



HP 1:10 Gb Ethernet Blade Switch for HP BladeSystem c-Class



Introducing the HP 1:10Gb Ethernet Blade Switch for BladeSystem c-Class: a high-performance managed switch solution with high speed 10Gb and 1Gb uplinks, advanced Layer 2 high availability features and advanced Layer 3 static and dynamic routing protocols.

Overview

Designed for the BladeSystem c-Class enclosure, the HP 1:10Gb Ethernet Blade Switch for BladeSystem c-Class delivers a combination of 10Gb Ethernet and 1Gb Ethernet ports for maximum flexibility in deploying next-generation networks.

The 1:10Gb Ethernet Blade Switch has a combination of 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 Blade Switch dramatically reduces cabling, power and cooling requirements compared to stand-alone switches, while providing over 30Gb of uplink bandwidth to handle the most demanding applications.

With a full set of dynamic routing features such as RIP and OSPF, the 1:10 Gb blade switch offers true consolidation of access and distribution layer switches into one easy to manage switch. A combination of excellent performance (low latency, wire speed performance for layer 2 and layer 3 packets), low power consumption, and high

availability and QoS features implemented for layer 2 and 3 makes the 1:10 Gb switch the most affordable solution for High Performance Computing environments as well as SMB markets.

Performance:

- Non blocking architecture
- Wire speed switching on all three 10Gb uplink ports
- Wire speed switching on all four 10/100/1000T RJ-45 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: iSCLI offers an industry-standard CLI to reduce the learning curve— or the easy to use BLADEOS CLI
- Can also be managed through HTTP, HTTPS, and SNMP. BladeHarmony Manager, a GUI application allows multiple switches to be upgraded at scheduled times.
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An embedded sFlow agent on the switch can be used to visualize traffic flows volume in a network to help with capacity planning, pinpoint usual or malicious behavior, billing and other tasks*

Security:

- Robust ACLs provide maximum security
- Port security based on 802.1x limits access to unwanted users
- Secured access through SSH and HTTPS (SSL)
- RADIUS Authentication
- TACACS+ Authentication
- Traffic can be forwarded between VLANs (802.1Q) through IP forwarding—which

- * Available with optional future software release

prevents traffic from being exposed unnecessarily to the outside network

Ideal environment

Data centers in transition

- A combination of both 1Gb and 10Gb uplinks provide maximum flexibility
- Reduce cabling by replacing multiple low bandwidth uplinks with a single 10Gb connection
- Copper, SR and LR fiber connections
- Layer 2/3 at the enclosure level reduces network traffic
- SNMP traps and easy to read Sys log messages keep administrators well informed of any link changes or outages so corrective actions can be performed in timely manner.

Key vertical applications such as Media, Financial, Scientific, or Application Service Providers

- High bandwidth uplinks accommodate the most demanding applications
- High availability maintains system uptime with minimum downtime
- Applications can be configured in separate VLANs to provide security against unauthorized access
- Private VLAN Edge provides Layer 2 isolation between the ports within the same broadcast domain, only allowing communication with a given uplink*

Mainstream/mid-sized data centers and departments, branch offices

- A fully featured layer 2 and layer 3 switch with 1Gb and 10Gb uplinks that resides within the blade enclosure
- Provides easy access to the switch via SNMP (v1, v2 and v3), HTTP/HTTPS SSH and intuitive web based interface
- Any to any port mirroring enables administrators to monitor all traffic entering and leaving the BladeSystem enclosure.

Key Benefits

The HP 1:10Gb Ethernet Blade Switch is designed specifically for the data center transitioning from 1Gb to 10Gb. This advanced switch lets you use your existing 10/100/1000Mb infrastructure today and step up to 10Gb at your own pace as needs develop.

High performance

- The HP 1:10Gb Ethernet Blade Switch delivers the highest available switching performance for the HP BladeSystem at a very attractive price.
- Up to 1.5 million pps per 1Gb port Forwarding rate, (64-byte packets) and 14.8 million pps per 10Gb port.
- Wire speed switching for incoming or outgoing traffic, providing up to 120Gbps of full duplex switching capacity.

Comprehensive Layer 2 features

- The HP 1:10Gb Ethernet Blade Switch provides a full set of advanced Layer 2 features including extensive support for VLANs, Spanning Tree, Rapid Spanning Tree, Multiple Spanning Tree and Uplink Failure Detection.
- High availability in Layer 2 ensures that mission critical traffic is not impacted in the unlikely event of a switch or power failure.
- IGMP v3 Snooping* boosts overall network performance and conserves bandwidth, by only forwarding multicast traffic to the clients that have expressed interest in receiving such packets. IGMP Snooping also conserves CPU cycles of the servers, thus avoiding the cost of unnecessary server upgrades.
- Network administrators can configure VLANs to logically separate traffic and contain broadcasts improving the overall performance while improving security. Administrators can easily add or remove users from VLANs based on their department or job functions.
- VLANs can be configured to segregate data, thus 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.
- The switch enables users to meet their security requirements by supporting HTTPS, RADIUS and TACACS+.

Full support for Layer 3 routing

- By adding Layer 3 routing at the enclosure level, network administrators now have more power, flexibility, and security capabilities at their command. Network traffic can be managed much more efficiently and broadcast traffic between servers is contained within the enclosure.

* Available with optional software release.

- Security features provide added protection for switch configuration data, while packet filtering helps secure and segment sensitive traffic or network access.
- Layer 3 routing with OSPF enhancements can reduce the number of broadcast domains, increasing network performance and efficiency.
- Layer 3 IP forwarding makes inter-VLAN routing much more scalable and efficient than equivalent layer 2 networks that rely on spanning tree alone.
- Easier management and troubleshooting is achieved by creating smaller "troubleshooting domains."
- Virtual Router Redundancy Protocol (VRRP) allows multiple switches to process traffic in an active-active configuration, allowing all switches in a VRRP group to process traffic simultaneously, ensuring maximum performance and fast, seamless failover.

High availability and resiliency

The HP 1:10Gb Ethernet Blade Switch provides a full set of advanced support for high availability and resiliency features such as Spanning Tree, Rapid Spanning Tree, Multiple Spanning Tree and Uplink Failure Detection.

- High availability ensures that mission critical traffic is not impacted in the unlikely case of a switch or power failure.
- Hot Links* provides basic link redundancy with fast recovery for network topologies that require Spanning Tree to be turned off.*
- Uplink Failure Detection (UFD) supports network adapter teaming, and allows the switch to monitor specific uplink ports to detect link failures.
- Compatibility with Cisco® EtherChannel for trunking to non-HP devices
- 802.1d Spanning Tree Protocol (STP) ensures that only one path to a destination is available at any one time by detecting loops and blocking switch ports as required.
- 802.1s Multiple Spanning Tree Protocol (MSTP) provides seamless integration, resiliency and availability for network topologies utilizing Virtual LANs (VLANs) into networks running 802.1s.
- MSTP enables networks to use individual uplinks for separate VLANs, thus improving the overall performance of the network.
- MSTP also enables Network administrators to map multiple VLANs to a reduced number of

Spanning Tree instances to provide multiple forwarding paths and load balancing for data traffic.

- DHCP opt82* – provides the underlying technology for the first implementation of BLADE's ServerMobility™, in which an IP address would be "assigned" to a specific chassis/slot location, independent of the underlying physical server.
- Internet Group Management Protocol (IGMP) Snooping allows the switch to intercept IGMP packets to build multicast tables for hosts that want to receive or stop receiving multicast streams. This feature greatly increases the performance of networks and frees up network bandwidth for multicast applications such as video streaming.
- Networks that experience heavy multicast traffic benefit from the ability to "prune" the traffic so that it travels only those hosts that require that multicast frames.
- Compatibility with Cisco® PortFast feature allows a port to transition rapidly to forwarding state upon bootup, without the usual Spanning Tree calculation period that may cause some applications to time out.
- DHCP opt82* – provides the underlying technology for the first implementation of BLADE's ServerMobility™, in which an IP address would be "assigned" to a specific chassis/slot location, independent of the underlying physical server.

HP 1:10Gb Ethernet Blade Switch deployment applications

The 1:10Gb Ethernet switch is ideal for networks transitioning to 10Gb Ethernet. It improves performance with 10Gb Uplinks directly from the BladeSystem enclosure, which can handle the most demanding applications such as High Performance Computing clusters, Voice Over IP, Video on Demand, video conferencing, image rendering, and server virtualization.

The 1:10Gb Ethernet Switch can also eliminate the complexity of managing separate networking and storage fabrics. By consolidating both networking and iSCSI storage onto 10Gb Ethernet, significant cost of ownership benefits can be realized, without impacting network performance.

* Available with optional software release.

1:10Gb switch Specifications Table

Performance and Form Factor

Blade Type	Single bay
Performance	120Gb Switching fabric 128MB SDRAM 16MB Flash memory
Port Configuration	16 Internal 1Gb Downlinks 4 External 10/100/1000BASE-T Uplinks 1 External 10Gb CX4 Uplink 2 External 10Gb XFP ports 1 Internal 10Gb cross-connect
Media Types	1 Management Console Port RJ-45 Copper XFP Fiber SR/LR CX4 copper

Management and Protocols

Management Features	Dual mode CLI: - BLADEOS and ISCLI SNMP v1, v2, v3 HTTP, HTTPS NTP sever support RMON
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High Availability Features	Link Layer Discovery Protocol* Link Aggregation Protocol Uplink failure detection Unidirectional Link Detection (UDLD)* Spanning Tree Virtual Router Redundancy Protocol (VRRP)
Protocols Supported	SSH v2, TACACS+, RADIUS, 802.3, 802.3u, 802.3ab, 802.1AB*, 802.1d, 802.1s, 802.1w, 802.1p, 802.3ac, 802.1x, 802.3ad (LACP and Static Trunking), 802.3ah*, and 802.1Q, IGMP Snooping(v1, v2 and v3)*, BOOTP and DHCP, IPv6 mgmt*

Deployment

Max per Enclosure	8
Options Available	10GbE XFP 850nm SR module – part number BN-CKM-SR 10GbE Short Range XFP Copper Transceiver – part number BN-CKM-X-CX4 (the above transceivers are available from BLADE Network Technologies) XFP 850nm SR module – PN 443756-B21 XFP 1310nm LR module – PN 443757-B21 Adv. Function Software (HP 1:10 GbE BLc ADVd FNCT SW) – PN 485193-B21
Warranty - year(s) (parts/labor/onsite)	1-1-1

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For more information about transceiver modules available from BLADE Network Technologies, visit the BLADE Web site at: <http://www.bladenetwork.net/Transceivers.html>

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* Available with optional software release.