Quantum

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

Quantum FC1202

FC1202

81-81354-01 A01

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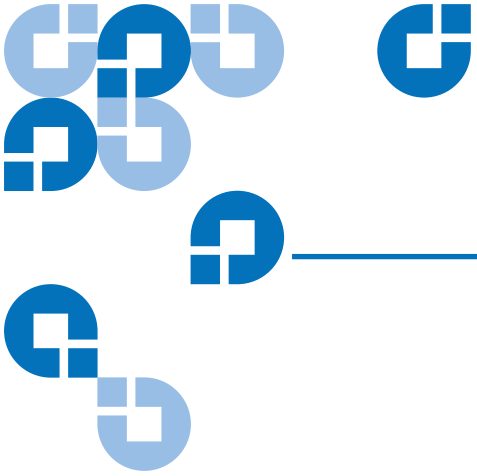
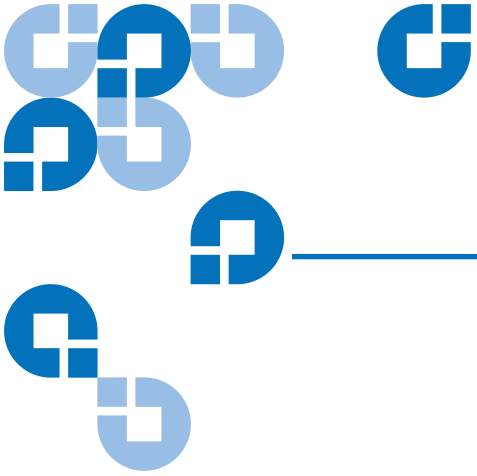


Contents

Figures



Tables

Preface

Audience

This document is written for operators of the FC1202 Fibre Channel bridge.

Purpose

This document explains how to use the web interface, serial/telnet interface, and how to troubleshoot the FC1202 Fibre Channel bridge.

Document Organization

This document is organized as follows:

- Chapter 1, FC1202 Description and Web Interface, provides a description of the FC1202 Fibre Channel bridge and information on the web interface.
- Chapter 2, FC1202 Bridge Serial/Telnet User Interface, provides information on the serial/telnet interface available on the FC1202 Fibre Channel bridge.
- Chapter 3, Troubleshooting, discusses problems you may encounter during the setup and operation of the FC1202 Fibre Channel bridge.

Notational Conventions

This manual uses the following conventions:

Note: Notes emphasize important information related to the main topic.

Caution: Cautions indicate potential hazards to equipment and are included to prevent damage to equipment.

Warning: Warnings indicate potential hazards to personal safety and are included to prevent injury.

This manual uses the following:

- 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.

Related Documents

Documents related to the FC1202 Fibre Channel bridge are shown below:

Quantum FC1202 Series Documentation

Document No.	Title	Description
81-8290-01	*PX500 Series User's Guide*	Provides user information for the PX500 Series tape libraries.

Document No.	Title	Description
81-81351-01	*FC1202 Fibre Channel Bridge Upgrade Instructions*	Provides installation and configuration information on the FC1202 Fibre Channel bridge.
6311658	*SNMP Integration Guide*	Provides integration information for SNMP.

Refer to the appropriate product manuals for information about your tape drives 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 Quantum PX500 Series libraries 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

Customer Support

The Quantum Customer Support Department provides a 24-hour help desk that can be reached at:

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Asia/Pacific Rim:	(International Code) + 61 7 3839 0988
Europe/Middle East/Africa:	(International Code) + 44 (0) 1256 848748

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Chapter 1

FC1202 Description and Web Interface

The Quantum PX500 Series automated tape libraries are controlled by a host computer via a SCSI LVD bus using the SCSI-3 medium changer command set. The Quantum PX500 Series allows for easy conversion from the SCSI host interface to a Fibre Channel host interface.

Fibre Channel Description

Fibre Channel is a serial data transfer architecture for use with computers and mass storage devices that is rapidly emerging to challenge SCSI as the interface of choice for host-to-storage applications.

Fibre Channel advantages include:

- Connection distances with the Quantum FC1202 option up to 500 meters
- 1 GB/Sec, 2 GB/Sec, or autosense data transfer rates
- Supports up to 126 devices in a loop mode
- Supports 24-bit addressing for over 16 million devices in point-to-point mode or fabric, when using a Fibre Channel switch or multiple Fibre Channel switches.

- Operating system independence
- Interconnect flexibility

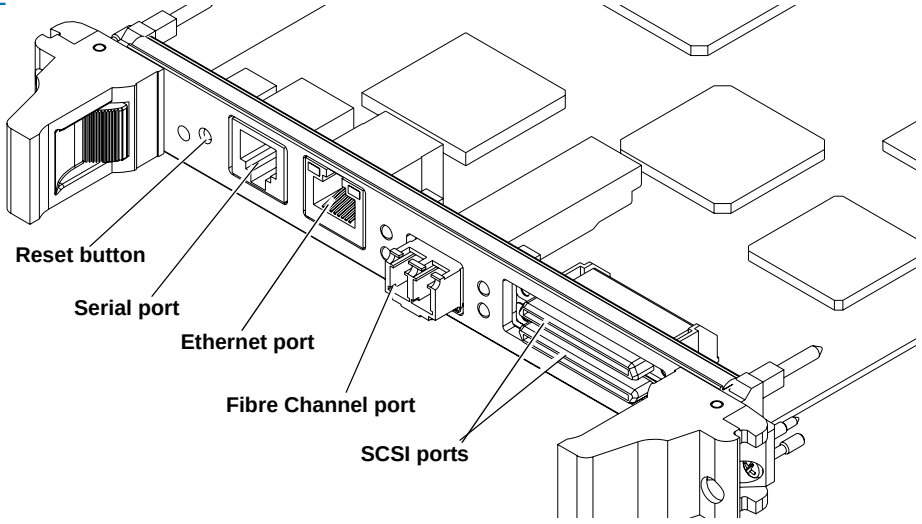
FC1202 Bridge Operation

Once a FC1202 bridge option is installed and tested, the library operates exactly as a PX500 Series with a SCSI host interface. Operation of the library via the operator control (OCP) is unchanged.

FC1202 Overview

The FC1202 provides a bridge between a Fibre Channel host and the SCSI tape drives within a library. Figure 1 shows the FC1202 Fibre Channel bridge and feature locations.

Figure 1 FC1202 Overview



SCSI Ports

The FC1202 contains two SCSI ports or buses (port 0 and port 1). When the SCSI port (bus) is connected to a tape drive, the corresponding LED is lit indicating activity on the SCSI bus.

FibreChannelPort

The FC1202 contains one Fibre Channel port. The port has two corresponding LEDs. The top LED indicates activity on the Fibre Channel port and the bottom LED indicates a valid Fibre Channel link on the port.

RJ-45 Ethernet Port

The FC1202 contains one RJ-45 Ethernet port which is used for remote configuration and bridge management. The port has two corresponding LEDs. The top LED indicates activity on the port and the bottom LED indicates a valid Ethernet link.

Serial Port

The FC1202 contains one serial port which is used to access the serial interface and locally manage or configure the bridge.

Power Indicator

The FC1202 contains one power LED which indicates two power states on the bridge. If the LED is green, the bridge is powered on. If the LED is yellow, the bridge is in the process of performing a "Power-On-Self-Test" or a the bridge has a processor problem.

Reset Button

The FC1202 contains a reset button that is used to force a manual reboot of the bridge. A pen or other small object must be used to access the reset button. You can also reboot the FC1202 from the web interface.

Caution: Resetting the FC1202 during a backup/restore job can result in a disruption of that process and loss of data. Ensure all data transfer jobs have completed before resetting the FC1202.

FC1202 Web Interface

The FC1202 utilizes a web-based interface which allows you to configure and manage the bridge from a remote workstation on the same network. The FC1202 is managed through the following web pages (accessible using Internet browser software installed on the host computer):

- Home Page contains status information, including a physical image of the FC1202.
- System Page allows you to configure standard system components.
- Ports Page allows you to configure both the SCSI and Fibre Channel ports
- Discovery Page allows you to display connected devices and discover new devices
- Mapping Page allows you to display and configure route mapping
- Statistics Page displays the FC1202 statistics
- Utilities Page allows you to access FTP utilities and trace information
- Report Menu displays the consolidated view of all FC1202 systems
- Reboot Option allows you to remotely reboot the FC1202

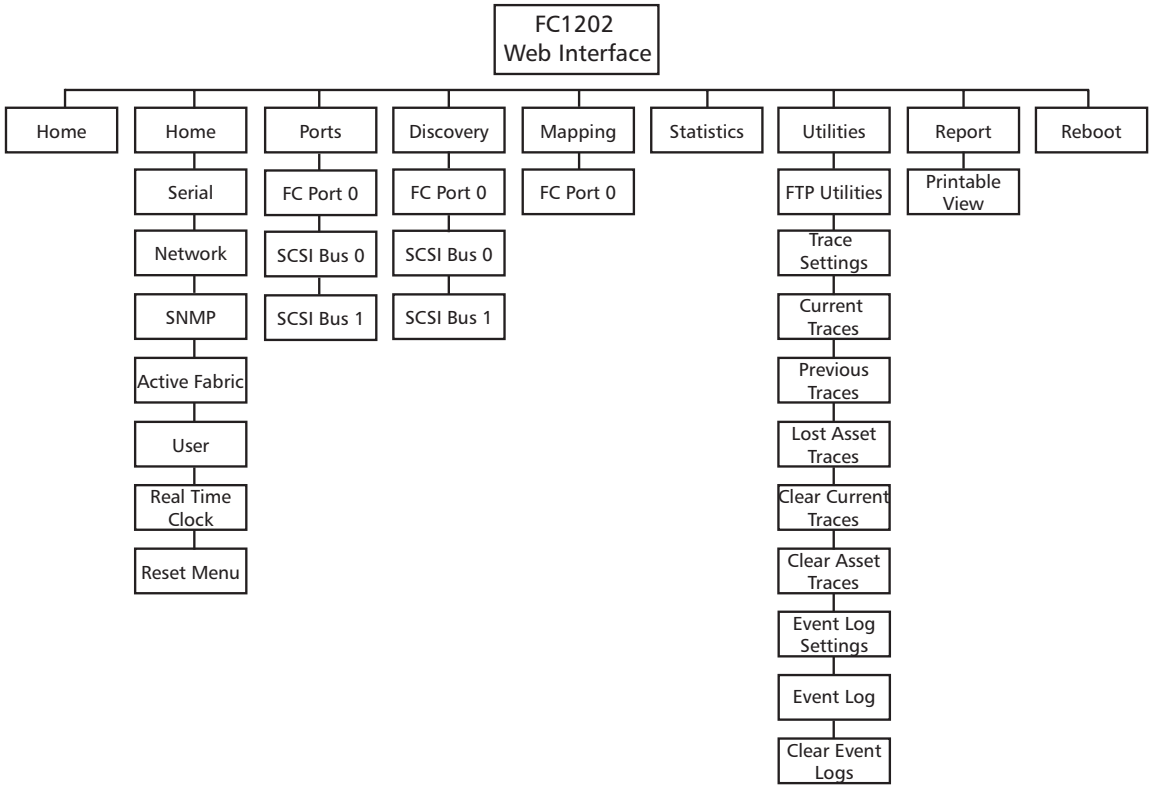
The FC1202 supports the following web browsers:

- Microsoft Internet Explorer 5.5 or later
  You can download this software from
  http://www.microsoft.com.
- Netscape Navigator 6.2 or later
  You can download this software from
  http://www.netscape.com.

FC1202 Menu Items

The following figure depicts the menu items available from the FC1202 Web Pages.

Figure 2 FC1202 Menu Tree



Accessing the FC1202 Web Pages

To access the FC1202 web pages:

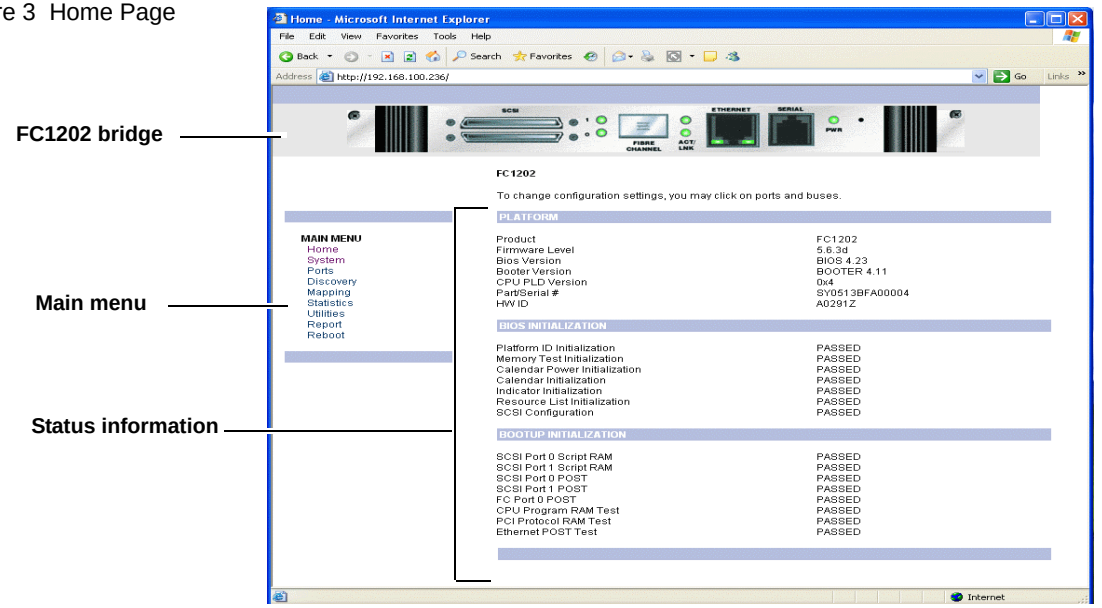
1 On the host computer, open the internet browser software.

In the **Address** field, type http://IPaddress/ where IP address is the IP address for the FC1202.

> **Note:** The default IP address is 1.1.1.1

The FC1202 **Home** page is displayed, showing FC1202 status information (see figure 3). The home page is accessible to anyone who knows the IP address.

Figure 3 Home Page

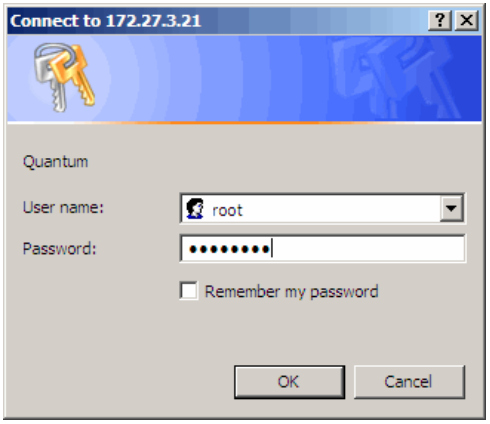


2 Select a menu option to access menus and screens.

The **Password** dialog box is displayed (see figure 4).

Note:	The default Username is **root** and the Password is **password**.

Figure 4 Password Dialog



Home Page

The first page that displays when you access the FC1202 web pages is the FC1202 **Home** page (see figure 3). This page includes information on the FC1202 status as follows:

- Current platform information
- Current bios initialization information
- Current bootup initialization information

The **Home** page is divided into three distinct sections:

- FC1202 bridge - The FC1202 image is interactive, allowing quick access to configuration menus:
  - To display current settings and status for a port, click the corresponding port shown on the FC1202 image.
  - To open a menu for making changes to the configuration for that particular port or bus, click the desired Fibre Channel port or SCSI port.
- To open the **Network Configuration** page, click the Ethernet port
  - Main menu
  - Bridge status information

The main menu displays a list of the FC1202 web pages. To view a page, click its corresponding link. The management frame displays the page you selected.

System Page

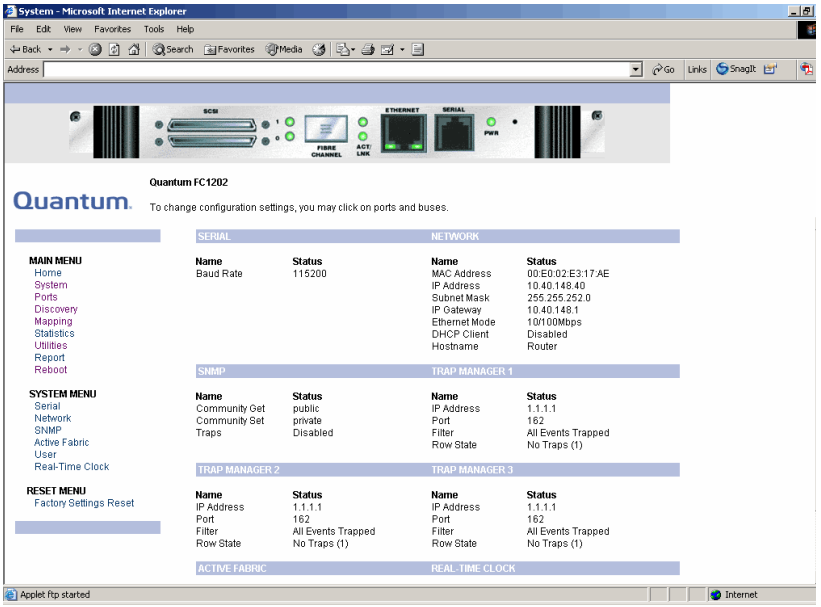
The **System** page is used to view and configure serial, network, trap, active fabric, clock, and power supply components.

To access the **System** page:

1. Click **System** from the Main menu on the **Home** page.

   The **System** page displays (see figure 5):

Figure 5 System Page



The **System** page allows you to configure:

- Serial port (see FC1202 Bridge Serial/Telnet User Interface on page 41)
- Network Information
- SNMP
- Active Fabric
- User Information
- Real Time Clock
- Reset Page

Network Information

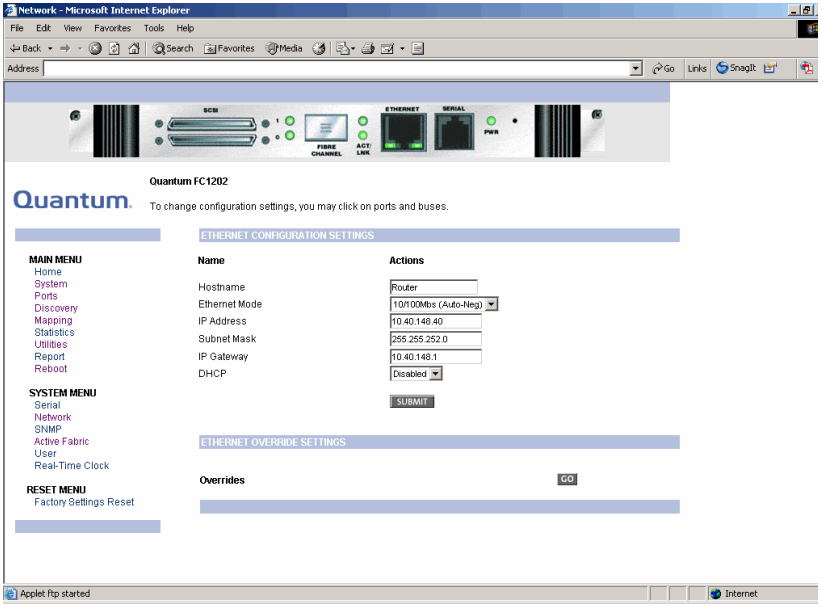
The **Network Information** page allows you to configure network settings for the FC1202.

To access the **Network Information** page:

1 Click **Network** in the **System** menu.

The **Network Information** page displays (see figure 6):

Figure 6 Network Information Page



2 Edit the configuration information as desired (see table 1 for a description of the fields) and click **Submit** to accept any new information.

Table 1 Network Configuration Fields

Field	Description
Hostname	View or set the hostname for the FC1202 (for example, the DNS name)
Ethernet Mode	View or set the Ethernet port speed (10Mps, 100Mps half duplex, 100Mps full duplex, 10/100 auto negotiate)
IP Address	View or set the IP address for the FC1202
Subnet Mask	View or set the subnet mask for the FC1202

Field	Description
IP Gateway	View or set the IP gateway for the FC1202
DHCP	Enable or disable DHCP support. When enabled, the FC1202 requests a dynamic IP address form a DHCP server on the Ethernet network.

The FC1202 will not use the new basic configuration until it has been rebooted.

> **Note:** To use the DHCP feature, a DHCP server must be operational on the Ethernet network. If DHCP is enabled and no DHCP server is present, no IP address will be assigned to the FC1202. This means that the FC1202 will not be reachable via its Ethernet port, even at the default 1.1.1.1 IP address.

SNMP

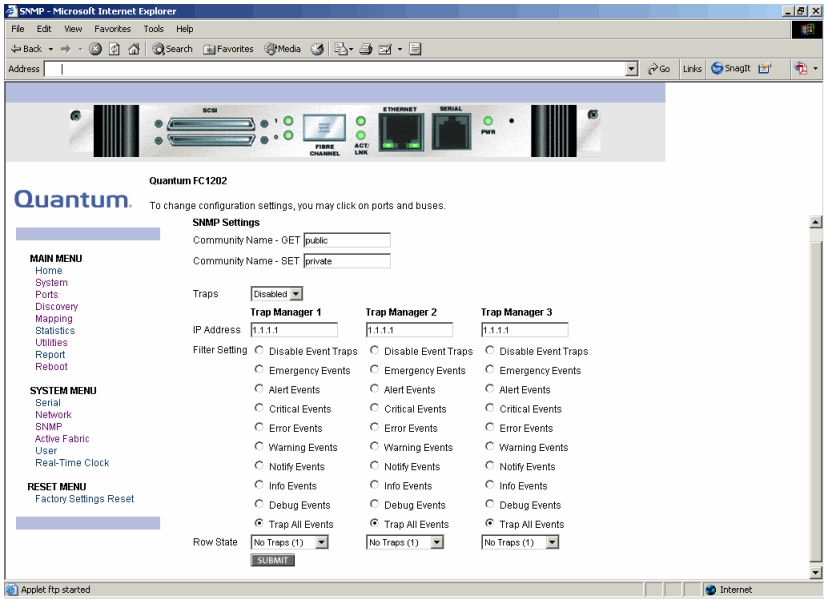
SNMP stands for Simple Network Management Protocol, a set of protocols for managing complex networks. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.

To access the **SNMP** page:

1. Click **SNMP** in the **System** menu.

   The **SNMP** page displays (see figure 7):

Figure 7 SNMP Page



SNMP settings:

- **Community Name - GET** (default: public) is checked for each GET request received by the bridge.

  The community name in the SNMP packet must match this community name for the SNMP GET request to be successfully completed. Configure the SNMP manager to have the same GET and SET community names as the bridge.

- **Community Name - SET** (default: private) is only applicable for the FA MIB 2.2.

- **TRAPS** - enables or disables SNMP traps for manager IP addresses.

  If traps are enabled, up to three trap manager IP addresses can be setup. Trapped events are logged in an event log. Event logging captures up to the last 215 events and then starts overwriting the log.

Note: To ensure accurate event logging, verify the clock and date are correctly set in the Real-time clock screen.

- **Trap Manager IP Address** - is the address used for sending trap notifications.

  Typically, this is the IP address of the machine using the network management application or MIB browser.

- **Trap Manager Filter Settings** sets filtering of event notifications.

  Event notifications correspond to the trace setting levels configured in the Trace Settings Configuration menu. The filters that can be set include:

  - Log All Events (Priority 0)
  - Disable Event Logging (Priority 1)
  - Error Events (Priority 6)
  - Notify Events (Priority 4)

- **Trap Manager Row State** is set to an integer in the range of 0 through 3

  Options include:

  - Disabled (0): clears to the default settings
  - No Traps (1): no traps exist
  - Row Exist (2): row exists by traps are not sent to the target
  - Send Traps (3): row exists and traps are sent

Active Fabric

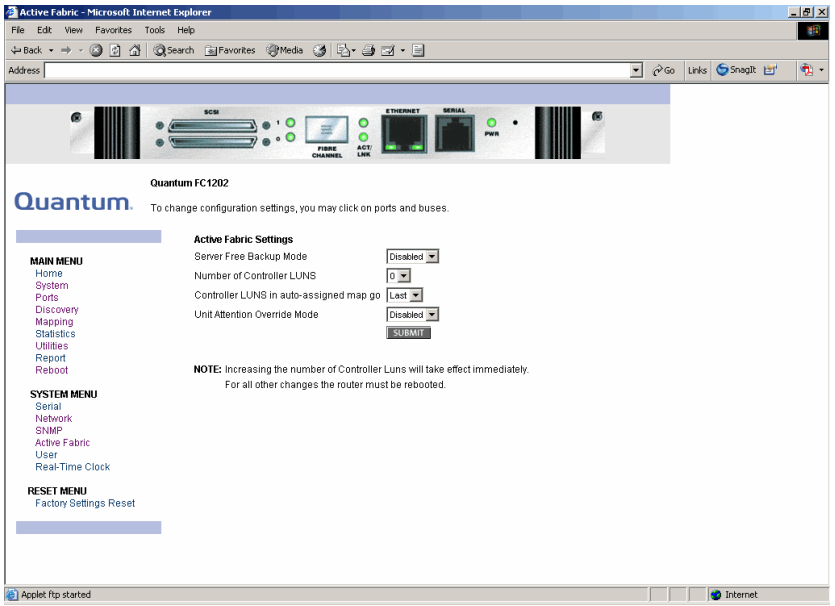
The **Active Fabric** page allows you to configure active fabric options on the FC1202.

To access the **Active Fabric** page:

1. Click **Active Fabric** in the **System** menu.

   The **Active Fabric** page displays (see figure 8):

Figure 8 Active Fabric Page



2 Edit the active fabric information as desired (see table 2 for a description of the fields) and click **Submit** to accept any new information.

Table 2 Active Fabric Fields

Field	Description
Server Free Backup Mode	Enables or disables server free backup. Enabling serverless backup allows the FC1202 to control the task of moving data from the primary storage to the library and removed the host from the process.
Number of Controller LUNS	View or set the number of controller LUNs reported by the FC1202. This number must be in the range of 0 through 4 (default=0)
Controller LUNS in Auto Assigned Map Go	View or set the location of LUNs in the Port 0 and Port 1 map. This setting can be toggled between first and last (default=last)

User Information

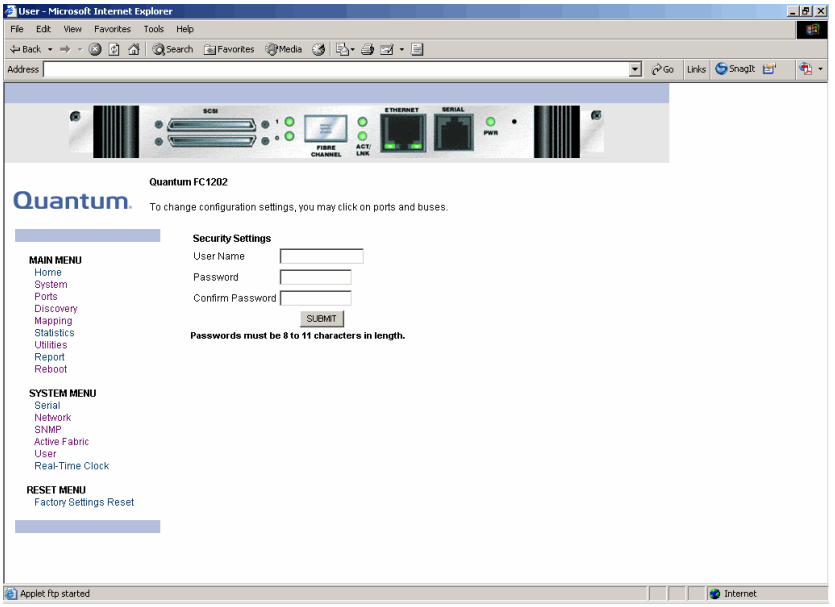
The **User Information** page allows you to configure FC1202 security.

To access the **User Information** page:

1 Click **User Information** in the **System** menu.

The **User Information** page displays (see figure 9).

Figure 9 User Information Page



2 Edit the user information as desired (see table 3 for a description of the fields) and click **Submit** to accept any new information.

Table 3 User Information Fields

Field	Description
User Name	View or set the user name. The user name can be any alphanumeric combination (default=**root**)
Password	View or set the password. The password can be any alphanumeric combination (default=**password**)

Note: The username and passwords should be unique and kept confidential. Using a combination of letters and numbers is recommended.

Real Time Clock

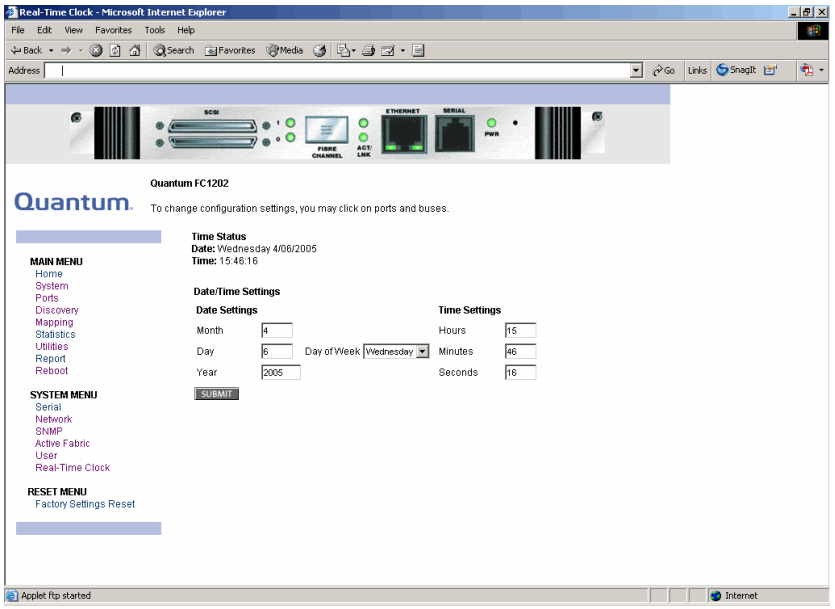
The **Real Time Clock** page allows you to set the system time and date.

To access the **Real Time Clock** page:

1 Click **Real Time Clock** in the **System** menu.

The **Real Time Clock** page displays (see figure 10):

Figure 10 Real Time Clock Page



2 Edit the real time clock information as desired (see table 4 for a description of the fields) and click **Submit** to accept any new information.

Table 4 Real Time Clock Fields

Field	Description
Date Settings	View or set the month, date, and year. The year must have four digits.
Day of Week	View or set the day of the week.
Time Settings	View or set the hours, minutes, and seconds. The system clock is a 24-hour clock.

Reset Page

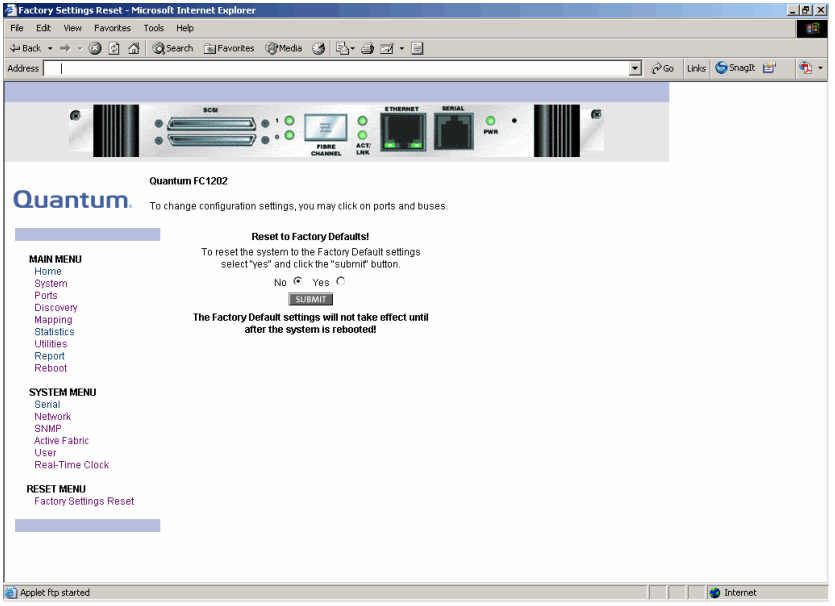
The Reset page allows you to reset the FC1202 to it's factory default settings.

To access the **Reset** page:

1 Click **Reset** in the **System** menu.

The **Reset** page displays (see figure 11).

Figure 11 Reset Page



2 To reset the FC1202 to its default factory configuration, select **Yes** and click **Submit**.

All bridge activities are disrupted while the unit resets the configuration to the factory configuration and saves those options to the FLASH memory. All configurable bridge options are reset except for:

- IP address
- Port maps

Ports Page

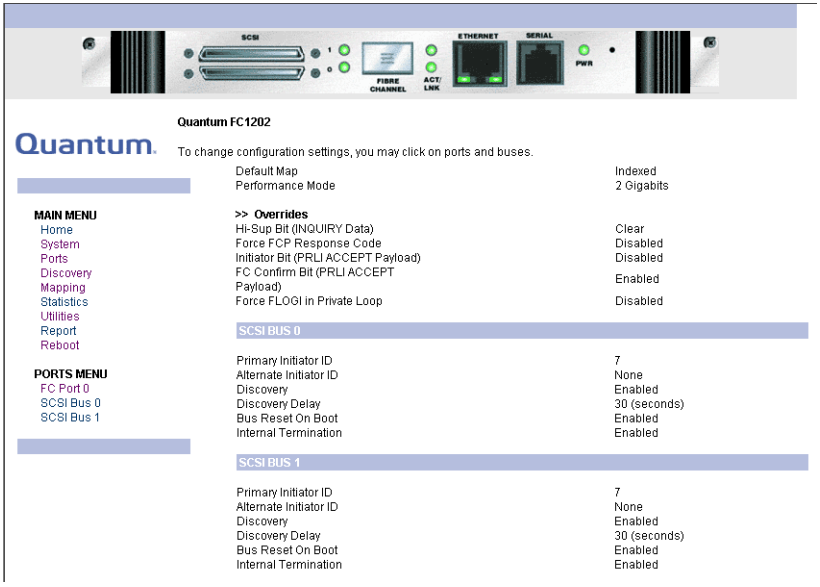
The **Ports** page is used to view and modify the configuration settings of both the Fibre Channel and SCSI ports on the FC1202.

To access the **Ports** page:

1. Click on **Ports** from the Main menu on the **Home** page.

   The **Ports** page displays (see figure 12).

Figure 12 Ports Page



The **Ports** page displays the current status of all connected Fibre Channel and SCSI ports on the FC1202.

The **Ports** page allows you to configure:

- Fibre Channel Port
- SCSI Ports

Fibre Channel Port

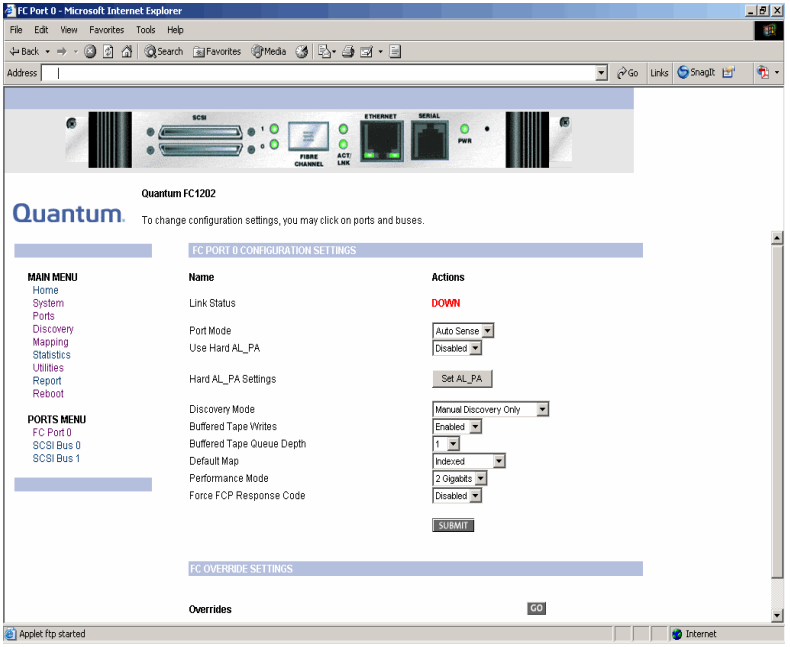
The **Fibre Channel Port** pages allow you to configure the Fibre Channel port on the FC1202.

To access a **Fibre Channel Port** page:

1. Click on the Fibre Channel port you wish to view or configure from the **Ports** menu.

   The **Fibre Channel Port** page displays (see figure 13).

Figure 13 Fibre Channel Port Page



2. Edit the Fibre Channel port information as desired (see table 5 for a description of the fields) and click **Submit** to accept any new information.

Table 5 Fibre Channel Port Fields

Field	Description
Link Status	Indicates the port link status. The status is either Up or Down.
Port Mode	View or set the port mode. The port mode settings are: • Auto Sense - the port attempts to negotiate as a loop. If it is not successful, the port negotiates as a fabric. If the port negotiates as a loop, it then determines whether it is a private or public loop. • N_Port - (default setting) the port bypasses port negotiation and connects as fabric automatically. If N_Port is selected and the Fibre Channel network is on a loop, a communication error will occur.
Use Hard AL_PA	View or set Hard AL_PA usage. The settings are either enabled or disabled.
Hard AL_PA Settings	View the AL_PA table.

Field	Description
Discovery Mode	View or set the FC1202 discovery mode. The discovery settings are (default: Manual): • Auto Discovery on Reboot Events - the FC1202 automatically discovers all Fibre Channel devices when rebooted or when link-up events occur, such as connecting cables or rebooting network hubs/ switches. Both the Fibre Channel ports and the devices behind the ports are discovered on all subsequent link-up events. • Auto Discovery on Link Up Events - the FC1202 automatically discovers all Fibre Channel devices when rebooted or when link-up events occur, such as connecting cables or rebooting network hubs/ switches. both the ports and the devices behind the ports are discovered for the first link-up event. Subsequent link-up events only discover the ports and not the devices behind the ports. • Manual Discovery - (default setting) when this setting is selected, the FC1202 only discovers new devices when the Discovery option is selected from the Main menu or when a Registered State Change Notification (FSCN) is received from a fabric.
Buffered Tape Writes	View or set the buffered tape writes setting (default: enabled). When enabled, buffered tape writes return status on consecutive write commands prior to the tape device receiving data.
Buffered Tape Queue Depth	View or set the buffered tape Queue depth. Select a setting of 0 through 10 from the drop down list.

Field	Description
Default Map	View or set the mapping mode for the selected port. The port mapping settings are (default: indexed): • Port 0 or Port 1 Device Map • Indexed (default setting) - the indexed map should NOT be edited for security reasons. • Auto-assigned - contains all SCSI devices that are attached to the FC1202 • SCC
Performance Mode	View or edit the FC1202 performance mode. The FC1202 Fibre Channel port speed can be set to either 1GB/sec or 2GB/sec. Ensure that the FC1202 and the fabric or loop are set for the same network speed. You may experience framing errors if the network and FC1202 speeds are set differently.
Force FCP Response Code	View or edit the force FCP response code. The setting can be toggled between off or on for support of HP-specific HBA #223180-B21 and #120186-001.
Override Settings	This option is reserved for Quantum Customer Support Only.

SCSI Ports

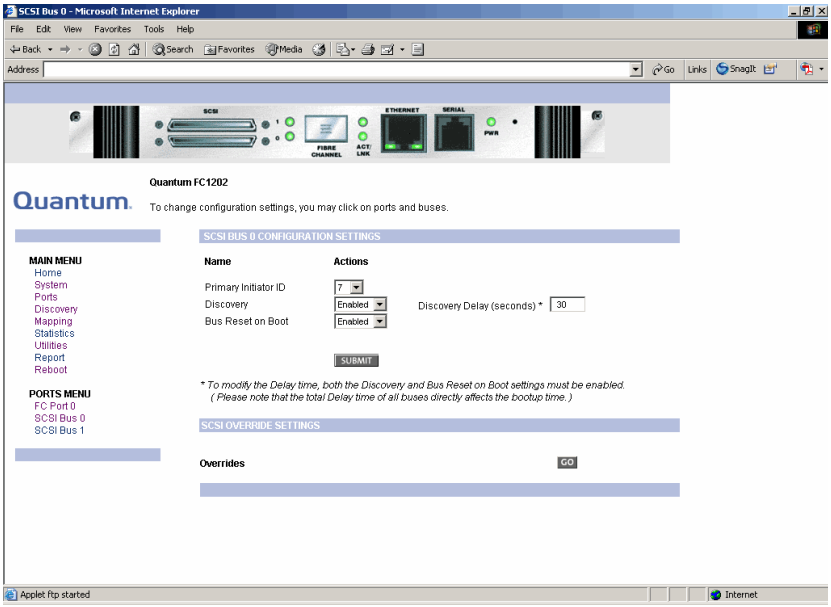
The **SCSI Ports** pages allow you to configure the individual SCSI ports/busses on the FC1202.

To access a **SCSI Port** page:

1. Click on the SCSI port you wish to view or configure from the Ports menu.

   The SCSI Port page displays (see figure 14).

Figure 14 SCSI Port Page



2 Edit the SCSI port information as desired (see table 5 for a description of the fields) and click **Submit** to accept any new information.

Table 6 SCSI Port Fields

Field	Description
Primary Initiator ID	View or set the SCSI ID for this port (default: 7)
Discovery	View or edit the discovery mode. The settings are enabled or disabled.
Bus Reset on Boot	View or set bus reset on boot mode. When enabled, the FC1202 automatically resets the SCSI busses during a power up or reboot. After the power-up or reboot is complete, there is an additional 30 second delay while host/devices are discovered.
Override Settings	This option is reserved for Quantum Customer Support Only.

Discovery Page

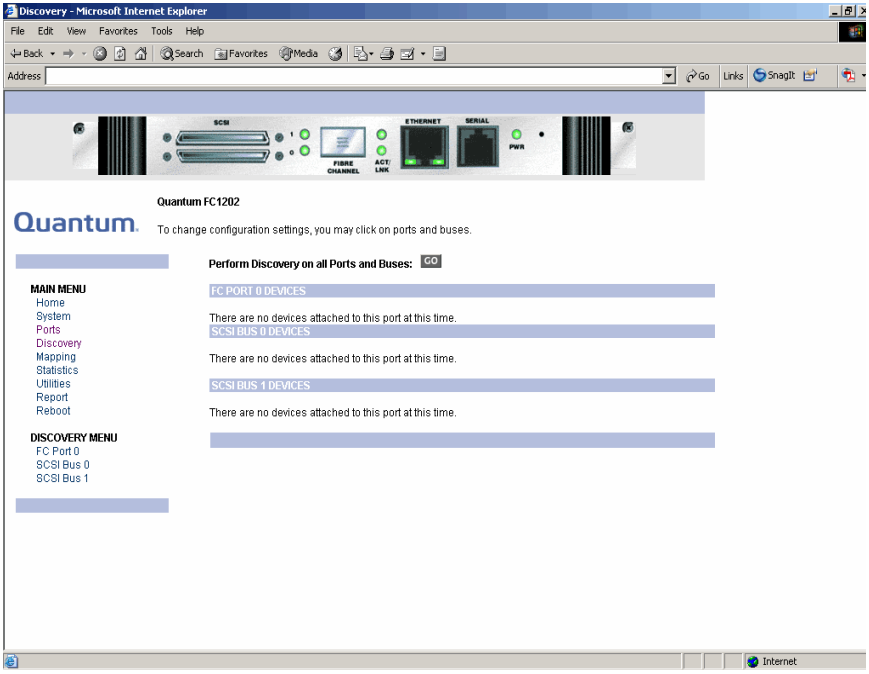
The **Discovery** page is used to view and discover new target devices such as tape drives and media changers.

To access the **Discovery** page:

1 Click on **Discovery** from the Main menu on the **Home** page.

The **Discovery** page displays (see figure 15).

Figure 15 Discovery Page



To perform a manual discovery of a specific Fibre Channel or SCSI port, select the port either from the Discovery menu or from the FC1202 image and click **Go**.

Mapping Page

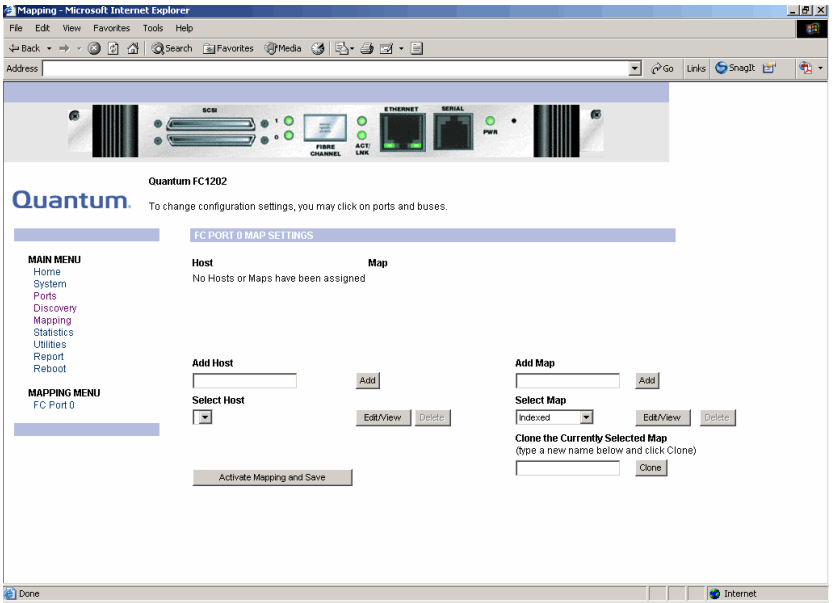
The Mapping page allows you to view or modify host and map information for a Fibre Channel port or SCSI port. Maps and hosts can be added, edited, or deleted.

To access the **Mapping** page:

1 Click on **Mapping** from the Main menu on the **Home** page.

The **Mapping** page displays (see figure 16).

Figure 16 Mapping Page



Each physical port/bus on the Interface Controller can have the following maps:

Table 7 Device Map Types

Map Type	System/User Generated	Fibre Channel or SCSI
Auto Assigned	System	Fibre Channel and SCSI
Indexed (default)	System	Fibre Channel and SCSI
Port <0,1> Device Map	System	Fibre Channel
SCC	System	Fibre Channel

> **Note:** Port 0 or Port 1 Device Map is the recommended map to be used for editing and assigning oncoming hosts. The Indexed (default) map should not be used for editing, for security reasons, even though the user is able to edit this map.

To view or change map settings of a specific port or bus:

1. Select the port or bus from the menu bar on the left side of the screen or from the FC1202 image at the top of the screen.

   Specific mapping information is displayed, including the name of the port, the selected host, and the assigned map.

2. To make changes to the configuration, enter the new value and then select **Submit**.

   Because some mapping configuration settings are the same for Fibre Channel and SCSI maps and some settings are unique, this mapping section is subdivided as follows:

   - Common Fibre Channel Mapping Tasks
   - Fibre Channel Mapping Tasks

Common Fibre Channel Mapping Tasks

Although the initial screen display for Fibre Channel and SCSI maps differ slightly, the available actions are the same.

Table 8 Mapping screen options

Field	Description
Select Host	Adds a known host. To add a previously configured host, select the host from the Select Host drop down box.
Edit/View Host	View or change the host information.
Delete Host	Deletes the current host.
Select Map	Adds a known map. To edit the port 0 or port 1 device map, expand the Select Map drop down box and select the appropriate map from the list.

Field	Description
Edit/View Map	View or change map information.
Delete Map	Deletes the current map

Note: Indexed, Auto Assigned, and ACC maps cannot be deleted or renamed.

Fibre Channel Mapping Tasks

Configuration tasks for Fibre Channel mapping include:

- Viewing and Changing Fibre Channel Host Information
- Viewing and Changing Fibre Channel Map Information

Viewing and Changing Fibre Channel Host Information

This section is reserved for Quantum Customer Support only.

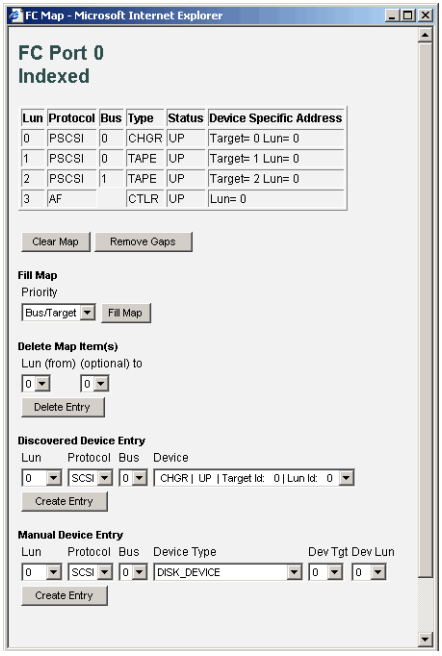
Viewing and Changing Fibre Channel Map Information

To view or change current Fibre Channel map information:

1. In the **Mapping Menu** screen, select the **Fibre Channel port**.
2. Select **Edit/View** in the Map section of the screen.

   The **Fibre Channel Map** dialog box is displayed. Current map information is shown at the top of the dialog box.
3. Enter the new settings and then select the appropriate action button.

Figure 17 Fibre Channel Dialog Box



Note: Auto-assigned and SCC maps cannot be modified, cleared, filler, or have entries removed.

Table 9 Fibre Channel Map Settings

Clear Map	Clears all entries from the current map.
Remove Gaps	Removes any incremental gaps in the sequence of LUNs listed in the table. When the system removes gaps from the table, the LUNs are renumbered in sequential order, starting with LUN 0.
Fill Maps	Fills in the current map. To use the fill map option, expand the fill map priority drop down box, select the fill option, and then click **Fill Map**.

Discovered Device Entry	Adds a discovered device to the map. To add a discovered device to the map, use the drop down box to enter the settings, at the desired LUN number, and then click **Create Entry** in the discovered device entry section of the screen.
Manual Device Entry	Creates a map entry for a device that is not yet discovered or installed. To add a new device to the map, use the drop down boxes to enter the settings, and then click **Create Entry** in the manual device entry section of the screen.

Statistics Page

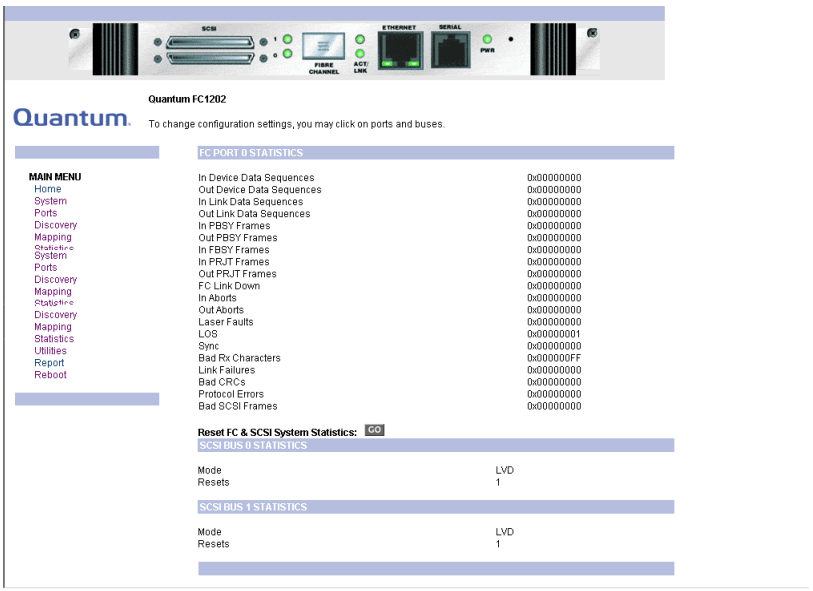
The **Statistics** page allows you to view various FC1202 statistics remotely.

To access the **Statistics** page:

1 Click on **Statistics** from the **Main** menu on the **Home** page.

The **Statistics** page displays (see figure 18).

Figure 18 Statistics Page



To view information for a specific port or us, click the component on the menu bar or the FC1202 image. To refresh the display, click **Reset SCSI System Statistics**.

Utilities Page

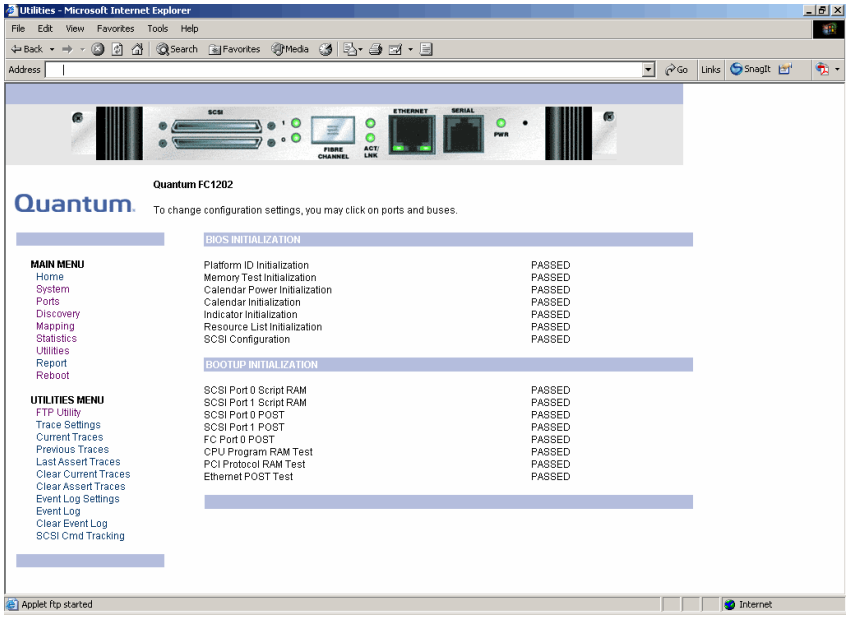
The **Utilities** page allows you to access FTP utilities and various trace information.

To access the **Utilities** page:

1 Click on **Utilities** from the Main menu on the **Home** page.

The **Utilities** page displays (see figure 19).

Figure 19 Utilities Page



The FTP utility requires the use of a JAVA applet and prompts for permission to install the applet, if needed. If the prompt is displayed, follow the onscreen instructions to complete the installation. The FTP utility then prompts for permission to run the applet.

Note: Internet access is required to verify the signature for the FTP applet and to download the JAVA applet plug-in for your browser.

To open an FTP session:

1. Enter the User Name, Password, and the IP address of the Interface Controller and click **Connect**.
2. Select the local file to upload or download. If necessary, click **Browse** to scroll through a file list.

> **Note:** The configuration file should be named <myconfigfile.cfg> when typing it into the FTP window.

The following file types can be uploaded to the Interface Controller:

- Configuration *(.cfg)*
- Firmware *(.dlx)*
- The following file types can be downloaded from the Interface Controller:
  - Configuration *(.cfg)*
  - Traces for the current boot cycle (*curtrace.txt*)
  - Traces from the previous boot cycle (*prvtrace.txt*)

To upload or download from the Interface Controller:

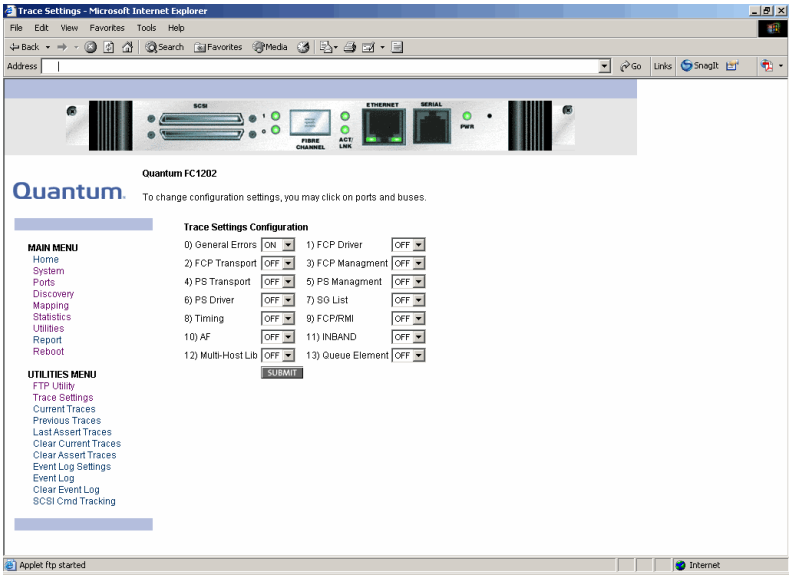
1. Click **Binary Transfer** mode.
2. Choose the desired task:
   - To download a file, click **Get**.
   - To upload a file, click **Put**.

> **Note:** If a valid firmware or configuration file is uploaded to the Interface Controller, an automatic reboot will occur once the file has been received. The Interface Controller cannot be accessed from the Visual Manager UI during the time that the reboot is in process, which is approximately 30 seconds.

Trace Settings Configuration

The **Trace Settings** screen is used to configure the trace settings (see figure 20).

Figure 20 Trace Settings Screen



Current Trace settings are displayed. To change the settings, use the drop-down boxes and choose the desired setting. After all changes are completed, select **Submit.**

Table 10 Trace Settings

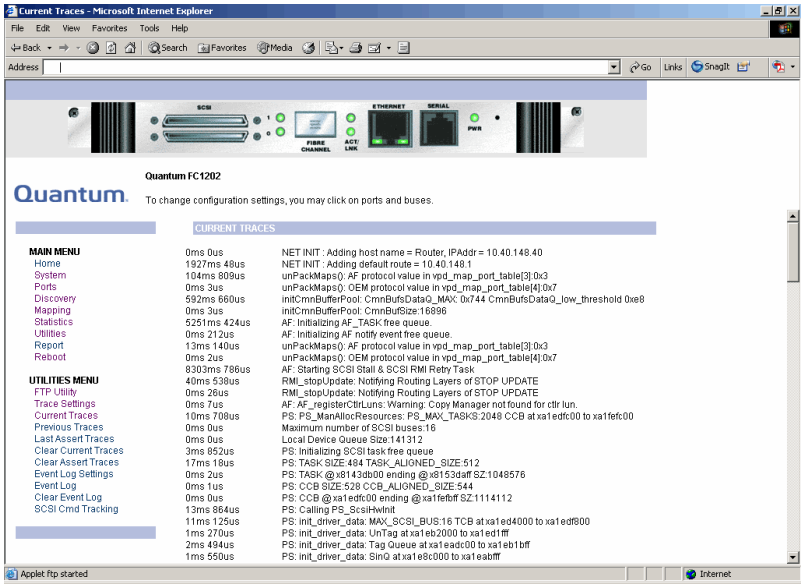
Settings	Description
General Errors	Displays the most serious errors and exception conditions.
FCP Transport	Fibre Channel Protocol transport functionality will be monitored and recorded.
PS Transport	Parallel SCSI transport functionality will be monitored and recorded.
PS Driver	Parallel SCSI driver functionality will be monitored and recorded.
Timing	Timer functions will be monitored and recorded.
AF	Active Fabric firmware will be monitored and recorded.

Settings	Description
FCP Driver	Fibre Channel Protocol driver functionality will be monitored and recorded.
FCP Management	Fibre Channel Protocol management functionality will be monitored and recorded.
PS Management	Parallel SCSI functionality will be monitored and recorded.
SG List	Scatter/gather list will be monitored and recorded
FCP/RMI	Fibre Channel Protocol routing layer will be monitored and recorded.
INBAND	Controller management functionality will be monitored and recorded.

Current, Previous, and Last Assert Trace Displays

These three **Utilities** Menu screens show trace information. The **Current Traces** screen shows data since the Interface Controller was last booted. The **Previous Traces** screen shows data from the last boot cycle. The **Last Assert Traces** screen shows data since the last assertion.

Figure 21 Current Traces Screen

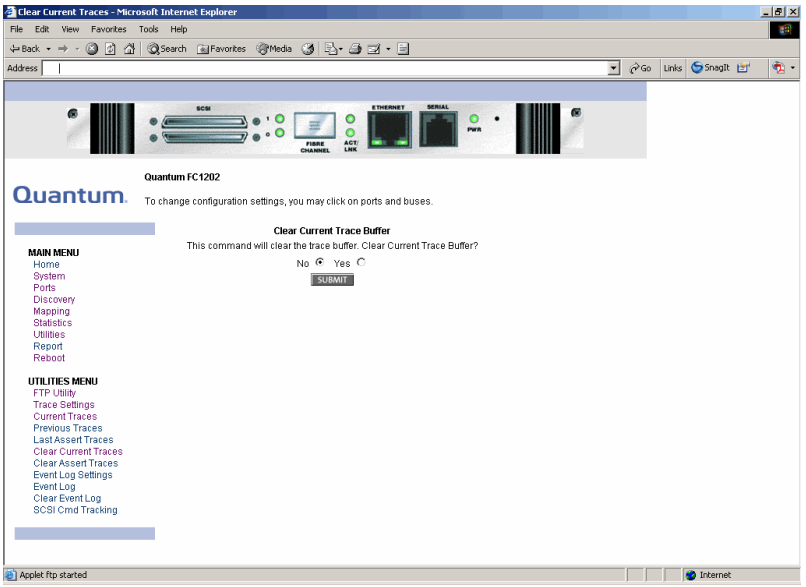


Clear Current and Assert Traces

These **Utilities Menu** screens are used to clear the current trace buffer or the assert trace buffer.

FC1202 activities will not be disrupted while the buffer is cleared.

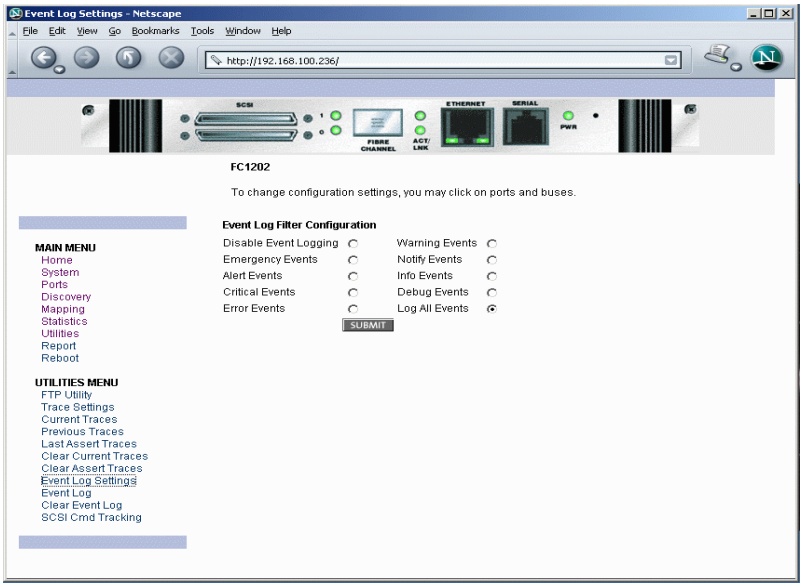
Figure 22 Clear Current Trace Buffer Screen



Event Log Configuration

The **Event Log Setting** screen is used to configure Event Log filters.

Figure 23 Event Log Filter Configuration Screen



Event Log settings:

- Disable Event Logging
- Emergency Events
- Alert Events
- Critical Events
- Error Events
- Warning Events
- Notify Events
- Info Events
- Debug Events
- Log All Events (Default)

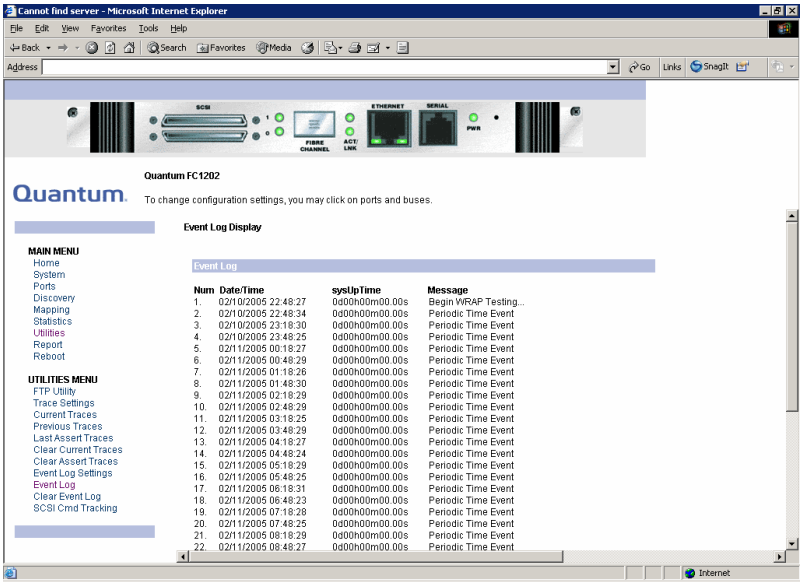
Event logging captures the last 215 events and then starts overwriting the log.

Note: To ensure accurate event logging, correctly set the clock and date in the Real Time Clock Configuration Menu.

Event Log Display

The **Event Log** screen is used to view the Event Log.

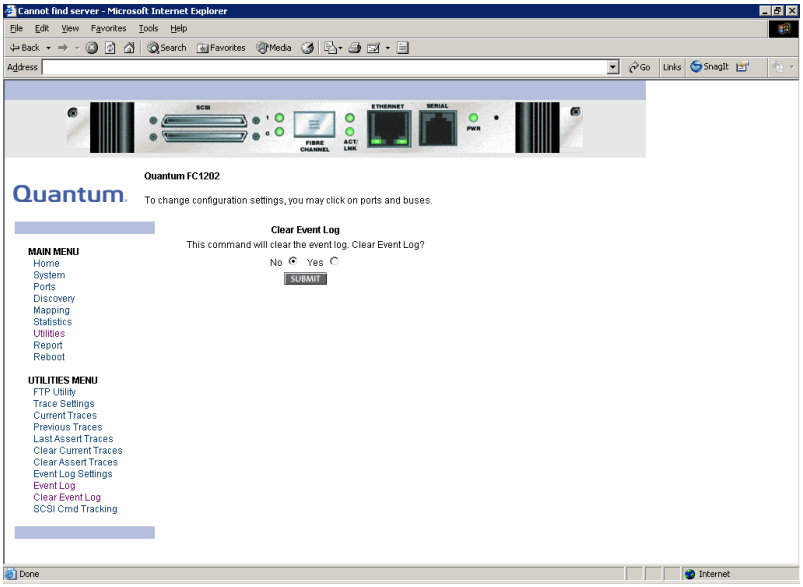
Figure 24 Event Log Display Screen



Clear Event Log

The **Clear Event Log** screen is used to clear the Event Log.

Figure 25 Clear Event Log Screen

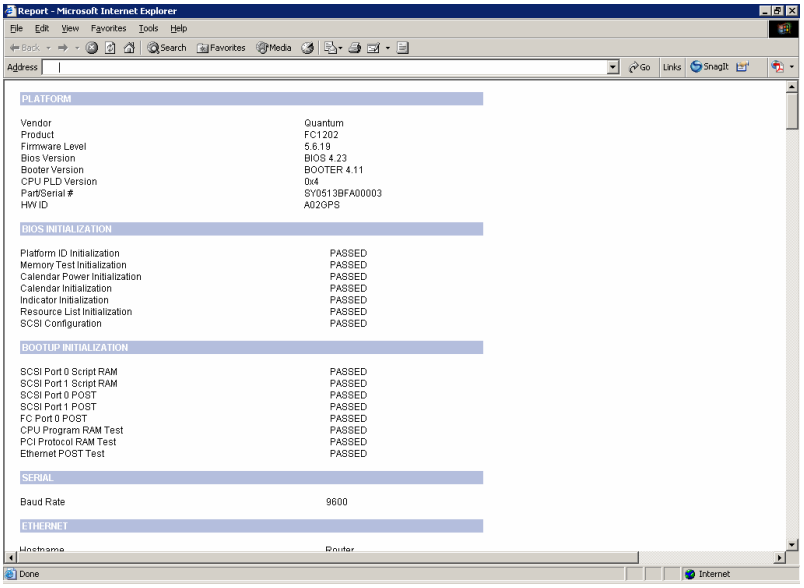


Current FC1202 activities will not be disrupted.

Report Menu

Accessed from the **Main Menu**, the **Report** screen displays a consolidated view of all system information, including environmental conditions.

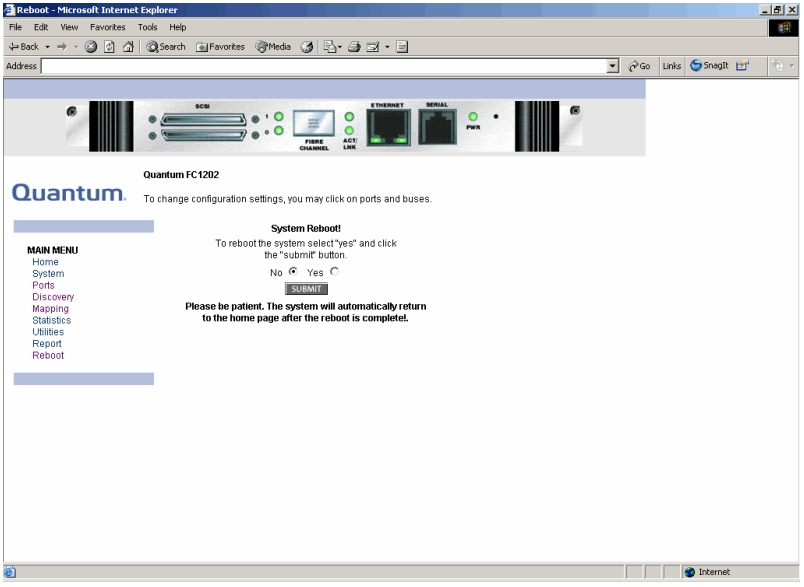
Figure 26 Report Screen



Reboot Option

FC1202 reboots are executed using this **FC1202 Main Menu** option.

Figure 27 Reboot Screen



When the Interface Controller is rebooted, current Interface Controller activities will be disrupted. All submitted configuration changes will be activated during the boot-up process.

Caution: Confirm there is no activity, such as a backup in progress, before initiating a reboot as the Interface Controller activities will be disrupted.

Chapter 2

FC1202 Bridge Serial/Telnet User Interface

The Serial/Telnet User Interface (UI) is used to configure and manage the FC1202. This chapter describes the configuration menus and option tasks available in the Serial/Telnet UI.

> **Note:** Unless otherwise indicated, configuration changes take effect when the FC1202 reboots.

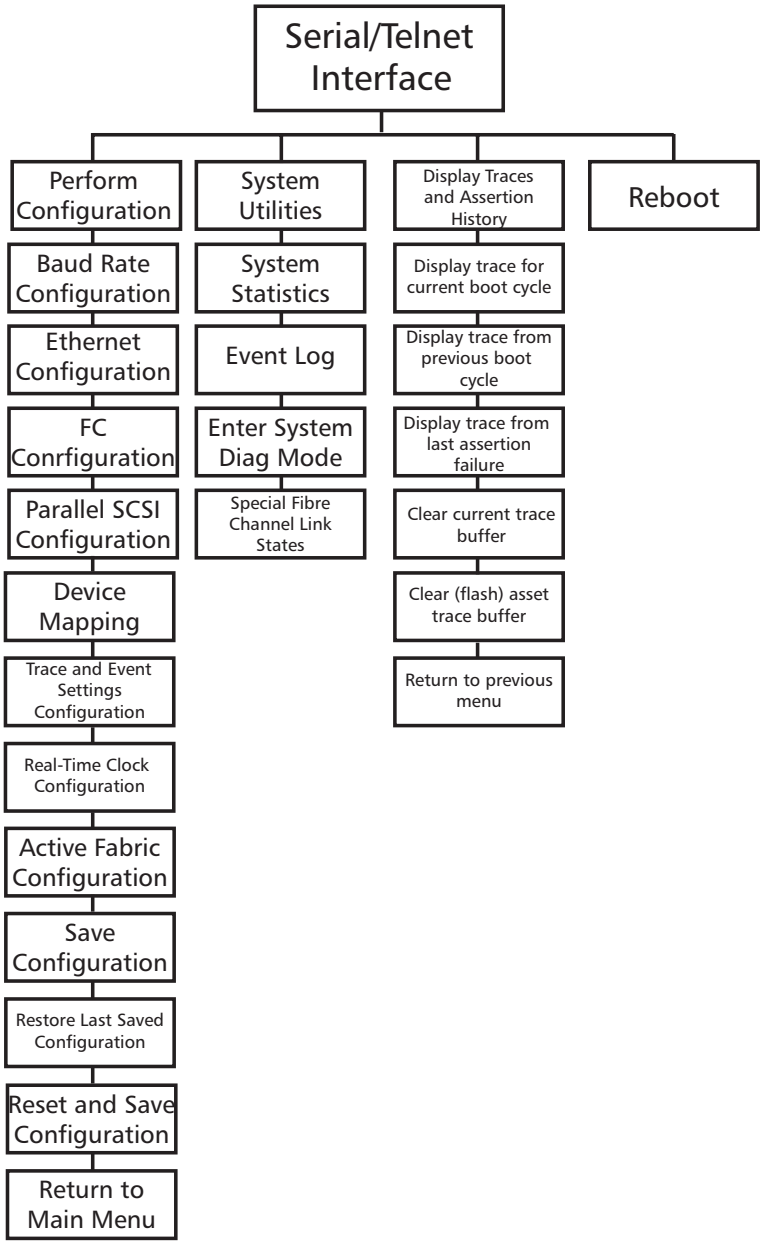
During the FC1202 start up process, the Serial/Telnet UI displays initial power-up messages. After the power-up process is completed, the **Main Menu** of the UI is displayed. Within the FC1202 **Main Menu**, several configuration menus and tasks are listed. All configuration and management tasks are performed from these menus.

This chapter is organized into the following sections:

- Reboot Option
- Download New Revision of Firmware Option

Serial/Telnet Menu Tree

Figure 28 Serial/ Telnet Menu Tree



Telnet User Interface (UI) Access

To open a Telnet session, the IP address of the FC1202 and a Telnet client utility are required.

> **Note:** After each reboot, a new Telnet session must be started. If the FC1202 is reset to factory settings, the Ethernet port will have to be re-configured using the serial interface.

From most Windows 9x, Windows NT, and Windows 2000 systems, a Telnet session can be started from the Command (DOS) shell using the following steps:

1. From the Windows **Start** Menu, open the Command Prompt (DOS) window.
2. At the command prompt, enter TELNET <IP ADDRESS> where <IP ADDRESS> is the IP address of the FC1202.
3. Enter the user name and password.

   The default user name is root and the default password is password.

   The user name and password should be changed from the default values. The **Configuration Menu** displays.

Serial User Interface (UI) Access

To open a serial session, a terminal emulator utility is required.

From most Windows 9x, Windows NT, and Windows 2000 systems, a HyperTerminal session can be started using the following steps:

1. From the Windows **Start** Menu, open **HyperTerminal**.
2. Name the new terminal session.
3. Indicate the appropriate COM port.
4. Configure the serial port settings, as listed in

Table 11 Terminal Settings

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

Note: Setting the baud rate to 115200 is recommended.

5 After completing the serial port configuration, select **OK** to start a serial session.

6 After the serial session has started, press **Enter** several times to initiate FC1202 communication and display the **Configuration Menu**.

Power up Messages

When the FC1202 is powered-on, a series of messages is displayed on the serial terminal or terminal emulation program.

Figure 29 is an example of these power-up messages.

Figure 29 Power Up Messages

```
SCSI Script RAM (2)  : XXXXXXXX
SCSI Script RAM (3)  : XXXXXXXX
Ethernet POST Test   : PASSED
SCSI POST Test (0)   : PASSED
SCSI POST Test (1)   : PASSED
SCSI POST Test (2)   : PASSED
SCSI POST Test (3)   : PASSED
Fibre Channel POST(0): PASSED
Fibre Channel POST(1): PASSED

Attaching network interface here XXXXXX... done.
Attaching network interface here XXX... done.

SCSI bus 0 is up. Connect Mode: (LVD)
SCSI Controller is a 1010  Terminators On

SCSI bus 1 is up. Connect Mode: (LVD)
SCSI Controller is a 1010  Terminators On

SCSI bus 2 is up. Connect Mode: (Single-Ended)
SCSI Controller is a 1010  Terminators On

SCSI bus 3 is up. Connect Mode: (LVD)
SCSI Controller is a 1010  Terminators On

Activating Interrupts for SCSI bus 0
Activating Interrupts for SCSI bus 1
Activating Interrupts for SCSI bus 2
Activating Interrupts for SCSI bus 3
```

Note: Throughout this section, XX represents value fields.

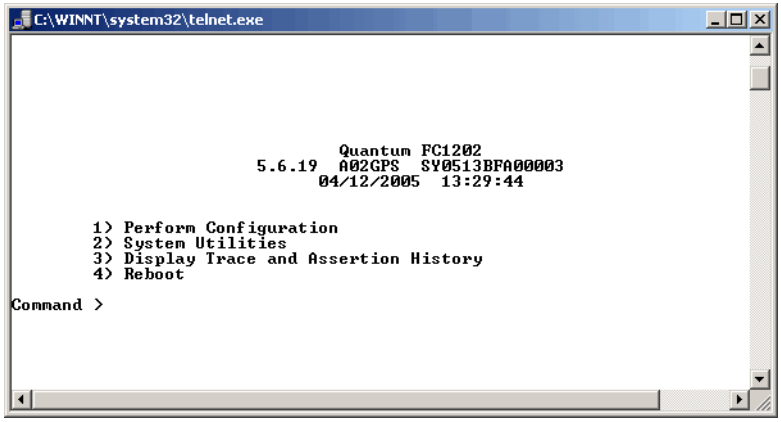
Serial/Telnet Main Menu

The **Main Menu** is the starting point for all configuration sub-menus and tasks.

Figure 30 is an illustration of the FC1202 **Main Menu**.

Note: If the power up messages and the **Main Menu** are not displayed, check the serial port settings.

Figure 30 FC1202 Main Menu



Main Menu options:

- **Perform Configuration** enters FC1202 configuration settings.
- **System Utilities** displays system statistics and perform diagnostic tests.
- **Display Trace and Assertion History** displays trace information and clears the trace buffer.
- **Reboot** reboots the FC1202.

Each **Main Menu** option is discussed in a separate section of this chapter.

Note: Except for the login process, uppercase and lowercase characters can be used interchangeably in all of the menus.

Firmware Download

To download firmware to the FC1202 through the serial port:

1 From the **Main Menu**, type 5 at the command prompt.

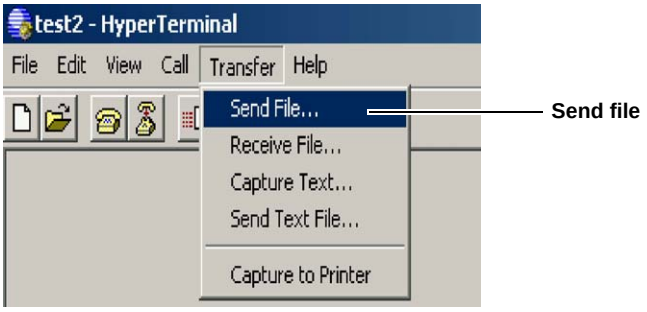
The system prompts you to confirm the transfer.

2 Press y to continue.

The system prompts you to: `Please begin xmodem file transfer...`

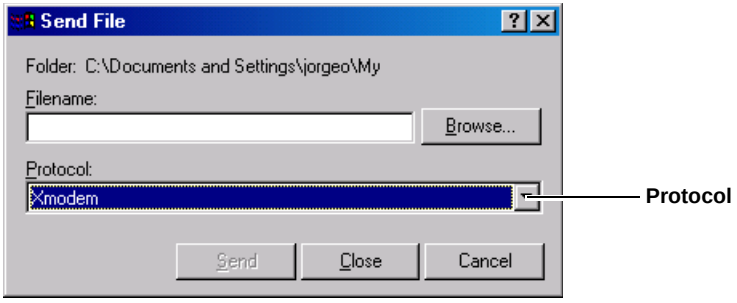
3 Select **Send File...** from the **Transfer** menu in Hyper-Terminal (see figure 31).

Figure 31 Transfer Menu



The **Send File** screen displays (see figure 32).

Figure 32 Send File Screen



4 Select the **Browse** button and locate the firmware file to upload to the FC1202.

5 Ensure the protocol drop down box is set to **Xmodem**.

6 Click **Send**.

The FC1202 displays the file transfer progress and then displays a message not to interrupt power for 90 seconds.

> **Caution:** Do not interrupt the file transfer process. If the process is interrupted, the FC1202 may become inoperable and will require repair.

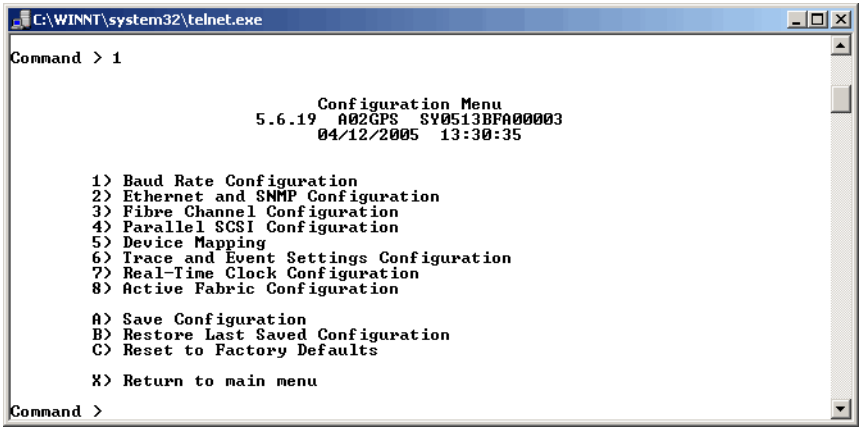
7 When the transfer process is complete, cycle power on the FC1202 storage array.

The firmware download is complete.

Perform Configuration

The **Configuration Menu** is used to configure the FC1202.

Figure 33 FC1202 Configuration Menu



Note: The FC1202 is shipped with a configuration of default settings that is acceptable for most system environments. Few changes to the configuration should be necessary.

After any configuration changes are made, select A) Save Configuration to record the changes.

If the configuration has been modified to meet company-specific needs, back up the company-specific configuration to an external file. If necessary, these settings can later be restored to the FC1202.

Configuration Menu options:

- **Baud Rate Configuration** changes the baud rate on the serial port.
- **Ethernet Configuration** enters Ethernet network settings.
- **Fibre Channel Configuration** configures the settings for the Fibre Channel port.
- **Parallel SCSI Configuration** configures the settings for the SCSI buses.
- **Device Mapping** modifies map and host settings.
- **Trace and Event Settings Configuration** modifies trace and event filter settings.
- **Real-Time Clock Configuration** sets the system clock.
- **Active Fabric Configuration** changes the number of controller LUNs.

- **Save Configuration** saves changes to memory.
- **Restore Last Saved Configuration** reverts to the previous configuration.
- **Reset and Save Configuration to Factory Defaults** resets all configuration options to the factory defaults.
- **Return to Main Menu** goes back to the previous screen.

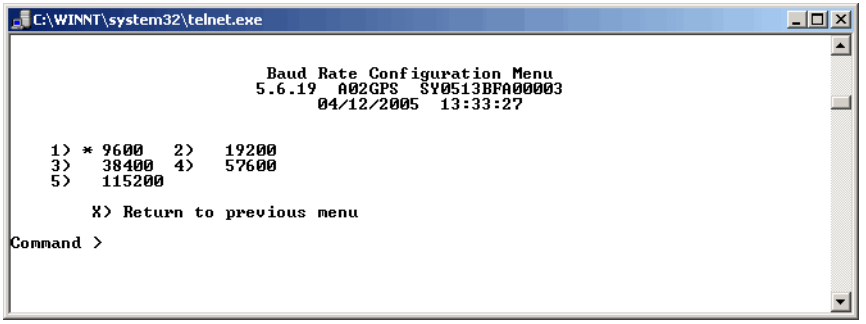
Because the **Configuration Menu** is the primary menu in the UI, each **Configuration Menu** option is discussed in a separate section.

Baud Rate Configuration

In the **Configuration Menu**, select **Baud Rate configuration** to change the baud rate used on the serial port.

Figure 34 is an illustration of the Baud Rate Configuration Menu.

Figure 34 Baud Rate Configuration Menu



Options include:

- 9600
- 19200
- 38400
- 57600
- 115200

> **Note:** The asterisk (*) symbol indicates the current setting for the baud rate.
>
> If the Autobaud feature is being used, it is not necessary to set a baud rate.

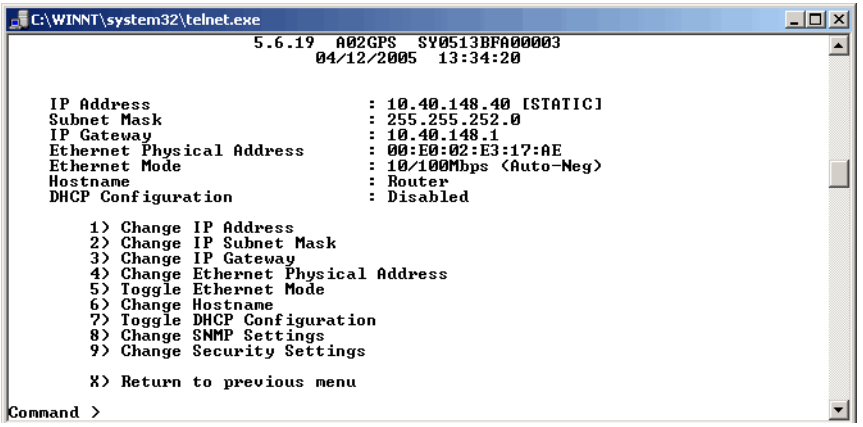
Ethernet Configuration

In the **Configuration Menu**, choose **Ethernet Configuration** to set up the Ethernet network. When this option is selected, the Ethernet **Configuration Menu** is displayed.

Current Ethernet settings are displayed, along with available Ethernet configuration options.

Figure 35 is an illustration of the **Ethernet Configuration Menu**.

Figure 35 Ethernet Configuration Menu



To view or change configuration settings:

1. Select a menu option
2. Make the configuration changes
3. Select **X) Return to previous menu**
4. Select **A) Save Configuration** to record the changes.

Ethernet **Configuration Menu** options:

- **Change IP address** (default: 1.1.1.1) changes the FC1202 IP address.
- **Change IP Subnet Mask** (default: 255.255.255.0) changes the FC1202 Subnet mask.
- **Change IP Gateway** (default: 0.0.0.0) changes the IP gateway for the Ethernet network.
- **Change Ethernet Physical Address** changes the Ethernet physical address (MAC address).

Caution: If this configuration setting is incorrectly set, processing difficulties may occur. Before changing this setting, evaluate the need for the change and verify the desired setting. Backing up the FC1202 configuration to an external file before making changes to this setting is recommended.

- **Toggle Ethernet Mode** changes the Ethernet mode.

  Options include:

  - 10 Mb/s only
  - 100 Mb/s (half duplex) only
  - 100 Mb/s (full duplex) only
  - 10/100 MPS (Auto-Neg.)

- **Change Hostname** changes the name of the host server.

  The name can be any combination of alphanumeric characters, up to eight characters.

- **Toggle DHCP Configuration** enables or disables support for Dynamic Configuration Protocol.

  When DHCP is enabled, the FC1202 will request a dynamic IP address from the DHCP server on the Ethernet network.

  Some DHCP servers allow a lease reservation to be set up for an IP address by providing the server with the Ethernet MAC address. The DHCP server will then provide the same IP address to the FC1202. This setup can be useful for remote management of the FC1202 such

as Telnet or Visual Manager, because the method of setting up a lease reservation varies depending on the DHCP server being used. Contact your Network Administrator for assistance.

Note: To use the DHCP feature, a DHCP server must be operational on the Ethernet network. If the DHCP feature is used when there is no DHCP server, DHCP standards require that the FC1202 wait three minutes for a response from a DHCP server before timing out.

- **Change SNMP Settings** is not supported.
- **9) Change Security Settings** changes security settings, including the user name and password.

  The default user name is root and the default password is password.

Caution: To ensure security, change the user name and password from the default settings.

Note: The security settings entered here affect all user interfaces.

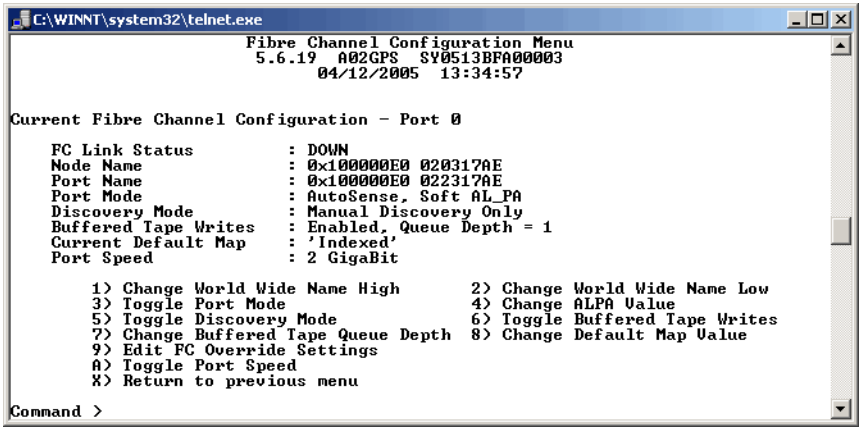
Note: User names and passwords should be unique and kept confidential. Using a combination of letters and numbers when creating user names and passwords is recommended.

Fibre Channel Configuration

In the **Configuration Menu**, choose **Fibre Channel Configuration** to configure the Fibre Channel port. The **Fibre Channel Configuration Menu** allows the configuration of ALPA settings, discovery mode, tape backup settings, port mode, default map, and override settings.

Figure 36 is an illustration of the **Fibre Channel Configuration Menu**.

Figure 36 Fibre Channel Configuration Menu



Fibre Channel Configuration Menu options:

Caution: If these configuration settings are incorrectly set, processing difficulties may occur. Before changing these settings, evaluate the need for the change and verify the desired setting. Backing up the FC1202 configuration to an external file before making changes to these settings is recommended.

- **Change World Wide Name High** (service mode-restricted access) changes the World Wide Port Name High.
- **Change World Wide Name Low** (service mode-restricted access) changes the World Wide Port Name Low.
- **Toggle Port Mode** (default: N_Port) changes the port mode to either Auto Sense or N_Port:
  - **Auto Sense, Soft AL_PA**: In this mode, the Fibre Channel port tries to negotiate as a loop. If it is not successful, then the Fibre Channel port negotiates as a fabric. If the port comes up as a loop, it then determines whether it is on a private or public loop.
  - **N_Port** (default): This mode allows the FC1202 to bypass the loop negotiation and come up as a fabric only. Use this setting if a HP switch is being used. If the FC1202 is on a loop and N_Port mode is selected, an error in communication may occur.

- **Auto Sense, Hard AL_PA**: In this mode, the Fibre Channel port uses a Hard AL_PA value, a unique one-byte valid value (derived from an Arbitrated Loop Topology as defined in ANSI specification FC_AL version 4.5). The FC1202 presents a list of these loop addresses along with the corresponding AL_PA. The user can then select the desired loop address.

- **Change AL_PA Value** changes the AL_PA value. The AL_PA lookup table is displayed. Enter a node number from the table.

- **Toggle Discovery Mode** (default: Manual Discovery Only) determines how the FC1202 will discover new Fibre Channel devices.

  Options include:

  - **Auto Discovery on Reboot Events** allows the FC1202 to automatically discover all Fibre Channel devices during reboots, including both the ports and the devices.

  - **Auto Discovery on Link-up Events** allows the FC1202 to automatically discover all Fibre Channel devices during reboots, including both the ports and the devices for the first link-up event. Subsequent link-up events will only discover the ports and not attached devices.

Note: SCSI devices attached to a Fibre Channel port must be mapped as sequential Fibre Channel LUNs starting at LUN number 00. Skipping LUN numbers is not recommended when mapping Fibre Channel LUNs because Fibre Channel Discovery stops the discovery process whenever an empty LUN position is found.

Caution: If these configuration settings are incorrectly set, processing difficulties may occur. Before changing these settings, evaluate the need for the change and verify the desired setting. Backing up the FC1202 configuration to an external file before making changes to these settings is recommended.

  - **Manual Discovery Only** (default) sets discovery of new devices to occur only after the user selects the Refresh Device Display option. The Refresh Device Display option is accessed from the System Utilities Menu.

- **Toggle Buffered Tape Writes** (default: Enabled) changes the tape backup mode to either **Enabled** or **Disabled**.
- **Edit FC Override Settings** (service mode-restricted access) enters Fibre Channel override settings.

  A sub-screen is displayed, listing the following options:

  - **Toggle Hi-Sup Bit Settings** changes the Hi-Sup Bit settings.

    Options include **Set** and **Clear**.

  - **Toggle Forcing FCP Response Code** for HP HBA #223180-B21 and #120186-001, changes the forcing of the FCP response code.

    Options include **Off** and **On**.

  - **Toggle Initiator Bit Setting in PRLI** changes the Initiator bit setting.

    Options include **Set** and **Clear**.

  - **Toggle Initiator Bit Setting in PRLI_ACC** changes the Initiator bit setting.

    Options include **Set** and **Clear**.

  - **Toggle FC Confirm Setting in PRLI_ACC**.

    Options include **Enabled** and **Disabled**.

  - **Change Target Reset Mode**

    Options include **Alternate** and **Disabled**.

  - **Toggle Forcing FLOGI when in Private Loop**

    Options include **Enabled** and **Disabled**.

  - **Toggle Using Unique Worldwide Names** changes the unique world wide name setting.

    Options include **Enabled** and **Disabled**.

- **Change Default Map Value** (default: Indexed) changes and displays the default current map for the port.

  Mapping modes can be Auto-Assigned, Indexed (default), or SCC.

Note: If the port speed is set incorrectly and the FC1202 is plugged into a Loop or Fabric, the unit may receive framing errors as a result of the incorrect FC link speed.

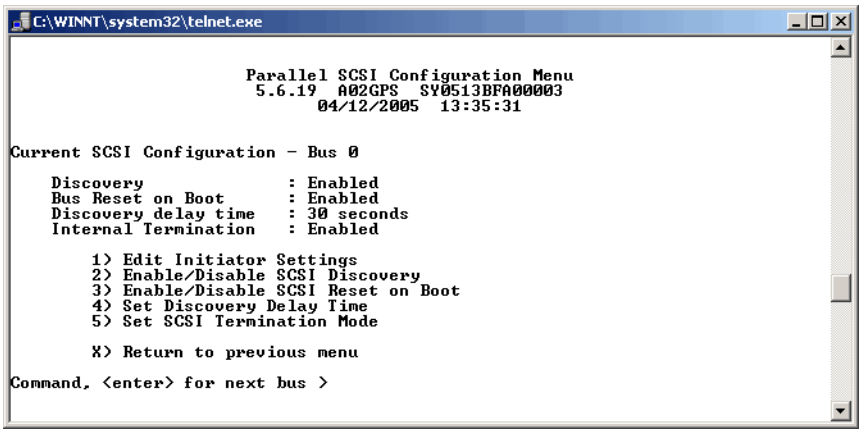
- **Toggle Port Speed** (default: 2 Gb/s) toggles the performance mode between 1 and 2 Gb/s for the selected FC port.

Parallel SCSI Configuration

In the **Configuration Menu**, choose **Parallel SCSI Configuration** to configure the SCSI buses. The **Parallel SCSI Configuration Menu** allows the configuration of the SCSI discovery mode, SCSI bus reset, termination mode, tape backup settings, and default current map.

Figure 37 is an illustration of the **Parallel SCSI Configuration Menu**.

Figure 37 Parallel SCSI Configuration Menu



Current settings for the selected SCSI bus are displayed.

Caution: If these configuration settings are incorrectly set, processing difficulties may occur. Before changing these settings, evaluate the need for the change and verify the desired setting. Backing up the FC1202 configuration to an external file before making changes to these settings is recommended.

SCSI Configuration Menu options:

- **Edit Initiator and Target Settings** changes the SCSI Initiator and Target settings.

The SCSI Initiator and Target Menu sub-screen is displayed, listing the following options:

- **Enable/Disable SCSI Initiator** enables or disables the SCSI Initiator.

  Options are **Enabled** and **Disabled**.

  - **Select primary and select/enable alternate SCSI ID** sets the primary and alternate initiator SCSI IDs (defaults: primary = 7; alternate = none).

    These should be unique IDs on the bus.

  - **Add Target ID** or

  - **Remove Target ID** adds or removes a Target ID.

    This adds an ID for a Fibre Channel device that responds to operation requests from the SCSI initiator.

> **Note:** Target IDs must be setup prior to mapping devices on the SCSI bus.

> **Note:** Do not enable Target IDs unless a SCSI initiator on the bus wants to use Fibre Channel devices. This type of configuration is known as a Target Mode configuration.

- **Enable/Disable SCSI Discovery** enables or disables the Discovery Mode.
- **Enable/Disable SCSI Reset on Boot** enables or disables automatic bus resets after a reboot.

  When enabled, the FC1202 will automatically reset SCSI buses during initial power ups and reboots.

> **Caution:** If these configuration settings are incorrectly set, processing difficulties may occur. Before changing these settings, evaluate the need for the change and verify the desired setting. Backing up the FC1202 configuration to an external file before making changes to these settings is recommended.

- **Set Discovery Delay Time** sets the length of time the FC1202 waits after a power-up or reboot before discovering SCSI devices.

> **Note:** This value should be set to no less than 250ms, according to the SCSI standard for Reset-to-Selection Time. Setting the value to at least 30 seconds to ensure all SCSI devices complete their individual POST is recommended.

- **Set SCSI Termination Mode** enables or disables the SCSI termination mode.
- **Edit SCSI Target Override Settings** changes the SCSI Target overrides.

  SCSI Parameter Override Configuration Menu options:

  - **Toggle CDB Length Override**: enabled or disabled.

    If enabled, the following configuration options are displayed:

    CDB Group 6 Length Default (default = 0) can be set to 0, 6, 10, or 12.

    CDB Group 7 Length Default (default = 0) can be set to 0, 6, 10, or 12.

  - **Toggle Wide Negotiation**: enabled or disabled.
  - **Toggle Synchronous Negotiation**: enabled or disabled.

    If enabled, the following configuration options are displayed:

    Synchronous Period (default = 40) is the maximum number of seconds allowed for negotiation.

    Synchronous Offset (default =16) is the maximum variation in transfer rate that can be negotiated in MB/s.

  - **Toggle Synchronous Parameter Override**: enabled or disabled.
- **Enable/Disable Buffered Tape Writes** (default: Enabled) enables or disables Buffered Tape Writes.

  Buffered Tape Writes return status on consecutive write commands before the tape device receives data, to enhance performance.
- **Change Default Map Value** sets the default map to use for the bus.

  Mapping modes can be Auto-Assigned (default), or Indexed.
- **Return to previous menu,** returns to previous menu.

- **Command** <Enter> scrolls to the next SCSI bus.

Device Mapping

Each physical port/bus on the FC1202 can have the following maps:

Table 12 Device Map Types

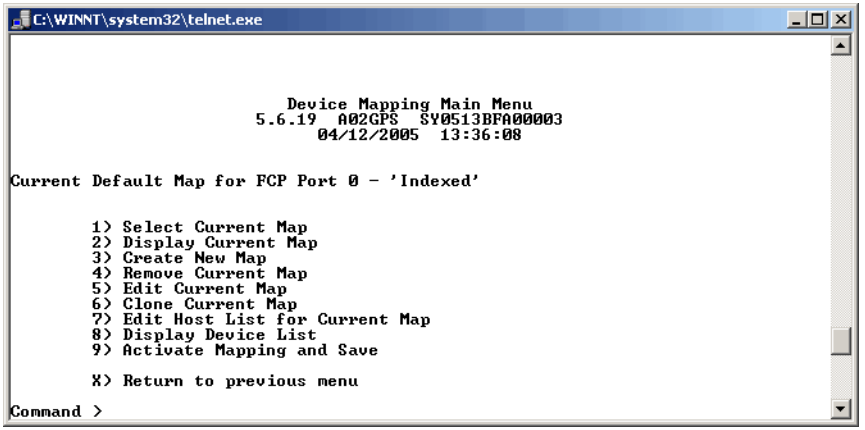
Map Type	System/User Generated	Fibre Channel or SCSI
Auto Assigned	System	Fibre Channel and SCSI
Indexed (default)	System	Fibre Channel and SCSI
Port <0 or 1> Device	System	Fibre Channel
SCC	System	Fibre Channel

Each map has a unique name and map ID; one of the maps must be identified as the "current" map for the FC1202 to use.

In the **Configuration Menu**, choose **Device Mapping** to manipulate maps and associate the selected hosts with a particular map. Maps are viewed, edited, and deleted, in the **Device Mapping Menu**.

Figure 38 is an example of the **Device Mapping Configuration Menu**.

Figure 38 Device Mapping Configuration Menu



Device Mapping Configuration Menu options:

- **Select Current Map** indicates which map is to be the current map.
- **Display Current Map** displays the current map.

- **Edit Current Map** changes current map settings.
- **Edit Host List for Current Map** changes the host information for the current map.
- **Display Device List** displays the device list.
- **Return to previous menu**, returns to previous menu.
- Command, <Enter> for next port/bus to scroll to the next SCSI bus, press <Enter>.

Because each menu option includes a menu or sample screen display, each menu option is discussed in the following separate sections.

Selecting the Current Map

In the Device Mapping Configuration Menu, choose **Select Current Map** to select the current map for each port or bus.

When this option is selected, the **Select Current Map** screen is displayed. The current map assignment is displayed at the top of the screen.

Figure 39 is an illustration of the Select Current Map screen for a Fibre Channel port.

Figure 39 Select Current Map

```
                    Current  Map  Display
              X.XX.XX XXXXXX XXXXXX-XXX_XXXXXXXXXXXXXX
                      01/06/2003  08:57:46
Port Map Display

Map: FCP Port 0: Name 'Indexed'
+-----++------+------+------+------+-----------------------------------+
| LUN || Prtl | Port | TYPE | STAT | Protocol Specific Information     |
+-----++------+------+------+------+-----------------------------------+
|   0 || SCSI |    1 | TAPE |  UP  | Target= 3   Lun=  0               |
|   1 || SCSI |    1 | DISK |  UP  | Target= 4   Lun=  0               |
|   2 || SCSI |    1 | DISK |  UP  | Target= 5   Lun=  0               |
|   3 || SCSI |    1 | DISK |  UP  | Target= 6   Lun=  0               |
|   4 || SCSI |    5 | TAPE |  UP  | Target= 1   Lun=  0               |
+-----++------+------+------+------+-----------------------------------+
Page # 1 out of 1 pages.
Number of entries in the Map = 5
Enter(N=Next, P=Prev, X=Exit) >
```

Caution: If this configuration setting is incorrectly set, processing difficulties may occur. Before changing this setting, evaluate the need for the change and verify the desired setting. Backing up the FC1202 configuration to an external file before making changes to this setting is recommended.

To indicate which map is to be the current map, type the number that corresponds to the desired map.

Displaying the Current Map

In the **Device Mapping Configuration Menu**, choose **Display Current Map** to view the entries for the current Map.

The **Current Map Display** screen is displayed.

Depending on whether a Fibre Channel map or a SCSI map was selected, the screen display will differ.

Note: The entire list may not fit on one screen. Press **N** or **P** to go back and forth between screens.

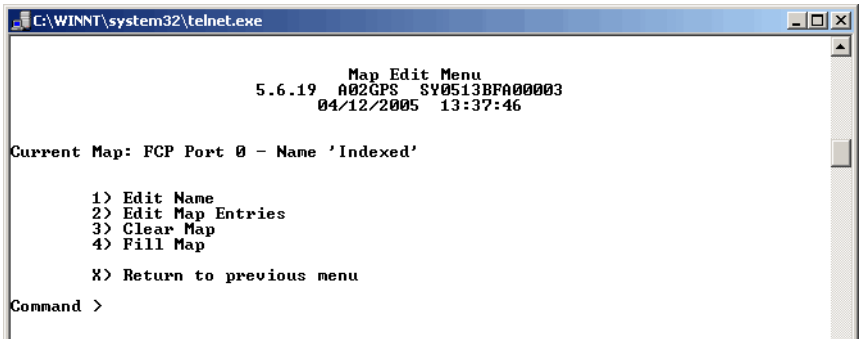
Editing the Current Map

In the **Device Mapping Configuration Menu**, choose **Edit Current Map** to edit the current map.

The **Map Edit Menu** subscreen is displayed.

Figure 40 is an illustration of the **Map Edit Menu**.

Figure 40 Map Edit Menu



Note: Auto-Assigned and SCC Maps cannot be edited.

Map Edit Menu options:

- **Edit Map Entries** changes the content of the current map.
- **Clear Map** erases all entries from the current map.
- **Fill Map** automatically completes the entries for the current map.

Each editing option is discussed in the following sections.

Editing the Map Entries of the Current Map

To edit the details of the current map, in the Map Edit Menu, choose **Edit Map Entries**. This editing screen allows the user to navigate up and down the map entries and create or remove entries. Device lists are also available to make it easier to identify the device to be mapped.

Note: Mapping a device to its native port/bus is not allowed. The information needed to create entries is protocol/port dependent.

Although the options are the same for editing Fibre Channel and SCSI maps, the screen displays differ.

Edit Map Entries options:

- **Next (N)** scrolls down the list of map entries.
- **Previous (P)** scrolls up the list of map entries.
- **Create (C)** creates a new map entry for a newly added device.
- **Remove Gaps (R)** removes gaps in the listed sequence of LUNs.
- **Delete (D)** deletes a map entry.
- **Exit (X)** returns to the previous menu.

Scrolling between Display Pages of the **Edit Map Entries** screen

To scroll up and down the map entries, select **P** or **N**.

Creating a Map Entry for a Fibre Channel Map

To enter a map entry for devices that are not yet online, select **Create (C)**.

Note:	All essential information about the device must be known.

A series of questions is displayed. The questions will vary based on the "current" map protocol. Required information includes the LUN address, protocol, port, device name, and device type.

Note:	If the device being added is a SCSI device, the Target ID and LUN ID must be entered. The Target ID must already be defined in the SCSI configuration.

Removing Gaps in the Map

To remove any incremental gaps in the sequence of LUNs listed in the table, in the Edit Map Entries screen, select **Remove (R)**.

As the system removes any gaps from the table, the LUNs are renumbered in sequential order, starting with LUN 0.

Note:	Some operating systems require gaps be removed in the mapping table in order to detect all devices.

Deleting a Map Entry

To delete an entry from a map, in the Edit Map Entries screen, select **Delete (D)**.

For Fibre Channel maps, at the prompt, either enter the LUN ID of the LUN to delete or enter **D** to delete multiple LUNs.

For SCSI maps, at the prompt, enter the Target ID and LUN ID of the LUN to delete or enter **D** to delete multiple LUNs.

Clearing the Entries from the Current Map

To remove all entries from the current map, in the Edit Map Entries screen, select **Clear Map**. A confirmation prompt is displayed.

Filling in the Current Map

To instruct the system to automatically fill in the current map, in the Edit Map Entries screen, select **Fill Map**.

All new devices are added to the end of the current map. After this operation is completed, the **Edit Map Entries Menu** is redisplayed.

Note:	Devices marked DOWN are not mapped.

Editing the Host List for the Current Map

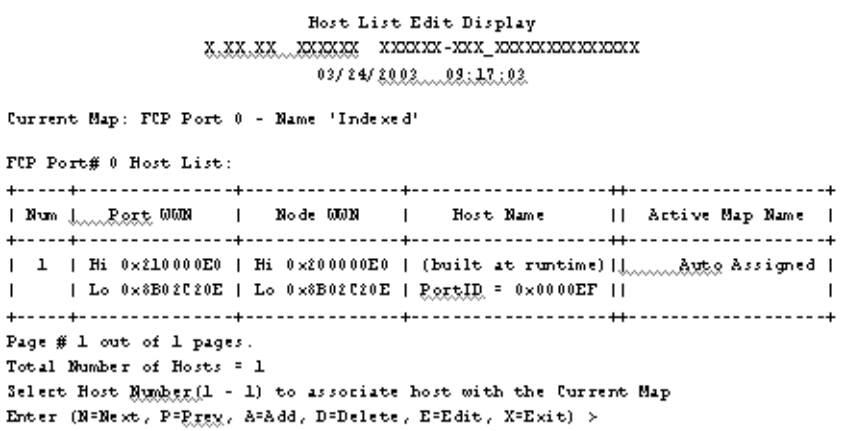
In the Device Mapping Configuration Menu, choose **Edit Host List for Current Map** to edit the host list for the current map.

The current map can be associated with hosts available in the host list on the same port where the map is defined. Initially all hosts are associated with an Auto Assigned map. These are built at runtime hosts and cannot be edited or deleted.

Although the options are the same for FCP maps, the screen display differs.

Figure 41 is an example of the Host List Edit Display screens for an FCP map.

Figure 41 Host List Edit Display



Host List Edit Display options:

- **Next (N)** scrolls down the Host List.
- **Previous (P)** scrolls up the Host List.
- **Add (A)** adds a new host to the Host List.
- **Delete (D)** deletes a host from the Host List.
- **Edit (E)** edits host information.
- **Exit (X)** returns to the previous menu.

Each of the options is discussed in the following paragraphs.

Scrolling between the Display Pages of the Host List Edit Screen

To scroll up and down the host entries, select **P** or **N**.

Selecting a Host

To select a host from the list, enter the number displayed in the “N#” or the “Num” column at the left of the screen.

Adding a Host to the Host List

To add a host to the Host List, select **Add (A)**.

If the host is an FCP host, the Host Name, Host ID, port WWN, and Node WWN for FCP host must be entered. (WWN values are hexidecimal.)

Deleting a Host from the Host List

To remove a host from the Host List, select **Delete (D)**. After entering the number of the host to delete, a confirmation prompt is displayed.

Editing Host information

To change host information, select **Edit (E)**.

Current host information is displayed on the screen. The system will display a series of prompts, allowing changes to be entered.

Note: To retain the current information for a prompt, press <Enter> at the prompt.

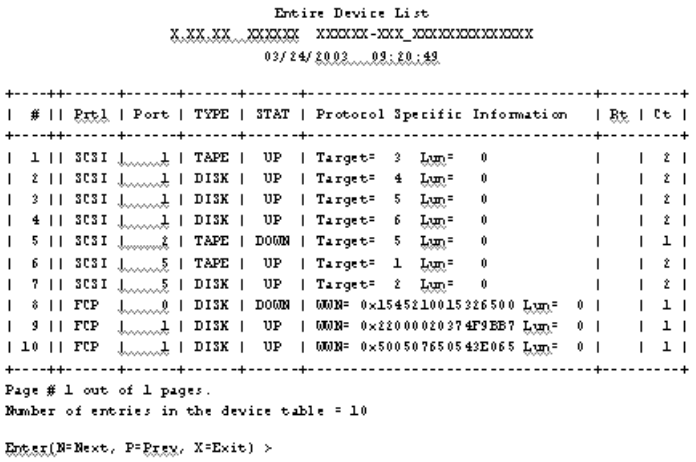
Displaying the Entire Device List

In the Device Mapping Configuration Menu, choose **Display Device List** to view the entire device list for all buses and ports.

The Entire Device List screen is displayed.

Figure 42 is an illustration of the **Entire Device List** screen.

Figure 42 Entire Device List



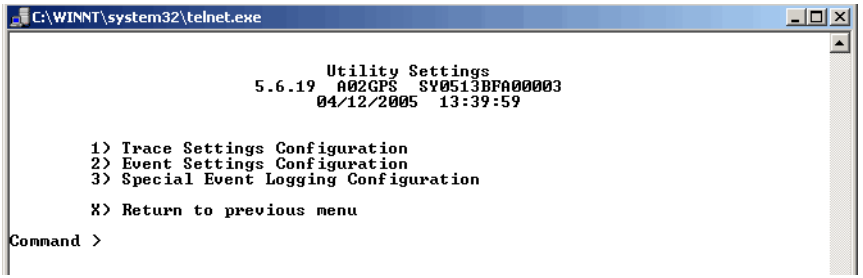
Note: The entire list of maps may not fit on one screen. Select **N** or **P** to go back and forth between screens displaying more maps. Select **X** to return to the previous menu.

Trace and Event Settings Configuration

In the **Configuration Menu**, choose **Trace and Event Settings Configuration** to view and change Trace and Event settings. When this option is selected, the following menu is displayed.

Figure 43 is an illustration of the **Utility Settings** menu.

Figure 43 Utility Settings Menu



Trace Settings Menu options:

- **Trace Settings Configuration** configures the trace settings.
- **Event Settings Configuration** configures the event settings.

Each of these options is discussed in the following sections.

Configuring Trace Settings

In the **Utility Trace Settings Menu, Trace Setting Configuration** is used to modify trace levels. Two pages of trace level settings are displayed.

Figure 44 is an illustration of a Trace Setting screen.

> **Note:** Trace settings should not be modified in normal operation; performance degradation may result.

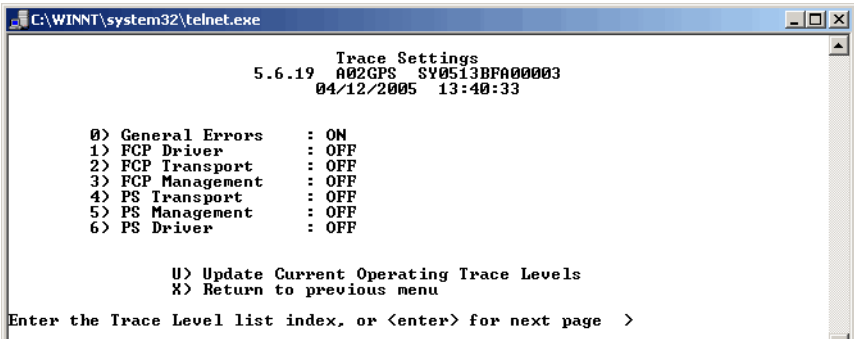
1. To change any of the settings in these screens, enter the number that corresponds to the option that needs to be changed.

   The current setting is toggled to either **On** or **Off**.

2. Repeat Step 1 for each setting that needs to be changed in the page.
3. Before leaving the page, activate the new setting by entering **Update Current Operating Trace Levels**.

This option forces the currently displayed trace settings to become effective immediately, without requiring a reboot or power cycle.

Figure 44 Trace Settings Screen



1 Press **Enter** to display the second **Trace Settings** page.

Figure 44 is an illustration of the second **Trace Settings** page.

2 If needed, change the settings in the second **Trace Settings** page.

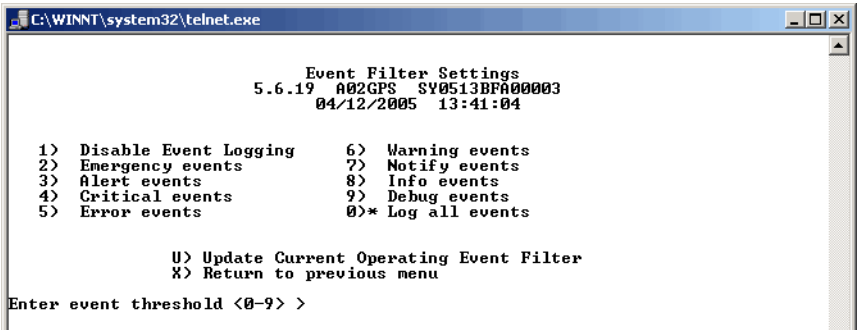
Note: Be sure to set the clock and date in the Real Time Clock Configuration Menu so that event logging is accurate.

Configuring Event Settings

In the **Utility Trace Settings Menu, Event Setting Configuration** is used to modify event filters:

Figure 45 is an illustration of the **Event Filter Settings** screen.

Figure 45 Event Filter Settings



Note: The asterisk in the screen display denotes the current setting.

1. To change any of the settings in this screen, enter the number of the desired setting (**1**, **2**, **3**, or **4**) that corresponds to the option that needs to be changed.

   Settings include:

   - Disable Event Logging
   - Emergency Events
   - Alert Events
   - Critical Events
   - Error EventsWarning Events
   - Notify Events
   - Info Events
   - Debug Events
   - * Log All Events (Default)

2. Before leaving the page, activate the new setting by entering **U) Update Current Operating Trace levels**.
3. This option forces the currently displayed trace settings to become effective immediately, without requiring a reboot or power cycle.

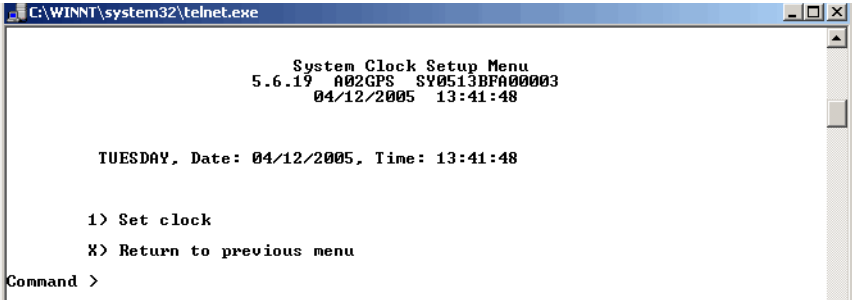
Note: Set the clock and date in the Real Time Clock Configuration Menu so that event logging is accurate.

Real-Time Clock Configuration

In the **Configuration Menu**, choose **Real-time Clock Configuration** to change the system time and date.

Figure 46 is an illustration of the **System Clock Setup Menu**.

Figure 46 Clock Set Up Menu



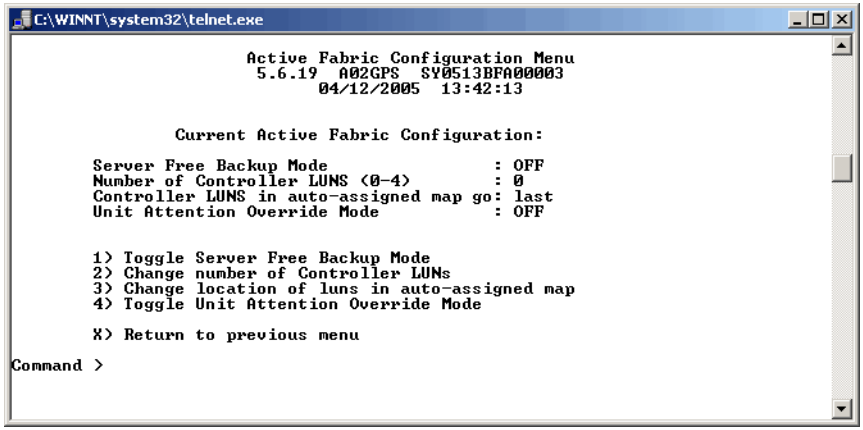
1. To change the date or time, select `Set Clock`.
2. A series of prompts are displayed, allowing setup of:
   - 24-hour time
   - Current date
   - Current day of the week

Active Fabric Configuration

In the **Configuration Menu**, select **Active Fabric Configuration** to enter Active Fabric options.

Figure 47 is an illustration of the **Active Fabric Configuration Menu**.

Figure 47 Active Fabric Configuration Menu



Active Fabric Configuration Menu options:

- **Change the number of controller LUNs** (default: 1) changes the number of controller LUNs.

  This setting is a number in the range of 0 through 4.

- **Change location of LUNs in auto-assigned map**. This setting can be toggled between **First** and **Last**.

Save Configuration

In the **Configuration Menu, Save Configuration** is used to save any configuration changes.

The current configuration state is saved in FLASH, which updates the previous configuration. This configuration is retained across future device resets or power cycles.

Restore Last Saved Configuration

In the **Configuration Menu, Restore Last Saved Configuration** is used to revert to the previous configuration. This can be useful when configuration changes have been made, and the user wishes to return to the previous configuration.

Reset and Save Configuration to Factory Defaults

In the **Configuration Menu**, choose **Reset and Save Configuration** to reset the FC1202 configuration to its initial settings (factory default). Selecting this option will reset operational parameters to their default values.

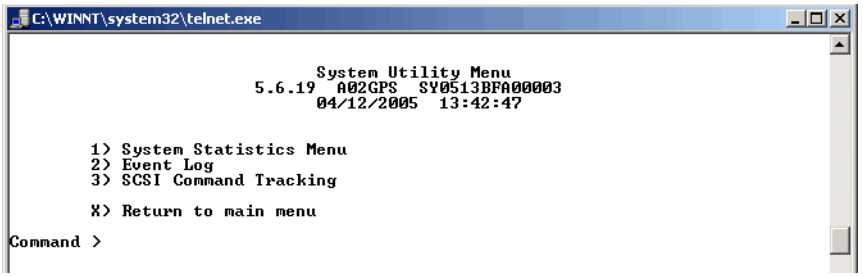
System Utilities

Accessed from the FC1202 **Main Menu**, the **System Utilities Menu** is primarily used to view system information.

To access the System Utilities Menu, in the FC1202 **Main Menu**, choose **System Utilities**.

Figure 48 is an illustration of the **System Utility Menu**.

Figure 48 System Utility Menu



System Utility Menu options:

- **System Statistics Menu** displays a variety of system status information.
- **Event Log** displays the system Event Log.
- **Enter System Diagnostics Mode** performs Ethernet, SCSI, and Fibre Channel connection tests. (Testing Mode - Restricted Access).
- **Special Fibre Channel Link States** performs special diagnostics (Testing Mode - Restricted Access).

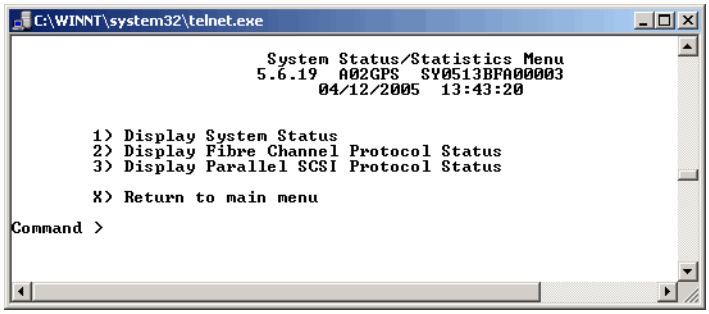
The **System Statistics Menu** and the Event Log options are discussed in the following sections.

System Statistics

In the **System Utility Menu**, select **System Statistics Menu** to view system status information.

Figure 49 is an illustration of the **System Status/Statistics Menu**.

Figure 49 System Status/Statistics Menu



System Statistics Menu options:

- **Display System Status** displays FC1202 status information.
- **Display Fibre Channel Protocol Status** displays Fibre Channel status information.
- **Display Parallel SCSI Protocol Status** displays SCSI status information.

Because each option offers a variety of display screens, each of these menu options is discussed in the following separate subsections.

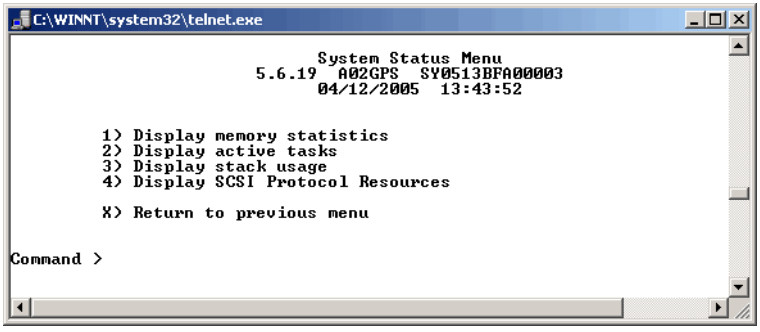
Viewing System Status Information

In the **System Statistics Menu**, choose **Display System Status** to view a variety of status information, including memory statistics, current active tasks, and stack usage.

The System Status Menu is displayed.

Figure 50 is an illustration of the **System Status Menu**.

Figure 50 System Status Menu



System Status Menu options:

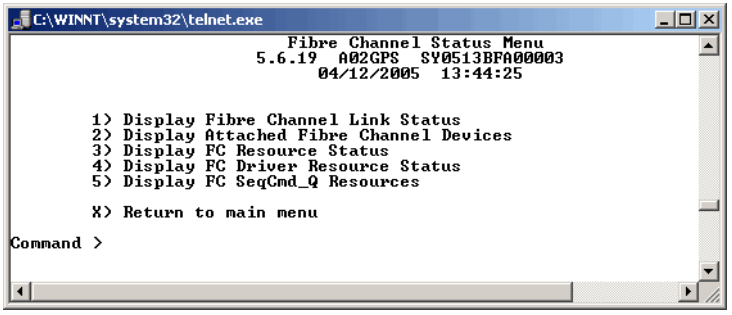
- **Display memory statistics** displays memory usage information
- **Display active tasks** displays a list of current tasks.
- **Display stack usage** displays current stack information.
- **Display SCSI Protocol Resources** displays SCSI protocol information.

Viewing Fibre Channel Status Information

To display Fibre Channel status information, in the **System Statistics Menu**, choose **Display Fibre Channel Protocol Status**. The **Fibre Channel Status Menu** is displayed.

Figure 51 is an illustration of the **Fibre Channel Status Menu**.

Figure 51 Fibre Channel Status Menu



The Fibre Channel Status Menu lists the following options:

- **Display Fibre Channel Link Status** displays Fibre Channel link information.
- **Display Attached Fibre Channel Devices** displays a list of devices attached to this Fibre Channel port.
- **Display FC Resource Status** displays Fibre Channel resource transport information.
- **Display FC Driver Resource Status** displays Fibre Channel driver information.

Each menu option and example screen displays are discussed in the following subsections.

Viewing Fibre Channel Link Information

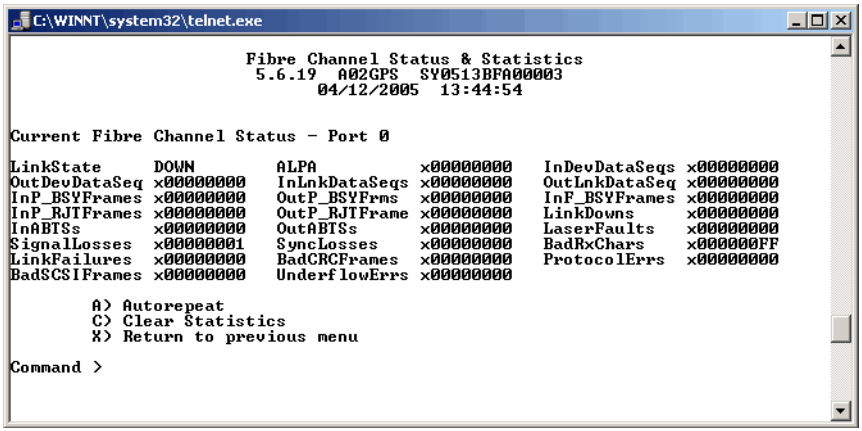
To see link statistics for the Fibre Channel port:

1 In the **Fibre Channel Status Menu**, choose **Display Fibre Channel Link Status**.

Figure 52 is an illustration of the **Fibre Channel Link Status** screen.

See table 13 for a list of term definitions.

Figure 52 Fibre Channel Link Screen



- To refresh the screen display, select **Autorepeat**.

Table 13 Table Status Definitions

Link Status Field	Definition
LinkState	Current Fibre Channel link status.
AL_PA	Arbitrated loop physical address. (not supported)
InDevDataSeqs	Number of Device Data sequences received by this port.
OutDevDataSeq	Number of Device Data sequences transmitted by this port.
InLnkDataSeqs	Number of Link Data frames received by this port.
InP_BSYFrames	Number of P_BSY frames received by this port.
OutP_BSYFrms	Number of P_BSY frames transmitted by this port.

Link Status Field	Definition
InF_BSYFrames	Number of F_BSY frames received by this port.
InP_RJTFrames	Number of P_RJT frames received by this port.
OutP_RJTFrame	Number of P_RJT frames transmitted by this port.
LinkDowns	Number of Link Down conditions detected.
InABTSs	Number of ABTS frames received.
OutABTSs	Number of ABTS frames transmitted.
LaserFaults	Number of laser faults detected.
SignalLosses	Number of times Loss of Signal was detected.
SyncLosses	Number of times Loss of Sync was detected.
BadRxChars	Number of bad characters received.
LinkFailures	Number of Link Failure conditions.
BadCRCFrames	Number of frames received with a bad CRC.
ProtocolErrs	Number of protocol errors detected.
BadSCSIFrames	Number of BAD SCSI frames detected.

Viewing Attached Fibre Channel Devices

To view a list of the devices attached to this port:

1 In the Fibre Channel Status Menu, choose **Display Attached Fibre Channel Devices.**

The **Fibre Channel Device Display** page is displayed.

Figure 53 is an illustration of the **Fibre Channel Device Display** page when it is first displayed.

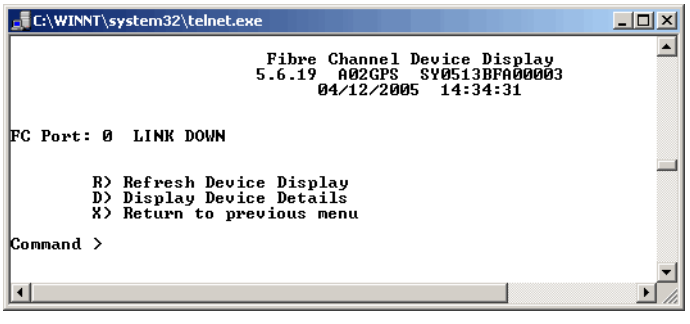


Figure 53 Fibre Channel Device Display Page

2 To refresh the display, select **Refresh Device Display**.

In FC1202-to-FC1202 configurations, only the first device of all the attached devices will be shown. To see all of the devices in these configurations, use Visual Manager.

3 To view device details, select **Display Device Details.**

Viewing Fibre Channel Resource Transport Information

1 To view FCP transport information, in the **Fibre Channel Status Menu**, choose **Display Fibre Channel Resource Status**.

The FCP Transport Queues page is displayed.

The **FCP Transport Queue** page has no options. It is used only for viewing resource status.

Viewing Fibre Channel Driver Status Information

1 To display Fibre Channel Driver Queue information, in the Fibre Channel Status Menu, select **Display Fibre Channel Driver Resource Status**.

The **Fibre Channel Driver Queues** page is displayed.

The **Fibre Channel Driver Queues** page has no options. It is used only for viewing Fibre Channel driver resources.

Viewing SCSI Status Information

To display SCSI status information, in the System Statistics Menu, choose **Display Parallel SCSI Protocol Status**.

The Parallel SCSI Protocol Status Menu is displayed.

SCSI Status Menu options:

- **Display SCSI Statistics** displays SCSI statistics.
- **Display Attached SCSI Devices** displays attached SCSI devices.
- **Display SCSI Resource Status** displays SCSI resource status.

Each option is discussed in the following paragraphs.

Viewing SCSI Statistics

To view the SCSI status page, in the SCSI Status Menu, choose **Display SCSI Statistics**. There are no options in this display screen.

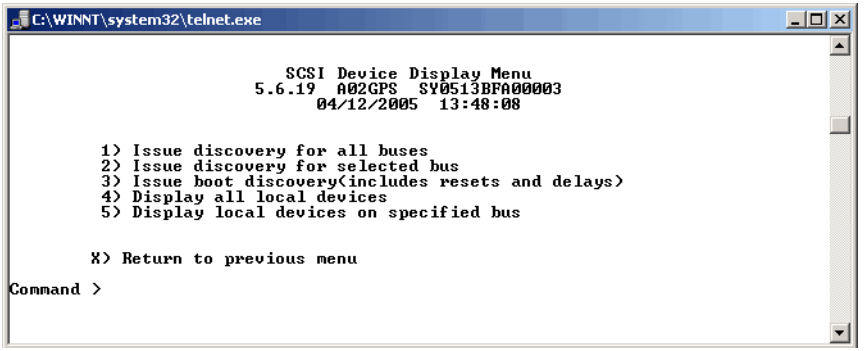
Viewing Attached SCSI Devices

To see a list of the devices attached to this SCSI bus in the SCSI Status Menu, choose **Display Attached SCSI Devices**.

The SCSI Device Display Menu is displayed.

Figure 54 is an illustration of the **SCSI Device Display Menu**.

Figure 54 SCSI Device Display Menu



SCSI Device Display Menu options:

- **Issue discovery for all buses** issues a discovery command for *all* SCSI buses.
- **Issue discovery for selected bus** issues a discovery command for *the selected* bus.
- **Issue boot discovery** issues a boot discovery command.
- **Display all local devices** displays a list of local devices for *all* buses.
- **Display local devices on specified bus** displays a list of local devices for *the selected* bus.

Viewing SCSI Resource Information

To display SCSI resource information, in the **SCSI Status Menu**, choose **Display SCSI Resource Status**.

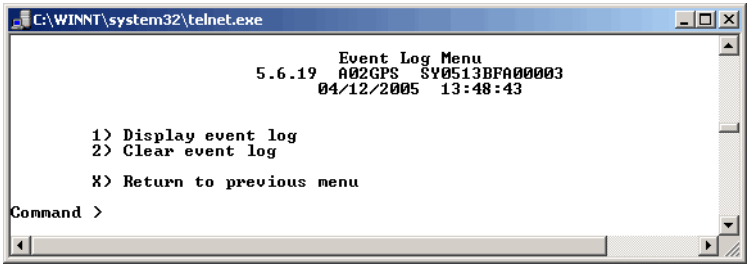
The **SCSI Resource Display** page is displayed. There are no options in the **SCSI Resource Display**. It is used only for viewing SCSI resource status.

Event Log

In the **System Utilities Menu, Event Log** is used to view and clear the system **Event Log**.

Figure 55 is an illustration of the **Event Log Menu**.

Figure 55 Event Log Menu



Event Log Menu options:

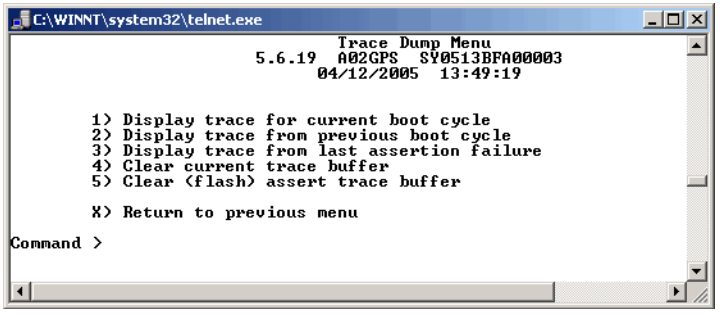
- **Display event log** displays the Event Log.
- **Clear event log** deletes all entries from the Event Log.

Display Trace and Assertion History

In the FC1202 **Main Menu, Display Trace and Assertion History** is used to manage trace history information.

Figure 56 is an illustration of the **Trace Dump Menu.**

Figure 56 Trace Dump Menu



Trace Dump Menu options:

- **Display trace for current boot cycle** displays current boot cycle trace history information.
- **Display trace from previous boot cycle** displays previous boot cycle trace history information.
- **Display trace from the last assertion failure** displays trace history information from the last assertion failure.
- **Clear current trace buffer** clears the current trace buffer.
- **Clear (flash) assert trace buffer** clears the assertion failure trace buffer.
- Return to previous menu

Saving Copies of the Trace Buffers using FTP

Using an FTP session, the trace buffers from the FC1202 can be copied and saved.

1. Verify the FC1202 is connected to the Ethernet network.
2. Start an FTP session.
3. Enter the FC1202 IP address at the FTP prompt:

   ftp <IP address>

> **Note:** Initially, the factory default FC1202 IP address is 1.1.1.1. To view the current IP address, navigate to the Ethernet Configuration Menu and view the screen display. See the "Configuration Menu" section for information on viewing and changing the FC1202 IP address.

4. Specify the directory location on the computer or network where the FTP program will store the trace file.
5. Enter the user name and password.

   The factory default user name is root and the default password is password.
6. Specify Bin mode:

   bin
7. Enter the appropriate command to copy the current or previous trace buffer:

- To copy the current trace buffer:

  get curtrace.txt

  The file will transfer from the FC1202.
- To copy the previous trace buffer:

  get prvtrace.txt

  The file will transfer from the FC1202.

Reboot Option

To reboot the FC1202, in the **Main Menu**, select **Reboot**.

After this option is selected, a confirmation prompt is displayed. If a positive response is given to the confirmation message, the FC1202 is restarted.

Note:	Current FC1202 activities will be disrupted during a reboot.

Download New Revision of Firmware Option

To download a new version of the firmware:

1. Select **Download a New Revision of the Firmware** in the FC1202 **Main Menu**.

   A confirmation prompt is displayed.
2. Respond to the confirmation prompt.
3. Select **Transfer, Send File** in the terminal emulator utility.
4. Select the location of the firmware.

   If necessary, use **Browse** to search for the file.
5. Select XMODEM as the transfer protocol.

6 Press the **Send** button.

The firmware will begin downloading to the FC1202.

When the download process is complete, the system verifies that the firmware image was successfully written to the FLASH memory and reboots. When the FC1202 is rebooted, it detects that there is a newly downloaded firmware image, copies that image to the boot sector of the FLASH, and boots using the new image.

Chapter 3

Troubleshooting

This section discusses basic methods of identifying problems in the setup and configuration of the Interface Controller.

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

The following topics are discussed in this section:

LED Indicators

The LED indicators on the Interface Controller are useful for diagnosing various problems:

- The ***SCSI bus* LEDs** indicate SCSI activity. These indicators are lit during power up, configuration, and when the unit is transferring data. If the SCSI indicator stays continually lit without any corresponding Fibre Channel LED activity, it may indicate a problem with the SCSI bus configuration. Verify the SCSI bus configuration.

- The ***Fibre Channel port*** **LEDs** indicate Fibre Channel activity (ACT) and link (LNK) status. If one of these indicators does not light or stays continually lit without any corresponding SCSI bus activity, it may indicate a problem with a Fibre Channel link. Verify the Fibre Channel port configuration.
- The ***Ethernet*** **LEDs** indicate activity and link status. If one of these indicators does not light or stays continuously lit, it may indicate a problem with the network connection. Verify the network connection. The port must be connected to a 10/100BaseT Ethernet network to function properly.

Figure 57 FC1202 Features

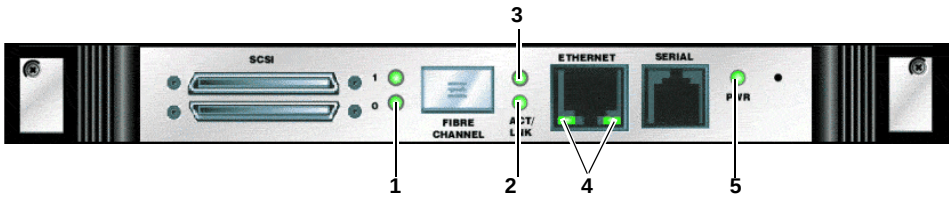


Table 14 FC1202 Feature Descriptions

Item	Description
1	SCSI bus activity LEDs (on corresponding ports, 0, 1)
2	Fibre Channel Link LED on Port 0
3	Fibre Channel Activity on Port 0
4	Ethernet Activity and Link LEDs
5	Power LED

Basic Troubleshooting

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

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

- Verifying SCSI Bus Configuration
- Verifying Fibre Channel Port Connection
- Verifying SCSI Devices in Windows NT
- Verifying Windows 2000 Driver
- Verifying Mapping
- Verifying Devices
- Verifying the Host Configuration
- Verifying HBA Device Driver Information

Each of these topics is discussed in the following sections.

Verifying SCSI Bus Configuration

Items to check include:

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

Verifying Fibre Channel Port Connection

If SCSI devices are recognized on the SCSI buses, but do not appear to the Fibre Channel host, it may be that the Fibre Channel link is not properly established. Most hubs and switches have link indicators showing link

status. When the Interface Controller is connected and powered on, this link indicator should be solid. If it is not, check the cabling or connections.

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

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

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

Verifying SCSI Devices in Windows NT

When mapping Fibre Channel and SCSI devices, verify the Fibre Channel and SCSI devices are recognized by the Interface Controller.

Windows NT may need to be rebooted with all SCSI devices and the Interface Controller powered up before recognizing the devices.

To verify the Fibre Channel and SCSI devices:

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

   The SCSI devices should be listed.

   If no devices are listed, verify the Interface Controller configuration, Fibre Channel HBA configuration, and cabling.

   If devices are listed, verify the Fibre Channel HBA mapping mode or the AL_PA addresses.

Verifying Windows 2000 Driver

The Windows 2000 driver is the device driver installation file (called an INF file) needed by the MS Windows 2000 Operating System. The Interface Controller needs no driver in reality, as the HBA in the Host PC

manages it. But this file lets the Windows 2000 Device Manager register a Interface Controller's Controller LUN as a “System” device, so that the Device Manager thereafter will not consider the controller LUN to be an unknown or “newly discovered” device with every reboot. Using this file, a User only has to “identify the Interface Controller to the Device Manager” once.

To install (register) the Interface Controller with a host Windows 2000 PC that has the FC HBA that will connect to the Interface Controller, use the included INF file (located on the user documentation CD). A controller LUN must also set up on the Interface Controller so that Windows 2000 can “discover” it.

When the Interface Controller FC link is “Up”, the user can either reboot the PC, or run the “Scan for new Hardware” function of the Windows 2000 Device Manager. Either action should cause the HBA to issue a SCSI Inquiry command, to which the Interface Controller replies with its ASCII Inquiry string. Initially, the Windows 2000 Hardware Wizard will use this string to refer to the Interface Controller.

After this discovery interaction occurs, the Hardware Wizard will prompt the user to install a device driver. The user should then select the Wizard's “Search for a suitable driver” option, and specify the folder containing the Interface Controller INF file, in this case located on the user documentation CD.

The Hardware Wizard scans all the INF files in the specified folder, and selects the first INF file it finds with a device entry containing a matching hardware ID string. It then copies the selected INF file, renaming it to “oem<#>.if”, where the '#' is some integer, and places the copy into the “*C:\WINNT\inf*” folder. It “compiles” the *INF* file to a “*.PNF*” file with the same root filename, and uses its Interface Controller model entry information to install -- or register in the Interface Controller's case -- the newly discovered device.

The user must reboot the Host PC to complete the process, as prompted by the Wizard.

Verifying the Interface Controller Configuration

If you are in doubt about the configuration or about the location of the error, restore the Interface Controller to the factory default configuration

and configure the unit one step at a time, verifying the functionality of the configuration after each change is made.

Caution: Restoring factory defaults overwrites user configurations. In the Serial/Telnet interface, use the save configuration option before resetting factory defaults to allow recovery of user configuration.

Verifying Mapping

If the Interface Controller is working in Fibre Channel-to-SCSI Initiator mode and is using Indexed or SCC mapping, try changing to Auto-assigned mapping.

Verifying Devices

Connecting the SCSI target devices directly to a SCSI interface (for example, a host SCSI bus) to verify that the devices are functional is recommended.

Verifying the Host Configuration

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

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

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

Verifying HBA Device Driver Information

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