

### Overview

Designed for the c-Class BladeSystem enclosure, the HP GbE2c Layer 2/3 Ethernet Blade Switch for c-Class BladeSystem (GbE2c L2/3) provides a full set of industry standard Gigabit Ethernet Layer 2 switching and layer 3 routing features, sixteen internal downlinks, five uplinks and two internal cross-connects in a single low cost blade solution. The GbE2c L2/3 dramatically reduces cabling, power and cooling requirements compared to stand-alone switches, allowing you to realize the full cost saving benefits of the HP c-Class BladeSystem.

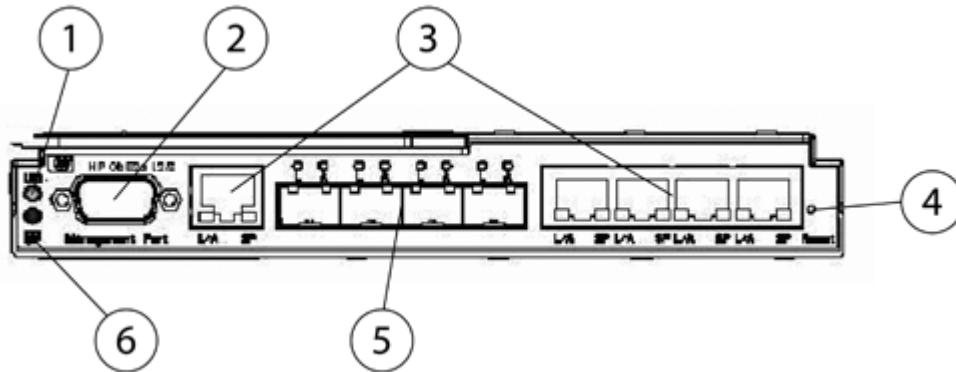


Figure 1 GbE2c Front Bezel

1. UID LED
2. DB-9 Serial Management Port
3. RJ-45 1Gb Uplink Ports
4. Reset Button
5. SFP module cages for optional Fiber Uplinks
6. Health LED

### What's New

- Support for HP ProLiant Generation 6 servers

### At A Glance

#### Performance:

- Wire speed switching on all five 10/100/1000T uplink ports
- Wire speed switching on all sixteen 1Gb server ports
- 71 millions pps (full duplex)
- 16:5 downlink to uplink bandwidth ratio
- Store and Forward Switching

#### Management:

- Offers simplified management
- Can be managed through CLI, HTTP, SNMP
- iSCLI offers a Cisco® compatible CLI to reduce the learning curve.

#### 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

## Overview

- Traffic can be forwarded between VLANs (802.1Q) through IP forwarding preventing traffic from being exposed to the outside network unnecessarily
- Offers TACACS+ Authentication

### Models

Models  
HP GbE2c Layer2/3 Ethernet Blade Switch for c-Class BladeSystem 438030-B21

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### 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)
	1000Base-SX	50/125 $\mu$ m Multimode Fiber, 400 MHz/Km (500 meters) 50/125 $\mu$ m Multimode Fiber, 500 MHz/Km (550 meters) 62.5/125 $\mu$ m Multimode Fiber, 160 MHz/Km (220 meters) 62.5/125 $\mu$ m Multimode Fiber, 200 MHz/Km (275 meters)

### 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 GbE2c Layer 2/3 Ethernet Blade 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 GbE2c Advanced Software	<p>HP GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software</p> <p><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.</p>	485192-B21
GbE2c L 2/3 Option Kit	<p>HP BLc GbE2c Layer 2/3 Fiber SFP Option Kit</p> <p><b>NOTE:</b> Each kit contains two SX SFP fiber modules. Only SFP modules with this part number will operate in the GbE2c Layer 2/3 Ethernet Blade Switch.</p>	440627-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</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><b>Support Plus 24</b></p> <p>Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic</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 Services On-site Service</b></p> <p>Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic -</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, 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><b>Installation &amp; Start-up Services</b></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><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></p>	<p>UE458E</p> <p>UE459E</p> <p>UE460E</p> <p>UE473E</p> <p>UE480E</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>

### 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	10 Gbps external port bandwidth per BladeSystem enclosure (20 Gbps full duplex)			
		Forwarding rate 1.5 million pps per Gigabit port, (64-byte packets)			
		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 8K MAC addresses per switch in a BladeSystem Enclosure		
		Forwarding Table Age Time	1 to 1,000,000 seconds (default: 300 seconds)		
			(Maximum age)		
		VLAN IDs	1000		
		IGMP Groups	64		
		Memory	128 MB Main, 16MB flash and 1MB packet buffer per interconnect switch		
		Connectors and Cabling	Connector	5 RJ-45	
				4 SFP Modules	
				1 DB-9 Management	
Cable Support		FCC Class A			
		ICES-003 Class A			
		AS/NZS 3548 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			
Indicators	For the 5 front panel Ethernet ports, there are 2 LEDs per port.	<b>Speed LED</b>			
		<b>Link/Activity LED</b>			
		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 (27.94mm)			
Weight		1.8 Kg (3.97 lbs.)			

### Technical Specifications

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: 2.0A, 25 W maximum (per interconnect switch)

Product Specifications Software	<b>Security Features</b>	<p><b>SSHV2, TACACS and TACACS+</b></p> <p>VLANs can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains. GbE2c also provides secured access through SSH v2, protecting against IP spoofing as well as DNS spoofing. GbE2c enables users to meet their security requirements by providing support of HTTPS, RADIUS and TACACS.</p>
	<b>Spanning Tree Features</b>	<p>802.1d, 802.1w, 802.1s</p> <p>GbE2c's industry standard Spanning Tree provides redundancy and the loop avoidance capabilities to keep the network not only up, but operating at peak performance</p> <p>Based on the industry standard 802.1w, GbE2c Rapid Spanning Tree Protocol (RSTP) offers fast convergence - reducing packet loss and downtime in high-availability and high resilient networks. GbE2c's industry-standard based RSTP offers instant failover to secondary links in an unlikely event of primary link failure.</p> <p>GbE2c 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.</p>
	<b>Trunking Features</b>	<p>802.3ad</p> <p>GbE2c reduces downtime in an unlikely event of link failure by supporting link aggregation protocol. GbE2c link aggregation is compatible with Cisco Etherchannel® thus providing seamless integration into Cisco® based networks.</p>
	<b>VLAN Features</b>	<p>In GbE2c up to 256 VLANs (802.1Q) can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains.</p>
	<b>Management Features</b>	<p>GbE2c provides multiple easy-to-use configuration and management options. For compatibility, the GbE2c offers the same CLI as the GbE2. The GbE2c will also be software upgradeable to use an industry standard network administrator CLI (comparable to Cisco®) in a future release.</p> <p>GbE2c's 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.</p> <p>GbE2c also enables sophisticated administrators to configure and manage the switch through SNMP. GbE2c provides full support for SNMP v1v2 and v3.</p>
	<b>QoS Features</b>	<p>Data can be classified in different priority queues to ensure maximum bandwidth availability for time sensitive and mission critical traffic</p> <p>Data can be prioritized based on 802.1p CoS and DSCP</p>

### Technical Specifications

Data can be easily reclassified from 802.1P to DSCP or from DSCP to 802.1P. The GbE2c Layer 2/3 Ethernet Blade Switch adheres to a strict queue mechanism to ensure important business sensitive traffic is delivered ahead of other traffic.

#### 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
- 128 IP interfaces
- 4096 ARP entries
- Global default route
- Static routing support with 128 routing table entries
- Dynamic routing support with entries in routing table (4K entries)
- Routing protocol (OSPF, RIPv1/v2)
- 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)
- SNTP (RFC 1361)
- Telnet (RFC 854)
- TFTP client (RFC 783)
- BootP client, (RFC 2132), and XModem
- QoS (RFC 2474 and RFC 2475)

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The GbE2c Layer 2/3 Ethernet Blade Switch uses the Differentiated Services (DiffServ) architecture to provide QoS functions. DiffServ is described in IETF RFCs 2474 and 2475.

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

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<b>Electromagnetic Emissions</b>	FCC Part 15 Class A
<b>Certifications FCC Part 15 Class A</b>	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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<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	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 <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> . To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> 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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