



# GbE2c Layer 2/3 Ethernet Blade Switch for HP c-Class BladeSystem



## Overview

Designed for the c-Class BladeSystem enclosure, the HP GbE2c Layer 2/3 Ethernet Blade Switch (GbE2c Layer 2/3) provides a full set of Layer 2 switching and Layer 3 routing features, sixteen internal downlinks, five uplinks and two internal cross-connects in a single low cost blade switch. Four of the five uplinks can be either copper or fiber using optional SFP fiber modules. The GbE2c Layer 2/3 Switch dramatically reduces cabling, power and cooling requirements compared to external stand-alone switches, allowing you to realize the full benefits of the HP c-Class BladeSystem.

The HP GbE2c Layer 2/3 Ethernet Blade Switch builds on the heritage of the GbE2 switch family by delivering on-going enhancements such as a new "industry standard" CLI, Layer 3 routing, high availability features and SFP Fiber uplink ports. Along with simplified management, wire-speed performance, redundant path capabilities and HP's world class service and support, the HP GbE2c Layer 2/3 Ethernet Blade Switch remains the price/performance leader of all blade switches

## What's New

A new addition to the family of 1Gb Ethernet switches, the GbE2c Layer 2/3 Ethernet Blade Switch now boasts low cost SFP fiber uplinks that allows you the flexibility to choose between fiber or RJ-45 copper uplinks. With layer 3 routing, filtering and QOS queuing the GbE2c Layer 2/3 switch becomes the perfect choice for high bandwidth switching applications within the enclosure.

## Performance

- Wire speed switching on all five 1Gb uplink ports
- Wire speed switching on all sixteen server ports
- Non blocking architecture
- 20Gb full duplex bandwidth

## Management

- Offers simplified management
- "Industry-standard" CLI
- Can be managed through CLI, HTTP, and SNMP (v1, v2 and v3)
- Password-enabled access restricts switch management to authorized users only

## Options

- 410917-B21 - Qty. 1 GbE2c Ethernet Blade Switch for c-Class BladeSystem
- UE478E - Qty. 1 HP CarePack 24x7 Enhanced three-year warranty.
- UE603E - Qty. 1 BladeSystem Enhanced Network Configuration Services

## Security

- Secured access through SSH
- Offers RADIUS Authentication
- Offers TACACS+ Authentication

## Ideal environment

Ideal for...

### Large enterprise data centers

- Up to 40Gb full duplex bandwidth when using two switches
- All Ports can be trunked together to meet high bandwidth demands
- Standards-based MSTP 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.



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

- Provides high availability that keeps systems up with minimum downtime
- Applications can be configured in separate VLANs to provide security against unauthorized accesses
- SNMP traps and easy to read Sylog messages keep administrators well informed of any link changes or outages so corrective actions can be performed in timely manner.

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

- A fully featured layer 2/layer 3 switch 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 chassis.

## **Key Benefits**

The HP GbE2c Layer 2/3 Switch is designed specifically for the data center requiring superior efficiency in a low cost, standards based, manageable blade switch solution.

### **High performance (10/100/1000 Mbps)**

- The HP GbE2c Layer 2/3 Switch delivers the highest available switching performance for the HP BladeSystem at a very attractive price. With its full set of Layer 2 features and seamless integration into any network, Layer 2/3 is a perfect fit for deployment in the HP BladeSystem enclosure.
- The GbE2c provides wire speed switching for incoming or outgoing traffic, providing up to 48Gbps of switching capacity or 35.7 Million packets per second switching performance.
- With the layer 2/3 GbE2c, HP continues its leadership in offering the best price/performance ratio in high performance switching. No other blade switch from any other vendor delivers this much performance at this price.

## **Comprehensive Layer 2 features**

The HP GbE2c Switch provides a full set of advanced Layer 2 features including extensive support for VLANs, Spanning Tree, Rapid Spanning, Multiple Spanning Tree and Uplink Failure Detection.

- High availability in Layer 2 ensures that mission critical traffic is not impacted in the unlikely case of a switch or power failure.
- Overall network performance and bandwidth conservation can be boosted with IGMP Snooping which only forwards multicast traffic to the clients that have expressed interest in receiving such packets. The GbE2c's IGMP Snooping capability not only improves the overall bandwidth but 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.
- Security VLANs can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains. The GbE2c Layer 2/3 Switch also provides secured access through SSH v2, protecting against IP spoofing as well as DNS spoofing. The GbE2c enables users to meet their security requirements by providing support of HTTPS, RADIUS and TACACS+.

## **Full support for Layer 3 routing**

By adding Layer 3 routing to the HP GbE2c switch, 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 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.

- Layer 3 can reduce the number of broadcast domains, increasing network performance and efficiency.
- Using Layer 3, inter-VLAN routing becomes much more scalable and efficient than



equivalent layer 2 networks that rely on spanning tree alone.

- Easier management and troubleshooting by creating smaller "troubleshooting domains".
- High availability in Layer 3 is achieved with a special extended version of Virtual Router Redundancy Protocol (VRRP) that allows Multiple GbE2c Layer 2/3 Switches to process traffic in an active-active configuration. All GbE2c L2/3 switches in a VRRP group can process traffic simultaneously, ensuring maximum performance and fast and seamless failover in the unlikely event of a failure.

### **Easy-to-use, simple network management**

The 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 GbE2c Layer 2/3 switch also enables sophisticated administrators to configure and manage the switch through SNMP. It provides full support for SNMP v1/2/3.

### **High availability and resiliency**

High availability ensures that mission critical traffic is not impacted in the unlikely case of a switch or power failure. The HP GbE2c Layer 2/3 provides a full set of advanced support for high availability and resiliency features such as Spanning Tree, Rapid Spanning Tree, Multiple Spanning Tree, Uplink Failure Detection, and IGMP Snooping.

- Uplink Failure Detection (UFD) supports network adapter teaming, and allows the switch to monitor specific uplink ports to detect link failures. When the switch detects a link failure, it automatically disables specific downlink ports. The corresponding server's network adapter can detect the disabled downlink, and trigger a network-adapter failover to another port on the switch, or another switch in the chassis.
- Compatibility with Cisco® EtherChannel enables 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.

- 802.1w 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. RSTP is an enhancement to the 802.1d Spanning Tree Protocol and offers improved spanning tree convergence time when network topologies change.
- 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 utilize 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.
- Virtual Router Redundancy Protocol (VRRP) in Layer 3 enables redundant router configurations within a LAN, providing alternate router paths for a host to eliminate single points-of-failure within a network
- Internet Group Management Protocol (IGMP) Snooping allows the GbE2c Layer 2/3 to intercept IGMP packets to build multicast tables for hosts that want to receive or stop receiving multicast streams. GbE2c's IGMP Snooping capability not only improves the overall bandwidth but also conserves CPU cycles of the servers, thus avoiding the cost of unnecessary server upgrades. 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.



## GbE2c deployment applications

The HP GbE2c Layer 2/3 Switch is an ideal choice for the HP BladeSystem because of its port density, price/performance ratio, high availability, and advanced Layer 2 and Layer 3 feature sets. The GbE2c Layer 2/3 offers advanced Layer 2 features including extensive support for VLANs, Spanning Tree, Uplink Failure Detection and Link Aggregation (compatible with Cisco® EtherChannel) and advanced Layer 3 features such as Quality of Service (QoS), IP forwarding, Static Routing, and Dynamic Routing (RIP V1/V2 and OSPF).

## Investment Protection

The base configuration for the GbE2c Layer 2/3 provides full Layer 2 functionality. For customers looking for more advanced features, now or in the future, the GbE2c Layer 2/3 is software license key upgradeable to add Layer 3 features including Quality of Service (QoS), dynamic and static routing. QoS enables enterprise customers and service providers to run prioritize traffic such as VoIP and Video Conferencing over less time-critical data.

## GbE2c Layer 2/3 Specifications Table

### Performance and Form Factor

Blade Type	Single bay
Performance	48Gb Switching fabric 128MB SDRAM 16MB Flash memory
Port Configuration	16 Internal 1Gb Downlinks 5 External 10/100/1000BASE-T Uplinks 4 Optional external 1000SX fiber Uplinks 2 Internal cross-connects 1 Management Console Port
Media Types	Copper RJ-45 SFP Fiber SX

### Management and Protocols

Management Features	Dual mode CLI: AOS and ISCLI SNMP v1, v2, v3 HTTP, HTTPS NTP sever support RMON
High Availability Features	Link Aggregation Protocol Uplink failure detection Spanning Tree Virtual Router Redundancy Protocol (VRRP)
Protocols Supported	SSH v2, TACACS+, RADIUS, 802.3, 802.3u, 802.3ab, 802.1d, 802.1s, 802.1w, 802.1p, 802.3ac, 802.1x, 802.3ad (Static), and 802.1Q, IGMP Snooping, BOOTP

### Deployment

Max per Enclosure	8
Options Available	Fiber SFP module kit - PN440627-B21 (max 2 per switch)
Warranty - year(s) (parts/labor/onsite)	1-1-1