

# HP BladeSystem Ethernet interconnects

Family data sheet



HP 1:10Gb Ethernet BL-c Switch



Cisco Catalyst Blade Switch 3020



HP 10Gb Ethernet BL-c Switch



HP GbE2c Layer 2/3 Ethernet Blade Switch



## Simplify your network with our complete portfolio of Ethernet blade switches

HP has set out to redefine the data center. We started with our BladeSystem c-Class, a simple, modular infrastructure that is designed to save you time, energy and money—regardless of what you put inside. But to be efficient, a data center must be able to access and disseminate data instantaneously, securely and reliably. That's where the HP portfolio of Ethernet switching products can really make a difference. BladeSystem c-Class switches provide a rich set of networking features such as advanced layer 2/3 switching, security, VLANs, Spanning Tree Protocol, network failover recovery and resiliency. They lower the cost of maintenance and operation and increase network reliability by sharing the same redundant power and cooling resources as the server blades, while at the same time aggregating cables and reducing wiring clutter. In fact, for a typical enclosure, you can reduce the number of cables from 32 to just two.

## An Ethernet switch for every application

Whether you're looking for basic network connectivity for a remote office or a high bandwidth low latency link for a high-performance computing cluster, HP Ethernet switches provide the solution. You can choose from a simple-to-configure 1Gb switch, a 1Gb/10Gb hybrid switch designed especially for data centers in transition, or a powerful all 10Gb switch perfect for handling data from today's multi-processor virtualized servers.

If your data center is challenged with an ever-increasing appetite for bandwidth, look to HP for the answer. When coupled with our high performance server blades and mezzanine cards, our Ethernet switches will also support TOE (TCP/IP Offload Engine), accelerated iSCSI and RDMA all over a single network connection. These protocols are designed to move data more efficiently and with less overhead than standard methods. It's all about value, reliability, connectivity and scalability. Redefining the data center and simplifying your job, that's what the HP Ethernet blade switch portfolio is all about.

## 10Gb switches

### HP 10Gb Ethernet BL-c Switch

The HP 10Gb Ethernet BL-c Switch is a high-performance, low-latency 10Gb layer 3 switch optimized for bandwidth-intensive applications. It provides resiliency, high availability and fault tolerance at an affordable price. Twenty 10Gb ports (16 downlinks and four uplinks) provide switching power to handle the most

How do you reduce network costs while increasing server density and performance? With BladeSystem c-Class Ethernet switches.

demanding applications, including video on demand, high-performance computing clusters and iSCSI storage. The 16 10Gb downlinks are internal to the enclosure, saving the cost of expensive optical connections, while the 10Gb Ethernet BL-c Switch uplinks accept both SR and LR XFP modules for added flexibility.

The 10Gb Ethernet BL-c Switch provides rich layer 2-3 switching, advanced QoS, support for layer 3 Static and Dynamic Routing Protocols, Virtual Router Redundancy Protocol (VRRP)-based high availability, and filter-based security that is configurable to allow or deny traffic based on MAC address, IP address or virtual local area network (VLAN) ID.

The 10Gb Ethernet BL-c Switch works in conjunction with the HP NC512m 10Gb Dual Port Adapter. Each adapter provides two 10Gb ports to the switch and supports stateful TCP offloading, accelerated iSCSI and RDMA for both Microsoft® Windows® and Linux.

As server utilization increases and data centers move towards virtualization, the availability of bandwidth becomes critical. The 10Gb Ethernet BL-c Switch has a 400Gb (full duplex) switching matrix, making it an ideal switch for deployment in virtual server environments.

### HP 1:10Gb Ethernet BL-c Switch

The HP 1:10Gb Ethernet BL-c Switch is designed specifically for the data center transitioning from 1Gb to 10Gb. A single switch lets you use your existing 10/100/1000Mb infrastructure today and step up to 10Gb at your own pace as needs develop. The 1:10Gb Ethernet BL-c Switch is configured with 16 1Gb downlinks, four 1Gb RJ-45 uplinks, three 10Gb uplinks (one CX4 and two XFP) and one 10Gb cross-connect.

With 34Gb of combined uplink bandwidth, this switch is totally non-blocking and is perfect for applications such as combining iSCSI storage and network access on a single switch. Data centers looking to aggregate uplinks to save on cable and enterprise switch ports can combine the equivalent of ten 1Gb ports onto a single 10Gb link.

The 1:10Gb Ethernet BL-c Switch provides layer 3 routing which can reduce the number of broadcast domains, increasing network performance and efficiency. By using layer 3, inter-VLAN routing becomes more scalable and efficient than equivalent layer 2 networks that rely on Spanning Tree Protocol alone. Quality of service (QoS) support means data can be classified in different priority queues to provide enhanced bandwidth availability for time-sensitive and mission-critical traffic.

The 1:10Gb Ethernet BL-c Switch is an ideal choice for users of the HP BladeSystem c-Class enclosure because of its unique ability to support both 1Gb and 10Gb uplinks, non-blocking architecture, high availability and advanced feature set.

### XFP modules

Both the 10Gb Ethernet BL-c Switch and the 1:10Gb Ethernet BL-c Switch use XFP modules supplied by HP. Choose from the SR 850nm version, for cable lengths up to 82 meters over multi-mode fiber; or the LR 1310nm version for cable lengths up to 10 kilometers over single-mode fiber.

## 1Gb switches

### Cisco Catalyst Blade Switch 3020

The Cisco Catalyst Blade Switch 3020 was designed by Cisco for seamless integration into the BladeSystem c-Class enclosure. This lets it take advantage of the improved efficiency, lower cost and greater flexibility of the c-Class blade enclosure design.

The Catalyst Blade Switch 3020 provides an integrated platform that delivers Cisco resiliency, advanced security and enhanced manageability to the server edge while dramatically reducing cables. The Catalyst Blade Switch 3020 is flexible to fit the most demanding data center applications, providing 16 internal downlinks and eight 1Gb uplinks. Up to four uplinks can be fiber connections when using an optional Cisco SFP Fiber Module. In addition, two uplinks can be directed as internal cross-connects. To further capitalize on your current Cisco network infrastructure, you can run CiscoWorks management solutions.

## Technical specifications



	<b>HP 10Gb Ethernet BL-c Switch</b>	<b>HP 1:10Gb Ethernet BL-c Switch</b>	<b>Cisco Catalyst Blade Switch 3020</b>	<b>HP GbE2c Layer 2/3 Ethernet Blade Switch</b>	<b>HP GbE2c Ethernet Blade Switch</b>
<b>Blade type</b>	Double bay	Single bay	Single bay	Single bay	Single bay
<b>Performance</b>	200 Gb switching fabric 256 MB SDRAM 64 MB flash memory	120 Gb switching fabric 256 MB SDRAM 64 MB flash memory	48 Gb switching fabric 128 MB DDR SDRAM 32 MB flash memory	48 Gb switching fabric 128 MB DDR SDRAM 16 MB flash memory	48 Gb switching fabric 128 MB DDR SDRAM 16 MB flash memory
<b>Port configuration</b>	<ul style="list-style-type: none"> <li>16 internal 10 Gb downlinks</li> <li>4 external 10 Gb XFP uplinks</li> <li>1 management console port</li> <li>Internal interface to c-Class Onboard Administrator Module</li> </ul>	<ul style="list-style-type: none"> <li>16 internal 1 Gb downlinks</li> <li>4 external 10/100/1000BASE-T uplinks</li> <li>1 external 10 Gb CX-4 uplink;</li> <li>2 external 10 Gb XFP module ports</li> <li>1 internal 10 Gb cross-connect</li> <li>1 management console port</li> <li>Internal interface to c-Class Onboard Administrator Module</li> </ul>	<ul style="list-style-type: none"> <li>16 internal 1 Gb downlinks</li> <li>8 external 10/100/1000 SFP/BASE-T uplinks (2 configurable as cross-connects)</li> <li>Management console port</li> <li>Internal interface to c-Class Onboard Administrator Module</li> </ul>	<ul style="list-style-type: none"> <li>16 internal 1 Gb downlinks</li> <li>5 external 10/100/1000 SFP/BASE-T uplinks</li> <li>2 internal cross-connects</li> <li>1 management console port</li> <li>Internal interface to c-Class Onboard Administrator Module</li> </ul>	<ul style="list-style-type: none"> <li>16 internal 1 Gb downlinks</li> <li>5 external 10/100/1000 SFP/BASE-T uplinks, RJ-45 uplinks</li> <li>2 internal cross-connects</li> <li>1 management console port</li> <li>Internal interface to c-Class Onboard Administrator Module</li> </ul>
<b>Media types</b>	XFP SR/LR	Copper RJ-45, CX-4, XFP SR/LR	Copper RJ-45; Fiber SX/LX SFP (maximum of four)	Copper RJ-45; Fiber SX SFP (maximum of four)	Copper RJ-45
<b>Management features</b>	CLI; iSCLI, SNMP v1, v2, v3 HTTP, HTTPS; NTP server support; RMON	CLI; iSCLI, SNMP v1, v2, v3 HTTP, HTTPS; NTP server support; RMON	CiscoWorks; SNMP v1; v2c, and v3; Telnet; CLI	CLI; iSCLI, SNMP v1, v2, v3 HTTP, HTTPS; NTP server support; RMON	CLI; iSCLI, SNMP v1, v2, v3 HTTP, HTTPS; NTP server support; RMON
<b>High-availability features</b>	Link Aggregation Protocol; uplink failure detection; Spanning Tree	Link Aggregation Protocol; uplink failure detection; Spanning Tree	Per VLAN Spanning Tree Plus; Uplink Fast; Port Fast; Bridge Protocol Data Unit	Link Aggregation Protocol; uplink failure detection; Spanning Tree	Link Aggregation Protocol; uplink failure detection; Spanning Tree
<b>Protocols supported</b>	SSH v2, TACACS, TACACS+, RADIUS, 802.3, 802.3u, 802.3ab, 802.1d, 802.1p, 802.3ac, 802.3ad (Static), and 802.1Q, 802.3x, 802.1x, 802.1Q, IGMP v1, IGMP v2 BootP, QoS (RFC 2474 and RFC 2475)	SSH v2, TACACS, TACACS+, RADIUS, 802.3, 802.3u, 802.3ab, 802.1d, 802.1p, 802.3ac, 802.3ad (Static), and 802.1Q, 802.3x, 802.1x, 802.1Q, IGMP v1, IGMP v2 BootP, QoS (RFC 2474 and RFC 2475)	SSH v2, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1D, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z	SSH v2, TACACS, TACACS+, RADIUS, 802.3, 802.3u, 802.3ab, 802.1d, 802.1p, 802.3ac, 802.3ad (Static), and 802.1Q, 802.3x, 802.1x, 802.1Q, IGMP v1, IGMP v2 BootP, QoS (RFC 2474 and RFC 2475)	SSH v2, TACACS, TACACS+, RADIUS, 802.3, 802.3u, 802.3ab, 802.1d, 802.1s, 802.1w, 802.1p, 802.3ac, 802.3ad (Static), and 802.1Q, IGMP Snooping, BOOTP
<b>Maximum per c7000 enclosure</b>	2	8	8	8	8
<b>Options available</b>	XFP 850nm SR module (PN 443756-B21) XFP 1310nm LR module (PN 443757-B21)	XFP 850nm SR module (PN 443756-B21) XFP 1310nm LR module (PN 443757-B21)	1000Base SX Fiber SFP Module (PN 378929-B21)	1000Base SX Fiber SFP Module kit (PN 440627-B21) (maximum of 2 kits per switch)	None
<b>Warranty (parts/labor/onsite)</b>	1-year/1-year/1-year	1-year/1-year/1-year	1-year/1-year/1-year, 3-year software updates	1-year/1-year/1-year	1-year/1-year/1-year

By utilizing the advanced Cisco end-to-end management framework, you can simplify current and future deployments, reducing implementation, ownership and management costs. The Catalyst Blade Switch 3020 is an ideal choice for enterprise and data center environments. Integrating Cisco IOS networking directly into the BladeSystem joins the fabric of the Cisco network infrastructure with the HP computing fabric to deliver unsurpassed control of your data applications.

### HP GbE2c Layer 2/3 Ethernet Blade Switch

Expanding on the features of the GbE2c, the HP GbE2c Layer 2/3 Ethernet Blade Switch adds fiber uplinks and layer 3 routing to the GbE2c family of switches. In addition to a full set of advanced layer 2 features, this switch now provides the added benefits of layer 3 routing and quality of service (QoS) queuing for enhanced IP-based switching and filtering.

With layer 3 routing, network traffic can be managed much more efficiently and broadcast traffic between servers can remain within the enclosure. Security features provide added protection for switch configuration data, while packet filtering helps secure and segment sensitive traffic or network access.

The GbE2c Layer 2/3 Ethernet Blade Switch has 16 downlinks, five uplinks and two cross-connects. Up to four of the uplinks can be fiber connections with the addition of the SFP module kit—part number 440627-B21.

The GbE2c Layer 2/3 Ethernet Blade Switch is the lowest-priced fully featured layer 3 blade switch on the market today.\* This makes it an ideal choice for a wide range of networking and data center applications.

### HP GbE2c Ethernet Blade Switch

The HP GbE2c Ethernet Blade Switch is designed specifically for the data center that requires superior efficiency in a low-cost, standards-based, manageable blade switch. Designed for the BladeSystem c-Class enclosure, the GbE2c Switch provides 16 internal downlinks, five uplinks and two internal cross-connects. The GbE2c Switch provides a full set of advanced layer 2 features, including extensive support for VLANs, Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP) and Uplink Failure Detection (UDT).

High availability in layer 2 verifies that mission-critical traffic is not impacted in the unlikely case of a switch or power failure. And, using the GbE2c Switch dramatically reduces cabling, and power and cooling requirements compared to external switches, allowing you to realize the full benefits of the BladeSystem c-Class.

The GbE2c Switch helps protect your investment with nearly continuous enhancements such as a new industry-standard CLI. Along with simplified management, wire speed performance and redundant path capabilities, the GbE2c Switch offers the best price/performance ratio of all the HP BladeSystem Ethernet switch options.

The GbE2c Switch is an ideal choice for the majority of data center basic switching applications. That's because of its port density, price/performance ratio, high availability and advanced layer 2 feature set.

\*As of July 2007.

## Financial services

HP Financial Services provides innovative financing and financial asset management programs to help customers cost-effectively acquire, manage and ultimately retire their HP solutions. For more information on these services, please contact your local HP representative, or visit [www.hp.com/go/hpfinancialservices](http://www.hp.com/go/hpfinancialservices).

## For more information

For more information about the HP BladeSystem c-Class Ethernet solutions, contact your local HP representative, or visit [www.hp.com/go/bladesystem/interconnects](http://www.hp.com/go/bladesystem/interconnects).

## HP Services

HP Care Pack Services offer upgraded service levels delivering nearly continuous care to extend and expand your standard product warranty.<sup>1</sup> These easy-to-buy, easy-to-use support packages help you make the most of your hardware and software investments. And they let you choose the implementation and support levels that meet your business requirements, from basic to mission-critical.

### Providing successful network deployments

HP Enhanced Network Installation and Startup Service for HP BladeSystem Switches provides advanced configuration and testing of BladeSystem interconnect switches to enable correct implementation of network protocols—such as Spanning Tree Protocol—and access to advanced features like virtual LAN (VLAN), security and quality of service (QoS), which can enhance the performance, scalability and reliability of your data center network.

### Delivering enhanced hardware support

Increased availability and productivity with integrated rapid-response support, covering your HP BladeSystem hardware. Choose from 24x7 or 13x5 coverage, depending on your business requirements. Whichever option you select, you can enhance the return on your BladeSystem investment with consistent support levels across potentially geographically dispersed sites. This service provides same-day onsite assistance within four hours for service issues that cannot be resolved remotely.

Hardware support services are available for the BladeSystem enclosure, ProLiant BL server blade, and BladeSystem SAN switches.

- *Hardware support for HP BladeSystem enclosure*—covers the enclosure, patch panels, HP-supported Ethernet network interconnects, power enclosure with power supplies, and power distribution
- *Hardware support for ProLiant BL server blade*—covers the blade server and all HP-branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server
- *Hardware support for HP BladeSystem SAN switches*—covers the HP BladeSystem Brocade and McDATA SAN switches that are deployed as part of the HP BladeSystem infrastructure

For more information on these services, please contact your local HP representative or visit [www.hp.com/services/bladesystemsolutions](http://www.hp.com/services/bladesystemsolutions).

<sup>1</sup>HP Care Pack services for the c7000 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 Enclosure Care Pack services.

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For more information, visit [www.hp.com/go/bladesystem/interconnects](http://www.hp.com/go/bladesystem/interconnects)

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