity When the library is in P7000 identity mode, the PX720 will appear to the host as P7000 library. This is useful when a backup package does not recognize the PX720 identity.

PCI The PCI bus typically runs at speeds of 33 MHz or 66 MHz and is usually 32 bits wide. This means that it passes 32 bits of data simultaneously as if down 32 separate wires. Some of the most recent computers include "wider" 64-bit PCI buses, and already certain very high-end video capture cards offer improved performance if connected to a 64-bit PCI bus.

Petabyte A petabyte is equal to 1,024 terabytes or 2 to the 50th power (1,125,899,906,842,624) bytes!

R

Robotics As used in the context of automated tape libraries; the X-axis, Y-axis, and Z-axis mechanical assemblies inside the library used to move tape cartridges.

RS-232C Short for Recommended Standard-232C, a standard interface approved by the Electronic Industries Association (EIA) for connecting serial devices. This standard is for ASYNCHRO-NOUS TRANSFER between computer equipment and accessories. Data is transmitted bit by bit in a serial fashion. The RS-232 standard defines the function and use of all 25 pins of a DB-25 type connector.

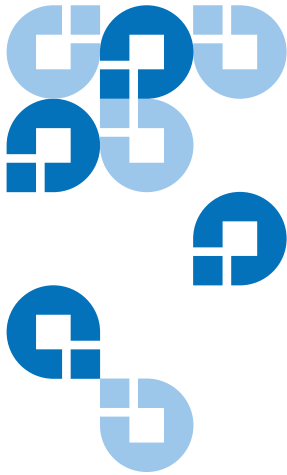
S

SCSI Small Computer System Interface. An American National Standards Institute (ANSI) communications standard for attaching peripheral equipment to computers.

- SCSI ID** A unique address (0 to 15) assigned to each device on a SCSI bus.
- SCSI-2** A second generation SCSI interface which includes command sets for magnetic and optical disks, tapes, printers, processors, CD-ROMs, scanners, medium changers, and communication devices.
- SDLT** Super Digital Linear Tape is a Quantum tape drive and tape cartridge specification offered in three ranges of capacity and transfer rates for workgroup, mid-range, and enterprise needs.
- Slot** Stores tape cartridges within the library cabinet.
- SNMP** Short for *Simple Network Management Protocol*, a set of protocols for managing complex networks.

T

- Take-up leader** The ring at the beginning of a tape in a cartridge.
- Tape drive controllers** A device that controls the transfer of data from a host to a tape drive and vice versa.
- Terabyte** A unit of measure for digital data equal to approximately 1,000 gigabytes, or 1,099,511,627,776 bytes!
- Terminator** Special electrical resistors (terminators) are installed in the SCSI devices at each end of the SCSI bus and are **not** installed in other devices on the bus. The SCSI bus must be properly terminated at both ends so that commands and data can be transmitted to and from all devices on the bus.



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