

### Overview

The HP 10Gb Ethernet BL-c Switch is the first c-Class switch to deliver a full 10 Gigabit Ethernet (10GbE) directly to each server blade. Sixteen 10GbE downlinks along with four 10GbE XFP uplinks make this switch the perfect choice for any bandwidth intensive application. Used in conjunction with the NC512m NIC for each server requiring 10GbE, the switch delivers a full set of industry standard Ethernet Layer 2 switching and Layer 3 routing functions, QoS, security and high availability features. The HP 10Gb Ethernet BL-c Switch provides 40Gb of uplink bandwidth making it the perfect choice for data centers transitioning to server virtualization or looking to consolidate bandwidth. 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 10Gb Ethernet BL-c Switch an ideal solution for applications such as iSCSI storage, Video On Demand and High Performance Computer Clustering.

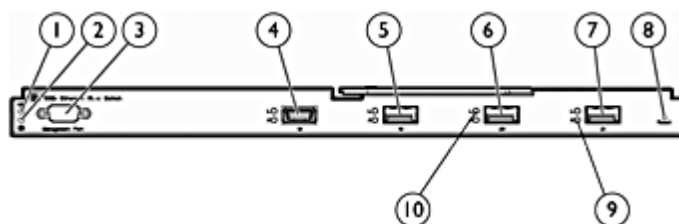


Figure 1 HP 10Gb Ethernet BL-c Switch Front Bezel

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|--------------------------------|--------------------------|
| 1. UID LED                     | 6. 10GbE XFP Module Cage |
| 2. Health LED                  | 7. 10GbE XFP Module Cage |
| 3. DB-9 Serial Management Port | 8. Reset Button          |
| 4. 10GbE XFP Module Cage       | 9. Activity LED          |
| 5. 10GbE XFP Module Cage       | 10. Link LED             |

### What's New

- HP 10GbE BLc Advanced Functionality Software

### At A Glance

#### Performance:

- Non blocking architecture
- Wire speed switching on all four 10GbE uplink ports
- Wire speed switching on all sixteen 10GbE server ports
- Store and forward switching

#### Management:

- Offers simplified management through two CLI options - AlteonOS or iSCLI
- Can be managed through HTTP, HTTPS, SNMP, and Blade Network Technologies' 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 and TACACS+ 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

HP 10Gb Ethernet BL-c Switch

445860-B21

### Compatibility

#### HP ProLiant Servers

HP ProLiant BL460c  
HP ProLiant BL465c  
HP ProLiant BL480c  
HP ProLiant BL685c  
HP ProLiant BL680 G5  
HP ProLiant BL860c

#### ProLiant BL c-Class

#### Server Blade Enclosures

HP BladeSystem c3000 Enclosure

**NOTE:** Maximum one (1) HP 10 Gb Ethernet BL-c Switches per enclosure

HP BladeSystem c7000 Enclosure

**NOTE:** Maximum two (2) HP 10 Gb Ethernet BL-c Switches per enclosure

### Standard Features

<b>Required Network Cabling</b>	10Gb Multimode fiber cable; 62.5/125 or 50/125 microns Singlemode fiber cable: 9/125 micron
<b>Required Network Adapter</b>	<p>NC512m Dual Port 10GbE Multifunction BL-c Adapter</p> <ul style="list-style-type: none"><li>• Dual port 10Gb Ethernet mezzanine cards supported in all HP ProLiant c-Class servers; mezzanine slots 2 and 3 (full height servers) and slot 2 (half height servers)</li><li>• Netxen Linux Socket Acceleration™ with Selective Acceleration™.</li><li>• Remote direct memory access (RDMA) and accelerated iSCSI capability (future release planned)</li></ul> <p>Solution Builder Adapters</p> <ul style="list-style-type: none"><li>• Third party adapters from Chelsio, NetEffect, ServerEngines and others available direct from manufacturers. More information is available at: <a href="http://h18004.www1.hp.com/products/blades/solutions/third-party.html">http://h18004.www1.hp.com/products/blades/solutions/third-party.html</a></li></ul>

<b>Supported Interconnect Bays</b>	The HP 10Gb Ethernet BL-c switch can be installed only in Bays 5/6 and 7/8 of the c7000 enclosure. The HP 10Gb Ethernet BL-c switch can be installed only in Bays 3/4 of the c3000 enclosure.
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<b>Service and Support</b>	<p>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.</p>
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The HP 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 10GbE Advanced Software	HP 10GbE BLc Advanced Functionality Software <b>NOTE:</b> 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.	485194-B21
XFP Options	HP SR XFP Option Kit <b>NOTE:</b> Each kit contains a single 850nm SR XFP fiber module. Only HP supplied XFP modules will operate in the HP 10Gb Ethernet BL-c Switch.	443756 B21
	HP LR XFP Option Kit <b>NOTE:</b> Each kit contains a single 1310nm LR XFP fiber module. Only HP supplied XFP modules will operate in the HP 10Gb Ethernet BL-c Switch.	443757 B21
Network Adapter Options	HP NC512m Dual Port 10GbE Multifunction BL-c Adapter <b>NOTE:</b> An NC512m network adapter card is required for each server blade connecting to the HP 10Gb Ethernet BL-c Switch. <b>NOTE:</b> The NC512m requires 2GB of server memory per active port.	440910-B21
Service and Support Offerings	<p><b>NOTE:</b> 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><b>Hardware Services On-site Service</b></p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE458E</span></p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE459E</span></p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE460E</span></p> <p><b>Support Plus 24</b></p> <p>Onsite Hardware support 24x7, 4-Hour response and Microsoft O/S Software Technical support onsite, onsite at HP's discretion, 24x7 2-Hour response time including HP holidays, Electronic <span style="float: right;">UE473E</span></p> <p><b>NOTE:</b> 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><b>NOTE:</b> 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><b>Hardware Support Services On-site Service</b></p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE477E</span></p> <p><b>NOTE:</b> Uplifts the Ethernet devices to the same level of warranty as the c-class enclosure</p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE478E</span></p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE479E</span></p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE480E</span></p> <p><b>Installation &amp; Start-up Services</b></p> <p>HP BladeSystem c-Class Infrastructure Installation and Startup Service, Electronic <span style="float: right;">UE602E</span></p>	

### Related Options

HP BladeSystem Enhanced Network Installation and Startup Service, Electronic	UE603E
ProLiant BL c-Class Blade Server Hardware Installation, Electronic	UE493E
ProLiant BL c-Class Enclosure and Server Blade Hardware Installation, Electronic	UE494E
<b>NOTE:</b> For more information, customer/resellers can contact <a href="http://www.hp.com/services/bladessystemservices">http://www.hp.com/services/bladessystemservices</a>	

### Technical Specifications

Shipping Dimensions	Length	11.42 in (290 mm)			
	Width	14.49 in (368 mm)			
	Height	2.36 in (60 mm)			
Shipping Weight		4.41 lbs (2.0 kg)			
Product Specifications Hardware	Performance	40 Gbps external port bandwidth per BladeSystem enclosure (80 Gbps full duplex)			
		Forwarding rate Cut Through			
		Non-blocking, full-wire speed for all connections.			
		<b>Forwarding Mode</b>	Store and forward		
		<b>MAC Addresses</b>	Supports 16K MAC addresses per switch in a BladeSystem Enclosure		
		<b>Forwarding Table Age Time</b> (Maximum age)	1 to 1,000,000 seconds (default: 300 seconds)		
		<b>Jumbo Frame Support</b>	12K Byte Jumbo Frames Supported		
		<b>VLANs</b>	1000		
		<b>IGMP Groups</b>	1000		
		<b>Memory</b>	256 MB Main, 64MB flash and 1.5MB packet buffer per interconnect switch		
		Connectors and Cabling	Connector	4 10GbE XFP Module cages 1 DB-9 Management	
			Cable Support	FCC Class A ICES-003 Class A AS/NZS 3548 Class A VCCI Class A	
		Network Transfer Rate	10Gb (half duplex)	10000 Mbps	
			10Gb (full duplex)	20000 Mbps	
		Indicators	For the front panel Ethernet ports, there are 2 LEDs per port.		
	<b>10 Gb Link/Activity LED</b>				
Link LED	Solid Green		Link Active		
	Activity LED	Blinking	Data Activity		
Dimensions	Length	10.5 in (267.7 mm)			
	Width	15.24 in (387.10 mm)			
	Height	1.1 in (27.94 mm)			
Weight		2.72 Kg (6.0 lbs.)			
Environmental Ranges	<b>Temperature Range</b>	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: 5.8A, 70 W maximum (per interconnect switch)			

### Technical Specifications

<b>Product Specifications Software</b>	<b>Security Features</b>	<b>SSHV2, TACACS and TACACS+</b> 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.
	<b>Spanning Tree Features</b>	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 (STG's) are supported
	<b>Trunking Features</b>	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.
	<b>VLAN Features</b>	Up to 1000 VLANs (802.1Q) can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains.
	<b>Management Features</b>	This switch provides multiple easy-to-use configuration and management options. For compatibility, this switch offers the same AlteonOS 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.
	<b>QoS Features</b>	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 802.1. The HP 10Gb Ethernet BL-c Switch adheres to a strict queue mechanism to ensure important business-sensitive traffic is delivered ahead of other traffic.

### Technical Specifications

#### Layer 3 Features

- 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
- 250 IP interfaces
- 4096 ARP entries
- Global default route
- Static routing support with 128 routing table entries
- 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)
- SNMP (RFC 1361)
- Telnet (RFC 854)
- TFTP client (RFC 783)
- BootP client, (RFC 2132), and XModem
- QoS (RFC 2474 and RFC 2475)

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

### Technical Specifications

**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

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**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

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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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