

Quantum PX500 Series Tape Drive Installation Instructions

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Introduction

This document provides instructions for adding a tape drive to an Quantum PX500 Series tape library. The tape drive upgrade procedure consists of the following steps:

- [Unpacking the Tape Drive](#)
- [Installing the Tape Drives](#)
- [Cabling the Tape Drives](#)
- [Setting the Tape Drive SCSI ID](#)
- [Completing the Native Fibre Channel Installation](#)
- [Fibre Channel Connectivity Troubleshooting](#)

Tape Drive Numbering

The Quantum PX500 Series tape library may contain up to 10 tape drives depending on the library model. Refer to the following figures:

- [Figure 1](#) - PX502 Tape Drive Numbering (up to two tape drives)
- [Figure 2](#) - PX506 Tape Drive Numbering (up to six tape drives)
- [Figure 3](#) - PX510 Tape Drive Numbering (up to ten tape drives)

Figure 1 Quantum PX502
Tape Drive Numbering

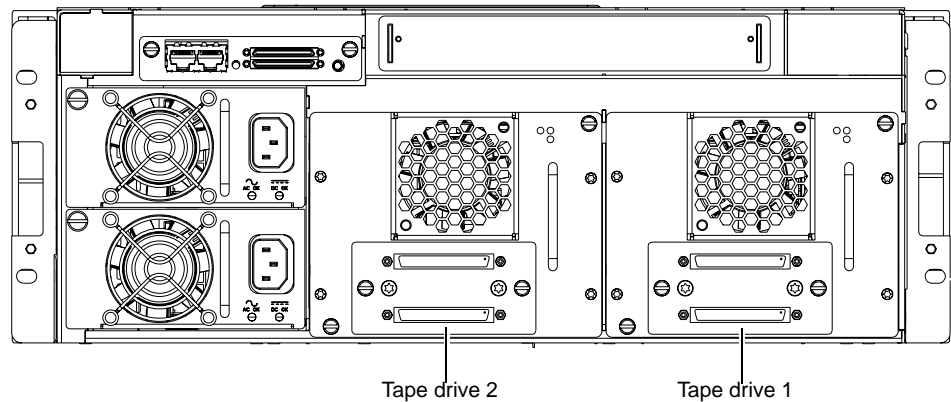


Figure 2 Quantum PX506
Tape Drive Numbering

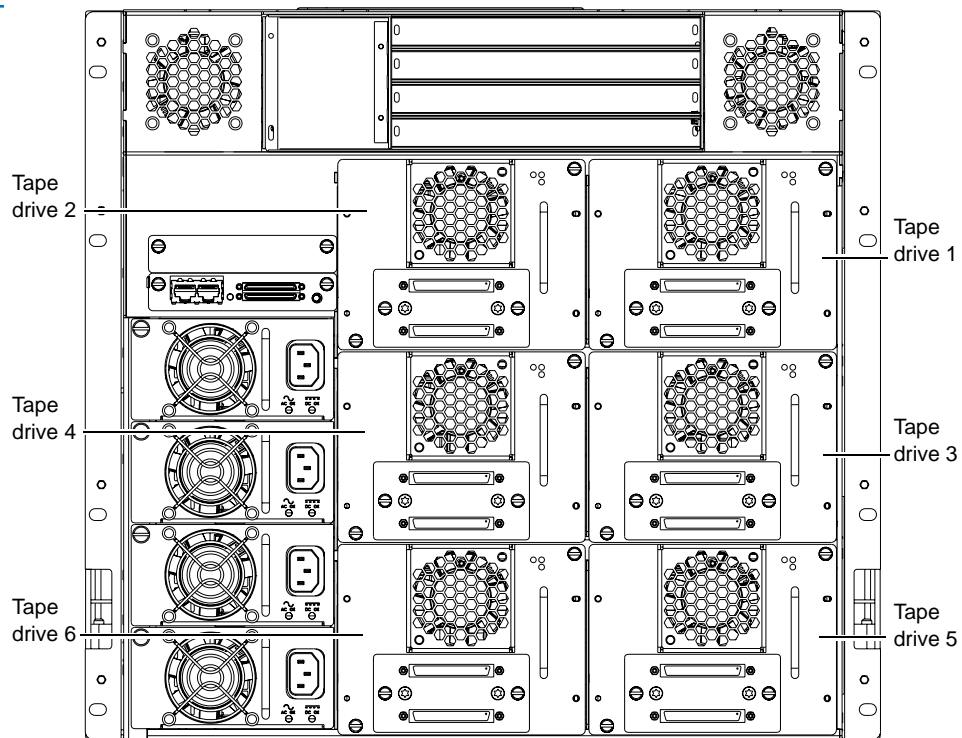
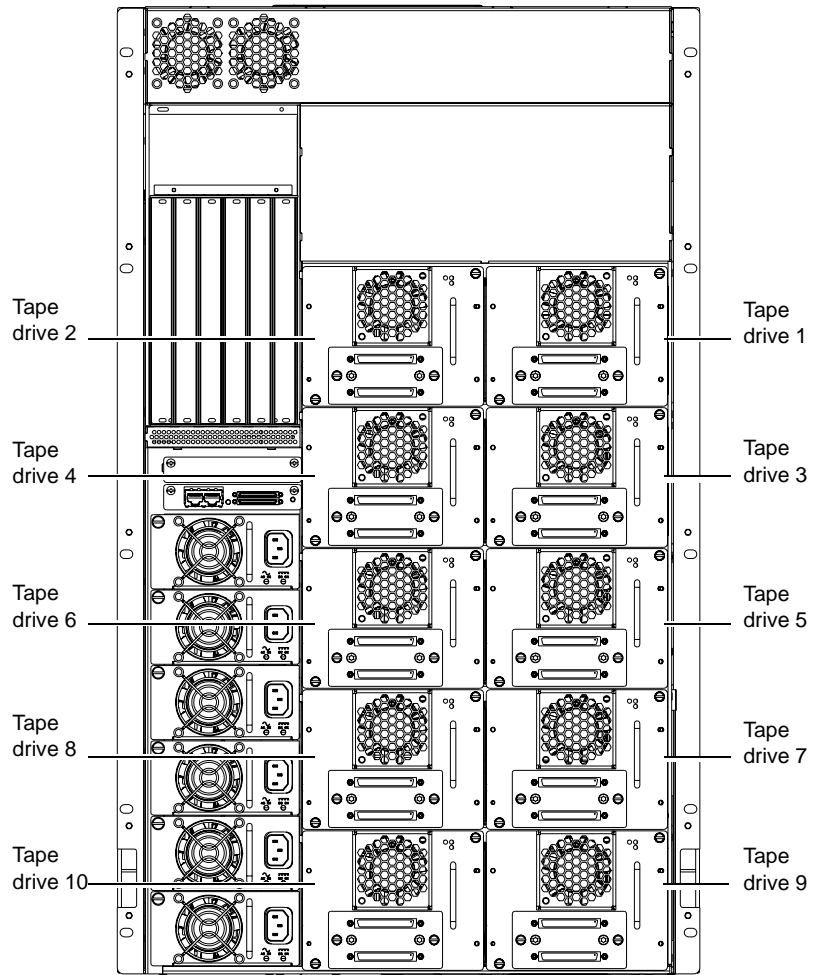


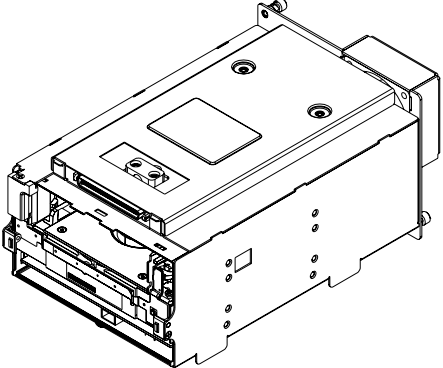
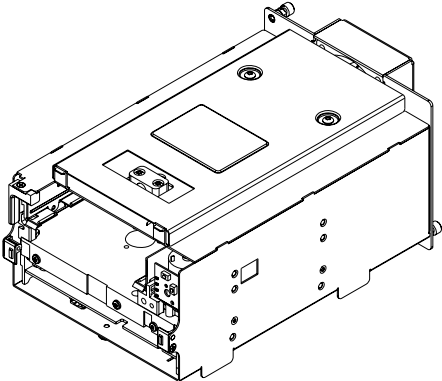
Figure 3 Quantum PX510
Tape Drive Numbering



Upgrade Kits

The tape drive upgrade kit differs depending on the tape drive type needed for the library (refer to [table 1](#)):

Table 1 Tape Drive Upgrade Kits

Part Number	<p>PC-UUBQA-YF (SDLT320, SCSI) PR-UU1QA-YF (SDLT600, SCSI) PR-UU4QC-YF (SDLT600, Native Fibre) PC-UUAQA-YF (DLT-S4, SCSI) PC-UU8QC-YF (DLT-S4, Native Fibre) PR-UU2QA-YF (HP LTO2, SCSI) PR-UU3QA-YF (HP LTO3, SCSI) PR-UU5QC-YF (HP LTO3, Native Fibre)</p>
SDLT320/600 and DLT-S4 Tape Drive Module	 <p>A detailed line drawing of a tape drive module, shown from a three-quarter perspective. It is a rectangular unit with a front-loading tape slot on the left side. The top surface has a central square area and two circular indicators. The right side features a vertical connector panel with several ports. The bottom edge has mounting tabs and a series of screws.</p>
HP-LTO2/3 Tape Drive Module	 <p>A detailed line drawing of a tape drive module, shown from a three-quarter perspective. It is a rectangular unit with a front-loading tape slot on the left side. The top surface has a central square area and two circular indicators. The right side features a vertical connector panel with several ports. The bottom edge has mounting tabs and a series of screws.</p>

Required Tools

The following tools are required to perform the tape drive upgrade procedure:

- Flat blade screwdriver

Caution: Use appropriate electrostatic discharge (ESD) precautions when installing the tape drive.

Unpacking the Tape Drive

To unpack the tape drive:

- 1 Open the shipping carton.
- 2 Remove the tape drive from the carton.

The tape drive is protected by two pieces of foam and an antistatic bag.

- 3 Remove the foam from the wrapped tape drive. Remove the tape drive from the antistatic bag.

Installing the Tape Drives

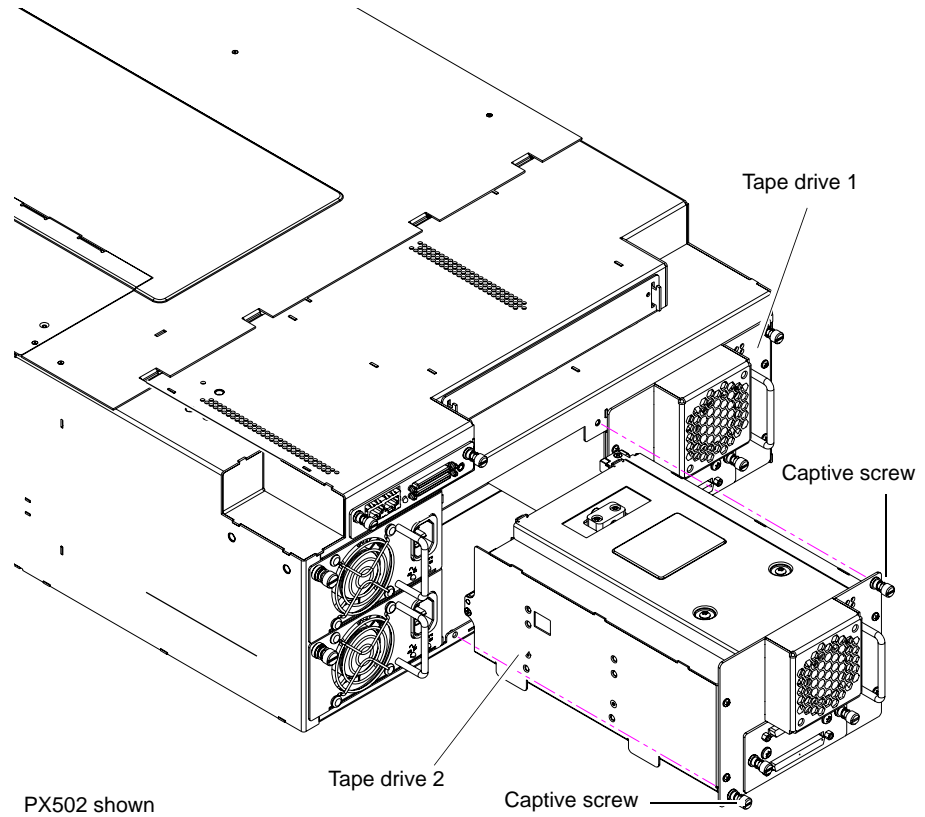
To install tape drives in a PX500 Series library:

Note: If this is an initial library installation, it is recommended to turn the library off prior to installing tape drives. If this is an existing library that is receiving a tape drive upgrade, the library can remain powered on.

Note: Each tape drive ships from Quantum with a version of library firmware as well as drive firmware on the tape drive interface PWA. When you install the tape drive, the library will check the version of library firmware on the tape drive and verify if the firmware is newer than the version currently running. If the library firmware on the tape drive is newer than the version currently running on the library, the OCP will prompt you with the option to upgrade the library firmware.

- 1 At the back of the library, use a flat blade screwdriver to loosen the captive screws that secure the cover plate to the empty drive bay.
- 2 Set the cover plate aside.
- 3 Insert the tape drive into the drive bay slowly until the connectors are seated (see [figure 4](#)).
- 4 Tighten the tape drive captive screws using a flat blade screwdriver.
- 5 Repeat steps [1](#) through [4](#) to install another tape drive in a different location, if desired.

Figure 4 Installing a Tape Drive



Proceed to [Cabling the Tape Drives](#).

Cabling the Tape Drives

After the tape drive(s) have been installed, you must connect SCSI or Fibre Channel cables to each drive.

Refer to the following figures to cable the tape drives:

- [PX502 Libraries](#) on page 9
 - SCSI tape drives (see [figure 5](#))
 - SCSI tape drives in surrogate mode (see [figure 6](#))
 - Native Fibre Channel tape drives (see [figure 7](#))
- [PX506 Libraries](#) on page 11
 - SCSI tape drives (see [figure 8](#))
 - Native Fibre Channel tape drives (see [figure 9](#))
- [PX510 Libraries](#) on page 13
 - SCSI tape drives (see [figure 10](#))
 - Native Fibre Channel tape drives (see [figure 11](#))

PX502 Libraries

The following figures illustrate tape drive cabling for the PX502 libraries

Figure 5 Cabling the Tape Drives in a PX502 Library (SCSI)

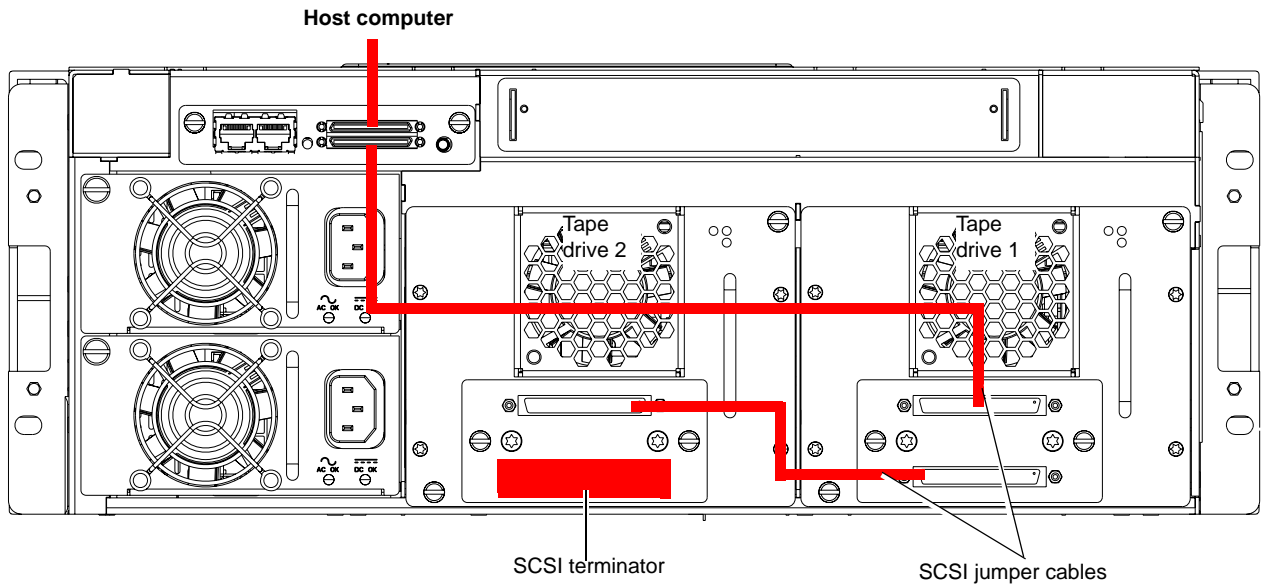


Figure 6 Cabling the Tape Drives in a PX502 Library (SCSI Surrogate)

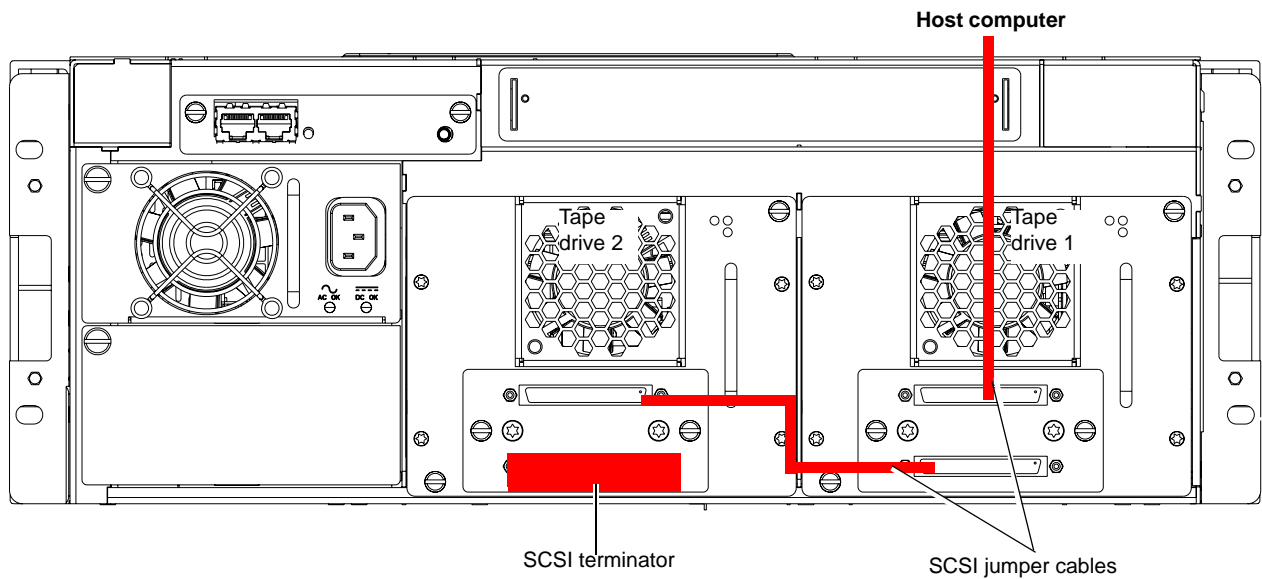
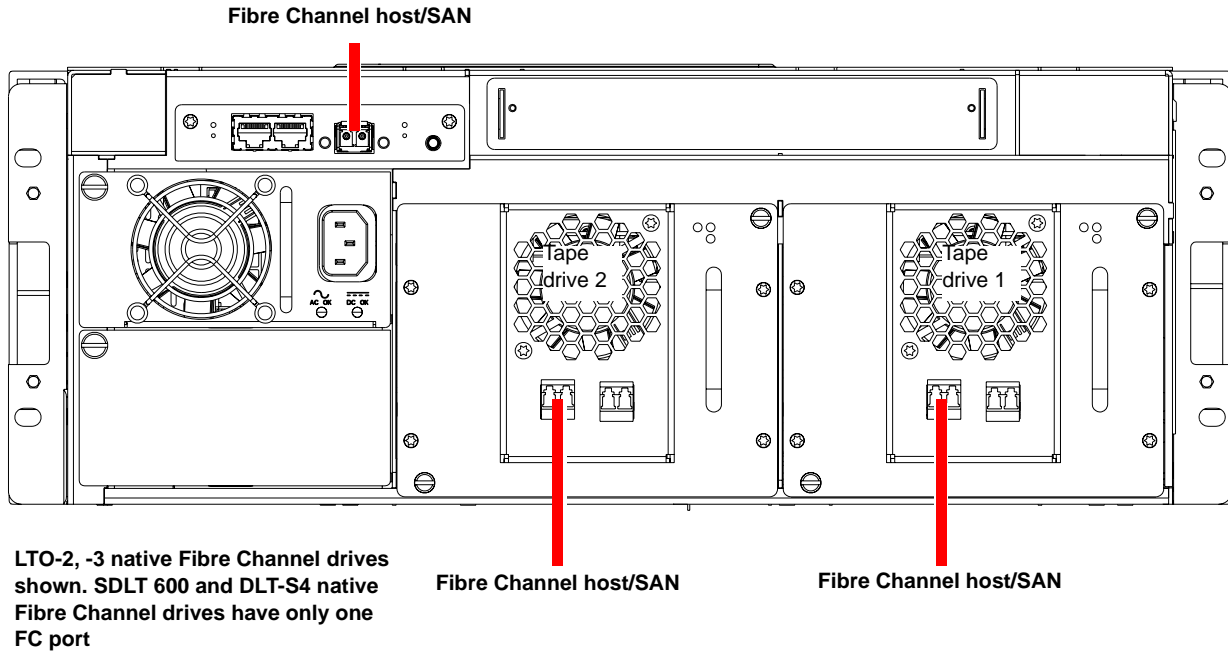


Figure 7 Cabling the Tape
Drives in a PX502 Library
(Native Fibre Channel)



PX506 Libraries

The following figures illustrate tape drive cabling for the PX506 library.

Figure 8 Cabling the Tape Drives in a PX506 Library (SCSI)

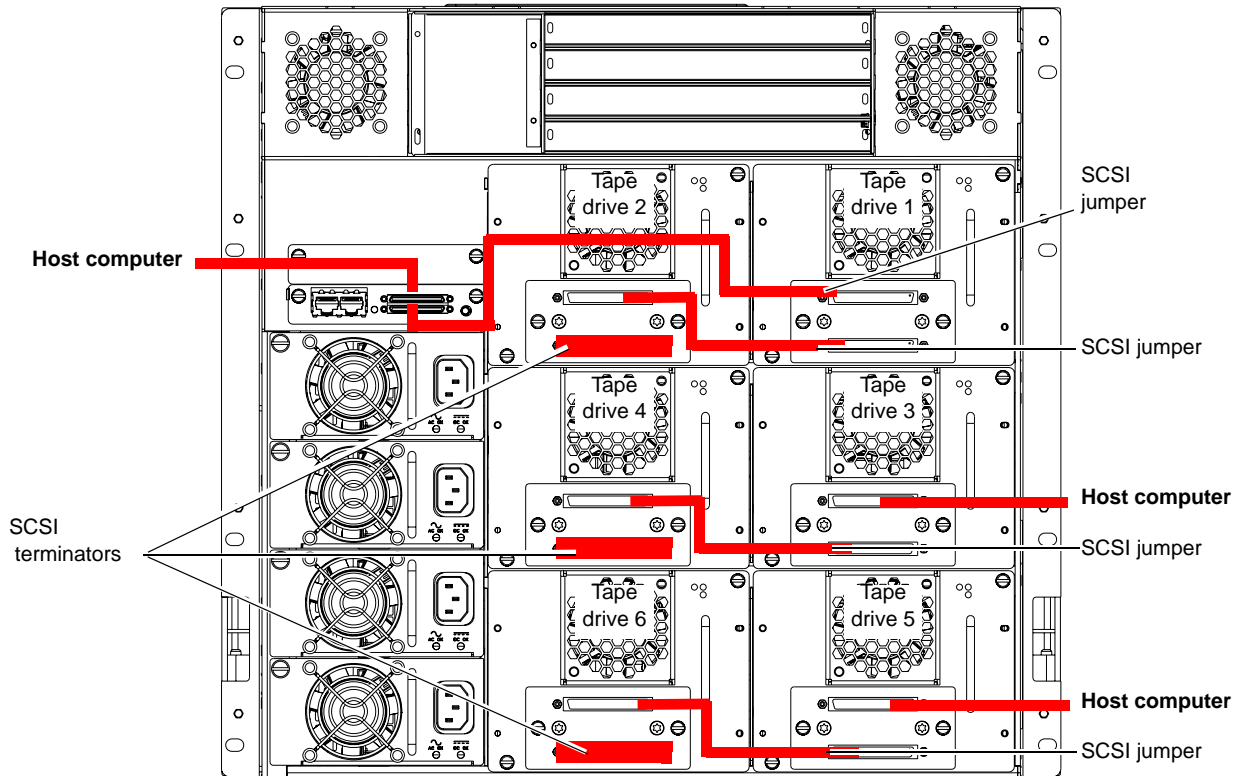
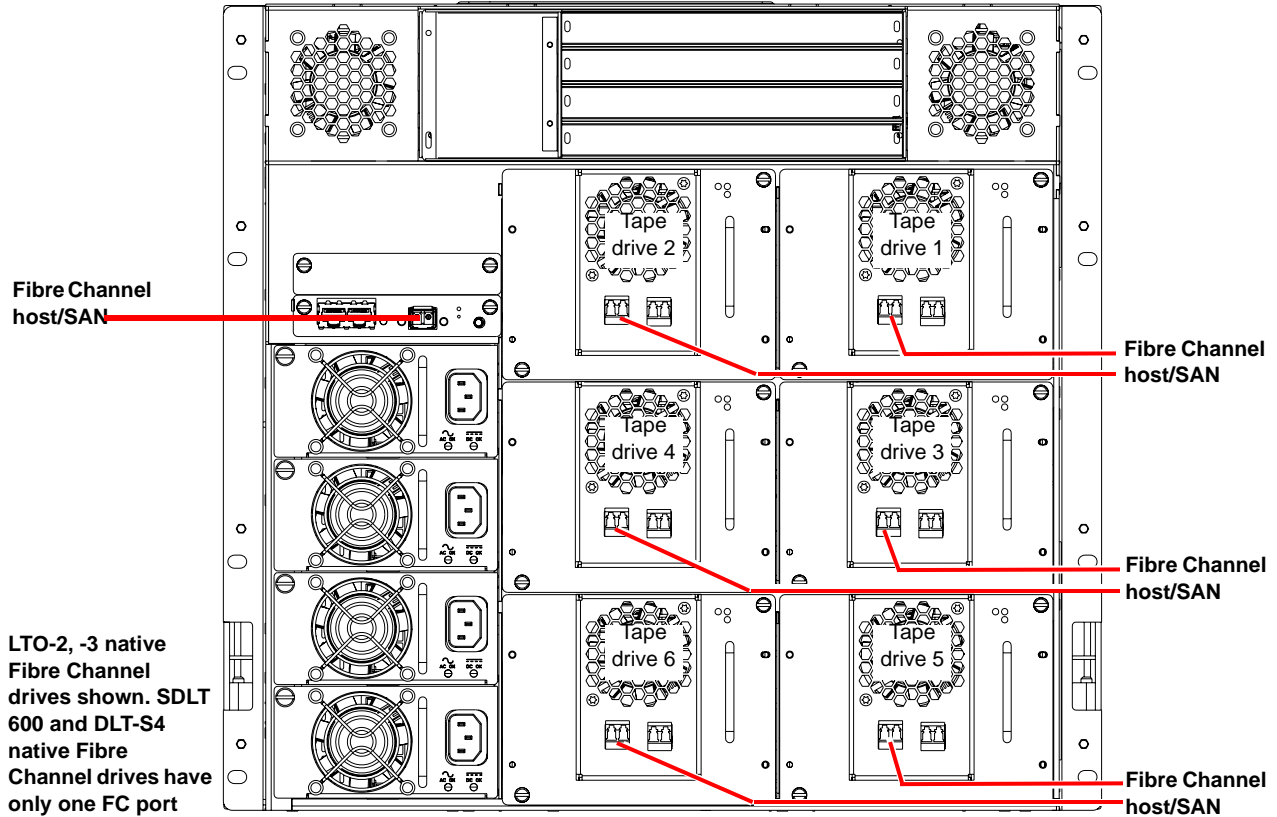


Figure 9 Cabling the Tape Drives in a PX506 Library
(Native Fibre Channel)



PX510 Libraries

The following figures illustrate tape drive cabling for the PX510 library.

Figure 10 Cabling the
Tape Drives in a PX510
Library (SCSI)

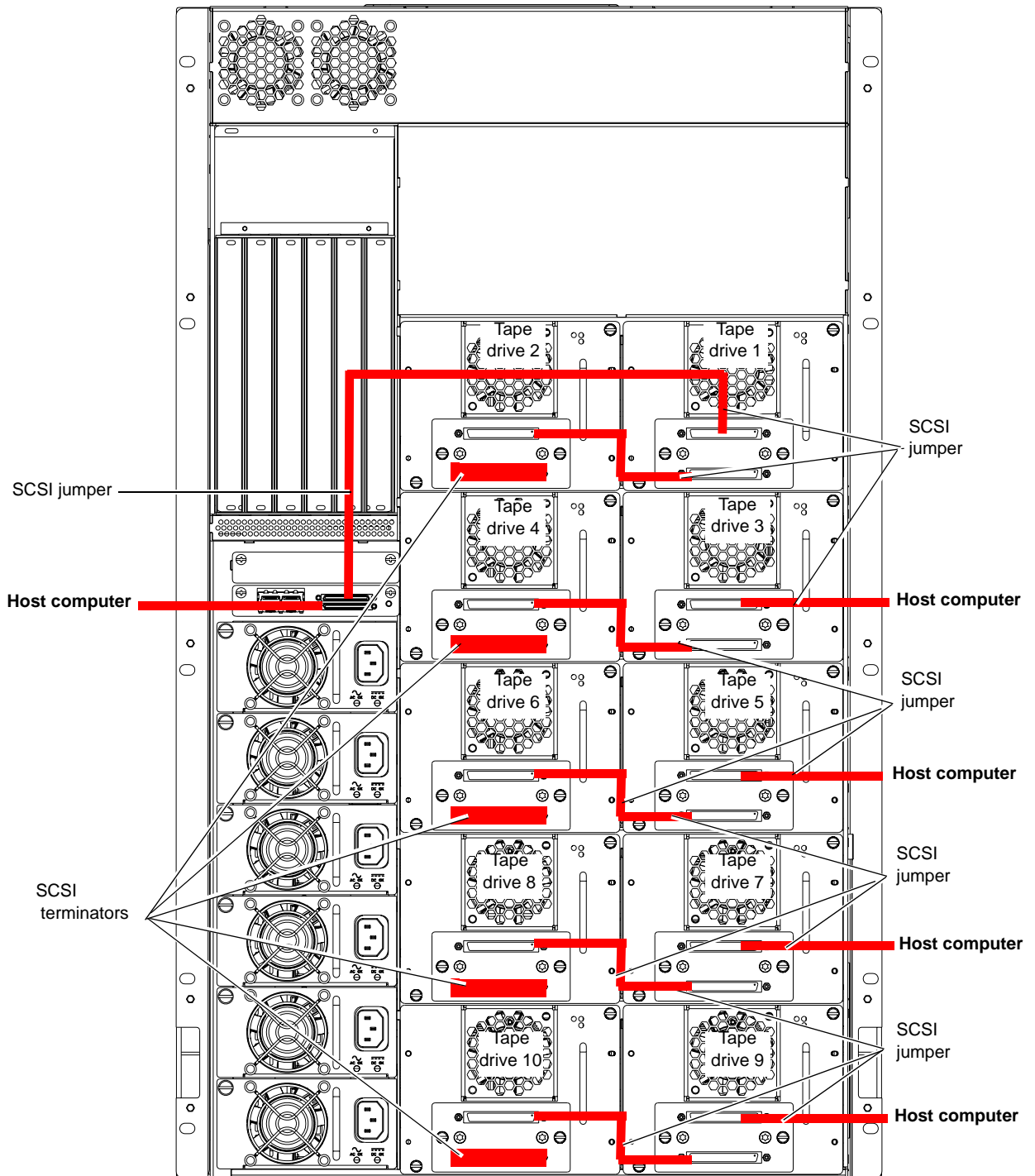
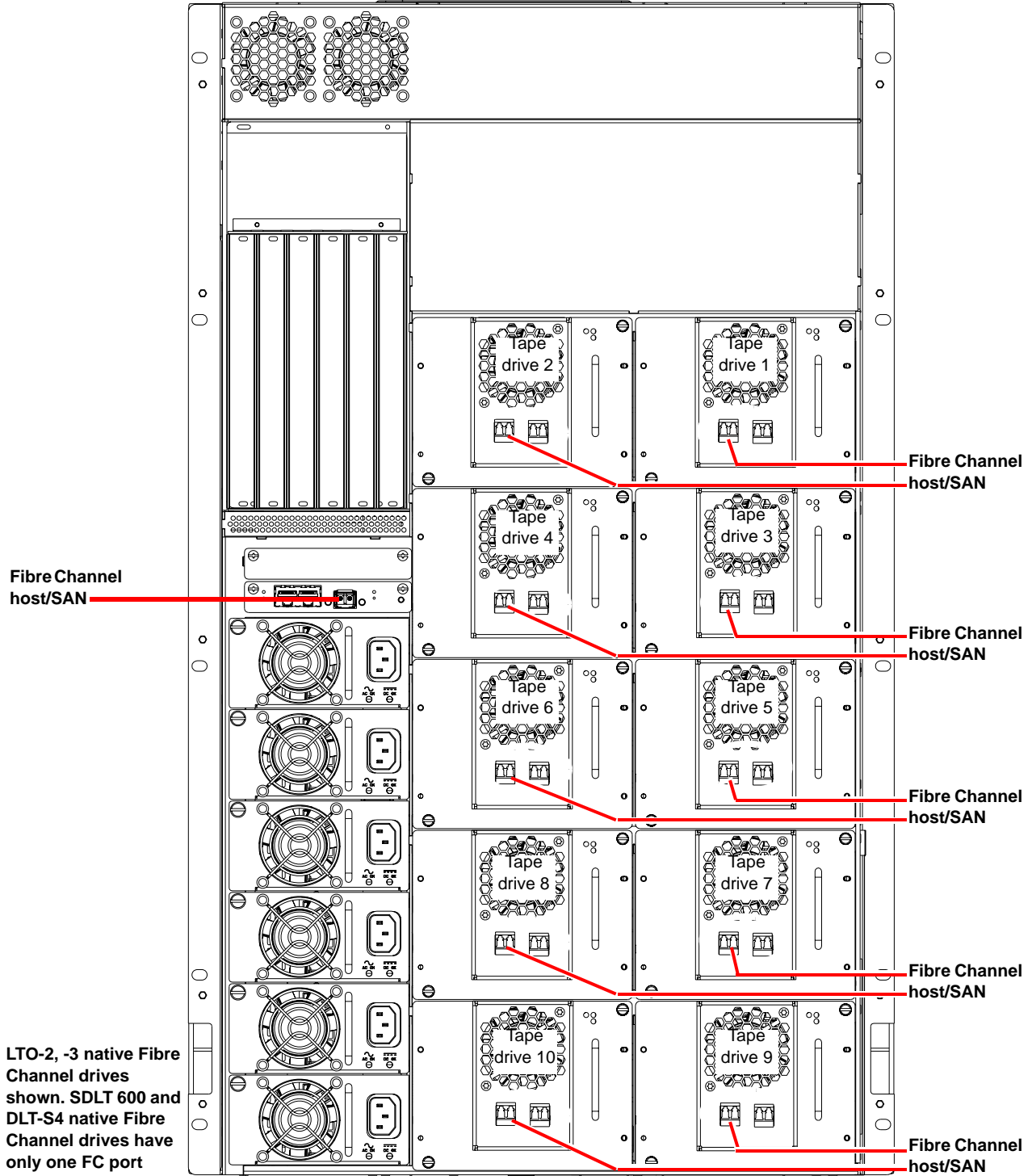


Figure 11 Cabling the Tape Drives in a PX510 Library
(Native Fibre Channel)



Setting the Tape Drive SCSI ID

The next step in the installation procedure is to set the required SCSI ID for the new tape drive.

Note: The library assigns SCSI IDs based on the drive order. Drive bay 1 = SCSI ID 1, drive bay 2 = SCSI ID 2, and so forth. It is only necessary to perform the steps in this section if you need to set the tape drive SCSI ID to an ID other than the default.

There are two ways to set the tape drive SCSI ID:

- [Setting the SCSI ID Using the OCP](#)
- [Setting the SCSI ID from the Remote Management Pages](#)

Setting the SCSI ID Using the OCP

To set the tape drive SCSI ID on an PX500 Series library with an LCD:

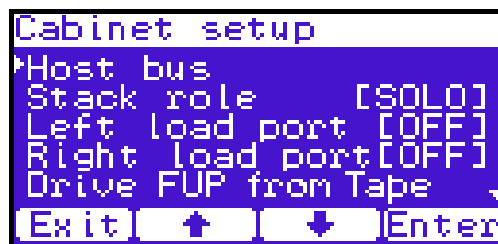
- 1 From the operator control panel (OCP), press **Setup** from the **Home** screen. The OCP displays the **Setup** screen (see [figure 12](#)):

Figure 12 Setup Screen



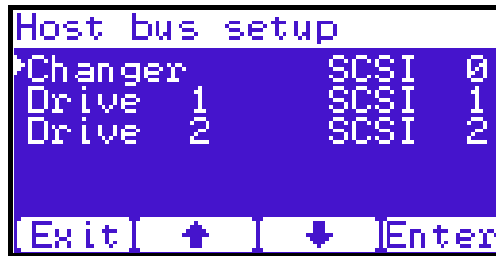
- 2 Use the up and down arrows to highlight **Cabinet** and press **Enter**. The **Cabinet** screen displays (see [figure 13](#)):

Figure 13 Library Options Screen



- 3 Use the up and down arrows to highlight **Host bus** and press **Enter**. The **Host bus** screen displays (see [figure 14](#)):

Figure 14 Host Bus
Options Screen



- 4 Use the up and down arrows to highlight the tape drive receiving the new SCSI ID and press **Enter**.
- 5 Use the up and down arrows to select a SCSI ID and press **Enter** to set the ID.
- 6 When you have completed setting the SCSI IDs, press **Exit** to return to the **Cabinet** screen.
- 7 From the **Ops** screen, use the up and down arrows to highlight **Drive Operations** and press **Enter**.

The **Drive Operations** screen displays (see [figure 15](#)):

Figure 15 Drive
Operations Screen



- 8 Use the up and down arrows to select a tape drive and press **Enter**.
- 9 Use the up and down arrows to select **Off** and press **Enter**.

The tape drive powers down and returns to the **Drive Operations** screen.

- 10 Use the up and down arrows to select **On** and press **Enter**.

The tape drive powers on and is ready for use. The tape drive installation is complete.

Setting the SCSI ID from the Remote Management Pages

To set the tape drive SCSI ID on a PX500 Series library from the remote management pages:

Note: The library must be off-line during this procedure.

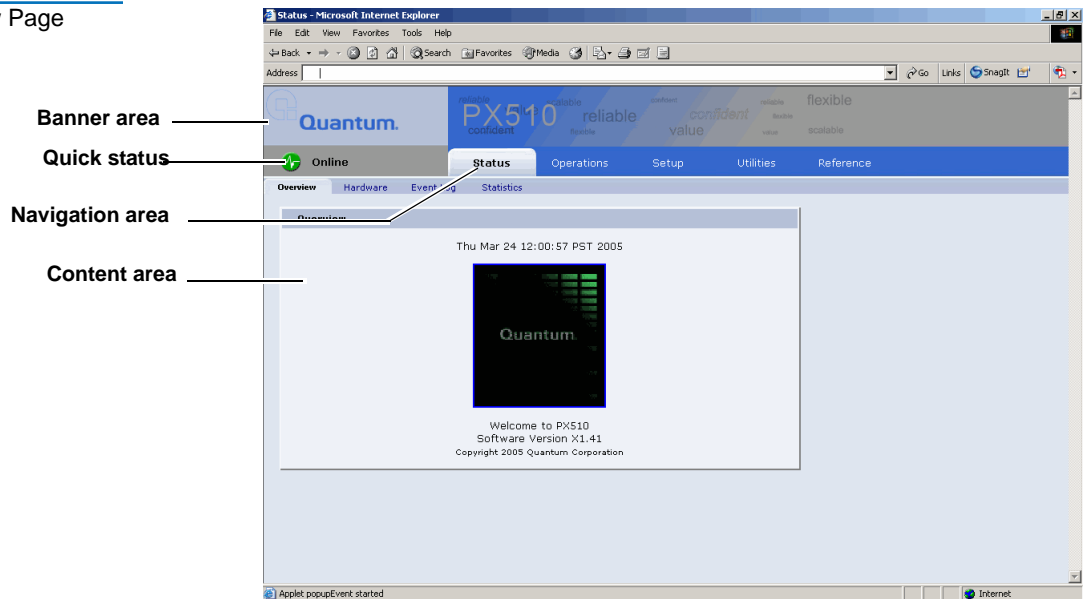
- 1 On the host computer, open the internet browser software.
- 2 In the **Address** field, type `http://IPaddress/` where IP address is the IP address for the Quantum PX500 Series library.

- 3 Enter the username and password and click **OK**.

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

The **Overview** page displays (see [figure 16](#)):

Figure 16 Overview Page



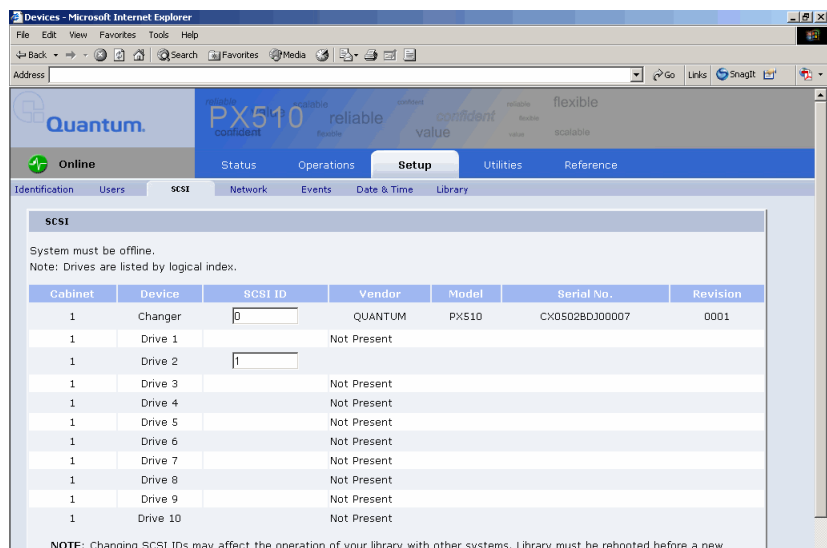
- 4 Click the **Setup** tab.

The **Setup** tab displays.

- 5 Click on the **SCSI** tab at the top of the **Setup** tab.

The **SCSI** page displays (see [figure 17](#)).

Figure 17 SCSI Page

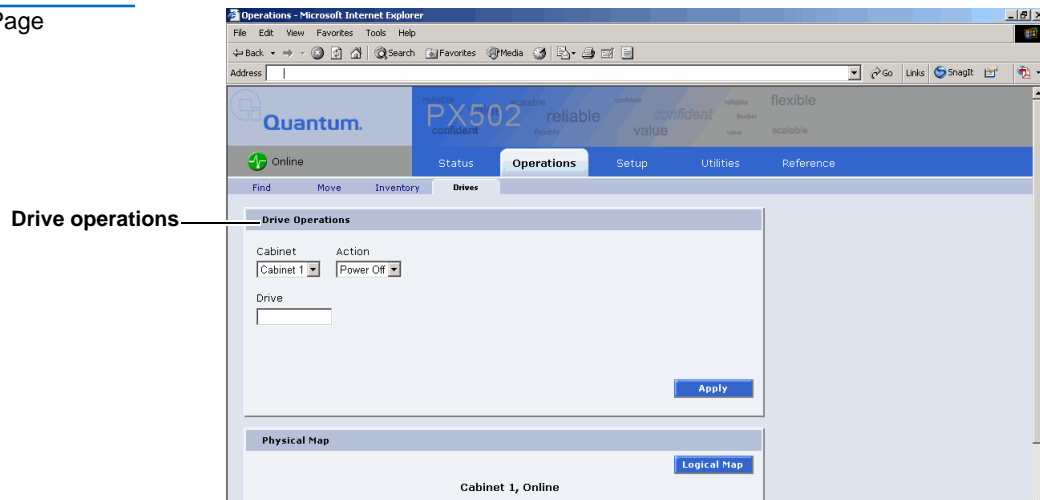


6 To change a SCSI ID, enter the ID number in the field next to the device and click **Apply**.

7 From the **Operations** page, click on the **Drives** tab.

The **Drives** page displays (see [figure 18](#)):

Figure 18 Drives Page



8 Enter the new tape drive number

9 Select **shutdown** and click **Apply**.

The tape drive powers down.

10 Enter the new tape drive number

11 Select **Power on** and click **Apply**.

The tape drive powers on. The tape drive installation is complete.

Completing the Native Fibre Channel Installation

After native Fibre Channel tape drives are installed, additional information must be gathered to complete the installation and verify connectivity. Completing the native Fibre Channel tape drive installation consists of the following steps:

- [Determining the WWNs World Wide Names](#)
- [Verifying Library Connectivity](#)

Determining the WWNs World Wide Names

The media changer (robot) and tape drives within the library have WWNs World Wide Names assigned to them by the system controller board (SCB). The WWNs must be determined and recorded both for the customer and for

Quantum customer support. This information is important when replacing the Fibre Channel SCB and tape drives. Using the following procedures, complete [table 2](#) and retain a copy of the table for your records. Have this table available when contacting Quantum Customer Support for any library or tape drive connectivity issues.

Table 2 Library World Wide Names

Library/Tape Drive	World Wide Name (e.g. 50:05:08:40:00:16:47:00)
Media Changer (robot)	
Tape drive 1	
Tape drive 2	
Tape drive 3	
Tape drive 4	
Tape drive 5	
Tape drive 6	
Tape drive 7	
Tape drive 8	
Tape drive 9	
Tape drive 10	

Using the Remote Management to Determine the WWNs

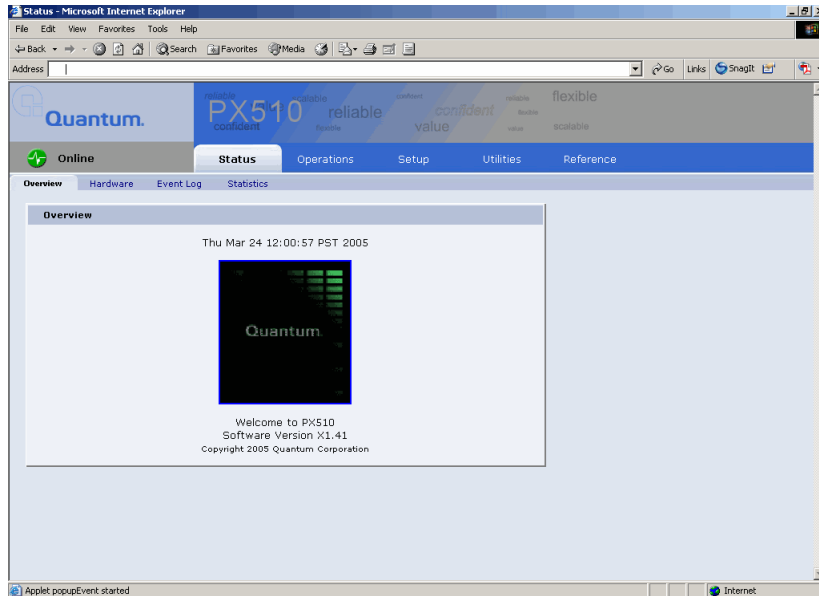
To determine the WWNs from the library remote management pages:

- 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 PX500 series library.
- 3 Enter the username and password and click **OK**.

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

The **Overview** page displays (see [figure 19](#)):

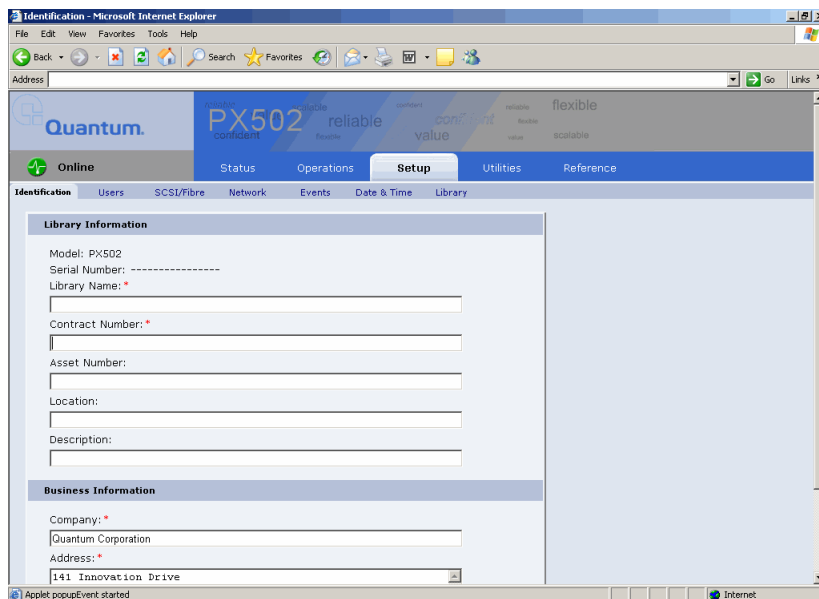
Figure 19 Overview Page



4 Click **Setup** from the contents frame.

The management frame displays the **Setup** page (see [figure 20](#)).

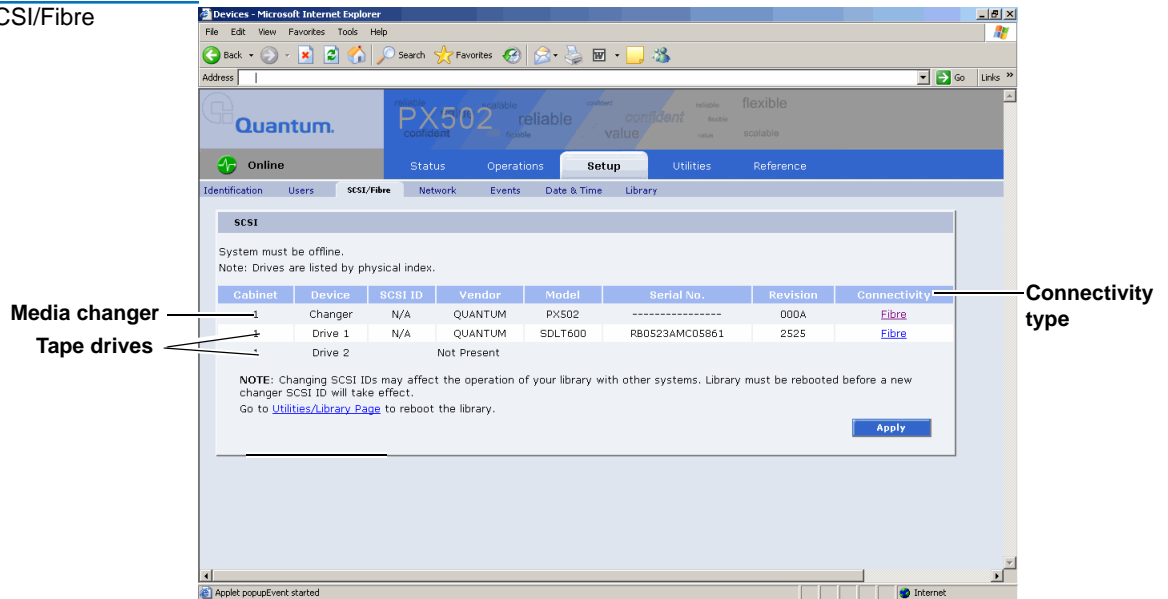
Figure 20 Setup Page



5 Click on the **SCSI/Fibre** tab.

The **SCSI/Fibre** page displays (see [figure 21](#)).

Figure 21 SCSI/Fibre Page



6 For the **Media Changer** and **Tape Drives**, click **Fibre** under the **Connectivity type**.

The **Media Changer** (see [figure 22](#)) and **Tape Drive Configuration** (see [figure 23](#)) screen displays.

Figure 22 Media Changer Configuration Screen

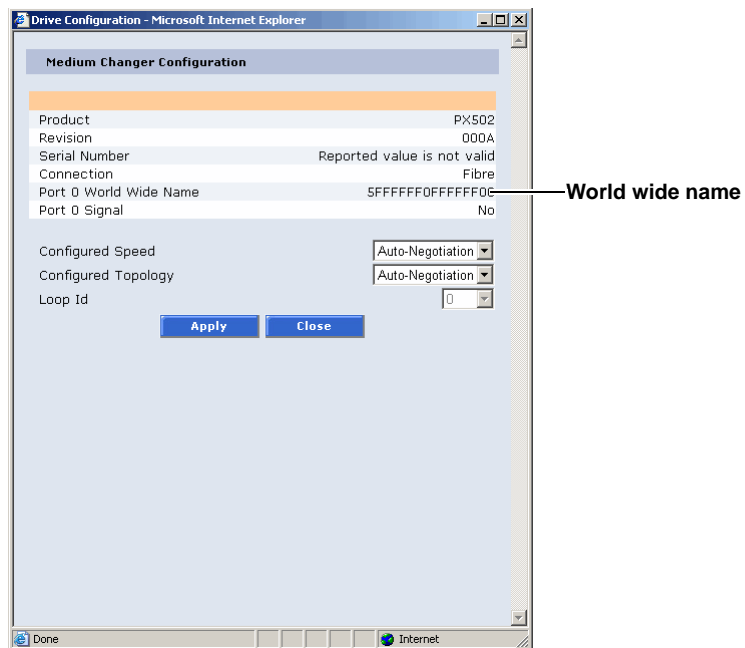
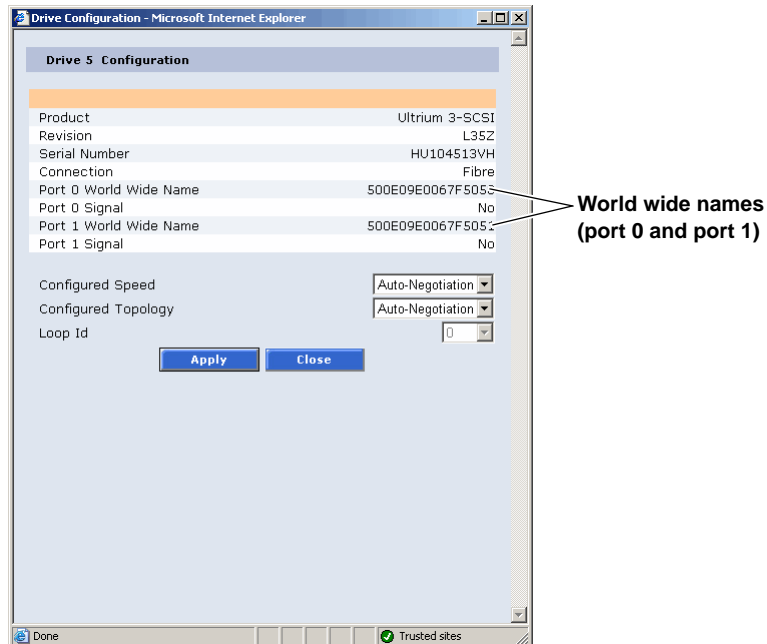


Figure 23 Tape Drive Configuration Screen



7 Record the WWNs for the media changer and tape drives in [table 2](#).

Note: These numbers are the world wide NODE names for the library and tape drives. The World Wide Port Name is very similar to the World Wide Node Name, however, the last hex byte is 01h greater than the last hex byte of the node name.

- Repeat [step 6](#) for all tape drives in the library

or

- Add **04h** to the last hex byte to derive the WWN for the next tape drive.

Example: **Drive 0** WWN is 50:05:08:40:16:6B:**00**, **Drive 1** WWN will be 50:05:08:40:16:6B:**04**, **Drive 2** WWN will be 50:05:08:40:16:6B:**08**.

8 To determine the WWN for the media changer, subtract **01h** from the next to last hex byte of the WWN for **Drive 0**.

Example: **Drive 0** WWN is 50:05:08:40:16:**6B**:00, **Media Changer** WWN will be 50:05:08:40:16:**6A**:00.

Verifying Library Connectivity

To verify the tape drive installation, you should verify that the library and tape drives are recognized from the host or from the SAN switch.

If the SAN switch is available, it is possible to verify connectivity by connecting to the switch. There are two ways to directly access the SAN switch:

- [Connect Via a Telnet Session](#)

- [Connect Via a Web Browser](#)

Note: The information below applies to a Brocade SAN switch. For other SAN switches, contact the SAN administrator.

Connect Via a Telnet Session

To connect via a Telnet session to a SAN switch:

- 1 Connect the service laptop to the SAN switch using an Ethernet cross-over cable, or by connecting to the LAN (if available).
- 2 On the service laptop, open a command prompt window.
- 3 From the command prompt, enter the following command and press <Enter>:

```
telnet <IP address of SAN switch>
```

The SAN switch login prompt displays.

- 4 Enter the **username** and **password** and press <Enter>.

Note: For Brocade SAN switches, the default login is **admin** for the username and **password** for password. This may have been changed by the system administrator. For all other switches, contact the system administrator.

- 5 For Brocade switches, at the command prompt, type **nsshow** and press <Enter>.

The nsshow command displays (see [figure 24](#)).

Figure 24 Nsshow Command

```
Select C:\WINNT\system32\cmd.exe
login: admin
Password:
switch:admin>
switch:admin>
switch:admin> nsshow
The Local Name Server has 4 entries <
Type Pid COS PortName NodeName TTL(sec)
NL 011001; 3;50:05:08:40:44:00:8d:01;50:05:08:40:44:00:8d:00; na
FC4s: FCP [HP Ultrium 2-SCSI K46Z]
Fabric Port Name: 20:00:00:60:69:30:3d:c9
NL 01101; 3;50:05:08:40:44:00:8d:05;50:05:08:40:44:00:8d:04; na
FC4s: FCP [HP Ultrium 2-SCSI K46Z]
Fabric Port Name: 20:01:00:60:69:30:3d:c9
N 011200; 3;50:05:08:40:44:00:8c:00;50:05:08:40:44:00:8c:00; na
FC4s: FCP [QUANTUM PX720 1.02]
Fabric Port Name: 20:02:00:60:69:30:3d:c9
N 011300; 3;21:00:00:e0:8b:10:d3;3;20:00:00:e0:8b:10:d3:d3 na
FC4s: FCP
NodeSymb: [42] "QLA2342 FW:v3.02.1 DUR:v8.2.3.1 <w32 UI>"
Fabric Port Name: 20:03:00:60:69:30:3d:c9
)
switch:admin> switchshow
switchName: switch
```

WWN for the library

WWN for the second Native Fibre channel drive

WWN for the first Native Fibre channel drive

If the world wide names are visible from the **nsshow** command, the connectivity is verified.

Connect Via a Web Browser

To connect via a web browser:

- 1 Connect the service laptop to the SAN switch using an Ethernet cross-over cable.
- 2 On the service laptop, launch a web browser such as Internet Explorer.
- 3 In the **Address** field, type `http://IPaddress/` where IP address is the IP address for the SAN switch and press <Enter>.

The SAN switch web based utility displays.

- 4 Examine the Name Server table for the status of the switch ports and the WWNs of the connected devices.

If the WWNs for the library and all tape drives are visible, the connectivity is verified.

Fibre Channel Connectivity Troubleshooting

Refer to the following sections Fibre Channel connectivity troubleshooting:

- [Fibre Channel Connectivity Troubleshooting](#)
- [SCSI ID Assignment with Native Fibre Channel Tape Drives](#)

Fibre Channel Connectivity Troubleshooting

The following section provides Fibre Channel connectivity problems and resolutions when connecting via Fibre Channel to the SAN switch, or directly to the library and drives.

- 1 Medium changer and drives are not visible in the device manager
 - a Check all cable connections.
 - b Check the SAN switch port LEDs for connection status to the library Fibre Channel HBA and tape drives.
 - c If you are connected to the SAN switch, verify that you are connected to the same zone as the library and tape drives. If you are unsure, try one of the ports on the SAN switch that a tape drive is connected to.

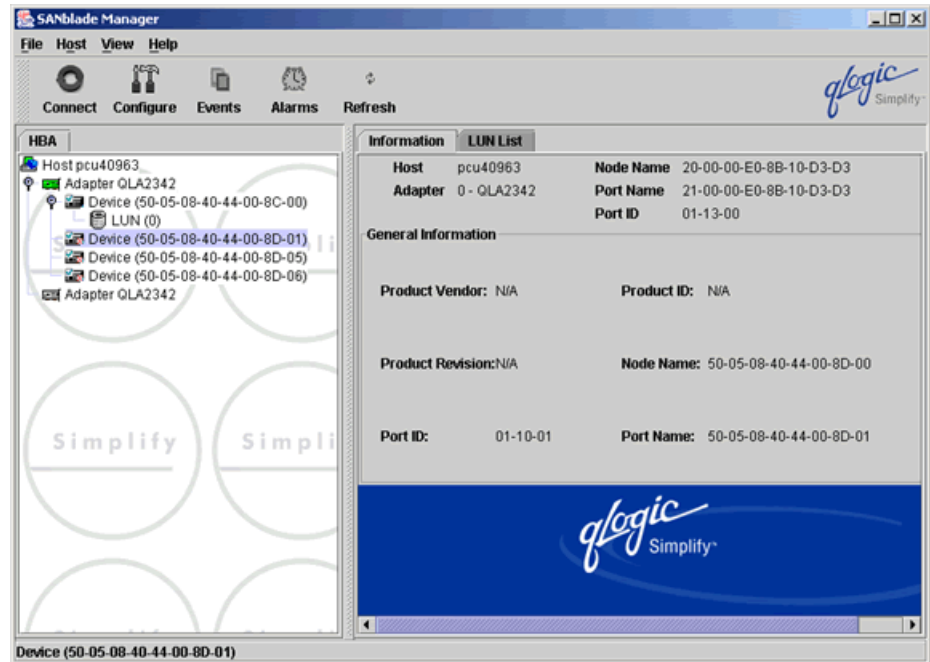
Note: If you are not on a port in the same zone as the library and all of the drives, you will not be able to verify connectivity.

- d Verify that the SAN switch is powered on and operating normally.

- e If you are still unable to view the Fibre Channel devices, launch the SANSurfer SANblade manager and click **Connect**. Accept the default “localhost” entry.

The SANblade manager displays (see [figure 25](#)).

Figure 25 SANblade Manager



The SANblade manager should display all connected Fibre Channel devices. If the library and tape drives do NOT display, check the cabling and connection status.

SCSI ID Assignment with Native Fibre Channel Tape Drives

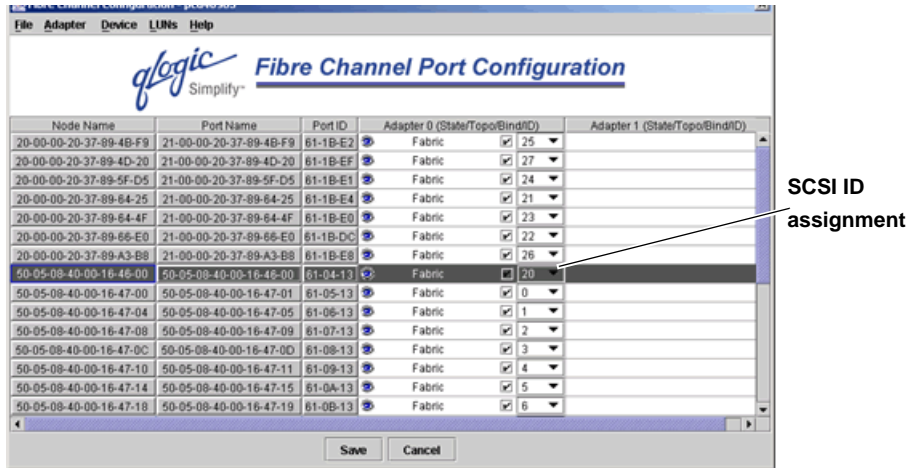
With native Fibre Channel tape drives, each tape drive is its own Fibre Channel target with a dedicated WWN and on LUN 0. The host (including the laptop using MAGMA box) will pick up the devices and assign local SCSI IDs in the order that the SAN devices are discovered. This will in almost every case NOT match the order of the devices as they are installed in the library. This is not a problem from the customer point of view, as long as drive serialization is enabled on the library and serialization is supported by the customer's ISV application. This will allow the ISV application to put the drives in the correct order within the application.

In some rare cases it may be necessary to re-map the local SCSI ID assignments so that the library changer is at SCSI ID 0 and the drive SCSI ID assignments follow in order. The important thing to remember is that the order of the SCSI IDs on your system will probably not match the order of the drives in the library. Make sure to check the SCSI ID that is assigned to the WWN of the drive you want to communicate with or you may be communicating to the wrong drive.

To display the SCSI ID assignments:

- 1 From the SANblade manager program, click **Configure**.
The port configuration screen displays (see [figure 26](#)).

Figure 26 Port Configuration Screen



The port configuration screen allows you to change the SCSI ID order if the Fibre Channel HBA drive supports persistent bindings.

Click on the drop down ID box to change the SCSI ID assignment as desired.