

Overview

Designed for the c-Class BladeSystem enclosure, the HP 1:10Gb Ethernet BL-c Switch delivers sixteen 1Gb downlinks, four 1Gb uplinks along with 3 10Gb uplinks (CX4, XFP) and a 10Gb cross-connect in a single bay form factor. A robust set of industry standard Ethernet Layer 2 switching and Layer 3 routing functions, QOS, security and High Availability features round out this extremely flexible and capable switch. The HP 1:10Gb Ethernet BL-c Switch dramatically reduces cabling, power and cooling requirements compared to stand-alone switches, while providing over 34Gb of uplink bandwidth to handle the most demanding applications. A combination of excellent performance which includes low latency, wire speed performance for Layer 2 and Layer 3 packets and low power consumption makes the HP 1:10Gb Ethernet BL-c Switch an ideal solution for any large data center environment.

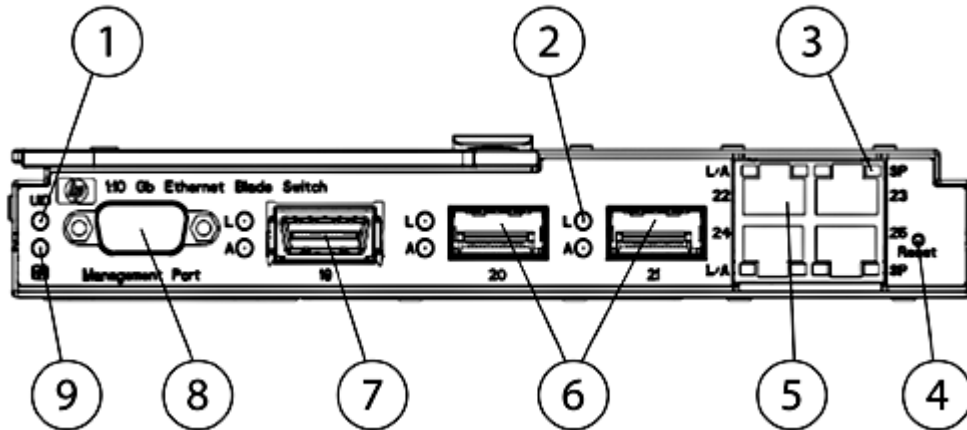


Figure 1 HP 1:10Gb Ethernet BL-c Switch Front Bezel

- | | |
|---------------------------|--------------------------------|
| 1. UID LED | 6. 10Gb XFP Module Cages |
| 2. Link Activity LEDs | 7. 10Gb CX4 Uplink Port |
| 3. Speed LEDs | 8. DB-9 Serial Management Port |
| 4. Reset Button | 9. Health LED |
| 5. RJ-45 1Gb Uplink Ports | |

What's New

- Support for HP ProLiant Generation 6 servers

Overview

At A Glance

Performance:

- Non blocking architecture
- Wire speed switching on all four 10/100/1000T RJ-45 uplink ports
- Wire speed switching on all three 10Gb uplink ports
- Wire speed switching on all sixteen 1Gb server ports
- 178.5 millions pps (full duplex)
- Greater than 1:1 downlink to uplink bandwidth ratio
- Store and Forward Switching

Management:

- Offers simplified management through two CLI options - Alteon or iSCLI
- Can be managed through HTTP, HTTPS, SNMP, and Blade Network's BladeHarmony Manager

Security:

- Robust ACLs provide maximum security.
- Port security based on 802.1x limits access to unwanted users
- Secured access through SSH and HTTPS (SSL)
- Offers RADIUS Authentication
- Traffic can be forwarded between VLANs (802.1Q) through IP forwarding-preventing traffic from being exposed unnecessarily to the outside network
- Offers TACACS+ Authentication

Models

Models
HP 1:10Gb Ethernet BL-c Switch 438031-B21

Compatibility

HP ProLiant Servers

HP ProLiant BL860c
HP ProLiant BL685c G6
HP ProLiant BL685c G5
HP ProLiant BL680c G5
HP ProLiant BL495c G5
HP ProLiant BL490c G6
HP ProLiant BL480c
HP ProLiant BL465c G5
HP ProLiant BL460c G6
HP ProLiant BL460c G5
HP ProLiant BL460c
HP ProLiant BL280c G6
HP ProLiant BL260c G5
HP ProLiant BL2x220c G5

ProLiant BL c-Class

HP BladeSystem c3000 Enclosure

Server Blade Enclosures

HP BladeSystem c7000 Enclosure

Standard Features

Required Network Cabling	10Base-T	Categories 3, 4 or 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	100Base-TX	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-T	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	10Gb	Multimode fiber cable; 62.5/125 or 50/125 microns Singlemode fiber cable: 9/125 micron The following CX4 cable lengths have been qualified and can be purchased directly from HP. Please see the Related Options section of this QuickSpecs. HP BLadeSystem c-Class.5m 10-GbE CX4 Cable HP BLadeSystem c-Class 1m 10-GbE CX4 Cable HP BLadeSystem c-Class 15m 10-GbE CX4 Cable

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

The HP 1:10Gb Ethernet BL-c Switch Limited Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMware-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP Care Pack services for the c7000 and c3000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 and c3000 enclosure Care Pack services.

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: <http://www.hp.com/hps/carepack>

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: <http://www.hp.com/hps>

NOTE: Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Related Options

HP 1-10GbE Advanced Software	<p>HP 1:10 GbE BLc Advanced Functionality Software</p> <p>NOTE: Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.</p>	485193-B21
HP 10-GbE CX4 Cables	<p>HP BLadeSystem c-Class .5m 10-GbE CX4 Cable</p> <p>HP BLadeSystem c-Class 1m 10-GbE CX4 Cable</p> <p>HP BLadeSystem c-Class 15m 10-GbE CX4 Cable</p>	<p>444477-B21</p> <p>444477-B22</p> <p>444477-B27</p>
XFP Options	<p>HP SR XFP Option Kit</p> <p>NOTE: Each kit contains a single 850nm SR XFP fiber module. Only HP supplied XFP modules will operate in the HP 1:10Gb Ethernet BL-c Switch.</p> <p>HP LR XFP Option Kit</p> <p>NOTE: Each kit contains a single 1310nm LR XFP fiber module. Only HP supplied XFP modules will operate in the HP 1:10Gb Ethernet BL-c Switch.</p>	<p>443756 B21</p> <p>443757 B21</p>
Service and Support Offerings	<p>NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.</p> <p>Hardware Services On-site Service</p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic</p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>Support Plus 24</p> <p>Onsite Hardware support 24x7, 4-Hour response and Microsoft O/S Software Technical support offsite, onsite at HP's discretion, 24x7 2-Hour response time including HP holidays, Electronic</p> <p>NOTE: HP Care Pack services for the c7000 and c3000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 and c3000 enclosure Care Pack services.</p> <p>NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 and c3000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.</p> <p>Hardware Support Services On-site Service</p> <p>Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic -</p> <p>NOTE: Uplifts the Ethernet devices to the same level of warranty as the c-class enclosure</p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic</p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>Installation & Start-up Services</p> <p>HP BladeSystem c-Class Infrastructure Installation and Startup Service, Electronic</p> <p>HP BladeSystem Enhanced Network Installation and Startup Service, Electronic</p> <p>ProLiant BL c-Class Blade Server Hardware Installation, Electronic</p> <p>ProLiant BL c-Class Enclosure and Server Blade Hardware Installation, Electronic</p>	<p>UE458E</p> <p>UE459E</p> <p>UE460E</p> <p>UE473E</p> <p>UE477E</p> <p>UE478E</p> <p>UE479E</p> <p>UE480E</p> <p>UE602E</p> <p>UE603E</p> <p>UE493E</p> <p>UE494E</p>

Related Options

NOTE: For more information, customer/resellers can contact
<http://www.hp.com/services/blade-system-services>

Technical Specifications

Shipping Dimensions	Length	290 mm (11.42 in.)	
	Width	368 mm (14.49 in.)	
	Height	60 mm (2.36 in.)	
Shipping Weight		2.0 Kg (4.41 lbs)	
Product Specifications Hardware	Performance	34 Gbps external port bandwidth per BladeSystem enclosure (68 Gbps full duplex)	
		Forwarding rate 1.5 million pps per Gigabit port, (64-byte packets) and 14.8 million pps per 10 Gig port	
		Non-blocking, full-wire speed for all connections Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support.	
	Forwarding Mode	Store and forward	
	MAC Addresses	Supports 16K MAC addresses per switch in a BladeSystem Enclosure	
	Forwarding Table Age Time	1 to 1,000,000 seconds (default: 300 seconds)	
	(Maximum age)		
	Jumbo Frame Support	9278 Byte	
	Multicast Groups	1000	
	Memory	256 MB Main, 64MB flash and 1MB packet buffer per interconnect switch	
Connectors and Cabling	Connector	4 RJ-45 2 10Gb XFP Module cages 1 10Gb CX4 1 DB-9 Management	
	Cable Support	FCC Class A ICES-003 Class A AS/NZS 3548 Class A VCCI Class A	
Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps	
	10 Base-T (full-duplex)	20 Mbps	
	100 Base-TX (half-duplex)	100 Mbps	
	100 Base-TX (full-duplex)	200 Mbps	
	1000 Base-TX (half and full-duplex)	2000 Mbps	
	10Gb (full duplex)	20000 Mbps	
Indicators	For the front panel Ethernet ports, there are 2 LEDs per port.		
	RJ-45 Port Speed LED	RJ-45 and 10 Gb Link/Activity LED	
	Off	10 Mbps	Solid Green Link
	Green	100 Mbps	Blinking Activity
	Amber	1 Gbps	
Dimensions	Length	10.5 in (267.7 mm)	
	Width	7.5 in (192.79 mm)	
	Height	1.1 in (27.94 mm)	
Weight		1.7 Kg (3.7 lbs.)	

Technical Specifications

Environmental Ranges	Temperature Range	
	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-40° to 158° F (-40° to 70° C)
	Relative Humidity (non-condensing)	Operating 5% to 95%
Power Specification	Power Requirements	12VDC: 4.0A, 50 W maximum (per interconnect switch)

Product Specifications Software	Security Features	SSHV2, TACACS and TACACS+ VLANs can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains. The Switch also provides secured access through SSH v2, protecting against IP spoofing as well as DNS spoofing. Support of HTTPS, RADIUS TACACS and TACACS+ enables users to meet their security requirements.	
	Spanning Tree Features	802.1d, 802.1w, 802.1s Industry standard Spanning Tree provides redundancy and the loop avoidance capabilities to keep the network not only up, but operating at peak performance. Based on the industry standard 802.1w, Rapid Spanning Tree Protocol (RSTP) offers fast convergence - reducing packet loss and downtime in high-availability and high resilient networks. Industry-standard based RSTP offers instant failover to secondary links in an unlikely event of primary link failure. This switch also offers Multiple Spanning Tree Protocol (MSTP; 802.1s) for seamless integration into networks running 802.1s. Multiple Spanning Tree enables networks to utilize individual uplinks for separate VLANs thus improving the overall performance of the network. Up to 32 Spanning Tree Groups (STGs) are supported.	
	Trunking Features	802.3ad Reduced downtime in an unlikely event of link failure by supporting link aggregation protocol. This link aggregation is compatible with Cisco Etherchannel® thus providing seamless integration into Cisco® based networks.	
	VLAN Features	Up to 1000 VLANs (802.1Q) can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains.	
	Management Features	This switch provides multiple easy-to-use configuration and management options. For compatibility, the switch offers the same Alteon CLI as the GbE2 family of switches. This switch also uses an industry standard network administrator CLI (comparable to Cisco®). A Web-based management interface enables administrators to easily configure the most advanced features such as Rapid Spanning Tree, Uplink Failure Detection and SNMP management by pointing and clicking. The switch also enables sophisticated administrators to configure and manage the switch through SNMP. Full Support is provided for SNMP v1v2 and v3.	
	QoS Features	Data can be classified in different priority queues to ensure maximum bandwidth availability for time sensitive and mission critical traffic. Data can be prioritized based on 802.1p CoS and DSCP. Data can be easily reclassified from 802.1P to DSCP or from DSCP to	

Technical Specifications

Layer 3 Features

802.1.

The HP 1:10Gb Ethernet BL-c Switch adheres to a strict queue mechanism to ensure important business-sensitive traffic is delivered ahead of other traffic.

- IP Forwarding enables traffic to be forwarded between VLANs without the need of an external router or Layer 3 switch. This reduces traffic in the core network by making Layer 3 routing decisions within the BladeSystem enclosure
- 256 IP interfaces
- 4096 ARP entries
- 2048 Dynamic Route entries
- Global default route
- Static routing support with 128 routing table entries
- Dynamic routing support with entries in routing table
- Dynamic Routing protocol
- RIP v1
- RIP v2
- OSPF
- VRRP(Virtual Router Redundancy Protocol) to maximize high availability in complex network environments

Standards Support

- Compliance
- IEEE 802.3
- 802.3u
- 802.3ab
- 802.1d
- 802.1p
- 802.3ac
- 802.3ad (Static), and 802.1Q
- 802.3x
- 802.1x
- SNMP v1 (RFC 1157)
- RMON v1 (RFC 1757) groups 1, 2, 3, and 9
- MIB-II (RFC 1213)
- Bridge MIB (RFC 1493)
- Interface Group MIB (RFC 2863)
- Ethernet MIB (RFC 1643)
- 802.1Q Extended Bridge MIB (RFC2674)
- Entity MIB (RFC 2037)
- SNMP Trap Convention (RFC 1215)
- Bridge Trap (RFC 1493)
- Remote Monitoring Traps (RFC 1757)
- and HP Enterprise Switch MIBs and Environmental Traps
- IGMP v1 (RFC 1112)
- IGMP v2 (RFC 2236)
- IGMP v3 (RFC 3376)
- SNTP (RFC 1361)
- Telnet (RFC 854)
- TFTP client (RFC 783)
- BootP client, (RFC 2132), and XModem
- QoS (RFC 2474 and RFC 2475)

Technical Specifications

The HP 1:10Gb Ethernet BL-c Switch uses the Differentiated Services (DiffServ) architecture to provide QoS functions. DiffServ is described in IETF RFCs 2474 and 2475.

Safety and Compliance	TUV to UL 60950-1, and CAN/CSA C22.2 No. 60950-1 and to EN 60950-1
Safety Certifications	CE Marking RoHS 5/6 compliant

Electromagnetic Emissions	FCC Part 15 Class A
Certifications FCC Part 15 Class A	EN 55022: 1998 (CISPR22) EN 55024: 1998 (CISPR24) VCCI Class A AS/NZS 3548 Class A CE CNS 13438 Class A MIC MIC

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to http://www.hp.com/go/green . To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.
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The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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