

HP ProLiant BL p-Class GbE2 Interconnect Switch

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BL p-Class GbE2 Interconnect Switch Overview

- Next generation ProLiant BL p-Class integrated switch
- Layer 2, Gigabit Ethernet performance standard on all switch ports
 - 16 10/100/1000T downlinks/switch
 - 4 1000SX or 10/100/1000T uplinks/switch
 - 2 10/100/1000T ports at front/switch
 - 2 10/100/1000T crosslinks/switch
- Architecture supports future options
 - Layer 3 routing and L3-7 content network switching options
 - 10GbE uplink upgrade option
- Advanced network protocol support
- BL20p G2 Fibre Channel signal pass-through option



p-Class System Compatibility

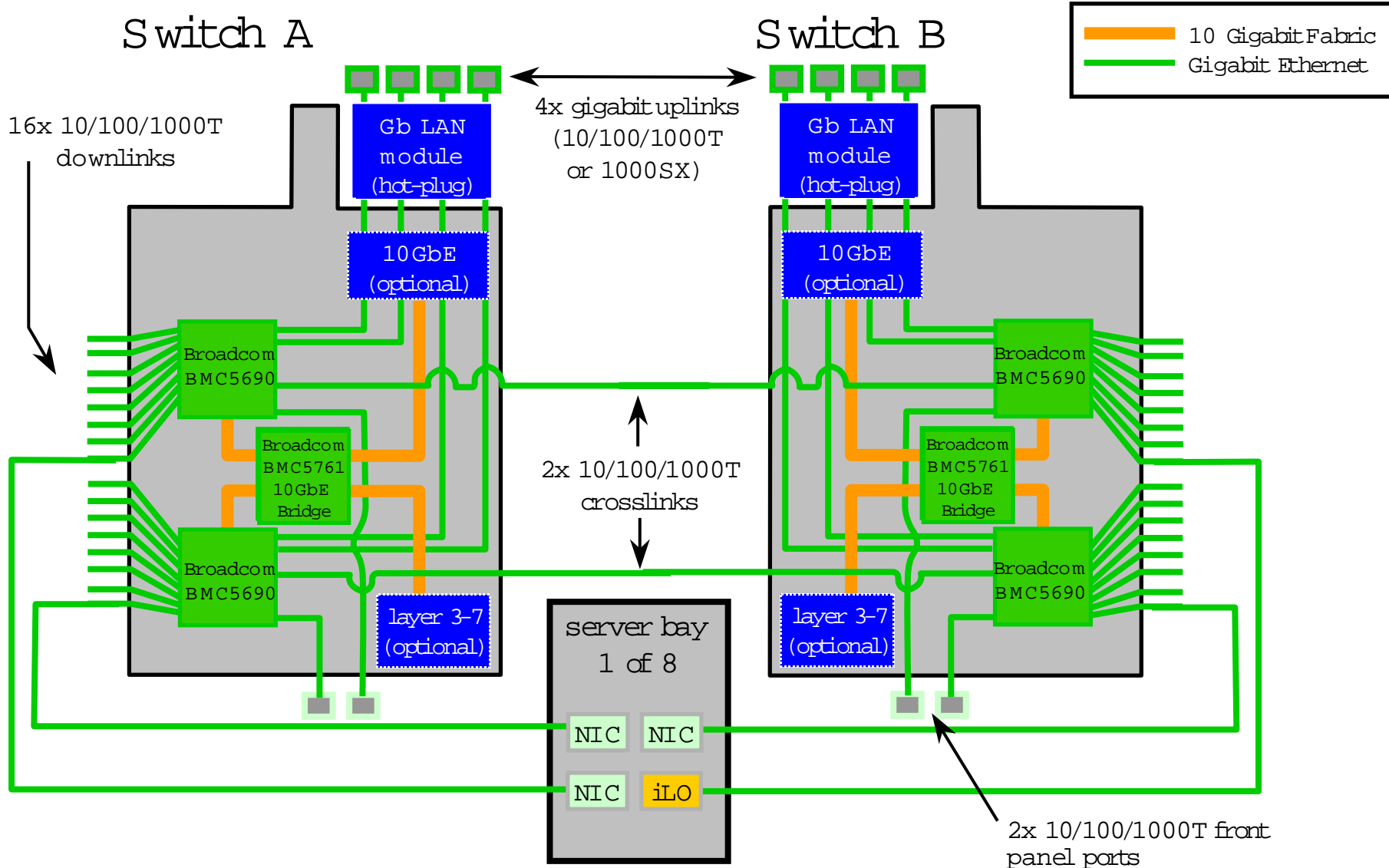
- GbE2 switch fully supported on the p-Class infrastructure
- Same form factor as existing GbE switch
- No modification needed on p-Class server blade enclosure
- Use with any mix of server blades
- In-field customer upgrade from patch panels or GbE switch
 - No need to power down the server blade or server blade enclosure



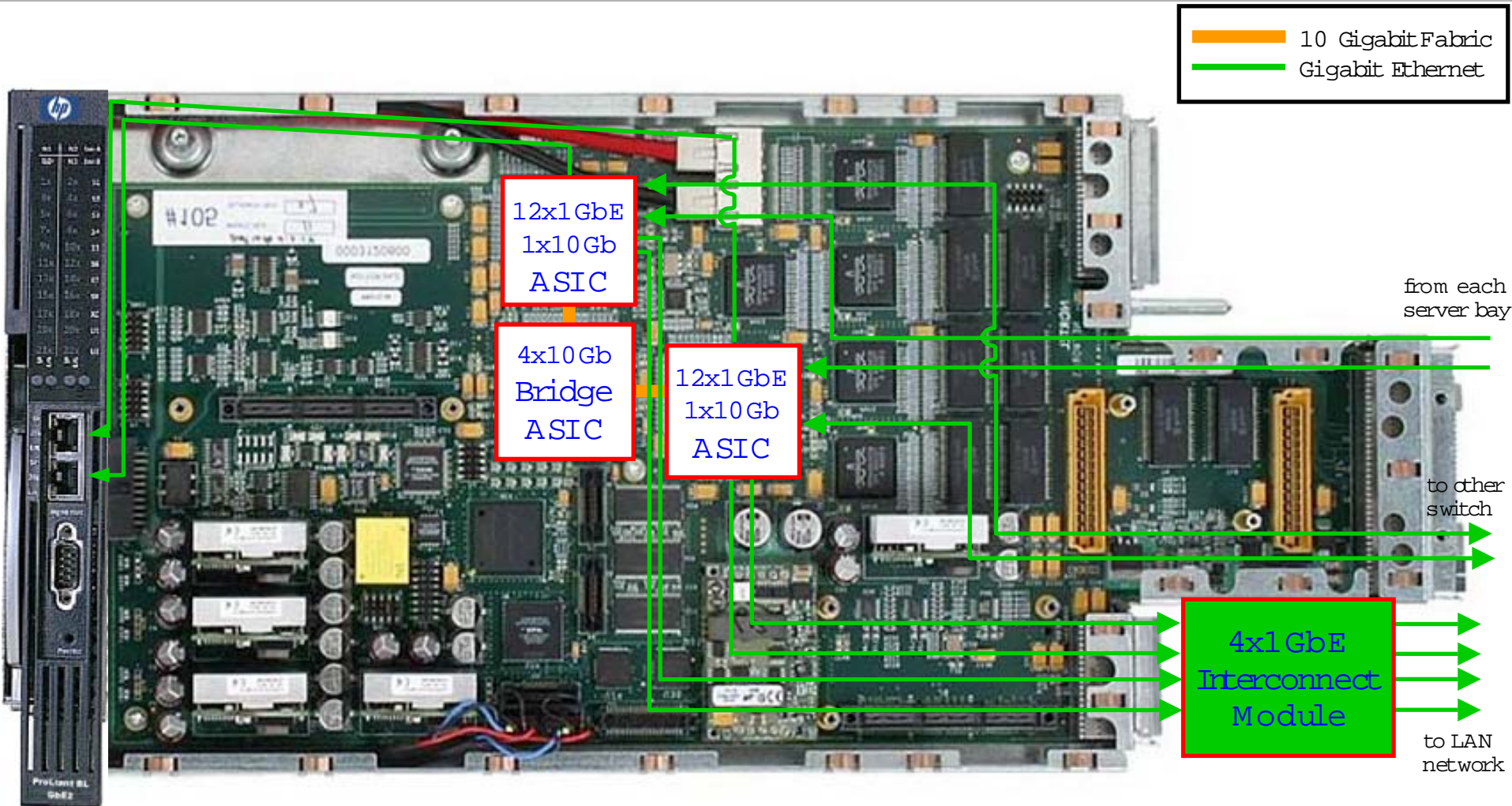
GbE2 Switch Investment Protection

- Includes a 10 gigabit fabric supporting future upgrades
 - Layer 3-7 switching
 - Ideal for load balancing / IP content delivery applications
 - Based on Nortel Alteon Application Switch
 - 10GbE uplink option
 - Ideal for future bandwidth needs and convergence of IP-based LAN & SAN
- User installable in the field without powering down the server blades or server blade enclosure
- Now possible to independently select the switching layer and the uplink bandwidth in a single switch
- Option availability planned as early as 1H04

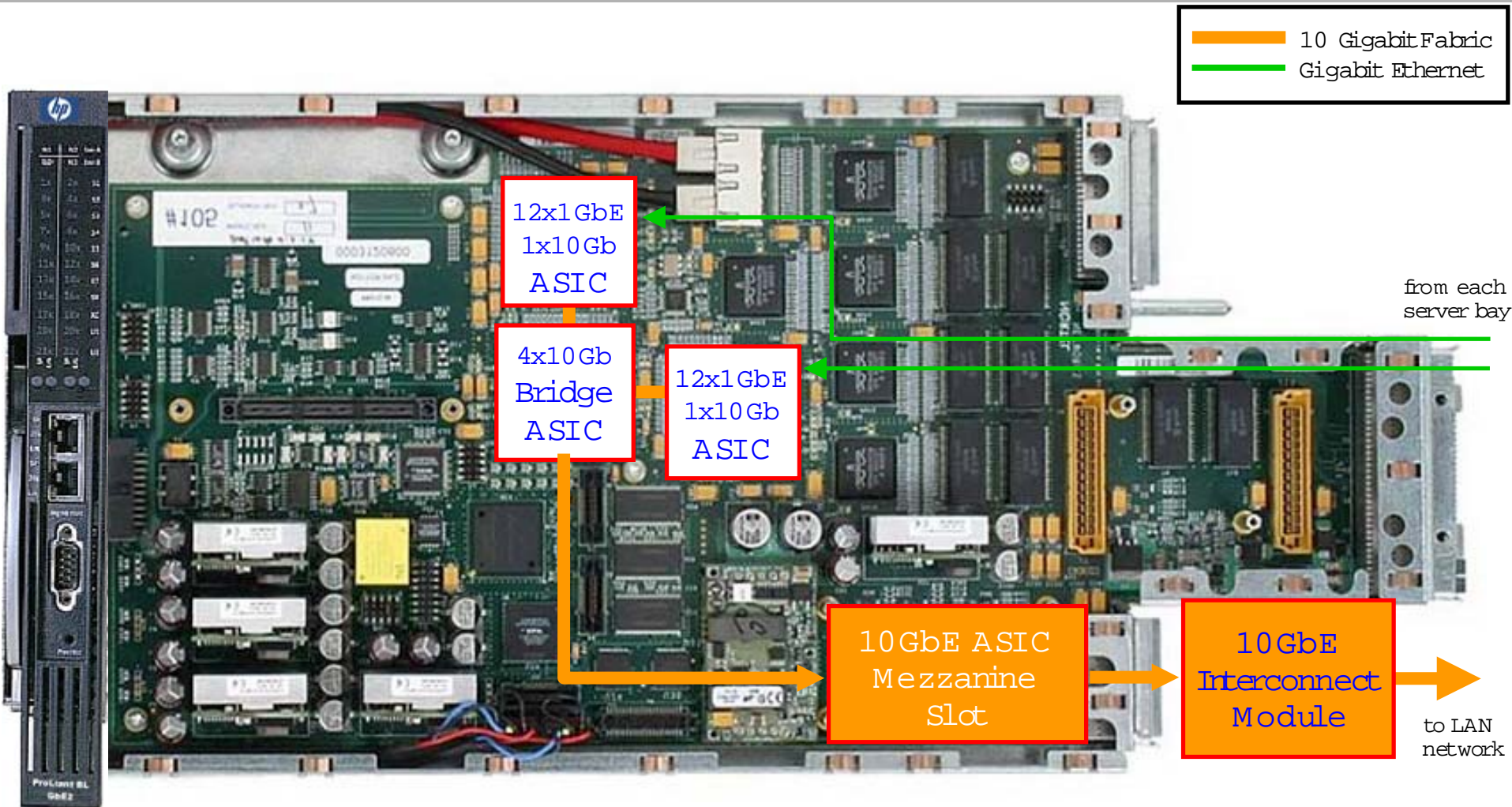
GbE2 Switch Architecture



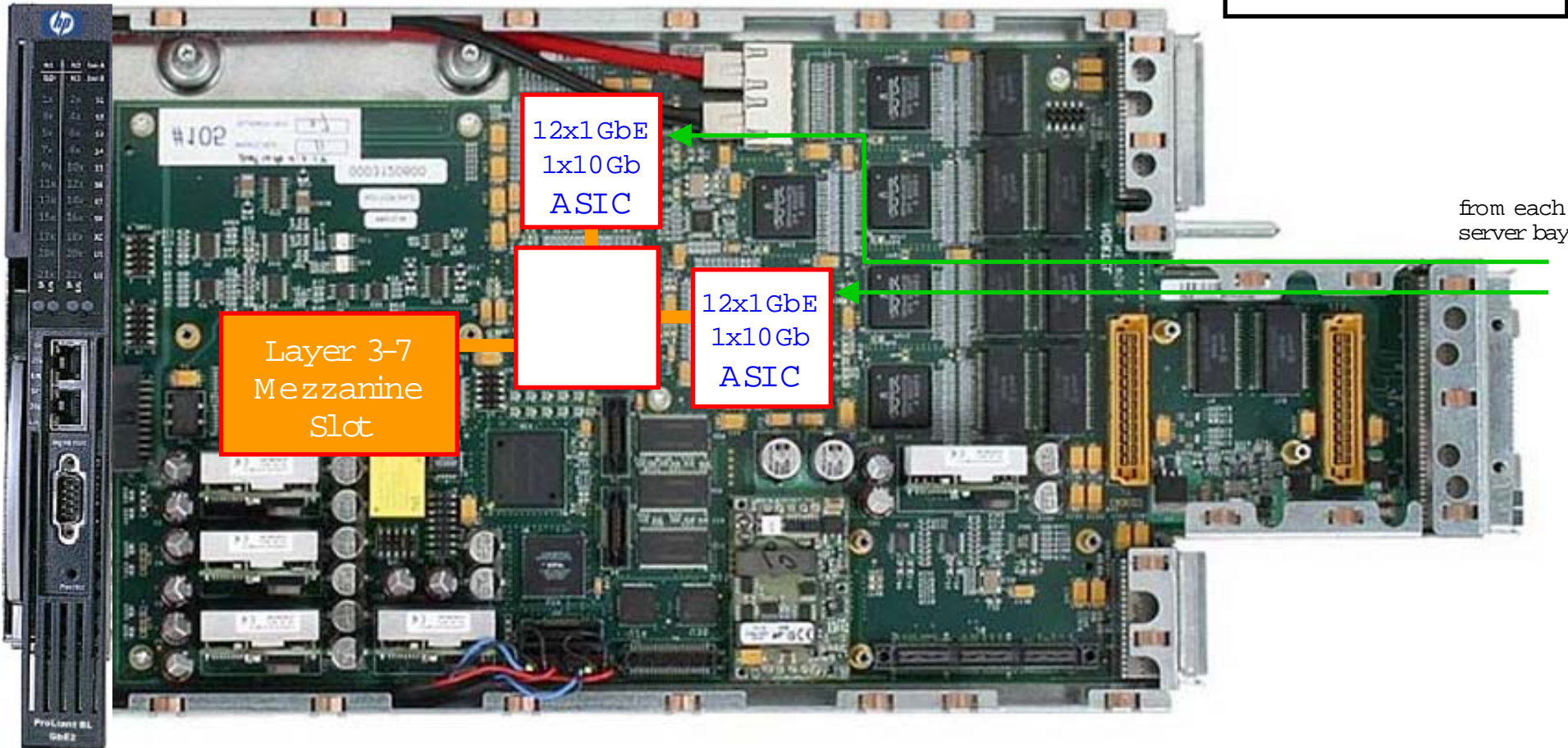
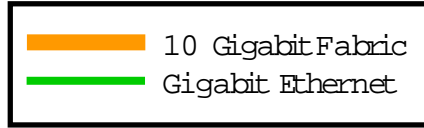
Gigabit Ethernet Signal Routing



10GbE Uplink Option Signal Routing



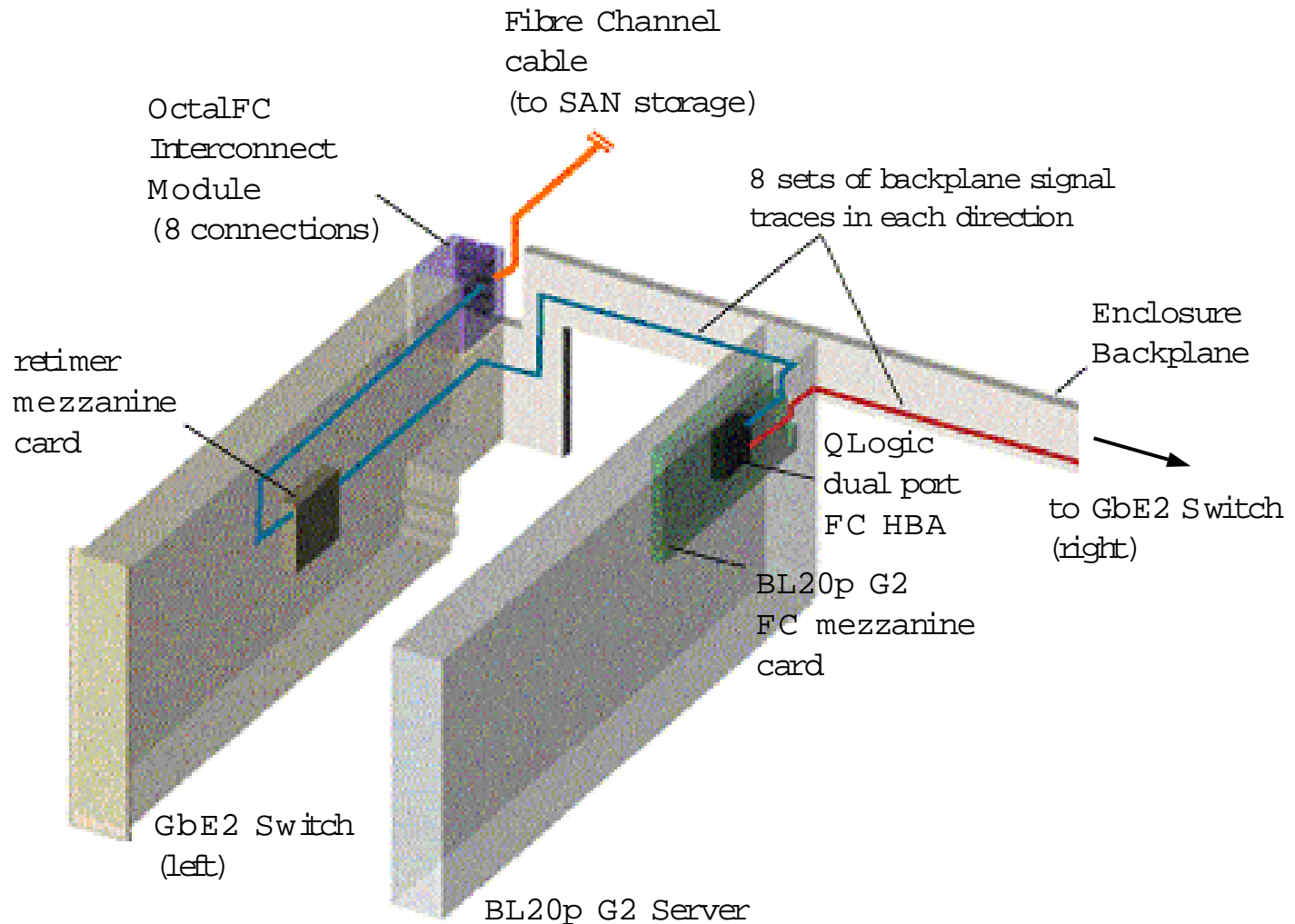
Layer 3-7 Option Signal Routing



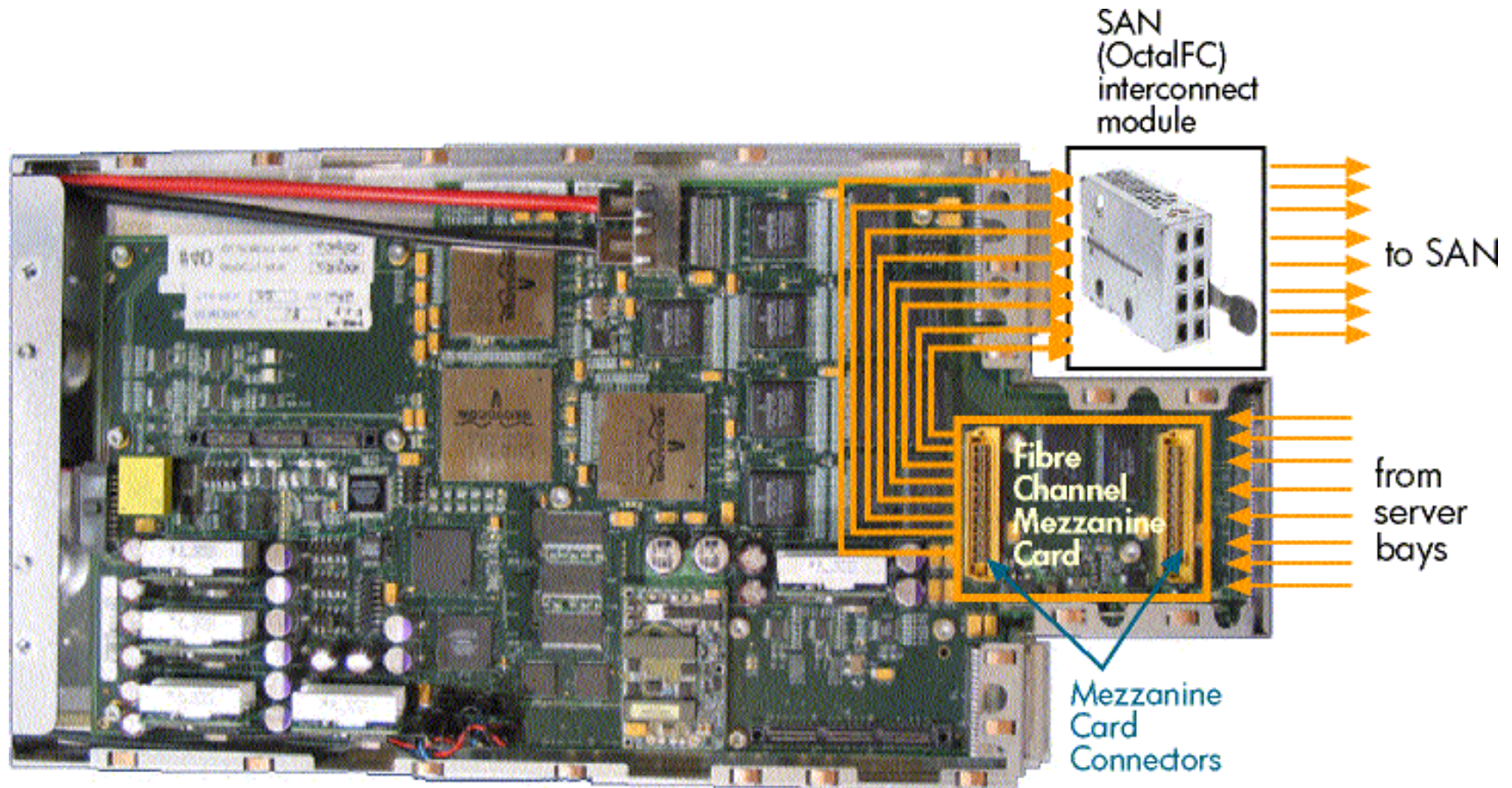
BL20p G2 FC Pass-through Option

- Optional GbE2 Storage Connectivity Kit for pass-through of the BL20p G2 Fibre Channel (FC) signals
 - Supports a full enclosure of BL20 G2 servers each with the dual-port FC card
 - Single kit provides components for one server blade enclosure.
- Both Ethernet signal consolidation and FC pass-through is now possible with a single interconnect
 - FC pass-through for maximum flexibility in choosing 3rd party SAN switch
- Completely separate from Ethernet signals
 - GbE2 switch's chassis is simply used as FC signal carrier

BL20p G2 FC Pass-through Signal Routing



GbE2 Storage Connectivity Kit Components

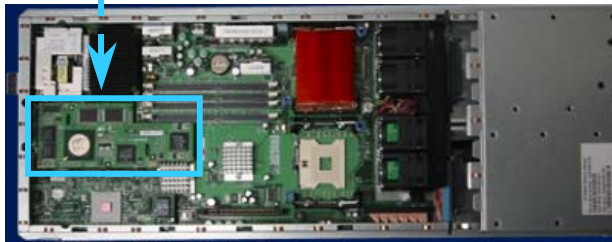


Adding FC Pass-through on the GbE2 Switch

1



Add BL20p G2
Dual-port FC
Mezz Card



ProLiant BL20p G2

2

Add GbE2 OctalFC
Interconnect
Module



Server Blade Enclosure

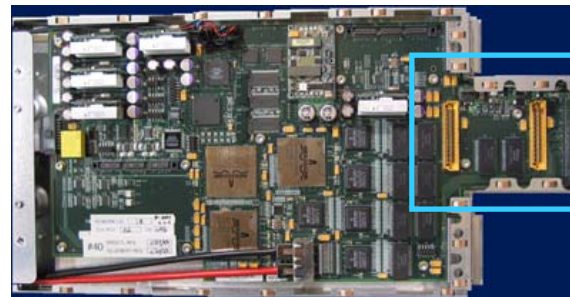
3

Plug-in Small
Form Factor SFPs
(included with BL20p G2 FC
Mezz Card)



4

Add GbE2 FC
Mezz Card



p-Class GbE2 Interconnect
Switch

Main GbE2 Added Network Features

(compared to the GbE Switch)



- Spanning tree per VLAN
 - Compatible with PVST and PVST+ using IEEE 802.1Q
- RADIUS, SSH, and SCP security
- 9K Jumbo frames
- Real-time clock in addition to network time protocol
- Step-by-step configuration set-up utility
- Trace route, remote syslog, and other added monitoring and diagnostics
- Layer 3-7 switching option

GbE2 Switch Availability

- Same fully redundant architecture as GbE switch
 - Hot swap redundant switches and interconnect modules
 - Redundant inter-switch crosslink communications
 - Redundant NIC connections to each server blade
 - Redundant Ethernet uplinks and front panel ports
 - Redundant DB-9 serial ports
 - Support for all types of ProLiant NIC teaming
 - On-board redundant fans
 - Redundant N+N hot-swap power via the p-Class power enclosure
 - Spanning tree support for loop free networks
 - Back-up switch configuration file via TFTP

- Plus...
 - Redundant firmware OSs and config files in memory
 - Redundant configurable syslog servers, DNS clients, and gateways with automatic failover

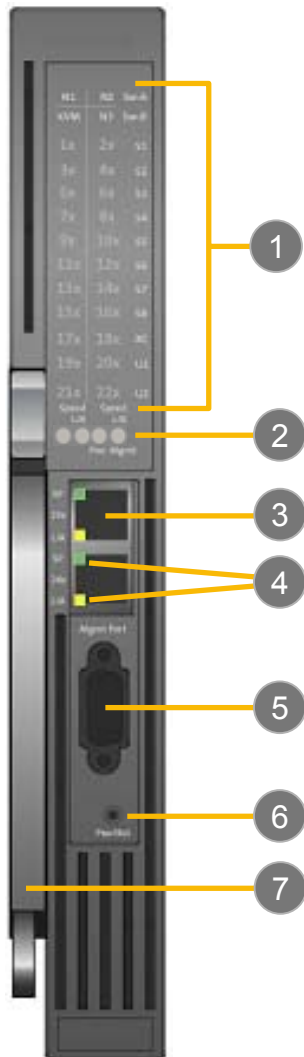
GbE2 Switch Management and Serviceability



Unmatched user serviceability and mgmt features

- Front-loading switch hot-swapped in seconds
 - Unique modular design absolutely eliminates all cabling/re-cabling
- Per port LED annunciation panel per switch
- Power reset, 2xGbE ports, and 1x serial port at front panel of each switch
 - Easy access to local data packet analysis and general system administration without sacrificing uplink ports
- Web-based and scriptable command line interfaces with set-up wizard accessible from any switch port
- Telnet, SSH, RADIUS, SCP, remote and local syslog, TFTP, XModem, and text-based human read/write configuration file
- SNMP with support for an extensive list of MIBs and environmental traps
- Perform switch, iLO, and PXE administration from any switch port

GbE2 Switch Front Panel



Item	Description
1	per port LED panel for link speed and activity status
2	power, management, and system option status LEDs
3	two local-access 10/100/1000T Ethernet switch ports
4	RJ-45 connector link speed and activity LEDs
5	DB-9 serial connector for access to the CLI and menu driven console
6	power/reset button
7	blade chassis latch and handle

GbE2 Switch User Interfaces

[Configuration Menu]

- sys - System-wide Parameter Menu
- port - Port Menu
- ip - IP Menu
- vlan - VLAN Menu
- stp - Spanning Tree Menu
- snmp - SNMP Menu
- pmirr - Port Mirroring Menu
- trunk - Trunk Group Menu
- setup - Step by step configuration set up
- dump - Dump current configuration to script file
- ptcfg - Backup current configuration to tftp server
- gtcfg - Restore current configuration from tftp server

hp invent
CONFIGURE STATISTICS DASHBOARD
Apply | Save | Revert | Diff | Dump
2. May 19 9:47:12 ALERT stp: STG 1, topology change detected

p-Class Gbe-2 - 192.168.2.44

Switch Ports D

Status	Switch Port Info	Operation Status
<input checked="" type="checkbox"/>	Port1: stp: FORWARDING tagging disabled PVID: 1	operational
<input checked="" type="checkbox"/>	Port2: stp: FORWARDING tagging disabled PVID: 4001	operational
<input checked="" type="checkbox"/>	Port3: stp: FORWARDING tagging disabled PVID: 1	operational
<input checked="" type="checkbox"/>	Port4: stp: FORWARDING tagging disabled PVID: 1	operational
<input checked="" type="checkbox"/>	Port5: stp: DISABLED tagging disabled PVID: 1	operational
<input checked="" type="checkbox"/>	Port6: stp: DISABLED tagging disabled PVID: 1	operational

hp invent
CONFIGURE STATISTICS DASHBOARD
Apply | Save | Revert | Diff | Dump
Show Log - Help - Quit
13. May 22 9:54:36 NOTICE system: link down on port 19

p-Class Gbe-2 - 192.168.2.44

Switch Spanning Tree Groups Configuration

1. Search Range
Spanning Tree Groups(1-16) From 1 To 16

2. Search Options
Bridge Priority(0 = any)
State: any
Search Operation: or Search

Spanning Tree Group	State	Bridge Priority	Bridge Hello Time	Bridge Max Age	Bridge Forward Delay	Bridge Aging Time
1	on	32768	2	20	15	300
2	on	32768	2	20	15	300
3	on	32768	2	20	15	300
4	on	32768	2	20	15	300
5	on	32768	2	20	15	300
6	on	32768	2	20	15	300

hp invent
CONFIGURE STATISTICS DASHBOARD
Apply | Save | Revert | Diff | Dump
16. May 22 9:57:01 NOTICE system: link up on port 19

p-Class Gbe-2 - 192.168.2.44

VLANs Config

VLAN ID (1 - 4095) From 1

VLAN Name

VLAN State: Enable

Search Operation: or

VLAN ID	VLAN Name	State
1	Default VLAN	enabled

Selecting a p-Class interconnect

		Provides network cable reduction	Supports FC pass-through for BL20p G2	Supported NIC speeds from server blade
Patch Panels	Patch Panel	No	No	10/100/1000
	Patch Panel G2	No	Yes	10/100/1000
Switches	GbE switch (with copper or fiber uplinks)	Yes	No	10/100
	GbE2 switch (with copper or fiber uplinks) (target availability 2Q03)	Yes	Yes with GbE2 switch FC Option	10/100/1000

GbE2 Switch Summary

- Gigabit Ethernet performance standard on all ports
 - 24 GbE ports per switch (6 external for customer use)
- Unparalleled investment protection to support network requirements today and tomorrow
 - Future 10GbE uplink and layer 3-7 switching options
 - BL20p G2 FC pass-through option
 - Fully supported on existing p-Class system
- Advanced network functionality
 - Multiple STP, RADIUS, L3-7, 9K jumbo frames, etc.
- End-to-end redundant architecture maximizing network availability
- Unmatched management and user friendly serviceability features



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p-Class GbE versus GbE2 switch key differences

Item	GbE	GbE2
Internal ports	Fast Ethernet	Gig
Uplinks	2xGig + 2x10/100T	4xGig
Front panel ports	2x10/100T	2x10/100/1000T
Layer 3-7 upgrade	No	Yes
10GbE upgrade	No	Yes
FC SAN pass-through	No	Yes
Multiple spanning tree	No	Yes
RADIUS	No	Yes
2 f/w images & config files	No	Yes
9K jumbo frames	No	Yes
SSH and SCP	No	Yes
STP fast forward (ByPass)	Yes	No
IGMP multicasting	Yes	No
IEEE 802.1p QoS	Yes	No
RMON	Yes	No
DHCP client	Yes	No

Regressions from GbE addressed in future no cost firmware upgrades

GbE2 Switch Browser Based Interface

The screenshot displays the HP GbE2 Switch Browser Based Interface. The interface is divided into several sections:

- Toolbar:** Located at the top, it contains the HP logo, the word "invent", and buttons for "CONFIGURE", "STATISTICS", and "DASHBOARD". Below these buttons are links for "Apply", "Save", "Revert", "Diff", and "Dump".
- Message Window:** A notification bar at the top right showing the message: "15. Mar 19 3:40:38 NOTICE system: link up on port 15".
- Navigation Window:** A sidebar on the left containing a tree view of the switch configuration options: "Switch", "General", "Switch Ports", "Radius", "NTP", "Syslog/Trap Features", "Config/Image Control", "Port-Based Port Mirroring", and "Trunk Groups".
- Forms Window:** The main content area titled "Switch Dashboard" displaying a table of switch details.

Property	Value
Switch Name	ace12
Switch Location	RearLab
RackId	735135
Chassis	Geb-R3-C2
Slot	A
Switch Type	p-Class GbE2
Last Boot Time	14:09:09 Thu Apr 3, 2003 (power cycle)
MAC Address	00:00:aa:aa:aa:26
Hardware Rev	00
Hardware Part Num	P314080-A
Software Rev	2.0.0.5
Banner	

At the bottom of the interface, there is a status bar with "Open folder" on the left and "Internet" on the right.

GbE2 Switch CLI

[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]
```

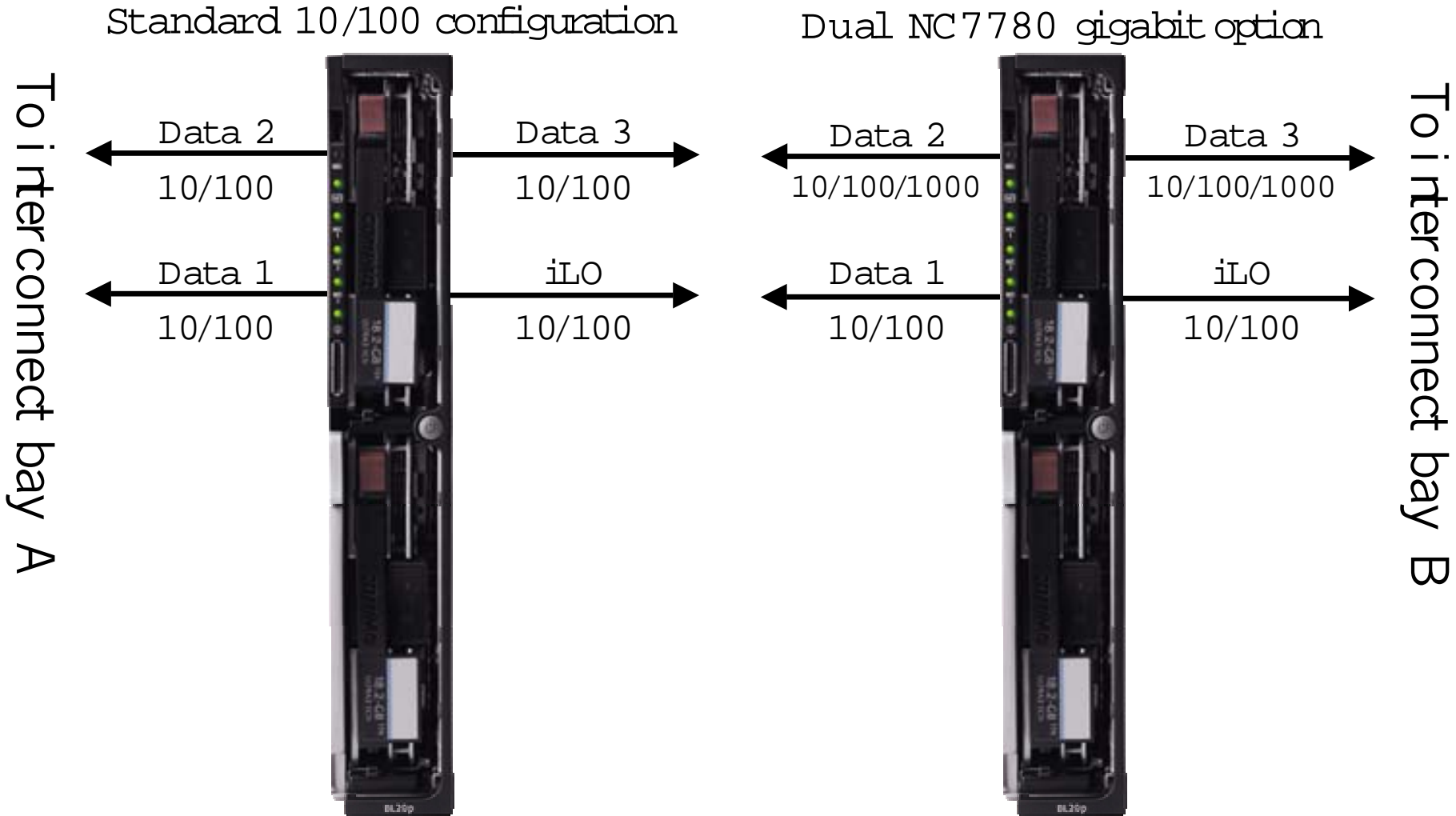
Main Menu
Log-in
Screen

```
Set Up" will walk you through the configuration of System Date and Time,
BOOTP, Spanning Tree, Port Speed/Mode, VLANs, and IP interfaces. [type
Ctrl-C to abort "Set Up"]
```

```
-----
Will you be configuring VLANs? [y/n]
```

Set-up
Wizard

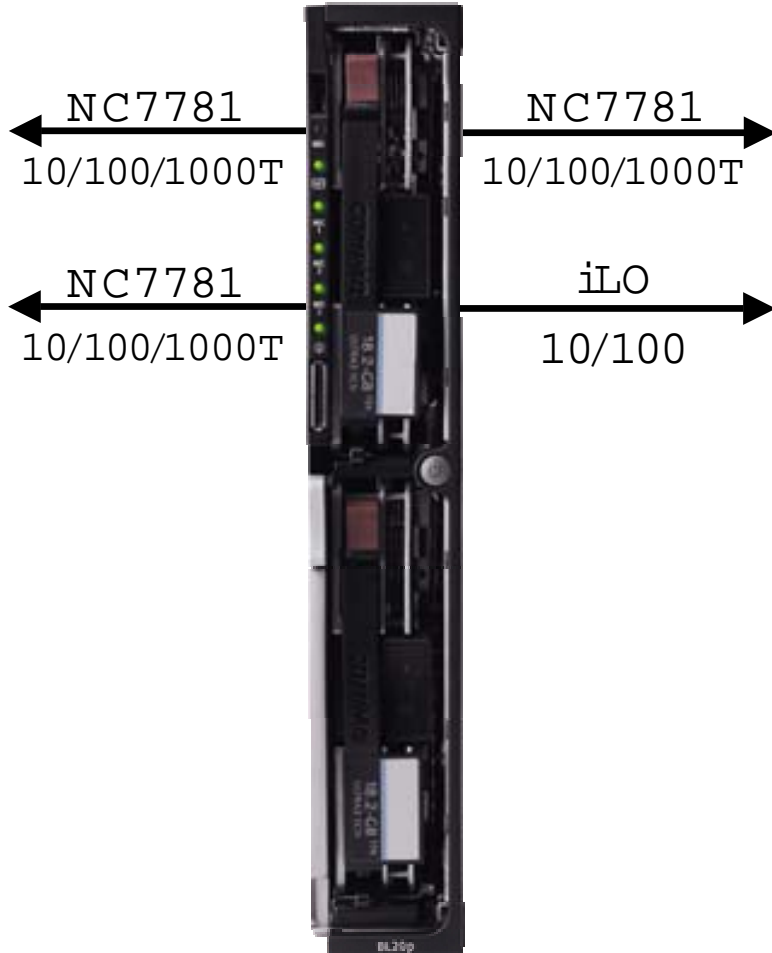
ProLiant BL20p Signal Routing



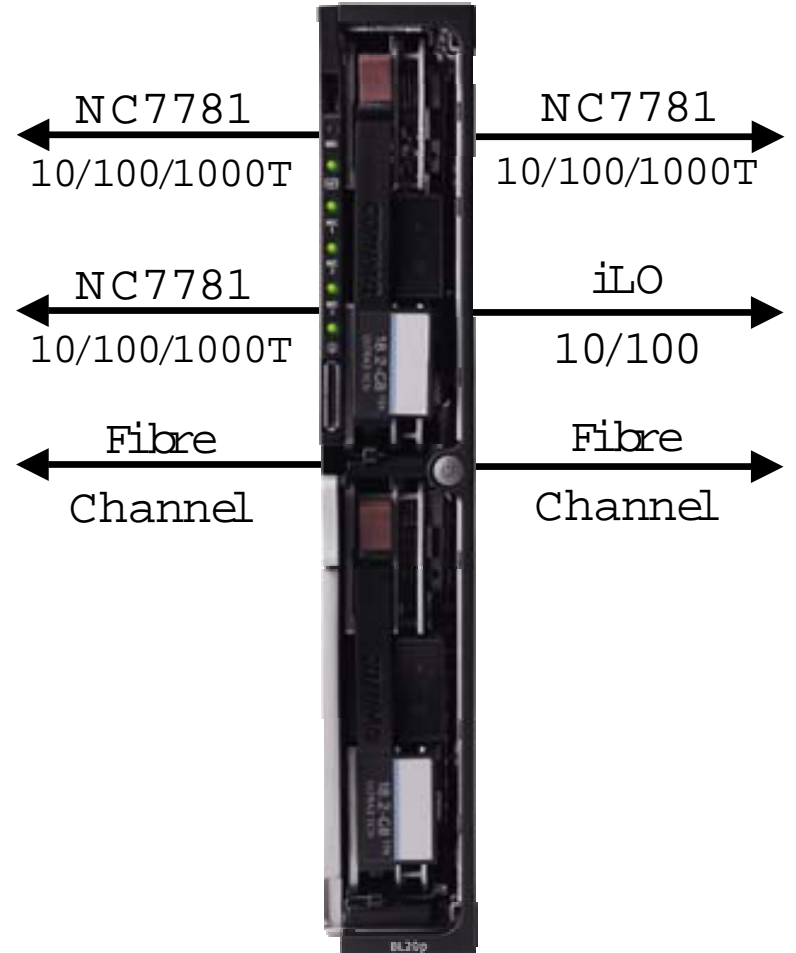
ProLiant BL20p G2 Signal Routing

To interconnect bay A

Standard network mezzanine card



Fibre Channel mezzanine card



To interconnect bay B

ProLiant BL40p Signal Routing

