HP ProLiant BL p-Class GbE2 Interconnect Switch User Guide

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HP ProLiant BL p-Class GbE2 Interconnect Switch User Guide

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About This Guide

This guide can be used for reference when servicing the HP ProLiant BL p-Class GbE2 Interconnect Switches.

> ⚠ **WARNING:** To reduce the risk of personal injury from electric shock and hazardous energy levels, only authorized service technicians should attempt to repair this equipment. Improper repairs can create conditions that are hazardous.

Technician Notes

> ⚠ **WARNING:** Only authorized technicians trained by HP should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module-level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

> ⚠ **WARNING:** To reduce the risk of personal injury from electric shock and hazardous energy levels, do not exceed the level of repairs specified in these procedures. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create conditions that are hazardous.

> ⚠ **WARNING:** To reduce the risk of electric shock or damage to the equipment:
>
> - **Disconnect power from the system by unplugging all power cords from the power supplies.**
>
> - **Do not disable the power cord grounding plug. The grounding plug is an important safety feature.**
>
> - **Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.**

> △ **CAUTION:** To properly ventilate the system, you must provide at least 7.6 cm (3.0 in.) of clearance at the front and back of the switch.

> △ **CAUTION:** The computer is designed to be electrically grounded (earthed). To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.

> **NOTE:** Any indications of component replacement or printed wiring board modifications may void any warranty.

Where to Go for Additional Help

In addition to this guide, the following information sources are available:

- *HP ProLiant BL p-Class GbE2 Interconnect Switch Application Guide*

- *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide*

- *HP ProLiant BL p-Class GbE2 Interconnect Switch Browser-based Interface Reference Guide*

- *HP ProLiant BL p-Class C-GbE2 Interconnect Kit Quick Setup Instructions*

- *HP ProLiant BL p-Class F-GbE2 Interconnect Kit Quick Setup Instructions*

- *HP ProLiant BL p-Class GbE2 Storage Connectivity Kit Quick Setup Instructions*

- Service training guides

- Service advisories and bulletins

- QuickFind information services

- Insight Manager software

Telephone Numbers

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.

- In Canada, call 1-800-263-5868.

For HP technical support:

- In the United States and Canada, call 1-800-652-6672.

- Outside the United States and Canada, refer to

    www.hp.com

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Introduction

Overview

This user guide provides installation and reference information for the following kits:

- HP ProLiant BL p-Class C-GbE2 Interconnect Kit

- HP ProLiant BL p-Class F-GbE2 Interconnect Kit

Additional References

Once the GbE2 Interconnect Switch is installed, you are ready to configure it. Detailed information about how to configure the GbE2 Interconnect Switch is available in the following reference guides. These guides are located on the ProLiant BL p-Class GbE2 Interconnect Switch Management Utilities and User Documentation CD.

- *HP ProLiant BL p-Class GbE2 Interconnect Switch Application Guide*

- *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide*

- *HP ProLiant BL p-Class GbE2 Interconnect Switch Browser-based Interface Reference Guide*

HP ProLiant BL p-Class C-GbE2 Interconnect Kit

The HP ProLiant BL p-Class C-GbE2 Interconnect Kit contains two HP ProLiant BL p-Class GbE2 Interconnect Switches and two QuadT2 Interconnect Modules.

The HP ProLiant BL p-Class GbE2 Interconnect Switches and QuadT2 Interconnect Modules use 10Base-T/100Base-TX/1000Base-T Gigabit Layer 2 switching technology to provide between 32-to-1 (blocking) to 32-to-12 (blocking) reduction in the number of networking cables per BL p-Class server blade enclosure.

Each HP ProLiant BL p-Class GbE2 Interconnect Switch and QuadT2 Interconnect Module reduces sixteen 10Base-T/100Base-TX/1000Base-T server networking ports to one to four RJ-45 10Base-T/100Base-TX/1000Base-T ports (located on the removable interconnect module) and one to two RJ-45 10Base-T/100Base-TX/1000Base-T ports (located on the front of the HP ProLiant BL p-Class GbE2 Interconnect Switch).
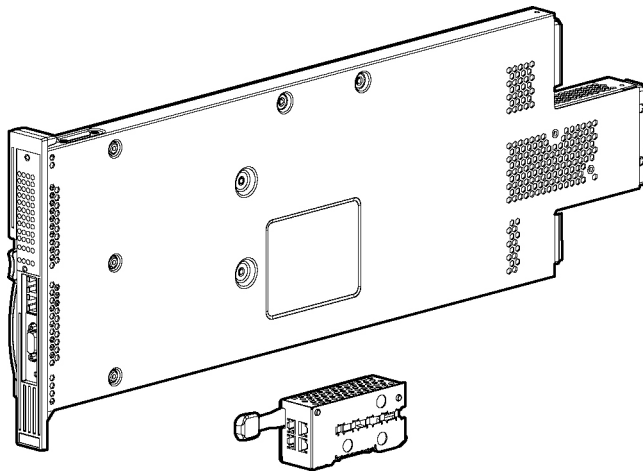
Figure 1-1: HP ProLiant BL p-Class GbE2 Interconnect Switch and QuadT2 Interconnect Module

HP ProLiant BL p-Class F-GbE2 Interconnect Kit

The HP ProLiant BL p-Class F-GbE2 Interconnect Kit contains two HP ProLiant BL p-Class GbE2 Interconnect Switches and two QuadSX Interconnect Modules.

The HP ProLiant BL p-Class GbE2 Interconnect Switches and QuadSX Interconnect Modules use 10Base-T/100Base-TX/1000Base-T and 1000Base-SX Gigabit Layer 2 switching technology to provide between 32-to-1 (blocking) to 32-to-12 (blocking) reduction in the number of networking cables per BL p-Class server blade enclosure.

Each HP ProLiant BL p-Class GbE2 Interconnect Switch and QuadSX Interconnect Module reduces sixteen 10Base-T/100Base-TX/1000Base-T server networking ports to one to four LC 1000Base-SX ports (located on the removable interconnect module) and one to two RJ-45 10Base-T/100Base-TX/1000Base-T ports (located on the front of the HP ProLiant BL p-Class GbE2 Interconnect Switch).
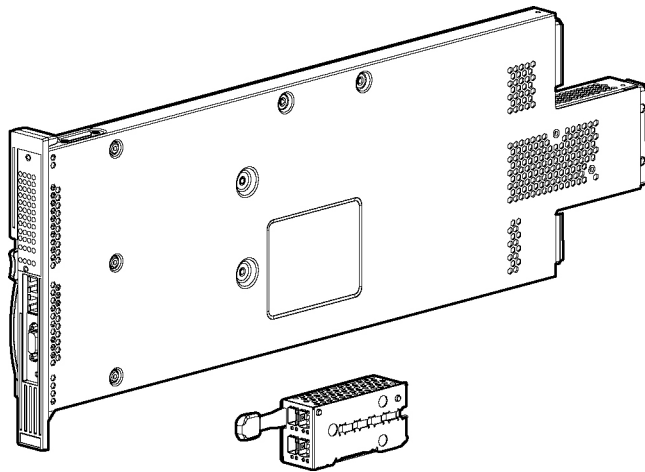
Figure 1-2: HP ProLiant BL p-Class GbE2 Interconnect Switch and QuadSX Interconnect Module

Features

The ProLiant BL p-Class GbE2 Interconnect Switch and interconnect modules are designed for easy installation and high performance in an environment where traffic on the network and the number of users increases continually.

Enterprise Class Performance

The ProLiant BL p-Class GbE2 Interconnect Switch features include:

- Up to a 16-to-1 reduction in networking cables and connections; concentration of sixteen 10/100/1000 Ethernet networking ports down to as little as one Gigabit Ethernet port, or up to six Gigabit Ethernet ports for additional bandwidth and redundant connections to the network backbone

- Multi-layer switching upgradeability with future Layer 3-7 routing and Internet Protocol (IP) load balancing content delivery switching

- Support for a future 10 Gigabit Ethernet uplink upgrade for bandwidth intensive applications and convergence of IP-based network and storage systems

- Pass-through ProLiant BL20p G2 Fibre Channel storage signals via the optional GbE2 Storage Connectivity Kit

- Fully supported on the existing ProLiant BL p-Class server blade enclosure, and infrastructure compatible with any combination of ProLiant server blades

- Ability to upgrade from an existing GbE Interconnect Switch or Patch Panel interconnect without having to power down the server blades and the server blade enclosure

- Pre-configured for immediate use with the ProLiant BL p-Class server blade enclosure

- System security including Secure Shell (SSH), Secure Copy (SCP), 255 port-based IEEE 802.1Q tagged Virtual Local Area Networks (VLANs) per GbE2 Interconnect Switch, RADIUS user authentication and authorization, and more

- An extensive list of industry standard protocol support, compatible with widely-used networking components

- 9K jumbo frames that improve performance by increasing application throughput and decreasing server processor utilization

- Robust configuration and management from any switch port using the included browser-based and scriptable command line user interfaces

- Support for Telnet, Simple Network Management Protocol (SNMP), SCP and Trivial File Transfer Protocol (TFTP) file transfer, human read/write configuration file, XModem, an extensive list of Management Information Base objects (MIBs), and more, further enhance the management capabilities

- Fully end-to-end redundant architecture maximizing network availability

- Designed with unmatched user-friendly serviceability features including the rip-n-replace switch that can be hot-swapped in seconds via the unique modular design eliminating all cabling/re-cabling

GbE2 Interconnect Switch Redundancy

The ProLiant BL p-Class GbE2 Interconnect Switch offers several redundancy and failover features. With these features, the network configuration can be designed to allow for continued network access to each server blade in case of a component or link failure. GbE2 Interconnect Switch redundancy and failover features include:

- Two separate rip-n-replace GbE2 Interconnect Switches per one ProLiant BL p-Class server blade enclosure

- Four Gigabit Ethernet uplink ports in the back and two Gigabit Ethernet uplink ports in the front, per GbE2 Interconnect Switch, for designing fully meshed uplink paths to the network backbone

- Server networking connections routed to each of the separate GbE2 Interconnect Switches for redundant paths to tolerate a switch or port malfunction

- Redundant data path 10/100/1000 Ethernet cross connections between GbE2 Interconnect Switches

- Spanning Tree Protocol (STP) support that eliminates potential problems caused by redundant networking paths and provides for failover with a secondary path in case of primary path failure; supports IEEE 802.1D Spanning Tree Protocol and is compatible with Cisco® PVST+ and Cisco PVST, when the other device is configured as untagged or configured to use 802.1q tagging

- Redundant power supplies and redundant cooling fans within the server blade enclosure

- Redundant firmware images and configuration settings in memory

- Redundant, configurable Domain Name System (DNS) clients, syslog servers, gateways, and community strings and SNMP trap manager hosts

Configuration and Management

The ProLiant BL p-Class GbE2 Interconnect Switch provides the following configuration and management interfaces and tools:

- A scriptable command line interface (CLI) allows local, Telnet, or Secure Shell (SSH) access.

- A browser-based interface (BBI) allows remote access using a Web browser such as Microsoft® Internet Explorer or Netscape Navigator.

- Simple Network Management Protocol (SNMP) manageability and monitoring are supported.

- The GbE2 Interconnect Switch functionality allows you to upload and download interconnect switch configurations via Trivial File Transfer Protocol (TFTP) and Secure Copy Protocol (SCP), thus allowing the rapid deployment of multiple server blade systems, and providing robust backup and restore capabilities.

- Network Time Protocol (NTP) is supported, allowing the GbE2 Interconnect Switch to display and record the accurate date and time as provided by an NTP server.

- Two firmware images, either of which can be selected to be the current runtime image, can be held in memory.

- Remote authentication dial-in user service (RADIUS) provides support for user authentication and authorization.

- The user interfaces provide multi-level password protected user accounts.

- The setup utility allows step-by-step tailored configuration.

- IP settings can be set manually or obtained automatically from a Bootstrap Protocol (BOOTP) server.

- A text-based, human read/write configuration file provides viewing, printing, and editing capabilities.

- A Domain Name System (DNS) client supports primary and secondary DNS servers.

- Any port may be enabled/disabled as desired.

- Any GbE2 Interconnect Switch port can be used to perform switch management, Integrated Lights-Out (iLO), and Preboot Execution Environment (PXE).

Diagnostic Tools

The hardware, software, and firmware diagnostic tools that are available include:

- Insight Manager 7 automatic discovery and identification

- Power-on self-test (POST) built into the GbE2 Interconnect Switch boot process

- GbE2 Interconnect Switch port mirroring

- GbE2 Interconnect Switch LED panel displaying per port status and speed

- Interconnect module LEDs displaying per port status and speed

- System, management, and option compatibility status LEDs

- Front panel reset power switch, DB-9 port, and two Gigabit Ethernet ports

- Statistic monitoring including port utilization, data packets received/transmitted, port error packets, trunk utilization, and so on

- Ping and trace route capability

- Remote syslog with support for primary and secondary syslog server

- Portable Diagnostic Station option to configure and diagnose a GbE2 Interconnect Switch and server blade removed from the rack

- The ability to return the GbE2 Interconnect Switch to known good condition in case of firmware corruption

- State information dump for tuning and debugging switch performance

- Panic command for immediate state dump to flash memory and automatic switch boot

- Watchdog timer for automatic GbE2 Interconnect Switch reboot in case of switch software "freeze"

- Ability to set NVRAM diagnostic flags

GbE2 Interconnect Switch Architecture

The ProLiant BL p-Class system provides integrated switching technology for network cable reduction.

GbE2 Interconnect Switch with the QuadT2 Interconnect Module

The following Ethernet connectivity block diagram shows how the Ethernet ports are connected within the server blade enclosure.

GbE2 Interconnect Switch Architecture
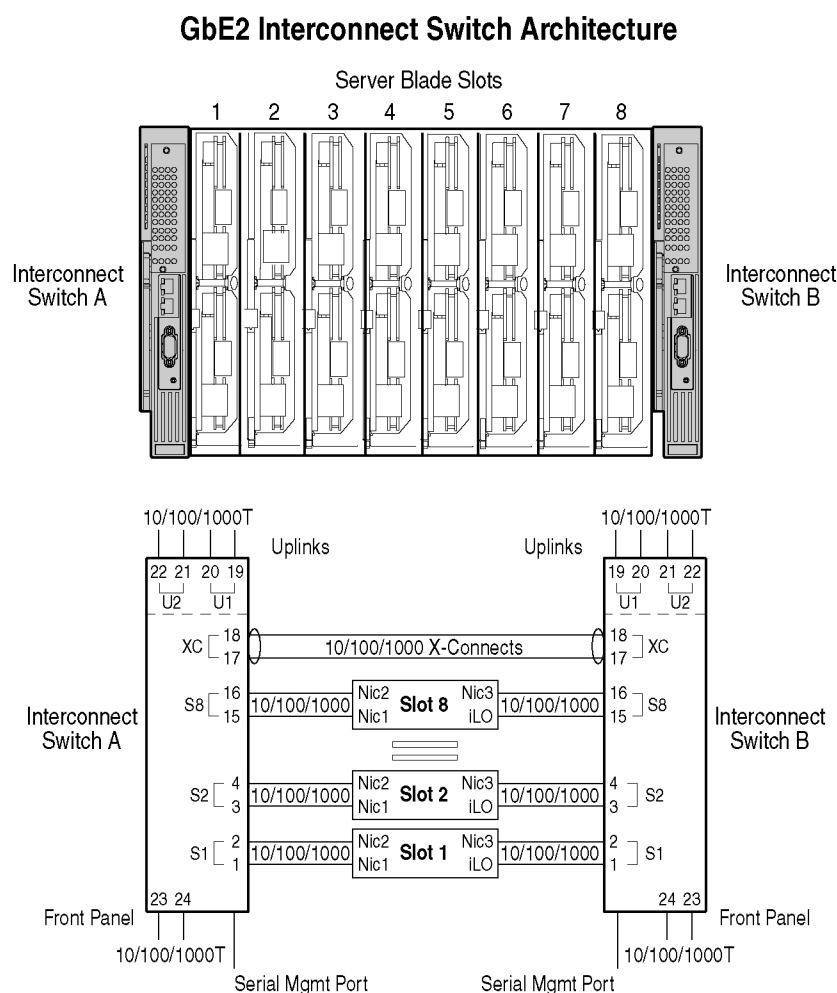
Figure 1-3: ProLiant BL p-Class GbE2 Interconnect Switch with the QuadT2 Interconnect Module

> **NOTE:** The actual negotiated speed of any port is dependent upon the capability of the device to which it is attached. For example, iLO typically operates at 100 Mb/s.

GbE2 Interconnect Switch with the QuadSX Interconnect Module

The following Ethernet connectivity block diagram shows how the Ethernet ports are connected within the server blade enclosure.
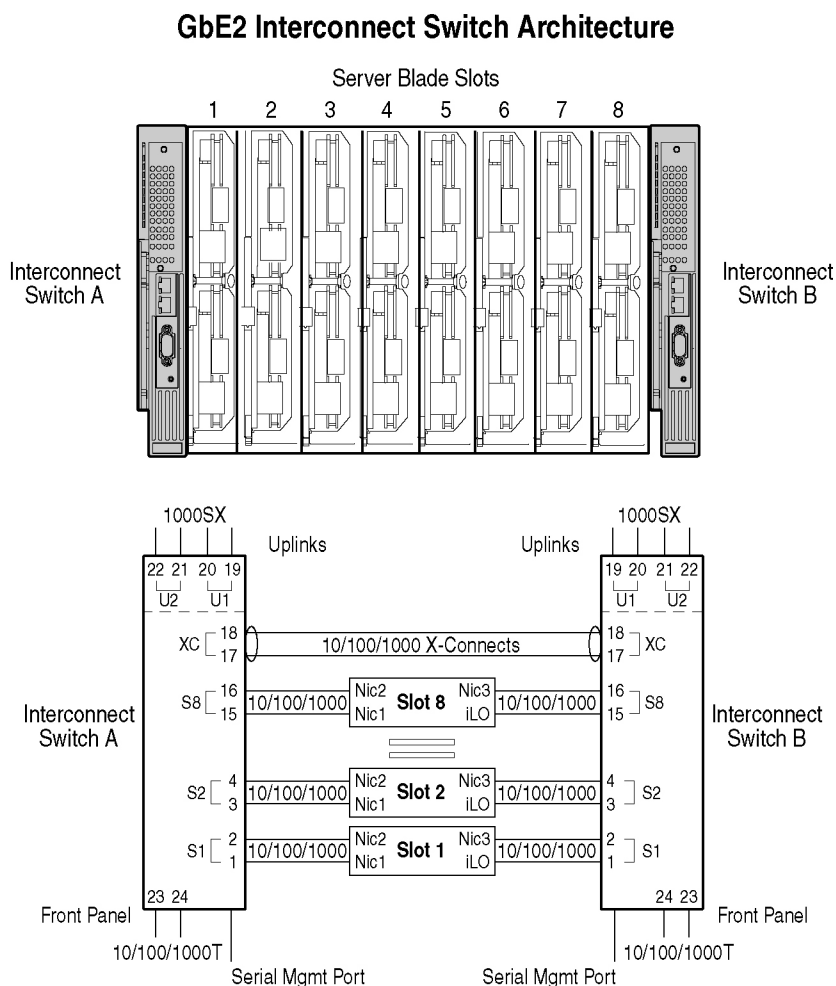
Figure 1-4: ProLiant BL p-Class GbE2 Interconnect Switch with the QuadSX Interconnect Module

> **NOTE:** The actual negotiated speed of any port is dependent upon the capability of the device to which it is attached. For example, iLO typically operates at 100 Mb/s.

GbE2 Interconnect Switches

Two GbE2 Interconnect Switches in the ProLiant BL p-Class server blade enclosure provide switch redundancy and redundant paths to the network ports on the server blades. Each GbE2 Interconnect Switch has six external Gigabit Ethernet ports and direct connections to two of the four network controllers per server blade slot. The four network controllers per server blade slot are NIC1, NIC2, NIC3, and Integrated Lights-Out (iLO).

Each pair of GbE2 Interconnect Switches consolidates up to thirty-two 10/100/1000 Ethernet controllers on eight servers into one-to-eight Gigabit ports (on the back of the system) plus four additional Gigabit Ethernet ports (on the front of the GbE2 Interconnect Switches). This design eliminates up to 31 network cables from the back of the server blade enclosure.

Refer to the server Setup and Installation Guide for more information about Integrated Lights-Out (iLO) management.

Redundant Crosslinks

The two GbE2 Interconnect Switches are connected through redundant 10/100/1000 crosslinks. These two crosslinks provide an aggregate throughput of 2 Gb/s for traffic between the GbE2 Interconnect Switches.

Redundant Paths to Servers

The three 10/100/1000 NIC ports and the one 10/100 iLO controller per server blade slot are routed through the enclosure backplane to different GbE2 Interconnect Switches. NIC1 and NIC2 are routed to Switch A. NIC 3 and iLO are routed to Switch B. This configuration provides redundant paths to each server.

On a heavily used system, using a single uplink port for all 24 NICs and 8 iLOs can cause a traffic bottleneck. For optimum performance, HP recommends that at least one to all four uplink ports per GbE2 Interconnect Switch be used.

The two front panel 10Base-T/100Base-TX/1000Base-T ports per GbE2 Interconnect Switch may also be used for additional uplink bandwidth to the network.

Supported Technologies

The ProLiant BL p-Class GbE2 Interconnect Switch supports the following technologies.

Layer 2 Switching

The ProLiant BL p-Class GbE2 Interconnect Switch uses 10/100/1000 Gigabit Layer 2 switching technology. Layer 2 refers to the Data Link layer of the Open Systems Interconnection (OSI) model, which is concerned with moving data packets across a network by enforcing Carrier Sense Multiple Access with Collision Detection (CSMA/CD). This layer performs the following tasks:

- Ethernet packet framing

- Medium Access Control (MAC) addressing

- Physical medium transmission error detection

- Medium allocation (collision avoidance)

- Contention resolution (collision handling)

Layer 2 switching technology allows the GbE2 Interconnect Switch to look into data packets and redirect them based on the destination MAC address. This reduces traffic congestion on the network because packets, instead of being transmitted to all ports, are transmitted to the destination port only.

IEEE 802.1Q-based Virtual Local Area Network

The ProLiant BL p-Class GbE2 Interconnect Switch provides support for a total of 255 IEEE 802.1Q Virtual Local Area Networks (VLANs) for server grouping and isolation. A VLAN is a network segment configured according to a logical scheme rather than a physical layout. VLANs can be used to combine any collection of local area network (LAN) segments into an autonomous user group that appears as a single LAN.

VLANs also logically segment the physical network into different broadcast domains so that packets are forwarded only between ports within the VLAN. This technology enhances performance by conserving bandwidth and improves security by limiting traffic to specific domains. For example, you may want to isolate the server blade iLO ports from the rest of the NICs. The iLO ports on interconnect Switch B can be assigned to their own VLAN and go to a dedicated uplink or share an uplink using VLAN tagging.

IMPORTANT: The greater the number of VLANs, the greater the GbE2 Interconnect Switch central processing unit (CPU) utilization. For maximum interconnect switch performance, HP recommends that you be judicious when configuring the number of VLANs.

Spanning Tree Protocol

The GbE2 Interconnect Switch supports IEEE 802.1D Spanning Tree Protocol (STP), which allows the blocking of links that form loops between switches in a network. When multiple links between switches are detected, a primary link is established. Duplicated links are blocked from use and become standby links. If the primary link fails, the standby link is activated.

In addition, the GbE2 Interconnect Switch provides a spanning tree domain per VLAN. The switch is compatible with Cisco® PVST+ and Cisco PVST, when the other device is configured as untagged or configured to use 802.1q tagging. Sixteen spanning tree domains are supported per GbE2 Interconnect Switch.

Simple Network Management Protocol

Each GbE2 Interconnect Switch can be configured and monitored remotely from a Simple Network Management Protocol (SNMP)-based network management station. The GbE2 Interconnect Switch supports industry-standard SNMP Management Information Bases (MIBs) and proprietary HP enterprise switch MIBs for fault detection and monitoring of switch functionality. In addition, the GbE2 Interconnect Switch supports various environmental traps such as temperature and fan failure traps.

To secure the management interface, the switch administrator can configure community strings with two levels of access: Read and Read/Write. Access to the GbE2 Interconnect Switch can also be restricted to only management stations that are members of a specific Internet Protocol (IP) network. This can be achieved by configuring the address/mask of that specific network as a restricted management network address/mask.

Port Mirroring

The GbE2 Interconnect Switch allows you to mirror one or multiple ports (source ports) to another port (destination port) for network monitoring and troubleshooting purposes. This technology offers a way for network packet analyzers to view the traffic moving through the GbE2 Interconnect Switches by providing a copy of the traffic that is currently being passed through any other port. The packets are normally sent to a network packet analyzer or other monitoring device attached to the mirror port.

Port Trunking and Load Balancing

The GbE2 Interconnect Switch supports EtherChannel compatible IEEE 802.3ad (without LACP) port trunking allowing several ports to be grouped together and act as a single logical link called a trunk. This feature provides a bandwidth that is a multiple of the bandwidth of a single link. It also improves reliability since load balancing is automatically applied to the ports in the trunked group. A link failure within the group causes the network traffic to be directed to the remaining links in the group.

Trivial File Transfer Protocol Support

Trivial File Transfer Protocol (TFTP) support allows the GbE2 Interconnect Switch firmware to be upgraded by downloading a new firmware file from a TFTP server to the GbE2 Interconnect Switch. Firmware images of the GbE2 Interconnect Switch can also be uploaded to a TFTP server, a configuration file can be downloaded into a GbE2 Interconnect Switch from a TFTP server, and configuration settings can be saved to the TFTP server.

Store and Forward Switching Scheme

The GbE2 Interconnect Switch provides a store and forward switching scheme that allows each packet to be buffered (stored) before it is forwarded to its destination. While this method creates latency, it improves reliability in a heavily used interconnect switch. Packets that cannot be forwarded are saved immediately, rather than dropped, so that packets behind them are less likely to be dropped in periods of heavy usage.

Bootstrap Protocol

By default, the GbE2 Interconnect Switch is configured to obtain an IP address from a Bootstrap Protocol (BOOTP) server during the boot process. The IP settings can also be manually configured by means of the serial interface. The IP settings are configurable from the browser-based interface, but because the connection is based on an IP address for these interfaces, users will have to reconnect with the newly assigned IP address.

Network Time Protocol

The GbE2 Interconnect Switch can maintain the current date and time. This information displays on the management interfaces and is used to record the date and time of switch events. Current date and time information can be manually set on the GbE2 Interconnect Switch or can be obtained through Network Time Protocol (NTP). NTP allows the GbE2 Interconnect Switch to send a request to a primary NTP server in each polling period asking for Greenwich Mean Time (GMT).

Remote Authentication Dial-in User Service

The GbE2 Interconnect Switch supports the Remote Authentication Dial-in User Service (RADIUS) method to authenticate and authorize remote administrators for managing the GbE2 Interconnect Switch. This method is based on a client/server model. The Remote Access Server (RAS)—the switch—is a client to the back-end database server. A remote user (the remote administrator) interacts only with the RAS, not the back-end server and database.

RADIUS authentication consists of the following components:

- A protocol with a frame format that utilizes User Datagram Protocol (UDP) over IP, based on Request For Comments (RFC) 2138 and 2866

- A centralized server that stores all the user authorization information

- A client, in this case, the GbE2 Interconnect Switch

The GbE2 Interconnect Switch, acting as the RADIUS client, communicates to the RADIUS server to authenticate and authorize a remote administrator using the protocol definitions specified in Request For Comments (RFC) 2138 and 2866. Transactions between the client and the RADIUS server are authenticated using a shared key that is not sent over the network. In addition, the remote administrator passwords are sent encrypted between the RADIUS client (the switch) and the back-end RADIUS server.

The benefits of using RADIUS are:

- Authentication of remote administrators

- Identification of the administrator using name/password

- Authorization of remote administrators

- Determination of the permitted actions and customizing service for individual administrators

Secure Shell and Secure Copy

Secure Shell (SSH) and Secure Copy (SCP) use secure tunnels to encrypt and secure messages between a remote administrator and the GbE2 Interconnect Switch. Telnet does not provide this level of security. The Telnet method of managing a GbE2 Interconnect Switch does not provide a secure connection.

SSH is a protocol that enables remote administrators to log securely into the GbE2 Interconnect Switch over a network to execute management commands.

SCP is typically used to copy files securely from one machine to another. SCP uses SSH for encryption of data on the network. On a GbE2 Interconnect Switch, SCP is used to download and upload the switch configuration via secure channels.

XModem

The GbE2 Interconnect Switch supports XModem for transferring files during direct dial-up communications. XModem sends blocks of data in 128-byte blocks, and includes an error-detection system called a checksum. When the data is received, the error detection system ensures that the entire message reached its destination. If not, the receiving computer sends a request for retransmission of the data.

Jumbo Frames

By default, the GbE2 Interconnect Switch module supports jumbo frames up to 9216 bytes, which may help reduce server central processing unit (CPU) utilization and may increase application throughput. No configuration is required. The GbE2 Interconnect Switch does not fragment frames as they exit, or assemble packets into jumbo frames as they enter the switch.

Auto-MDI/MDIX

The GbE2 Interconnect Switch Ethernet ports are medium dependent interface (MDI)/MDI crossover (MDIX) capable. MDI/MDIX is a type of Ethernet port connection using twisted pair cabling. The medium dependent interface (MDI) is the component of the media attachment unit (MAU) that provides the physical and electrical connection to the cabling medium. An MDI crossover (MDIX) is a version of MDI that enables connection between like devices. MDI ports connect to MDIX ports via straight-through twisted pair cabling whereas both MDI-to-MDI and MDIX-to-MDIX connections use crossover twisted pair cabling. The GbE2 Interconnect Switch has the capability to automatically detect the cable selection/type, making the distinction between a straight-through cable and a crossover cable unimportant.

Auto-negotiation of Duplex Mode and Speed

Auto-negotiation of duplex mode and speed can be configured on the GbE2 Interconnect Switch. Network adapters that support multiple data speeds, such as Fast Ethernet and Gigabit Ethernet, choose the speed at which they run through a procedure called auto-negotiation. Auto-negotiation involves probing the capability of the network using low-level signaling techniques to select compatible Ethernet speeds. Auto-negotiation was originally developed to make the migration from traditional Ethernet to Fast Ethernet products easier.

Redundant Images in Firmware

The GbE2 Interconnect Switch can store up to two different software images, called **image1** and **image2,** as well as boot software, called **boot.** When you download new software, you are given the ability to specify where it is to be placed: either into **image1, image2,** or **boot.**

For example, if your active image is currently loaded into **image1,** you should probably load the new image software into **image2.** This lets you test the new software and revert back to the original image stored in **image1,** if needed.

> △ **CAUTION:** Unlike the firmware which has two images, there is only one image of **boot** supported. Upgrading the **boot** image replaces the original **boot** image.

External Components

This section describes the front panel of the ProLiant BL p-Class GbE2 Interconnect Switch, the QuadT2 Interconnect Module Panel, and the QuadSX Interconnect Module Panel.

GbE2 Interconnect Switch Front Panel

The front panel of the GbE2 Interconnect Switch has LEDs to indicate link activity, link speed, power status, and management status. It has two RJ-45 connectors for 10Base-T/100Base-TX/1000Base-T Ethernet management ports, one RS-232 (DB-9) serial management port, and a **power/reset (Pwr/Rst)** button.
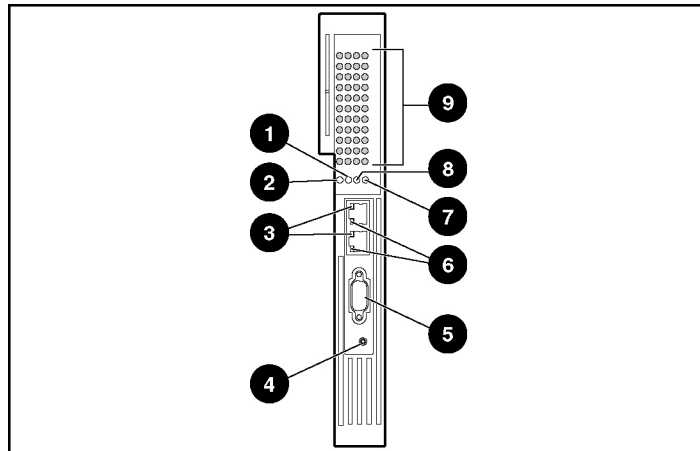
Figure 1-5: GbE2 Interconnect Switch front panel

Table 1-1: GbE2 Interconnect Switch Front Panel

Item	Description	Status
1	10G LED	Reserved for future use
2	SAN LED	Green = OctalFC Interconnect Module and Fibre Channel Signal Conditioning Card match
		Amber = OctalFC Interconnect Module and Fibre Channel Signal Conditioning Card do not match
		Off = No OctalFC Interconnect Module installed
		Refer to the "HP ProLiant BL p-Class GbE2 Storage Connectivity Kit Option" section in Chapter 2 for information about the GbE2 Storage Connectivity Kit.
3	Front panel RJ-45 connector link speed LEDs	Amber = 1000 Mb/s
		Green = 100 Mb/s
		Off = 10 Mb/s
4	**Pwr/Rst** button	Forces the GbE2 Interconnect Switch to power up or reboot
5	DB-9 connector	Used to access the local management console
6	Front panel RJ-45 connector link activity LEDs	Green = Link and no activity
		Green flashing = Link and activity
		Amber = Port disabled
		Off = No link
7	Management status LED	Flashing = Management session active
		Off = No management session active
8	Power status LED	Green = Power on
		Amber = Stand-by mode
		Off = Power off
9	Link activity and speed LEDs	Refer to the following figures and tables for LED assignments and functions.
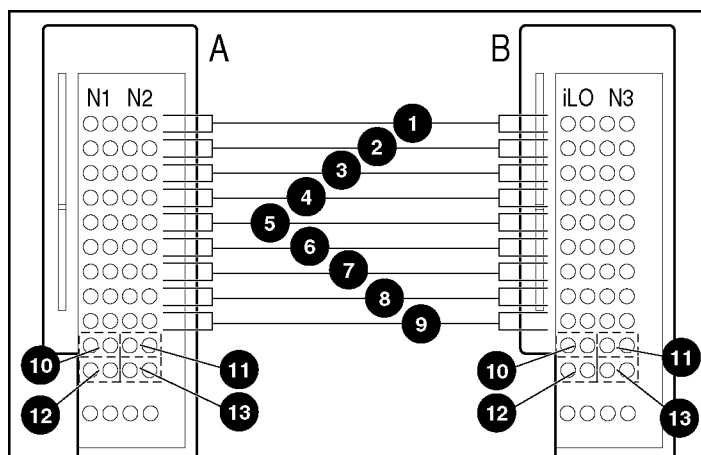
Figure 1-6: GbE2 Interconnect Switch front panel NIC LED assignments

Table 1-2: GbE2 Interconnect Switch Front Panel NIC LED Assignments

Item	Description
1	Server blade slot 1 Ethernet ports
2	Server blade slot 2 Ethernet ports
3	Server blade slot 3 Ethernet ports
4	Server blade slot 4 Ethernet ports
5	Server blade slot 5 Ethernet ports
6	Server blade slot 6 Ethernet ports
7	Server blade slot 7 Ethernet ports
8	Server blade slot 8 Ethernet ports
9	Interswitch X-Connect ports
10	Port (19x) RJ-45 connector for rear panel uplink
11	Port (20x) RJ-45 connector for rear panel uplink
12	Port (21x) RJ-45 connector for rear panel uplink
13	Port (22x) RJ-45 connector for rear panel uplink
*Ports 19x, 20x, 21x, and 22x are RJ-45 uplink connectors on the QuadT2 Interconnect Module and LC uplink connectors on the QuadSX Interconnect Module.	
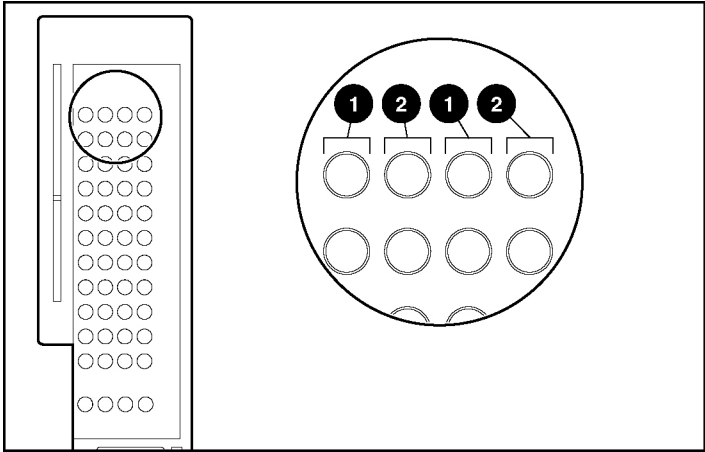
Figure 1-7: GbE2 Interconnect Switch front panel NIC LED functions

Table 1-3: GbE2 Interconnect Switch Front Panel NIC LED Functions

Item	LED Description	Status
1	Link speed	Amber = 1000 Mb/s
		Green = 100 Mb/s
		Off = 10 Mb/s
2	Link activity	Green = Link and no activity
		Green flashing = Link and activity
		Amber = Port disabled
		Off = No link

QuadT2 Interconnect Module Panel

The QuadT2 Interconnect Modules are inserted into the bottom-left-most and bottom-right-most bays on the rear side of the server blade enclosure. Each QuadT2 Interconnect Module has four RJ-45 connectors with link activity and speed LEDs for uplink network cabling. Four RJ-45 connectors support Gigabit Ethernet connections for uplink connectivity.
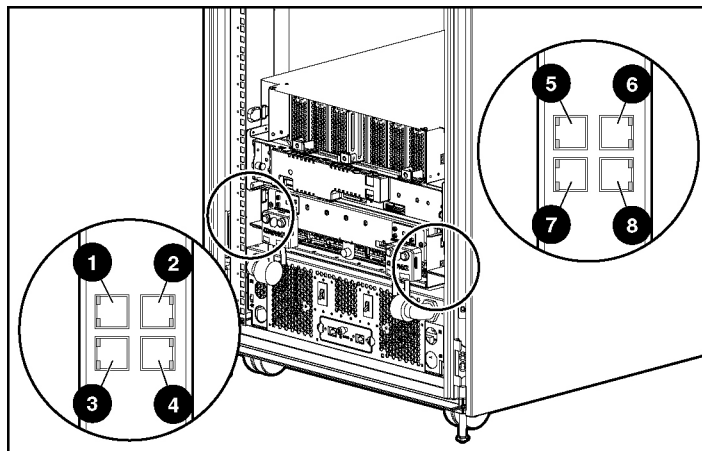
Figure 1-8: QuadT Interconnect Module connectors

Table 1-4: QuadT Interconnect Module Connectors

Item	Description
1	Port (22x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch B
2	Port (21x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch B
3	Port (20x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch B
4	Port (19x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch B
5	Port (22x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch A
6	Port (21x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch A
7	Port (20x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch A
8	Port (19x) RJ-45 connector for 10/100/1000T/TX/T Mb uplink for Switch A
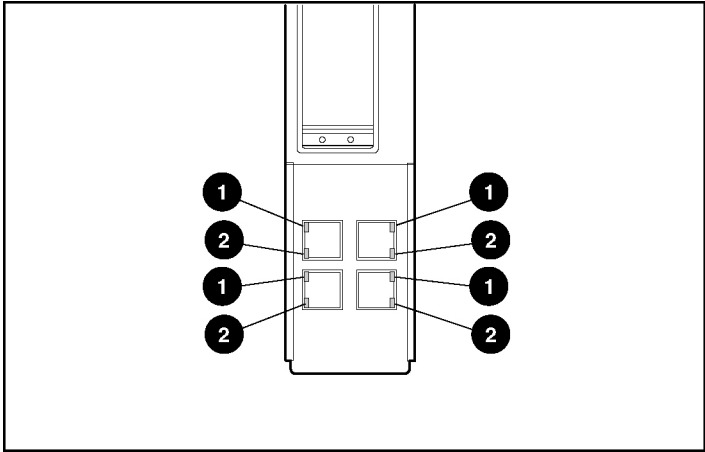
Figure 1-9: QuadT2 Interconnect Module LEDs

Table 1-5: QuadT2 Interconnect Module LEDs

Item	LED Description	Status
1	Link activity	Green = Link and no activity
		Green flashing = Link and activity
		Amber = Port disabled
		Off = No link
2	Link speed	Amber = 1000 Mb/s
		Green = 100 Mb/s
		Off = 10 Mb/s

QuadSX Interconnect Module Panel

The QuadSX Interconnect Modules are inserted into the bottom-left-most and bottom-right-most bays on the rear side of the server blade enclosure. Each QuadSX Interconnect Module has four LC connectors with link activity LEDs for uplink network cabling. The LC connectors support 1000SX Ethernet short-haul fiber connections for uplink connectivity.
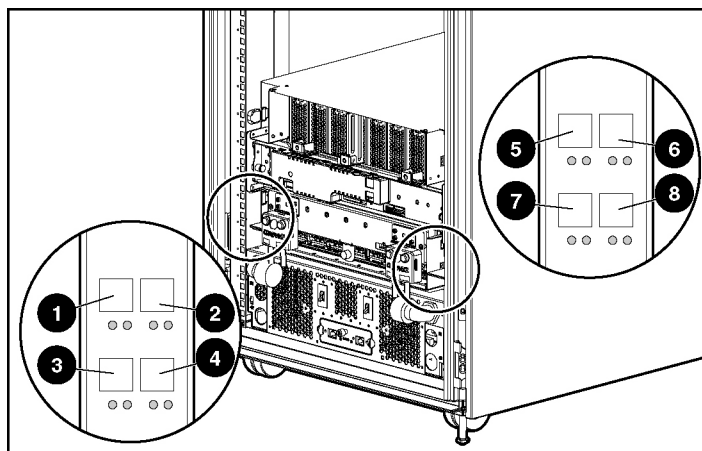
Figure 1-10: QuadSX Interconnect Module connectors

Table 1-6: QuadSX Interconnect Module Connectors

Item	Description
1	Port (22x) LC fiber connector for 1000SX uplink on Switch B
2	Port (21x) LC fiber connector for 1000SX uplink on Switch B
3	Port (20x) LC fiber connector for 1000SX uplink on Switch B
4	Port (19x) LC fiber connector for 1000SX uplink on Switch B
5	Port (22x) LC fiber connector for 1000SX uplink on Switch A
6	Port (21x) LC fiber connector for 1000SX uplink on Switch A
7	Port (20x) LC fiber connector for 1000SX uplink on Switch A
8	Port (19x) LC fiber connector for 1000SX uplink on Switch A
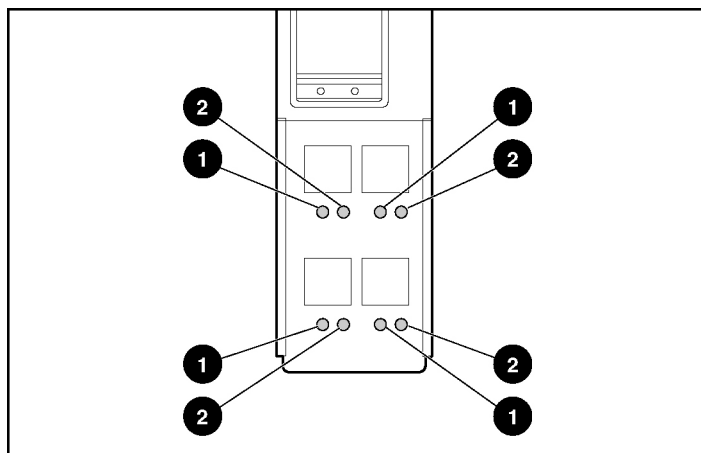
Figure 1-11: QuadSX Interconnect Module LEDs

Table 1-7: QuadSX Interconnect Module LEDs

Item	LED Description	Status
1	Link speed	Amber = 1000 Mb/s
2	Link activity	Green = Link and no activity
		Green flashing = Link and activity
		Amber = Port disabled
		Off = No link

2

Setting Up and Installing the GbE2 Interconnect Switch

Overview

This chapter describes how to set up and install the ProLiant BL p-Class GbE2 Interconnect Switches and the interconnect modules.

The setup and installation process includes the following tasks:

1. Installing the GbE2 Interconnect Switches and interconnect modules
2. Planning the GbE2 Interconnect Switch configuration
3. Cabling the GbE2 Interconnect Switch to the network
4. Powering up the GbE2 Interconnect Switch
5. Accessing the GbE2 Interconnect Switch
6. Logging on and configuring the GbE2 Interconnect Switch

Installing the GbE2 Interconnect Switches and Interconnect Modules

This section describes how to:

- Install the hardware in a new GbE2 Interconnect Switch deployment
- Replace an existing ProLiant BL p-Class GbE2 Interconnect Switch
- Upgrade from a ProLiant BL p-Class GbE Interconnect Switch
- Upgrade from a ProLiant BL p-Class RJ-45 Patch Panel
- Upgrade from a ProLiant BL p-Class RJ-45 Patch Panel 2

HP ProLiant BL p-Class GbE2 Storage Connectivity Kit Option

The HP ProLiant BL p-Class GbE2 Storage Connectivity Kit option provides ProLiant BL20p G2 Fibre Channel signal pass-through connectivity for the HP ProLiant BL p-Class C-GbE2 and F-GbE2 Interconnect Kits. The GbE2 Storage Connectivity Kit may be ordered separately and installed during a new deployment or later as an upgrade.

The GbE2 Storage Connectivity Kit contains two ProLiant BL p-Class OctalFC Interconnect Modules that are inserted into the top-left-most and top-right-most bays on the rear side of the server blade enclosure. Two ProLiant BL p-Class Fibre Channel Signal Conditioning Cards are also included in the kit; one is installed in each GbE2 Interconnect Switch.

If you are installing the GbE2 Storage Connectivity Kit, refer to the *HP ProLiant BL p-Class GbE2 Storage Connectivity Kit Quick Setup Instructions* included with the GbE2 Storage Connectivity Kit for more information.

Installation Guidelines

Observe the following guidelines:

- Always install GbE2 Interconnect Switches in pairs. Each server blade enclosure requires two GbE2 Interconnect Switches for proper connectivity. Both GbE2 Interconnect Switches are identical. They get their identities (Switch A or Switch B) from the server blade enclosure slots they are plugged into.

- For proper operation, you must run like pairs in the interconnect slot.

- Always install the QuadT2 or QuadSX Interconnect Modules into the bottom-left-most and bottom-right-most bays on the rear side of the server blade enclosure.

- Be sure that each interconnect module is fully seated. The latch/handle will drop into place when the module is firmly seated.

- Always install the GbE2 Interconnect Switches into the interconnect bays, which are the left-most (side A) and right-most (side B) bays on the front side of the server blade enclosure.

IMPORTANT: Record the switch MAC address printed on the MAC address label attached to your GbE2 Interconnect Switch. The MAC address can be used to find the IP address from a BOOTP server.

Installing a New GbE2 Interconnect Switch for a New Deployment

To install a new GbE2 Interconnect Switch for a new deployment:

1. Insert the interconnect modules into the bottom-left and bottom-right module bays on the rear side of the server blade enclosure.

   IMPORTANT: Be sure that the interconnect modules are fully seated. The latch/handle will drop into place when the module is firmly seated.
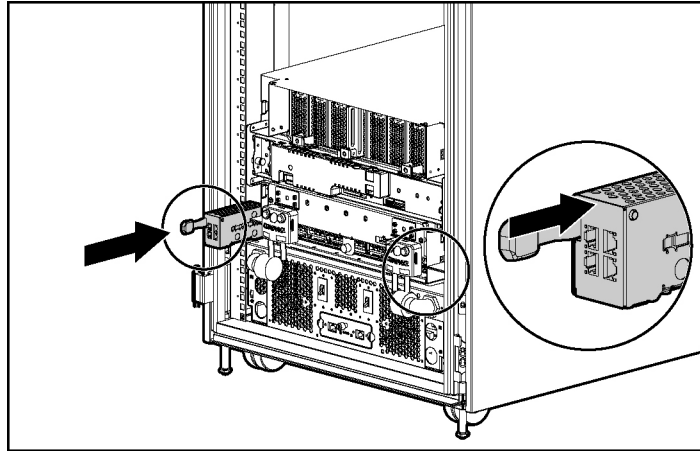
Figure 2-1: Installing the QuadT2 or QuadSX Interconnect Modules

2. Slide one GbE2 Interconnect Switch into the right interconnect bay in the front side of the server blade enclosure (1). The GbE2 Interconnect Switch in the right interconnect bay is referred to as Switch B.

3. Lock the ejector lever (2).
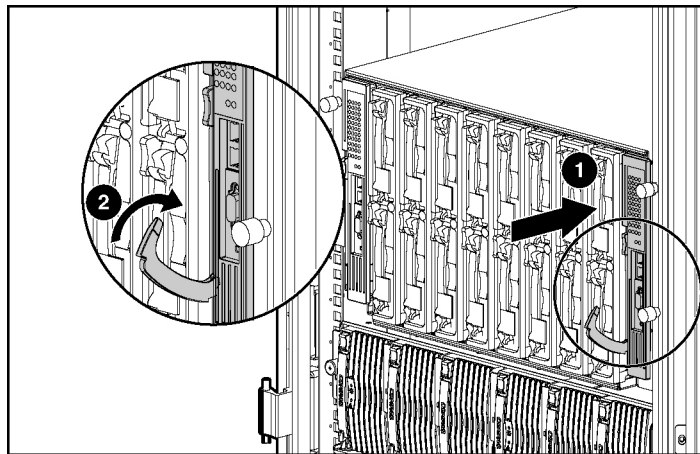
Figure 2-2: Installing the GbE2 Interconnect Switches

4. Repeat steps 2 and 3 to insert the second GbE2 Interconnect Switch in the left interconnect bay. The GbE2 Interconnect Switch in the left interconnect bay is referred to as Switch A.

Replacing an Existing GbE2 Interconnect Switch

⚠ **CAUTION:** Removing a GbE2 Interconnect Switch from a powered enclosure **will** result in the loss of network communications between the server blade network ports that are connected through this switch and the segment of network infrastructure those ports need to communicate.

For continued blade server network communication and services availability, do the following before you remove the GbE2 Interconnect Switch. Redirect critical high-availability services or applications to use the redundant network ports available on those blade servers that are connected through the redundant GbE2 Interconnect Switch in the enclosure.

IMPORTANT: If you are replacing an existing GbE2 Interconnect Switch, or upgrading from a GbE Interconnect Switch, an RJ-45 Patch Panel 2, or an RJ-45 Patch Panel, and you have strict security requirements:

- Do not cable the GbE2 Interconnect Switch until after configuration.

Or

- Connect the GbE2 Interconnect Switch to the optional Diagnostic Station. The Diagnostic Station enables you to power up, configure, and diagnose a ProLiant p-Class server blade or a ProLiant p-Class GbE2 Interconnect Switch outside of the rack environment.

To replace an existing GbE2 Interconnect Switch:

1. If possible, save the configuration file to a TFTP server for later retrieval. For more information on saving a configuration file to a TFTP server, refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide*.

2. On the front side of the ProLiant BL p-Class server blade enclosure, release the ejector lever for the GbE2 Interconnect Switch.

3. Pull down on the ejector lever to unlock the GbE2 Interconnect Switch from the enclosure.

4. Slide the GbE2 Interconnect Switch out of the interconnect bay.

5. Slide the new GbE2 Interconnect Switch fully into the interconnect bay.

6. Close the ejector lever and let the switch boot up completely, so that network connectivity is established.

7. If you saved the configuration file to a TFTP server, download the configuration. For more information on downloading a configuration file, refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide*.

NOTE: Only replace the interconnect module if it is faulty, or if a different type of interconnect module is required.

Upgrading from an Existing GbE Interconnect Switch

> △ **CAUTION:** Removing a GbE Interconnect Switch from a powered enclosure **will** result in the loss of network communications between the server blade network ports that are connected through this switch and the segment of network infrastructure those ports need to communicate.
>
> For continued blade server network communication and services availability, do the following before you remove the GbE Interconnect Switch. Redirect critical high-availability services or applications to use the redundant network ports available on those blade servers that are connected through the redundant GbE Interconnect Switch in the enclosure.

IMPORTANT: If you are replacing an existing GbE2 Interconnect Switch, or upgrading from a GbE Interconnect Switch, an RJ-45 Patch Panel 2, or an RJ-45 Patch Panel, and you have strict security requirements:

- Do not cable the GbE2 Interconnect Switch until after configuration.

Or

- Connect the GbE2 Interconnect Switch to the optional Diagnostic Station. The Diagnostic Station enables you to power up, configure, and diagnose a ProLiant p-Class server blade or a ProLiant p-Class GbE2 Interconnect Switch outside of the rack environment.

IMPORTANT: By default, both the GbE Interconnect Switch and GbE2 Interconnect Switch have STP enabled and have X-Connect ports (17 and 18) bundled in to a port trunk. During an upgrade from a GbE Interconnect Switch to a GbE2 Interconnect Switch, there will be an STP convergence delay due to the topology change. This causes a temporary interruption to packet forwarding on the attached Layer 2 switching network.

To upgrade from an existing GbE Interconnect Switch to a GbE2 Interconnect Switch:

1. On the rear side of the ProLiant BL p-Class server blade enclosure, remove the interconnect module from the top-left module bay.

2. On the front side of the server blade enclosure, release the ejector lever for the GbE Interconnect Switch in the right interconnect bay.

3. Pull down on the ejector lever to unlock the GbE Interconnect Switch from the enclosure.

4. Slide the GbE Interconnect Switch out of the interconnect bay.

5. On the rear side of the server blade enclosure, insert the new interconnect module into the bottom-left module bay.

6. On the front side of the server blade enclosure, slide a new GbE2 Interconnect Switch fully into the right interconnect bay.

7. Close the ejector lever and let the switch boot up completely, so that network connectivity is established.

8. Repeat steps 1 through 4 to remove the interconnect module from the top-right module bay and the GbE Interconnect Switch from the left interconnect bay.

9. Repeat steps 5 through 7 to insert the new interconnect module into the bottom-right module bay and the new GbE2 Interconnect Switch into the left interconnect bay.

Upgrading from an RJ-45 Patch Panel or RJ-45 Patch Panel 2

> △ **CAUTION:** Removing a patch panel from a powered enclosure **will** result in the loss of network communications between the server blade network ports that are connected through this patch panel and the segment of network infrastructure those ports need to communicate.

IMPORTANT: If you are replacing an existing GbE2 Interconnect Switch, or upgrading from a GbE Interconnect Switch, an RJ-45 Patch Panel 2, or an RJ-45 Patch Panel, and you have strict security requirements:

- Do not cable the GbE2 Interconnect Switch until after configuration.

Or

- Connect the GbE2 Interconnect Switch to the optional Diagnostic Station. The Diagnostic Station enables you to power up, configure, and diagnose a ProLiant p-Class server blade or a ProLiant p-Class GbE2 Interconnect Switch outside of the rack environment.

To upgrade from an existing RJ-45 Patch Panel or RJ-45 Patch Panel 2:

1. From the rear side of the server blade enclosure, slide out the top and bottom patch panel modules (total of four) from the module bays and unplug the cables.

2. From the front side of the ProLiant BL p-Class server blade enclosure, unlock the ejector lever and slide out the patch panels (total of two) from the interconnect bays.

3. From the rear side of the server blade enclosure, insert the new interconnect modules that came with the GbE2 Interconnect Switch into the bottom-right and bottom-left module bays.

4. From the front side of the server blade enclosure, slide the one GbE2 Interconnect Switch into the left interconnect bay.

5. Lock the ejector levers.

6. Repeat steps 4 and 5 to install the second GbE2 Interconnect Switch in the right interconnect bay.

Planning the GbE2 Interconnect Switch Configuration

Before you configure the GbE2 Interconnect Switch, HP recommends that you plan the configuration. As you plan, consider your default settings, security issues and privileges, and whether you want to configure each GbE2 Interconnect Switch manually or configure multiple GbE2 Interconnect Switches at the same time.

Default Settings

The GbE2 Interconnect Switches ship with a default configuration in which all ports are enabled and assigned a default VLAN with a VLAN ID (VID) equal to 1. This default configuration simplifies your initial setup by allowing you to use a single uplink cable (from any external Ethernet connector) to connect your server blade enclosure to your network. You need to assess your particular server environment to determine any requirements for other considerations.

When planning the configuration, consider the default settings for the following parameters:

- Switch IP settings
- Virtual Local Area Network (VLAN) settings
- Spanning Tree Protocol (STP) settings
- Port names and types
- Port trunking settings
- Interswitch X-Connect port settings
- Simple Network Management Protocol (SNMP) settings
- User name and password settings
- Default access to various management interfaces
- Network Time Protocol (NTP) settings

IMPORTANT: Refer to Appendix D for a complete list of default configuration settings.

GbE2 Interconnect Switch Security

When planning the GbE2 Interconnect Switch configuration, secure access to the management interface by:

- Creating users with various access levels

- Enabling or disabling access to various management interfaces to fit the security policy

- Changing default SNMP community strings for read-only and read-write access

User, Operator, and Administrator Access Rights

To enable better GbE2 Interconnect Switch management and user accountability, three levels or classes of user access have been implemented on the GbE2 Interconnect Switch. Levels of access to CLI, Web management functions, and screens increase as needed to perform various GbE2 Interconnect Switch management tasks. Conceptually, access classes are defined as follows:

- User interaction with the GbE2 Interconnect Switch is completely passive; nothing can be changed on the GbE2 Interconnect Switch. Users may display information that has no security or privacy implications, such as GbE2 Interconnect Switch statistics and current operational state information.

- Operators can only effect temporary changes on the GbE2 Interconnect Switch. These changes will be lost when the GbE2 Interconnect Switch is rebooted/reset. Operators have access to the GbE2 Interconnect Switch management features used for daily GbE2 Interconnect Switch operations. Because any changes an operator makes are undone by a reset of the GbE2 Interconnect Switch, operators cannot severely impact GbE2 Interconnect Switch operation.

- Administrators are the only ones that may make permanent changes to the GbE2 Interconnect Switch configuration, changes that are persistent across a reboot/reset of the GbE2 Interconnect Switch. Administrators can access GbE2 Interconnect Switch functions to configure and troubleshoot problems on the GbE2 Interconnect Switch. Because administrators can also make temporary (operator-level) changes as well, they must be aware of the interactions between temporary and permanent changes.

Access to GbE2 Interconnect Switch functions is controlled through the use of unique surnames and passwords. Once you are connected to the GbE2 Interconnect Switch via the local console, Telnet, or SSH, you are prompted to enter a password. The default user names/password for each access level are listed in the following table.

NOTE: It is recommended that you change default GbE2 Interconnect Switch passwords after initial configuration and as regularly as required under your network security policies. For more information, refer to the "Setting Passwords" section in Chapter 2 of the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide.*

Table 2-1: User Access Levels

User Account	Description and Tasks Performed	Password
User	The user has no direct responsibility for GbE2 Interconnect Switch management. He or she can view all GbE2 Interconnect Switch status information and statistics, but cannot make any configuration changes to the GbE2 Interconnect Switch.	`user`
Operator	The operator manages all functions of the GbE2 Interconnect Switch. The operator can reset ports or the entire GbE2 Interconnect Switch. By default, the operator account is disabled and has no password.	
Administrator	The super user administrator has complete access to all menus, information, and configuration commands on the GbE2 Interconnect Switch, including the ability to change both the user and administrator passwords.	`admin`

Manually Configuring a GbE2 Interconnect Switch

A GbE2 Interconnect Switch can be configured manually using a command line interface, a browser-based interface, or an SNMP interface. Refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide* for more information on how to use these management interfaces to configure the GbE2 Interconnect Switch.

After a GbE2 Interconnect Switch is configured, you can back up the configuration as a text file to a TFTP server. The backup configuration file can then be downloaded from the TFTP server to restore the switch back to the original configuration. This restoration may be necessary under one of the following conditions:

- The switch configuration becomes corrupted during operation.

- The switch must be replaced because of a hardware failure.

Configuring Multiple GbE2 Interconnect Switches

You can configure multiple GbE2 Interconnect Switches by using scripted command line interface (CLI) commands through Telnet or by downloading a configuration file using a TFTP server.

Using Scripted CLI Commands through Telnet

The CLI, provided with the GbE2 Interconnect Switch, allows you to execute customized configuration scripts on multiple switches. A configuration script can be tailored to one of the multiple switches, and then that configuration can be deployed to other switches from a central deployment server.

Using a Configuration File

If you plan for the base configuration of multiple GbE2 Interconnect Switches in your network to be the same, you can manually configure one GbE2 Interconnect Switch, upload the configuration to a TFTP server, and use that configuration as a base configuration template file.

GbE2 Interconnect Switch IP addresses are acquired by default using BOOTP, therefore, each GbE2 Interconnect Switch has a unique IP address. Each GbE2 Interconnect Switch can be remotely accessed from a central deployment server and an individual interconnect switch configuration can be downloaded to meet specific network requirements. Refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide* for additional information on using a TFTP server to upload and download configuration files.

Cabling the GbE2 Interconnect Switch

After installing the GbE2 Interconnect Switch hardware and planning the configuration, cable the GbE2 Interconnect Switch to your network.

IMPORTANT: If you are replacing an existing GbE2 Interconnect Switch, or upgrading from a GbE Interconnect Switch, an RJ-45 Patch Panel 2, or an RJ-45 Patch Panel, and you have strict security requirements:

- Do not cable the GbE2 Interconnect Switch until after configuration.

Or

- Connect the GbE2 Interconnect Switch to the optional Diagnostic Station. The Diagnostic Station enables you to power up, configure, and diagnose a ProLiant p-Class server blade or a ProLiant p-Class GbE2 Interconnect Switch outside of the rack environment.

To connect the interconnect modules to the network:

1. Connect your network cables to the interconnect modules. For connector locations, refer to the "QuadT2 Interconnect Module Panel" section or "QuadSX Interconnect Module Panel" section in Chapter 1.

2. Gather your network cables for the right side of the rack.

3. Insert the end of the cable-retaining bracket (provided with the bus bar and power bus boxes) into the cable bracket (1).

4. Tighten the thumbscrew to secure the cable retaining bracket over the cables (2).
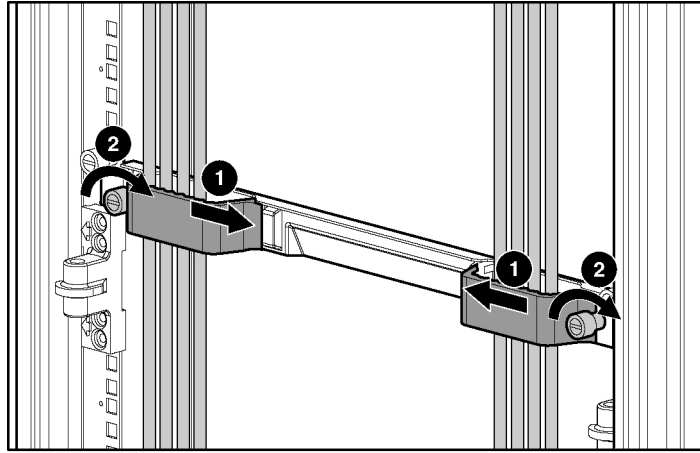
Figure 2-3: Installing the cable-retaining bracket

5. Repeat steps 2 through 4 for the network cables on the left side of the rack.

Powering Up the GbE2 Interconnect Switch

If the server blade enclosure has power applied, the GbE2 Interconnect Switch automatically begins to power up when installed. The power status LED on the front of the GbE2 Interconnect Switch starts out as amber to indicate that power is connected to the GbE2 Interconnect Switch. After 30 seconds, the power status LED turns to green to indicate that the GbE2 Interconnect Switch is powered up. After the built in self-test flashes all LEDs, the active links are illuminated, and the power status LED stays green.

You can manually force the GbE2 Interconnect Switch to power up by pressing the **Pwr/Rst** button through the access hole in the front panel of the GbE2 Interconnect Switch while the power status LED is amber. HP recommends using a small blunt object for this purpose.

> **CAUTION:** Pressing the **Pwr/Rst** button while the power status LED is green will reset the GbE2 Interconnect Switch.

IMPORTANT: If the server blade enclosure does not have power applied, refer to the System Setup and Installation Guide for the server blade enclosure.

Accessing the GbE2 Interconnect Switch

The GbE2 Interconnect Switch can be accessed using the serial (DB-9) management port or an Ethernet connection.

- To access the GbE2 Interconnect Switch locally, use the front panel serial management port.

- To access the GbE2 Interconnect Switch through an Ethernet connection, use either the GbE2 Interconnect Switch front panel RJ-45 ports or one of the following:

  — The uplink RJ-45 ports in the QuadT2 Interconnect Module

  — The uplink LC fiber ports in the QuadSX Interconnect Module

To access the GbE2 Interconnect Switch via an Ethernet connection, you need to assign it an IP address. By default, the GbE2 Interconnect Switch is set up to obtain its IP address from a BOOTP server existing on the attached network.

1. Access the BOOTP server and use the GbE2 Interconnect Switch MAC address to obtain the switch IP address. The MAC address is printed on the MAC address label attached to the GbE2 Interconnect Switch.

2. From a computer connected to the same network, use the IP address to access the GbE2 Interconnect Switch using a Web browser or Telnet application. This allows you to access the GbE2 Interconnect Switch browser-based interface (BBI) or command line interface (CLI). Once you have accessed the GbE2 Interconnect Switch, the GbE2 Interconnect Switch logon prompt is displayed.

If the GbE2 Interconnect Switch does not obtain the IP address by means of the BOOTP service, you can access the switch locally and manually assign an IP address.

1. Connect the GbE2 Interconnect Switch DB-9 serial connector, using the null-modem cable (provided with the following option kits: Scalable Busbar, Mini Busbar, and Power Bus Box), to a local client device (such as a laptop computer) with VT100 terminal emulation software (such as Microsoft® Windows® HyperTerminal).

2. Open a VT100 terminal emulation session with the following settings: **9600 baud rate, eight data bits, no parity, one stop bit,** and **no flow control.**

3. Complete the following instructions to log on and configure the GbE2 Interconnect Switch. Once you have assigned an IP address, you can access the switch remotely.

Logging On and Configuring the GbE2 Interconnect Switch

Do the following to log on to the GbE2 Interconnect Switch.

1. Connect to the GbE2 Interconnect Switch console. After connecting, the login prompt displays as shown below.

```
   Enter Password:
```

2. Enter **admin** as the default administrator password.

   The **Main Menu** displays with administrator privileges:

```
[Main Menu]
   info    - Information Menu
   stats   - Statistics Menu
   cfg     - Configuration Menu
   oper    - Operations Command Menu
   boot    - Boot Options Menu
   maint   - Maintenance Menu
   diff    - Show pending config changes  [global command]
   apply   - Apply pending config changes [global command]
   save    - Save updated config to FLASH [global command]
   revert  - Revert pending or applied changes [global command]
   exit    - Exit  [global command, always available]

>> Main#
```

To help with the initial process of configuring your GbE2 Interconnect Switch, the software includes a Setup utility. The Setup utility prompts you step-by-step to enter all the necessary information for basic configuration of the GbE2 Interconnect Switch. The Setup utility can also be activated manually from the command line interface any time after login.

Refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide* for information on how to run the Setup utility, configure the IP address, change configuration settings, and monitor switch operation using one of the following:

• Local RS-232 serial console management interface

• Remote Telnet console management interface

Refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Browser-based Interface Reference Guide* for information on how to use the embedded browser-based (HTML) interface to manage the GbE2 Interconnect Switch from anywhere on the network using a standard browser, such as Netscape Navigator or Microsoft Internet Explorer.

Appendix F of this guide provides information regarding the SNMP agents. This appendix also describes how to use the MIBs to configure and monitor the GbE2 Interconnect Switch using a generic SNMP manager, such as HP OpenView Network Node Manager or Insight Manager 7.

Supporting Software and Special Considerations

The following supporting software is available to assist you in configuring and managing the GbE2 Interconnect Switch.

- Server Blade and Power Management Module Firmware—Provides firmware and installation instructions required for proper rack location operation.

- Utilities package and documentation—Provides utilities and documentation for GbE2 Interconnect Switch management. The utilities and documentation are located on the utilities and user documentation CD included in the interconnect kit and at the website below.

- GbE2 Interconnect Switch Firmware Upgrade Smart Component (for Microsoft Windows only)—Provides quick and easy installation of the GbE2 Interconnect Switch firmware, firmware upgrade tool, and readme file. A SoftPaq is available for use with Linux operating systems.

The utilities package and documentation, and the SoftPaq listed above, are available at

www.compaq.com/support/servers

A

HP ProLiant BL p-Class C-GbE2 Interconnect Kit Regulatory Compliance Notices

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Canadian Notice (Avis Canadien)

Class A Equipment

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

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

European Union Notice

$C\epsilon$

Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN 55022 (CISPR 22)—Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11)—Electromagnetic Immunity
- EN 60950 (IEC 60950)—Product Safety

BSMI Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能
會造成射頻干擾，在這種情況下，使用者會被要求採
取某些適當的對策。

Japanese Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に
基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波
妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず
るよう要求されることがあります。

Korean Notice

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니
판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약
잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기
바랍니다.

B

HP ProLiant BL p-Class F-GbE2 Interconnect Kit Regulatory Compliance Notices

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Canadian Notice (Avis Canadien)

Class A Equipment

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

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

European Union Notice

$C\epsilon$

Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN 55022 (CISPR 22)—Electromagnetic Interference

- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11)—Electromagnetic Immunity

- EN 60950 (IEC 60950)—Product Safety

BSMI Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能
會造成射頻干擾，在這種情況下，使用者會被要求採
取某些適當的對策。

Japanese Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に
基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波
妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず
るよう要求されることがあります。

Korean Notice

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니
판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약
잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기
바랍니다.

Laser Compliance

The fiber optic module contains a laser that is classified as a "Class 1 Laser Product" in accordance with US FDA regulations and the IEC 60825-1. The product does not emit hazardous laser radiation.

⚠ **WARNING: Use of controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:**

- **Do not try to open the module enclosure. There are no user-serviceable components inside.**

- **Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.**

- **Allow only HP Authorized Service technicians to repair the unit.**

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. This device is classified as a Class 1 laser product as defined by IEC 60825-1.

C

Technical Specifications

Table C-1: General Specifications

Standards	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Ethernet
	IEEE 802.3z 1000Base-SX Ethernet
	IEEE 802.1D Spanning Tree Protocol
	IEEE 802.1Q VLAN
	IEEE 802.3ac Frame Extensions for VLAN
	IEEE 802.3ad Link Aggregation Protocol (No LACP support)
	IEEE 802.3x Full-Duplex Flow Control
	ANSI/IEEE 802.3 Nway Auto-Negotiation
Protocols	CSMA/CD
Data Transfer Rates	
Ethernet	Half-Duplex: 10 Mb/s
	Full-Duplex: 20 Mb/s
Fast Ethernet	Half-Duplex: 100 Mb/s
	Full-Duplex: 200 Mb/s
Gigabit Ethernet	Half-Duplex: 1000 Mb/s
	Full-Duplex: 2000 Mb/s
Connectors	
GbE2 Interconnect Switch	2 RJ-45, 1 DB-9
QuadT2 Interconnect Module	4 RJ-45
QuadSX Interconnect Module	4 SFP fiber transceivers with LC connectors

continued

Table C-1: General Specifications *continued*

Network Cables	
10Base-T	Two Pair UTP Category 3, 4, 5 (100 m)
	EIA/TIA-568 100-ohm STP (100 m)
100Base-TX	Two Pair or Four Pair UTP Category 5 (100 m)
	EIA/TIA-568 100-ohm STP (100 m)
1000Base-T	Four Pair UTP Category 5e (100 m)
	EIA/TIA-568 100-ohm STP (100 m)
1000Base-SX	50/125 μm Multimode Fiber with 400 MHz/Km rating has a maximum distance of 500 meters.
	50/125 μm Multimode Fiber with 500 MHz/Km rating has a maximum distance of 550 meters.
	62.5/125 μm Multimode Fiber with 160 MHz/Km rating has a maximum distance of 220 meters.
	62.5/125 μm Multimode Fiber with 200 MHz/Km rating has a maximum distance of 275 meters.
Number of Ports per GbE2 Interconnect Switch	16 x 10/100/1000-Mb/s Nway Ports dedicated to server blade for GbE2 Interconnect Switch communications
	2 x 10/100/1000-Mb/s Nway Ports dedicated to communications between GbE2 Interconnect Switches A and B
	4 10Base-T/100Base-TX/1000Base-T RJ-45 ports or 4 1-Gigabit LC ports (depending on C-GbE2 or F-GbE2 kit options)
	2 x 10Base-T/100Base-TX/1000Base-T RJ-45 front panel management ports, or additional uplink ports
	1 x serial RS-232 DB-9 front-panel management port

Table C-2: Physical and Environmental Specifications

DC Inputs	-48V: 2350 mA maximum per GbE2 Interconnect Switch
Power Consumption	112W maximum per GbE2 Interconnect Switch
Operating Temperature	10 to 35 degrees Celsius
Storage Temperature	-30 to 60 degrees Celsius
Operating Humidity	20% to 80% RH noncondensing
Storage Humidity	5% to 95% RH noncondensing
GbE2 Interconnect Switch Dimensions	28.0 in. x 10.4 in. x 1.6 in.
Interconnect Module Dimensions	Top Module (Fibre Channel Signals):
	7.4 in. x 3.5 in. x 1.6 in.
	Bottom Module (Ethernet Signals):
	7.4 in. x 2.25 in. x 1.6 in.
Weight	12 lb (GbE2 Interconnect Switch and Interconnect Module)
EMI	FCC Class A
	ICES-003 Class A
	AS/NZS 3548 Class A
	VCCI Class A
Safety	UL/CUL Listed Accessory
	CE

Table C-3: Performance Specifications

Transmission Method	Store-and-forward
Memory	128MB Main, 32MB flash, and 2 MB shared packet buffer memory per GbE2 Interconnect Switch
MAC Address Table Size	2K per GbE2 Interconnect Switch
Packet Forwarding Rate	1,488,095 packets per second with 64 byte packets per port (for 1000 Mb/s)
Maximum External Port Packet Forwarding Rate	6 X 1Gig Port = 6 X 1,488,095 = 8,928,570 pps per GbE2 Interconnect Switch
Best Downlink External Port Packet Forwarding Rate Ratio	16 : 6
Interswitch X-Connects across Enclosure Backplane	2 X 1Gig Ports bundled in Port Trunk of 2Gig Size
MAC Address Learning	Automatic update
Forwarding Table Age Time	Maximum age: 1 to 65535 seconds
	Default: 300 seconds
Maximum Number of VLANs	255 (including default VLAN plus user-configurable) per GbE2 Interconnect Switch
Maximum Number of Spanning Tree Domains	16 Spanning Tree Domains/Groups per GbE2 Interconnect Switch

D

Runtime Switching Software Default Settings

This section provides the default settings for the GbE2 Interconnect Switch:

- Table D-1 contains general default settings for both Switch A and Switch B

- Table D-2 contains Port Names, VLANs, STP/ByPass, Trunking Default Settings for Switch A

- Table D-3 contains Port Names, VLANs, STP/ByPass, Trunking Default Settings for Switch B

Switch A and Switch B: General Default Settings

Switch A and Switch B are configured with the following general default settings:

Table D-1: Switch A and Switch B: General Default Settings

Setting	Value	
Notice	None	
Banner	None	
User Names/Passwords	User Name :	Password :
	• user—Enabled	• user
	• oper—Disabled	• None
	• admin—Enabled (cannot be disabled)	• admin
BOOTP Service	Enabled	
IP Address (if manual IP option is selected)	0.0.0.0	
Subnet Mask (if manual IP option is selected)	0.0.0.0	
Primary Default Gateway	0.0.0.0	
Secondary Default Gateway	0.0.0.0	
Primary DNS Server Address	0.0.0.0	
Secondary DNS Server Address	0.0.0.0	
Default Domain Name	None	

continued

Table D-1: Switch A and Switch B: General Default Settings *continued*

Setting	Value
Management Network/Mask	0.0.0.0/0.0.0.0
Switch Software Image on Next Boot	Image1
Switch Config File on Next Boot	Active
Display Hostname (sysName) in CLI Prompt	Disabled
Idle Timeout	5 minutes
Telnet Status	Enabled
Telnet Port	23
Web Status	Enabled
Web Port	80
Backpressure	Disabled
Port State	Enabled
Port Speed/Duplex	Auto
Flow Control	Off
STP	STG 1—Enabled with Default VLAN (VID=1) Port 1-16 (Server Ports) STP—Disabled at Port Level STG 2-16—Disabled
Bridge Max Age	20 seconds
Bridge Hello Time	2 seconds
Bridge Forward Delay	15 seconds
Bridge Priority	32768
MAC Address Aging Time	300 seconds
Port Priority	128
Path Cost	19 for ports 1-16 and 19-24 4 for ports 17-18
Static VLAN Entry	Default VLAN (VID = 1)
Port VID	1 for all ports
Port Trunking	Trunk Group 1, Enabled with Port 17 and 18
Port Trunking Load Sharing Algorithm	Src Mac Address
Port Mirroring—Mirror Status	Disabled
Port Mirroring—Mirror Port	None Selected
Port Mirroring—Mirror Port Traffic Direction	None Selected

continued

Table D-1: Switch A and Switch B: General Default Settings *continued*

Setting	Value
Port Mirroring—Monitoring Port	None Selected
SNMP	Disabled
SNMP System Name	None
SNMP System Location	None
SNMP System Contact	None
SNMP Community String/Access Right	Public = read-only Private = read/write
SNMP Trap Host 1	0.0.0.0
SNMP Trap Host 1 Community String	Public
SNMP Trap Host 2	0.0.0.0
SNMP Trap Host 2 Community String	Public
SNMP Authentication Traps	Disabled
SNMP Link Up/Down Traps	Enabled
Security IP Network/Mask	0.0.0.0/0.0.0.0
TFTP Server IP Address	0.0.0.0
TFTP Port Number	69
Firmware Upgrade	File name = none
Configuration File from TFTP Server	File name = none
Configuration File to TFTP Server	File name = none
PING Tool	Target address = undefined Default tries = 4
TraceRoute Tools	Target address = undefined
Serial Port Baud Rate	9600
Serial Port Data Bit	8
Serial Port Parity Bit	None
Serial Port Stop Bit	1
Serial Port Flow Control	None
Default VLAN	Default VLAN (VID=1) with all ports assigned including CPU, STG=1

Table D-1: Switch A and Switch B: General Default Settings *continued*

Setting	Value
NTP State	Disabled
NTP Server	0.0.0.0
NTP Resync Interval	720 minutes
GMT Timezone Offset	-06:00
Daylight Savings Time State	Disabled
System Up Time	0 days 00 :00 :00
Current Time	RTC or NTP (00 :00 :00)
Date	None
Syslog Host	0.0.0.0
Syslog Host 2	0.0.0.0
Syslog Host Severity	7
Syslog Host 2 Severity	7
Syslog Console Output	Disabled
Log	console—Enabled
	system—Enabled
	mgmt—Enabled
	cli—Enabled
	stp—Enabled
	vlan—Enabled
	ssh—Enabled
	ntp—Enabled
	ip—Enabled
	web—Enabled
RSA Server Key Autogen Interval	0
RSA Server Key Autogen	Disabled
SSH Server	On
SCP-only Administrator Password	admin
SSH Server Port	22
SCP Apply and Save	Enabled

continued

Table D-1: Switch A and Switch B: General Default Settings *continued*

Setting	Value
RADIUS Server	Off
RADIUS Secret	None
Primary RADIUS Server	0.0.0.0
Secondary RADIUS Server	0.0.0.0
RADIUS Server Port	1645
RADIUS Server Retries	3
RADIUS Server Timeout	3
RADIUS Backdoor for Telnet Access	Disabled
Re-ARP Period in Minutes	10

Switch A: Port Names, VLANs, Trunking Default Settings

> **IMPORTANT:** If you have the ProLiant BL p-Class F-GbE2 Interconnect Kit option with the QuadSX Interconnect Modules, the management interface supports only 1000M/Full and Auto options for the Speed/Duplex fields for Gigabit uplink ports. The fiber QuadSX Interconnect Module supports **only 1000-Mb/s (Gigabit) speed**, and **not** 10-Mb/s or 100-Mb/s.

Switch A is configured with the following factory default settings for Port Names, VLANs, and Trunking.

Port Type	UI Port No.	Speed	VID	VLAN Member AS	VLAN Name	Port Name	STP	Trunk Group
Server	1	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server1_Port1	Disabled	
Server	2	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server1_Port2	Disabled	
Server	3	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server2_Port1	Disabled	
Server	4	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server2_Port2	Disabled	
Server	5	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server3_Port1	Disabled	
Server	6	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server3_Port2	Disabled	
Server	7	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server4_Port1	Disabled	
Server	8	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server4_Port2	Disabled	
Server	9	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server5_Port1	Disabled	
Server	10	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server5_Port2	Disabled	
Server	11	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server6_Port1	Disabled	

continued

Port Type	UI Port No.	Speed	VID	VLAN Member AS	VLAN Name	Port Name	STP	Trunk Group
Server	12	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server6_Port2	Disabled	
Server	13	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server7_Port1	Disabled	
Server	14	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server7_Port2	Disabled	
Server	15	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server8_Port1	Disabled	
Server	16	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server8_Port2	Disabled	
X-Connect	17	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Xconnect_1	Enabled	1
X-Connect	18	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Xconnect_2	Enabled	1
M Uplink	19	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U1_Port_19	Enabled	
M Uplink	20	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U1_Port_20	Enabled	
D Uplink	21	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U2_Port_21	Enabled	
D Uplink	22	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U2_Port_22	Enabled	
Front Panel	23	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	FrontPanel1	Enabled	
Front Panel	24	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	FrontPanel2	Enabled	

Switch B: Port Names, VLANs, Trunking Default Settings

> **IMPORTANT:** If you have the ProLiant BL p-Class F-GbE2 Interconnect Kit option with the QuadSX Interconnect Modules, the management interface supports only 1000M/Full and Auto options for the Speed/Duplex fields for Gigabit uplink ports. The fiber QuadSX Interconnect Module supports **only 1000-Mb/s (Gigabit) speed**, and **not** 10-Mb/s or 100-Mb/s.

Switch B is configured with the following factory default settings for Port Names, VLANs, and Trunking.

Port Type	UI Port No.	Speed	VID	VLAN Member AS	VLAN Name	Port Name	STP	Trunk Group
Server	1	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server1_iLO	Disabled	
Server	2	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server1_Port3	Disabled	
Server	3	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server2_iLO	Disabled	
Server	4	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server2_Port3	Disabled	
Server	5	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server3_iLO	Disabled	
Server	6	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server3_Port3	Disabled	
Server	7	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server4_iLO	Disabled	
Server	8	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server4_Port3	Disabled	
Server	9	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server5_iLO	Disabled	
Server	10	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server5_Port3	Disabled	
Server	11	10/100/1000 (Auto)	1	Egress/ Untag	Default VLAN	Server6_iLO	Disabled	

continued

Port Type	UI Port No.	Speed	VID	VLAN Member AS	VLAN Name	Port Name	STP	Trunk Group
Server	12	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server6_Port3	Disabled	
Server	13	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server7_iLO	Disabled	
Server	14	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server7_Port3	Disabled	
Server	15	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server8_iLO	Disabled	
Server	16	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	Server8_Port3	Disabled	
X-Connect	17	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	XConnect_1	Enabled	1
X-Connect	18	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	XConnect_2	Enabled	1
M Uplink	19	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U1_Port_19	Enabled	
M Uplink	20	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U1_Port_20	Enabled	
D Uplink	21	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U2_Port_21	Enabled	
D Uplink	22	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	U2_Port_22	Enabled	
Front Panel	23	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	FrontPanel1	Enabled	
Front Panel	24	10/100 /1000 (Auto)	1	Egress/ Untag	Default VLAN	FrontPanel2	Enabled	

E

Performing a Serial Download

Introduction

You can perform a serial download of the new GbE2 Interconnect Switch Operating System firmware, or Boot Code firmware if you want to upgrade a GbE2 Interconnect Switch directly from any existing operating system (OS) or Boot Code images.

This procedure requires the following:

- A computer running terminal emulation software

- A standard null modem cable with a female DB-9 connector

- A GbE2 Interconnect Switch OS firmware and/or Boot Code images

Serial Upgrade of Boot Code Firmware Image Procedure

Use the following procedure to perform a serial upgrade of the GbE2 Interconnect Switch Boot Code firmware image, usually named **pGbE2_b_100.bin.**

1. Using the null modem, connect the console port of a GbE Interconnect Switch to the serial port of your PC that supports XModem/1K XModem.

2. Start HyperTerminal (part of Microsoft Windows) or equivalent terminal emulation application (depending on your computer operating system), and set the following parameters for terminal emulation console:

Parameter	Value
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

3. Power on the GbE2 Interconnect Switch.

4. Hold the **Shift** key down and press the **D** key repeatedly during the Memory Test, until the following message displays:

```
Memory Test ...............


Xmodem Mode


  Starting POST...


  Checking PCI bus.................................  PASSED.
  Checking MP I2c.................................  PASSED.
  Checking Interrupt..............................  PASSED.
  Post Passed.
ProLiant p-Class GbE2 Interconnect Switch - PPCBoot 2.2.X
To download a Switch Boot Code or Operating System firmware image use
1K Xmodem at 115200
```

NOTE: You can perform serial downloads at 57600 baud rate by pressing the **Shift-F** keys or at 115200 baud rate by pressing the **Shift-D** keys.

5. After you see the message displayed in step 4, reconfigure your terminal emulation console with the following parameters.

Parameter	Value
Baud Rate	115200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

6. Press **Enter** several times on the keyboard of the PC that is connected to the console port of the GbE2 Interconnect Switch. When the console port is successfully communicating with the PC, indicating readiness for image transfer, you see continuous C's:

CCCCCCCCCCCCCCCCCC

7. Make sure that the new Switch Boot Code firmware file is available on the computer. This file can be downloaded from the CD that is shipped with the GbE2 Interconnect Switch or from the HP website.

8. Select ***<Transfer-Send File>*** from the menu and choose the following options in the send file window:

```
file: pGbE2_b_100.bin (100 represents the version number of Switch
Boot Code firmware)


protocol: 1K XMODEM
```

The send file window displays progress of the file transfer. It takes about seven minutes for the transfer to complete.

NOTE: Although slower, XModem also works if you choose not to use 1K MODEM.

9. After completing the transfer, a message displays prompting how many bytes transferred, followed by another message prompting image extraction. Do not power cycle the switch during this process. After extracting the image, it is updated to flash and a message with a progess indicator displays as shown.

> ⚠ **CAUTION:** Do not power off the GbE2 Interconnect Switch until you see the message: "Change your baud rate to 9600 bps and power cycle the switch," otherwise, the GbE2 Interconnect Switch will be inoperable.

```
ProLiant p-Class GbE InterConnect Switch - PPCBoot 2.2.x

To download a Switch Boot Code or Operating System firmware image use
1K Xmodem at 115200

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Total bytes transferred: 0x4ff400

Extracting images... Do *NOT* power cycle the switch

Updating flash...

################################################################

Change your baudrate to 9600 bps and power cycle the switch
```

10. Change the baud rate to 9600 and power off the GbE2 Interconnect Switch, wait for a few seconds, and power on the GbE2 Interconnect Switch.

The GbE2 Interconnect Switch boots with the new version of the Boot Code image that was just downloaded.

Serial Upgrade of Operating System Firmware Procedure

Use the following procedure to perform a serial upgrade of the GbE2 Interconnect Switch Operating System firmware image usually named **pGbE2_100.bin.**

1. Using the null modem cable, connect the console port of a GbE Interconnect Switch to the serial port of your PC that supports XModem/1K XModem.

2. Start HyperTerminal (part of Microsoft Windows) or equivalent terminal emulation application (depending on your computer operating system) and set the following parameters for terminal emulation console:

Parameter	Value
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

3. Power on the GbE2 Interconnect Switch.

4. Hold the **Shift** key down and press the **D** key repeatedly during the Memory Test, until the following message displays:

    ```
    Memory Test ...............


    Xmodem Mode


      Starting POST...


      Checking PCI bus.................................  PASSED.

      Checking MP I2c.................................  PASSED.

      Checking Interrupt..............................  PASSED.

      Post Passed.

    ProLiant p-Class GbE2 Interconnect Switch - PPCBoot 2.2.X

    To download a Switch Boot Code or Operating System firmware image use
    1K Xmodem at 115200
    ```

    NOTE: You can perform serial downloads at 57600 baud rate by pressing the **Shift-F** keys or at 115200 baud rate by pressing the **Shift-D** keys.

5. After the message in step 4 displays, reconfigure your terminal emulation console with the following parameters.

Parameter	Value
Baud Rate	115200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

6. Press **Enter** several times on the keyboard of the PC that is connected to the console port of the GbE2 Interconnect Switch. When the console port is successfully communicating with the PC, indicating readiness for image tranfer, you see continuous C's:

CCCCCCCCCCCCCCCCC

7. Make sure that the new Switch Operating System firmware file is available on the computer. This file can be downloaded from the CD that is shipped with the GbE2 Interconnect Switch or from HP website.

8. Select *<Transfer-Send File>* from the menu and choose the following options in the send file window:

```
file: pGbE2_100.bin (100 represents the version number of Switch
Operating System firmware)


protocol: 1K XMODEM
```

The send file window displays the progress of the file transfer. It takes about five minutes for the transfer to complete.

NOTE: Although slower, XModem also works if you choose not to use 1K MODEM.

9. After completing the transfer, a message displays prompting how many bytes transferred, followed by another message prompting image extraction. Do not power cycle the switch during this process.

> ⚠ **CAUTION:** Do not power off the GbE2 Interconnect Switch until you see the message: "Change your baud rate to 9600 bps and the power cycle switch," otherwise, the GbE2 Interconnect Switch will be inoperable.

10. After extracting the image, the system prompts you to select which current operating system image (image1 or image2) needs to be updated by the new operating system image. It also provides an option (**n**) not to update any and to quit the update procedure.

Depending on your selection, 1 or 2, the system updates image1 or image2 on the flash and a message with a progress indicator displays as shown below. If you select **n,** the system aborts the update procedure and prompts you to reset the baudrate and power cycle the switch.

```
ProLiant p-Class GbE Interconnect Switch - PPCBoot 2.2.
To download a Switch Boot Code or Operating System firmware image use
1K Xmodem at 115200
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Total bytes transferred: 0x4ff400
Extracting images... Do *NOT* power cycle the switch


Please pick up destination, switch OS image [1|2|n]?
1
Updating switch OS image 1 @ ff800000
####################
Change your baudrate to 9600 bps and power cycle the switch
```

OR

```
ProLiant p-Class GbE Interconnect Switch - PPCBoot 2.2.
To download a Switch Boot Code or Operating System firmware image use
1K Xmodem at 115200
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Total bytes transferred: 0x4ff400
Extracting images... Do *NOT* power cycle the switch


Please pick up destination, switch OS image [1|2|n]?
2
Updating switch OS image 2 @ ff400000
####################
Change your baudrate to 9600 bps and power cycle the switch
```

OR

```
ProLiant p-Class GbE Interconnect Switch - PPCBoot 2.2.

To download a Switch Boot Code or Operating System firmware image use
1K Xmodem at 115200

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Total bytes transferred: 0x4ff400

Extracting images... Do *NOT* power cycle the switch


Please pick up destination, switch OS image [1|2|n]?

n

No update

#####################

Change your baudrate to 9600 bps and power cycle the switch
```

11. Change the baud rate to 9600 and power off the GbE2 Interconnect Switch. Wait for a few seconds, and power on the GbE2 Interconnect Switch.

    During bootup the GbE2 Interconnect Switch the following prompt displays:

    ```
    Press <Ctrl>-o to use the other image…
    ```

    If you want to use the other operating system image, press the **Ctrl-o** keys.

F

SNMP MIBs Support

Introduction

Management and statistics information is stored in the GbE2 Interconnect Switch in the Management Information Base (MIB). The GbE2 Interconnect Switch supports several standard MIBs. Values for MIB objects can be retrieved with any SNMP-based network management software.

In addition to the standard MIBs, the switch also supports its own proprietary enterprise MIB as an extended Management Information Base. The proprietary MIB is retrieved by specifying the MIB Object-Identifier (OID) at the network manager station.

MIB values can be either read-only or read/write variables.

- Read-only MIB variables can be constants that are programmed into the switch or variables that change while the switch is in operation. Examples of read-only constants include the number and types of ports. Examples of read-only variables are the statistics counters, such as the number of errors that have occurred or how many kilobytes of data have been received and forwarded through a port.

- Read/write MIB variables are usually related to user-customized configurations. Examples include the IP address of the switch, Spanning Tree Algorithm parameters, and port status.

SNMP Manager Software

If you use third-party vendor SNMP software to manage the switch, you can access proprietary enterprise MIBs for the switch. The MIBs can be found on the ProLiant BL p-Class GbE2 Interconnect Switch Management System Utilities and User Documentation CD or with the GbE2 Interconnect Switch utilities on the following website:

www.compaq.com/support/servers

If your software provides functions to browse or modify MIBs, you can also change the MIB values (if the MIB attributes permit the write operation). This process can be quite involved, because you must use the MIB OIDs, available in the MIB files, and retrieve them one by one.

Use an SNMP manager, such as HP OpenView Network Node Manager or Insight Manager 7, to access the enterprise-specific MIBs. Compile the MIBs into the MIB database and then use a MIB browser to navigate through them. For detailed information, access the individual descriptions of each MIB or refer to the documentation that came with your SNMP manager software.

The GbE2 Interconnect Switch SNMP agent supports SNMP Version 1. Security is provided through SNMP community strings. The default community strings are "public" for **SNMP GET** operation and "private" for **SNMP SET** operation. The community string can be modified only through the command line interface (CLI).

Users may specify up to two trap hosts for receiving SNMP traps. The agent will send the SNMP trap to the specified hosts when appropriate. Traps will not be sent if there is no host specified.

Supported MIBs

The SNMP agent for the GbE2 Interconnect Switch supports the following MIBs:

- bt2Network.mib—Layer 3 configuration information including IP interface, gateway, and Domain Name System (DNS)

- bt2Physical.mib—Layer 2 configuration information including VLAN, trunk groups, spanning tree configuration, port mirroring, and Forwarding Database (FDB) table

- bt2Switch.mib—General switch configuration information including statistics, system information, port configuration, RADIUS, Network Time Protocol (NTP), syslog, trap host, Trivial File Transfer Protocol (TFTP), hardware information, and statistics

- bt2trap.mib—GbE2 Interconnect Switch trap information

- hpswitchpl.mib—HP GbE2 Interconnect Switch MIB root definition

- rfc1213.mib—MIB-II for network management of TCP/IP-based internets; Layer 3 IP information/data

- rfc1215.mib—Coldstart, warmstart, linkup trap definitions

- rfc1493.mib—Bridge traps, standard spanning tree, and other Layer 2 switch data

- rfc1643.mib—Ethernet-like MIB, Layer 2 frame statistics and informatoin

- rfc1757.mib—Remote Network Monitoring (RMON) MIB

- rfc2037.mib—SNMP network management entity MIB for use with multiple STPs

- cpqrack.mib—Rack location information

- cpqsinfo.mib—Switch identification information

- cpqhost.mib—Switch identification information

Supported Traps

The GbE2 Interconnect Switch SNMP agent supports the following generic traps as defined in RFC 1215:

- ColdStart

- WarmStart

- LinkDown

- LinkUp

- AuthenticationFailure

The SNMP agent also supports two spanning tree traps as defined in RFC 1493:

- NewRoot

- TopologyChange

The following are the enterprise SNMP traps supported in the GbE2 Interconnect Switch:

Table F-1: Supported Enterprise SNMP Traps

Trap Name	Description
`bt2SwDefGwUp`	Signifies that the default gateway is alive.
`bt2SwDefGwDown`	Signifies that the default gateway is down.
`bt2SwDefGwInService`	Signifies that the default gateway is up and in service.
`bt2SwDefGwNotInService`	Signifies that the default gateway is alive but not in service.
`bt2SwLoginFailure`	Signifies that someone failed to enter a valid username/password combination.
`bt2SwPrimaryPowerSupplyFailure`	Signifies that the primary power supply failed.
`bt2SwVrrpNewMaster`	Indicates that the sending agent has transitioned to Master state.
`bt2SwVrrpNewBackup`	Indicates that the sending agent has transitioned to Backup state.
`bt2SwVrrpAuthFailure`	Signifies that a packet has been received from a router whose authentication key or authentication type conflicts with this router's authentication key or authentication type. Implementation of this trap is optional.

continued

Table F-1: Supported Enterprise SNMP Traps *continued*

Trap Name	Description
bt2SwRackLocationChange	Signifies that the GbE2 Interconnect Switch has had a location change.
bt2SwTempExceedThreshold	Signifies that the switch temperature has exceeded maximum safety limits.
bt2SwTempReturnThreshold	Indicates that the switch temperature has returned below maximum safety limits.
bt2SwApplyComplete	Signifies that the new configuration has been applied.
bt2SwSaveComplete	Signifies that the new configuration has been saved.
bt2SwFwDownloadSucess	Signifies that the firmware has been downloaded to [image1|image2|boot image].
bt2SwFwDownloadFailure	Signifies that the firmware downloaded failed to [image1|image2|boot image].
bt2SwFanFailure	Indicates that the fan failure has been detected.
bt2SwFanFailureFixed	Indicates that the fan failure has been fixed.

G

Safe Mode Configuration

Introduction

GbE2 Interconnect Switch configuration files are specified in text format. Trivial File Transfer Protocol (TFTP) or Secure Copy (SCP) services can to be used to upload and download these text-based configuration files. When these configuration files are downloaded and applied to the GbE2 Interconnect Switch, the GbE2 Interconnect Switch interprets the contents and applies it to the system as active configuration.

The configuration settings can be saved to NVRAM, and they become the backup configuration for the GbE Interconnect Switch. These settings are then used every time the GbE Interconnect Switch is rebooted.

IMPORTANT: The TFTP server must be running TFTP server software to perform a file transfer. TFTP server software is included as part of the Windows utilities package.

When inserting a new or replacement GbE2 Interconnect Switch into a production/real-time environment, you must be certain that the GbE2 Interconnect Switch configuration is compatible with the production network. Since the factory default switch configuration may not be same as the production configuration, it may compromise the security aspects and VLAN isolation used by the production network.

A new or replacement GbE2 Interconnect Switch should be preconfigured in a "safe mode" such that it addresses these security concerns and still allows the administrator to configure the switch and finalize switch deployment on the production network. The administrator can simply download a final configuration template with the safe mode configuration to deploy the GbE2 Interconnect Switch in the production environment.

User Account Information

User password information is not saved in the configuration file for security reasons and must be managed by the GbE2 Interconnect Switch administrator. User account information can be manually added to the configuration file after it is uploaded, or it can be re-entered using the CLI.

Safe Mode

When inserting a new or replacement GbE2 Interconnect Switch into a production environment, you must be certain that the GbE2 Interconnect Switch configuration is compatible with the production network. Compatibility with a network can include items such as:

- Specific configuration of the network in general—problems, such as loops, can occur within the network without specifically enabling Spanning Tree Protocol (STP)

- Security of connected network entities—security issues can arise as a result of configuration items, including such attributes as subnet-to-subnet communication and blade-to-blade communication where communication between these entities is not acceptable

- Security of the GbE2 Interconnect Switch—these attributes include controlled access to the GbE2 Interconnect Switch such as user-password and SNMP read-write community strings

- Other configuration attributes, such as VLAN settings

The GbE2 Interconnect Switch factory default, as well as previously configured GbE2 Interconnect Switches, may not have configurations that are compatible with the production network.

If the configuration of the GbE2 Interconnect Switch is not compatible with the production network, the GbE2 Interconnect Switch may be pre-configured in a pre-production network environment before inserting in to production environment. Also, the GbE2 Interconnect Switch can booted up using the Diagnostic Station for preconfiguration, to make it ready for production network.

There are several preconfiguration options:

- Configure the GbE2 Interconnect Switch for its exact position in the production network.

- Partially configure the GbE2 Interconnect Switch so that it is compatible with multiple positions in the production network. The configuration can then be completed for the GbE2 Interconnect Switch through scripting, manual operation, or a configuration download. This more globally appropriate configuration is called a safe mode configuration. Note that a single safe mode configuration may or may not be appropriate for all production environments. A spare GbE2 Interconnect Switch, however, configured to a safe mode, may be appropriate for multiple production environments.

GbE2 Interconnect Switch Replacement Scenario using a Safe Mode Configuration

When an in-production GbE2 Interconnect Switch fails:

1. Remove the failed GbE2 Interconnect Switch.

2. Insert the spare GbE2 Interconnect Switch that was previously configured for safe operation.

3. Upgrade to new firmware if appropriate.

4. Download the correct configuration for that particular GbE2 Interconnect Switch.

Safe Mode Configuration File Templates

An example template configuration file, named **Safe_Mode_GbE2**, has been provided as a basis to create an appropriate safe mode configuration. This file, delivered with the GbE2 Interconnect Switch Management Utilities package, is located on the utilities and user documentation CD included in the interconnect kit and at the following website:

www.compaq.com/support/servers

NOTE: The template provided is only an example, and should not be used in a production environment without modifications required for your specific production network. This template has commented sections such as for IP configuration, password protection, and port selection.

Safe Mode Configuration File Template Modification

To modify the safe mode configuration file template:

1. Review the readme file located on the utilities and user documentation CD.

2. Copy the example safe mode template from the utillities and user documentation CD to a new file with custom name.

3. Perform modifications appropriate for your production environment. Your environment may require additional settings such as VLAN configuration, IP settings, password settings, TFTP/SCP settings, and so on.

Applying the Safe Mode Template Configuration File

Use one of the following methods to apply the file to your GbE2 Interconnect Switch and set the switch in Safe Mode.

Method 1: Via the switch serial port using command line interface (CLI)

1. Power up the switch using the Diagnostic Station or by inserting the switch in a non-production blade enclosure. Login to the switch CLI via the serial console as **Admin.**

2. Open the **Safe_Mode_GbE2** template configuration file using any text editor, such as Microsoft WordPad, and make the changes as suggested by the comments in that template configuration file.

3. Copy all the content from the template configuration file with your edits and paste it as a command to the switch CLI.

4. Issue the **/apply** command on the CLI.

5. Issue the **/save** command, and type **y** when prompted.

6. Power up the switch by inserting it into a production blade enclosure. This boots up the switch in Safe Mode, with all ports except uplink port 19 disabled.

7. Access any of the switch management interfaces through uplink port 19, and complete the switch configuration appropriate for your production network. Or, you can use the serial port to complete the switch configuration appropriate for your production network.

Method 2: Via any switch management interface using TFTP functionality

1. Power up the switch using the Diagnostic Station or by inserting the switch in a non-production blade enclosure. After resetting the switch to factory settings (if required), login to the switch CLI via the serial console as **Admin.**

2. If the switch cannot get BootP assigned IP settings, configure the switch IP address settings so that it can access a TFTP server on the attached network.

3. Open the **Safe_Mode_GbE2** template configuration file using any text editor, such as Microsoft WordPad, and make the changes as suggested by the comments in that template configuration file.

4. From any switch management interface, enable TFTP download of the template configuration file with your edits.

5. Apply the changes and save to flash.

6. Power up the switch by inserting it into a production blade enclosure.This boots up the switch in Safe Mode with all ports except uplink port 19 disabled.

7. Access any of the switch management interfaces through uplink port 19, and complete the switch configuration appropriate for your production network. Or, you can use the serial port to complete the switch configuration appropriate for your production network.

H

Electrostatic Discharge

Overview

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.

- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.

- Place containers on a grounded surface before removing the contents.

- Avoid touching pins, leads, or circuitry.

- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a grounded cord. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.

- Use heel straps, toe straps, or boot straps. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.

- Use conductive field service tools.

- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an HP authorized reseller install the part.

NOTE: For more information on static electricity or assistance with product installation, contact your HP authorized reseller.

RJ-45 Pin Specification

When connecting the HP ProLiant BL p-class GbE2 Interconnect Switch to a switch, bridge, or hub, an Ethernet cable is necessary.

Figure I-1 displays the standard RJ-45 receptacle/connector for 10/100 Mb/s and Gigabit over Copper ports. Table I-1 indicates the pin number and wire color assignments for the switch-to-network adapter card connection, and the Ethernet cable for the switch-to-switch, switch-to-hub, or switch-to-bridge connection. Table I-2 provides the same information for the Gigabit over Copper ports.

NOTE: A cable configured for Gigabit over Copper can also be used on a 10/100-Mb/s connection.
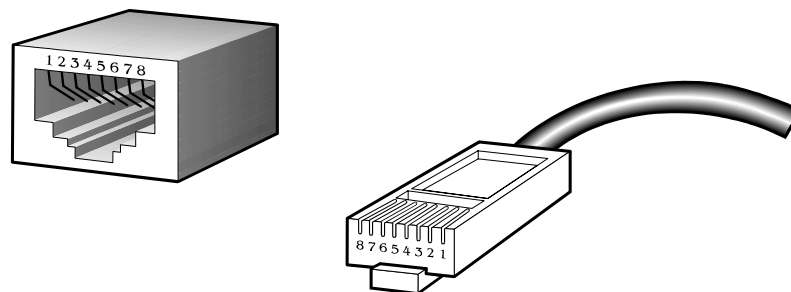
Figure I-1: Standard RJ-45 receptacle/connector for 10/100 Mb/s and Gigabit over Copper

Table I-1: RJ-45 Connector Pin Assignment for 10/100 Mb/s

Contact	Media Direct Interface Signal	Color Match
1	Tx + (transmit)	White/Orange
2	Tx - (transmit)	Orange/White
3	Rx + (receive)	White/Green
4	Not used	Blue/White
5	Not used	White/Blue
6	Rx – (receive)	Green/White
7	Not used	White/Brown
8	Not used	Brown/White

Table I-2: RJ-45 Connector Pin Assignment for Gigabit over Copper

Contact	Media Direct Interface Signal	Color Match
1	BI_DA+	White/Orange
2	BI_DA-	Orange/White
3	BI_DB+	White/Green
4	BI_DC+	Blue/White
5	BI_DC-	White/Blue
6	BI_DB-	Green/White
7	BI_DD+	White/Brown
8	BI_DD-	Brown/White

J

Troubleshooting

This section provides information on solutions to problems that may occur during the configuration and operation of a Proliant BL p-Class GbE2 Interconnect Switch. The following tables provide steps to take before calling your service representative.

Following are four tables with basic troubleshooting information:

- **Setting Up and Accessing**—Table J-1 contains general troubleshooting information about setting up and accessing the GbE2 Interconnect Switch. Topics covered include LEDs, cables, failure of the GbE2 Interconnect Switch to get IP settings, failure to connect to the GbE2 Interconnect Switch remotely, and what to do if you forget your administrator user name and password.

- **Configuring**—Table J-2 contains general troubleshooting information about configuring the GbE2 Interconnect Switch. Topics covered include configuring VLANs and XConnect ports.

- **Using a TFTP Server**—Table J-3 contains general troubleshooting information about using a TFTP server to back up GbE2 Interconnect Switch configuration or to configure multiple GbE2 Interconnect Switches.

- **Upgrading Firmware Using the Serial Port**—Table J-4 contains general troubleshooting information about upgrading system firmware using the serial console port.

For additional troubleshooting information, refer to

- Appendix E, Performing a Serial Download, in this guide

- Appendix A, Troubleshooting Tools, in the *HP ProLiant BL p-Class GbE2 Interconnect Switch Application Guide*

- The following website:

  hp.com

Table J-1: Troubleshooting: Setting Up and Accessing

Problem	Possible Cause	Possible Solution
Forgot the administrator user name and password that you configured on the GbE2 Interconnect Switch.	Unknown	Call HP technical support at 1-800-652-6672 or your service representative to get a backdoor password.
The Power LED on the GbE2 Interconnect Switch is not on.	The GbE2 Interconnect Switch is not seated properly.	Make sure that the GbE2 Interconnect Switch is inserted completely and seated properly.
	The server blade enclosure is not powered up.	Make sure that the server blade enclosure is powered up and all the power connections are intact.
	There is a faulty LED.	Check the console to see if GbE2 Interconnect Switch is booted.
	The GbE2 Interconnect Switch fuse is blown.	Send for repair.
The Power LED on the GbE2 Interconnect Switch stays amber for more than 30 seconds and GbE2 Interconnect Switch does not boot.	The standby mode time out function is malfunctioning.	Force the GbE2 Interconnect Switch to boot by pressing the **Pwr/Rst** button.
No link LED displays, even after you plug the Category 5 cable in the RJ-45 connector of the external port.	The cable is not properly plugged in.	Check the cable at both ends to ensure that it is plugged in and seated properly.
	The cable or connector heads are faulty.	Replace the cable with another tested cable.
	The RJ-45 connector on the switch or LED is faulty.	• After checking and replacing the cable, if no link LED displays, check whether the port is transferring data. If yes, the LED is faulty. If no, it could be a faulty RJ-45 connector. Call your service representative. • This could be caused by using a crossover cable instead of a straight-through cable.

continued

Setting Up and Accessing *continued*

Problem	Possible Cause	Possible Solution
Cannot access the GbE2 Interconnect Switch serial console interface using null modem connection from a PC Terminal Emulation Program.	The null modem cable is faulty.	Make sure that you use the null modem cable provided by HP with this hardware.
	The connection settings do not match the GbE2 Interconnect Switch serial settings.	Make sure that the PC Terminal Emulation session settings match the GbE2 Interconnect Switch serial settings.
An error message that the GbE2 Interconnect Switch failed to complete the system self-testing is displayed on the serial console screen.	The system diagnostic tests failed.	Note the reason for the failure from the serial console screen message and call your service representative.
The keyboard locks up when using HyperTerminal to log on to the GbE2 Interconnect Switch through the console interface.	Scroll lock is on.	Press the **Scroll Lock** key on the keyboard and make sure that the scroll lock is off.
The GbE2 Interconnect Switch fails to get its IP settings from the BOOTP server, even though by default it is configured for BOOTP. **IMPORTANT:** If you are running in spanning tree mode, it can take up to 90 seconds for the GbE2 Interconnect Switch to get its IP settings.	The GbE2 Interconnect Switch is not connected properly to the network.	Check the cable and connections and make sure that there is network connectivity between the GbE2 Interconnect Switch and the BOOTP server.
	The BOOTP server is not available on the network or VLAN that is attached to the switch management port.	Make sure that the BOOTP server is present on the network or VLAN attached to the GbE2 Interconnect Switch.
	The BOOTP server cannot offer IP settings to the GbE2 Interconnect Switch because no IP addresses are available.	Add additional IP addresses as necessary.
	The GbE2 Interconnect Switch timed out its request for IP settings.	Reset the GbE2 Interconnect Switch.
Cannot connect to the GbE2 Interconnect Switch console interface remotely using Telnet.	The GbE2 Interconnect Switch IP address may not be configured or correct.	• From the serial console interface, make sure that the GbE2 Interconnect Switch IP address is configured and valid on your network. • Use the correct IP address to establish the Telnet connection with the GbE2 Interconnect Switch.
	The setting allowing access to the GbE2 Interconnect Switch using the Telnet interface is disabled.	From the serial console interface, make sure that the Telnet interface is enabled.
	The management network address/mask (if used) does not contain the IP address of your management station.	From the serial console interface, make sure that the Management Network Address/Mask contains the IP address of your management station.

continued

Setting Up and Accessing *continued*

Problem	Possible Cause	Possible Solution
Cannot connect to the GbE2 Interconnect Switch console interface remotely using SSH.	The GbE2 Interconnect Switch IP address may not be configured or correct.	• From the serial console interface, make sure that the GbE2 Interconnect Switch IP address is configured and valid on your network. • Use the correct IP address to establish the SSH connection with the GbE2 Interconnect Switch.
	The setting allowing access to the GbE2 Interconnect Switch using the SSH interface is disabled.	From the serial console interface, make sure that the SSH interface is enabled and all its settings are configured correctly.
	The management network address/mask (if used) does not contain the IP address of your management station.	From the serial console interface, make sure that the Management Network Address/Mask contains the IP address of your management station.
Cannot connect to the GbE2 Interconnect Switch remotely using the Web interface.	The GbE2 Interconnect Switch IP address may not be configured or correct.	• From the serial console interface, make sure that the GbE2 Interconnect Switch IP address is configured and valid on your network. • Use the correct IP address to establish the Web connection with the GbE2 Interconnect Switch.
	Access to the GbE2 Interconnect Switch using the Web interface is disabled.	From the serial console interface, make sure that the Web interface is enabled.
	The Proxy server settings are configured on your Internet browser and your proxy server does not know the GbE2 Interconnect Switch IP address.	Disable the manual proxy settings on your Web browser and let it automatically find Web servers using the IP address.
	The management network address/mask (if used) does not contain the IP address of your management station.	From the serial console interface, make sure that the Management Network Address/Mask contains the IP address of your management station.
Cannot connect to the GbE2 Interconnect Switch SNMP interface.	The GbE2 Interconnect Switch IP address may not be configured or correct.	• From the serial console interface, make sure that the GbE2 Interconnect Switch IP address is configured and valid on your network. • Use the correct IP address to establish the SNMP connection with the GbE2 Interconnect Switch.
	The management network address/mask (if used) does not contain the IP address of your management station.	From the serial console interface, make sure that the Management Network Address/Mask contains the IP address of your management station.

Table J-2: Troubleshooting: Configuring

Problem	Possible Cause	Possible Solution
After connecting more than one port to another switch or destination device, the port activity LEDs continuously indicate activity.	Because there are multiple links across this device and the destination device, they form loops, which cause broadcast storms.	Enable STP if you want multiple links. This setting prevents loops and maintains standby links for resilience in case of primary link failure.
While configuring VLANs, you cannot enable a port in multiple VLANs.	A port can be part of only one VLAN unless the port is a tagged port.	Make sure that you enable the port as a tagged port.
While assigning the ports to VLANs, the GbE2 Interconnect Switch does not let the user enable two adjacent ports into two different VLANs.	The ports could be two adjacent ports that are bundled in a Port Trunk.	Two ports that are assigned to a Port Trunk cannot be assigned to two different VLANs. Either break the trunk to assign it two different VLANs or assign the ports to one VLAN.

Table J-3: Troubleshooting: Using a TFTP Server

Problem	Possible Cause	Possible Solution
While using TFTP to download firmware, the GbE2 Interconnect Switch fails to connect to the TFTP server, or after connection the download fails.	The TFTP server is not available to connect to or there is connectivity failure between the switch and TFTP server.	• Make sure that the IP address of the TFTP server is correct. • Make sure that the TFTP server exists on the same network and VLAN as the GbE2 Interconnect Switch. • Make sure that you can ping the TFTP server from the GbE2 Interconnect Switch and vice versa.
	The firmware file is not found on the TFTP server. The file name could be wrong.	• Make sure that a valid firmware file exists on the TFTP server to download to the GbE2 Interconnect Switch. • On the GbE2 Interconnect Switch, check the file name you configured to download.
	The TFTP server was started with a configured directory.	The GbE2 Interconnect Switch must be configured using the full path name, if it is not in the directory specified in the TFTP server.
While using TFTP to download or upload a configuration file, the GbE2 Interconnect Switch fails to connect to the TFTP server, or after connection the download or upload fails.	The TFTP server is not available to connect or there is a connectivity failure between the GbE2 Interconnect Switch and the TFTP server.	• Make sure that the TFTP server exists on the same network or VLAN as that of the switch. • Make sure that you can ping the TFTP server from the switch and vice versa. • Make sure that the IP address of the TFTP server is correct.
	The configuration file is not found on the TFTP server. The file name could be wrong.	• Make sure that a valid configuration file exists on the TFTP server to download to the GbE2 Interconnect Switch. • On the GbE2 Interconnect Switch, check the file name you configured to download or upload.
	The TFTP server was started with a configured directory.	The GbE2 Interconnect Switch must be configured using the full path name, if it is not in the directory specified in the TFTP server.

continued

Table J-4: Troubleshooting: Upgrading Firmware Using the Serial Port

Problem	Possible Cause	Possible Solution
After forcing the GbE2 Interconnect Switch into the download mode, the console screen displays a message to change the baud rate for your terminal emulation session for XModem transfer and does not display CCCC….	Your terminal emulation session baud rate does not match the GbE2 Interconnect Switch serial console baud rate in the download mode.	Change the baud rate of your terminal emulation session to match the GbE2 Interconnect Switch serial console baud rate in the download mode. **IMPORTANT:** The baud rate for the GbE2 Interconnect Switch serial console in the download mode and runtime mode are two separate settings.
After starting to download the firmware file, the download fails.	The firmware file is not the correct one or is corrupt.	Obtain the latest firmware file that is specified for this GbE2 Interconnect Switch.
The GbE2 Interconnect Switch configuration is corrupt.	An error was made when saving the GbE2 Interconnect Switch configuration.	Reboot the GbE2 Interconnect Switch and reload the factory settings. This action clears all settings and restores them to the initial values that were present when the GbE2 Interconnect Switch was purchased. Refer to the *HP ProLiant BL p-Class GbE2 Interconnect Switch Command Reference Guide* for more information. After reloading the factory settings, reconfigure the GbE2 Interconnect Switch settings.

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