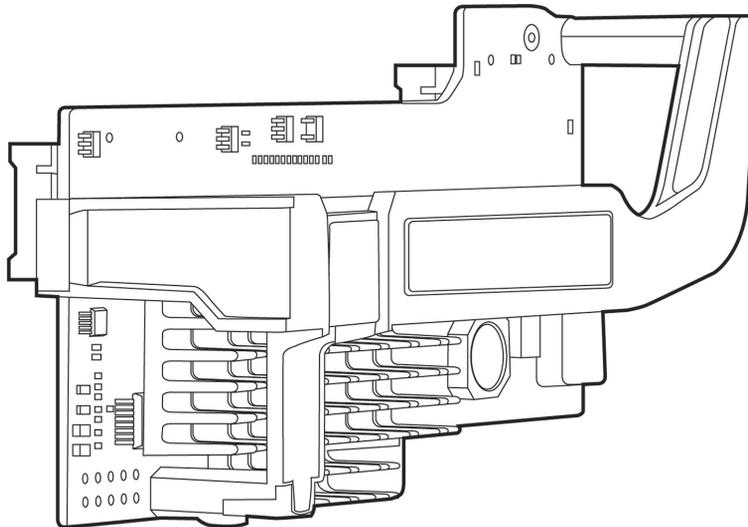


### Overview

The HP Ethernet 10Gb 2-port 560FLB Adapter features the next generation of 10Gb Ethernet offering based on Intel 82599 chipset on a FlexibleLOM form factor, further reducing power requirements for 2 ports of 10Gb Ethernet. It is designed for use with HP BladeSystem c-Class Gen8 servers.

It provides full duplex high performance Ethernet connectivity. The HP 560FLB FlexibleLOM network adapter helps to extend the benefits of virtualization beyond the server and into the rest of the infrastructure.

The HP 560FLB supports enterprise class features such as VLAN tagging, adaptive interrupt coalescing, MSI-X, NIC teaming (bonding), Wake-on-LAN, Receive Side Scaling (RSS), jumbo frames, EEE 1588, PXE boot and virtualization features such as VMware NetQueue, Microsoft VMQ and Intel's VMDq.



**HP Ethernet 10Gb 2-port 560FLB Adapter**

### Models

HP Ethernet 10Gb 2-port 560FLB Adapter

655639-B21

HP Ethernet 10Gb 2-port 560FLB FIO Adapter

684214-B21

**NOTE:** The HP 560FLB on each server blade connects to a 10Gb interconnect in bays 1-2 (HP BladeSystem c7000 Enclosure) or bay 1 (HP BladeSystem c3000 Enclosure).

**NOTE:** The 560FLB requires a minimum of 2 GB of server memory.

**NOTE:** The 560FLB supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 device.

**NOTE:** The 560FLB will only support 1000Mbps when connected to a 1Gb Ethernet interconnect.

### Kit contents

- HP Ethernet 10Gb 2-port 560FLB Adapter
- Quick install card
- Product warranty statement
- Drivers, user guide, and utilities via <http://www.hp.com>

### Compatibility

#### HP ProLiant Server Support

- HP ProLiant BL465c Gen8
  - HP ProLiant BL460c Gen8
  - HP ProLiant BL420c Gen8
  - HP ProLiant BL660c Gen8
- 

#### Supported Interconnect Modules

- HP 6125XLG Ethernet Blade Switch
- HP 6120XG Blade Switch
- HP 6120G/XG Blade Switch
- HP 1:10Gb Ethernet BL-c Switch
- Cisco Catalyst 3120G Blade Switch for HP
- Cisco Catalyst 3120X Blade Switch for HP
- Cisco Catalyst 3020 Blade Switch
- Cisco Fabric Extender B22HP for HP
- HP GbE2c Layer 2/3 Ethernet Blade Switch
- HP 1GbE Pass Thru Module
- 10GbE Ethernet Pass-Thru Module
- HP 6125G Ethernet Blade Switch
- HP 6125G/XG Ethernet Blade Switch

**NOTE:** Except for the HP 6120XG and the Cisco B22 Fabric Extender, all other supported interconnects are limited to 1Gb per port connection.

### Standard Features

#### Product Features

- Dual-port 10GbE FlexibleLOM network adapter that provides the flexibility to choose the type of LOM to meet growing infrastructure needs
- Industry-leading throughput and latency performance
- Up to 40Gb/s bi-directional near line rate throughput
- Hardware and software acceleration and offloads for stateless TCP/IP
- Supports Wake-on-LAN ( at 1 Gb)  
**NOTE:** Wake-on-LAN is supported only on Port1 from system power state S5.
- Improved small packet performance
- Interrupt Coalescing
- Support for Preboot eXecution Environment (PXE)
- Integrated PHY and MAC

#### Dual-port 10 Gigabit Ethernet Throughput (theoretical bandwidth)

The HP 560FLB adapter delivers 20,000 Mbps full duplex Ethernet transfer rate per port (40 Gbps aggregate full duplex), providing the network performance needed to improve response times and alleviate bottlenecks. 10Gb Ethernet bandwidth is ideal for high performance computing, database clusters.

#### Jumbo Frames

The HP 560FLB adapter supports jumbo frames (also known as extended frames), permitting up to a 9K byte (KB) transmission unit (MTU) when running Ethernet I/O traffic. This is over 5X the size of a standard 1500-byte Ethernet frame. With jumbo frames, networks can achieve higher throughput performance and greater CPU utilization. These attributes are particularly useful for database transfer and tape backup operations.

#### MSI and MSI-X

Message Signaled Interrupt (Extended) provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores

#### Interrupt Coalescence

Interrupt coalescing (interrupt moderation) groups multiple packets, thereby reducing the number of interrupts sent to the host. This process optimizes host efficiency, leaving the CPU available for other duties.

#### 802.1p QoS Tagging

IEEE quality of service (QoS) 802.1p tagging allows the adapter to mark or tag frames with a priority level across a QoS-aware network for improved traffic flow.

#### 802.1Q VLANs

IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the HP 560FLB adapter to be separated into multiple virtual NICs for added network segmentation and enhanced security and performance. VLANs increase security by isolating traffic between users. Limiting the broadcast traffic to within the same VLAN domain also improves performance.

#### TCP/IP Stateless Offloading

TCP, IP, UDP checksum offload, Large Send Offload (LSO), TCP, Segmentation Offload (TSO). These features optimize host efficiency, leaving the CPU available for other duties.

### Standard Features

**Optimized for Virtualization**

I/O Virtualization support for VMware NetQueue, Microsoft's VMQ and Intel's VMDq technologies help meet the performance demands of consolidated virtual workloads.

Compliant with Single-Root I/O Virtualization (SR-IOV), accommodating multiple Virtual Machines (VMs) to share single PCIe resources. The device is capable of SR-IOV, and requires Firmware, Software and OS support

**IEEE 1588 & 802.1AS**

Support hardware-enabled IEEE 1588, a standard that defines PTP (Precision Time Protocol), a high-precision time protocol for clock synchronization used in measurement and control systems.

**RDMA**

Not Supported

**iSCSI**

The HP 560FLB does not support accelerated iSCSI or iSCSI boot.

### Ease of Deployment and Management

**PXE Boot Support**

Supports the Preboot eXecution Environment (PXE) allows the server to boot over the network and download software residing in the network

**FlexibleLOM slot Compatibility**

Compatible with HP FlexibleLOM slot for c-Class Gen8 blade servers

**Network Adapter Teaming**

The HP 560FLB adapter support for NIC teaming helps IT administrators increase network fault tolerance and improve workload balance. These capabilities optimize availability, improve performance and help reduce costs

**Management Support**

The HP 560FLB adapter can be administered from HP Systems Insight Manager (SIM). The adapters can be managed individually or in teams, providing SNMP based statistics for reporting purposes. The 560FLB adapter can also be managed by other applications with SNMP support.

**HP Sea of Sensors 3D**

Support for HP's Sea of Sensors which is a collection of 32 sensors that automatically track thermal activity - heat - across the server. When temperatures get too high, sensors can kick on fans and make other adjustments to reduce energy usage. What makes it better is the upgrade from all six fans kicking on at one time to a new system where only one kicks on - the one in proximity of the area that started heating up - thus reducing the amount of energy used for cooling.

### Standard Features

#### Warranty

HP branded hardware options qualified for BladeSystem c-Class and p-Class servers are covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. The HP branded hardware option diagnostic support and repair is available for one year from date of purchase, or the length of the server they are attached to, whichever is greater. 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.

Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>.

### Service and Support

#### Service and Support

#### HP Technology Services

HP Technology Services offers you consultants and support experts to solve your most complex infrastructure problems. We help keep your business running, boost availability and avoid downtime.

#### Protect your business beyond warranty with HP Care Pack Services

When you buy HP Options, it's also a good time to think about what level of service you may need. HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

HP Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help you deliver high levels of application availability through proactive service management and advanced technical response.

Here is the support service recommendation from the Foundation Care and Proactive Care portfolio. For customized support service solution, HP can work with you to tailor a service solution for your unique support requirements using broader services portfolio of Foundation Care and Proactive Care.

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#### Recommended Services

#### Recommended HP Care Pack Services for optimal satisfaction with your HP product

##### 3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

**OR**

##### 3-Year HP 24x7 4 hour Response, HP Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution, and basic software problem diagnosis, fault isolation, and resolution if available to HP. If the problem is with HP HW, the representative will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

##### HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

### Service and Support

#### Related Services

#### Related HP Care Pack Services to enhance your HP product experience

##### **3-Year HP 24x7 4 hour Response, Proactive Care or Critical Advantage**

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-2140ENW.pdf>

**OR**

##### **3-Year HP 6-hour Onsite Call-to-Repair, HP Collaborative Support**

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request to the HP Global Solution Center, and basic software problem diagnosis, fault isolation, and resolution if available to HP. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

##### **HP Proactive Select Service**

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

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#### **Insight Remote Support**

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more <http://www.hp.com/go/insightremotesupport>

### Related Options

#### Additional c-Class BladeSystem Gen8 Adapters

#### Flexible LOM Adapters

HP FlexFabric 10Gb 2-port 554FLB Adapter	647586-B21
HP Ethernet 1Gb 2-Port 361FLB Adapter	652500-B21
HP Flex-10 10Gb 2-port 530FLB Adapter	656590-B21

#### Mezzanine Adapters

HP Ethernet 1Gb 4-port 366M Adapter	615729-B21
HP FlexFabric 10Gb 2-port 554M Adapter	647590-B21
HP Flex-10 10Gb 2-port 530M Adapter	631884-B21
HP Ethernet 10Gb 2-port 560M Adapter	665246-B21
HP Flex-10 10Gb 2-port 552M Adapter	674764-B21

#### HP c-Class BladeSystem Interconnect Options

HP 6120XG Blade Switch	516733-B21
HP 6120G/XG Blade Switch	498358-B21
HP 1:10Gb Ethernet BL-c Switch	438031-B21
Cisco Catalyst 3120G Blade Switch for HP	451438-B21
Cisco Catalyst 3120X Blade Switch for HP	451439-B21
Cisco Catalyst 3020 Blade Switch	410916-B21
Cisco Fabric Extender B22HP for HP	641146-B21
HP GbE2c Layer 2/3 Ethernet Blade Switch	438030-B21
HP 1GbE Pass Thru Module	406740-B21
10GbE Ethernet Pass-Thru Module	406740-B21
HP 6125G Ethernet Blade Switch	658247-B21
HP 6125G/XG Ethernet Blade Switch	658250-B21

### Technical Specifications

<b>General Specifications</b>	<b>Network processor</b>	Intel 82599 Ethernet Controller
	<b>Data rate</b>	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth.
	<b>Bus type</b>	PCI Express v2.0 (Gen 2) x8
	<b>Form factor</b>	FlexibleLOM
	<b>IEEE Compliance</b>	802.3, 802.1ab, 802.3x, 802.3ad, 802.3p, 802.1q, 802.3ae, 802.1au, 802.3ap, 802.1as, 802.3ak, 802.1qaz, 802.1Qbb
<b>Power and Environmental Specifications</b>	<b>Operating Temperature</b>	0°C to 55°C / 32°F to 131°F
	<b>Humidity</b>	10% to 90% non-condensing
	<b>Power requirement</b>	<8W
	<b>Emissions classification</b>	FCC Class A
	<b>Agency Approvals</b>	USA: FCC Part 15 Class A
		Canada: ICES--3, Issue 4
		Japan: VCCI V3 (2010.04) Class A
International: EN55022:2006 + A1:2007 Class A		
<b>RoHS Compliance</b>	6 of 6	
<b>Safety</b>	International: EN55024:1998+A1:2011+A2; EN61000-3-2:2006, EN61000-3-3:2008	
	Taiwan: BSMI, CNS13438 (2006) Class A	
	Australia/New Zealand (AS/NZS): EN55022:2006+A12007 class A	
<b>Operating System Support</b>	<b>Microsoft:</b>	Korea: KN22 Class A, KN24
	Microsoft Windows Server 2008 SP2, R2 w/SP1 (x86 and x64)	
	Microsoft Windows Hyper-V, R2 w/SP1	
	<b>Linux:</b>	6 of 6
	Red Hat Enterprise Linux (x86 and EM64T/AMD64) 5.7, 6.1	
	SUSE Linux Enterprise Server (x86 and EM64T/AMD64)	
	<b>Solaris:</b>	UL Mark (USA and Canada)
Solaris 10		
<b>Virtualization:</b>	CE Mark	
VMware ESX/ESXi 4.1u2 and ESXi 5.0u1		
Citrix XenServer 6.0		

**NOTE:** For more operating system support & certification information, please visit: <http://h10018.www1.hp.com/wwsolutions/index.html>.

### Technical Specifications

**Environment-friendly  
Products and Approach****End-of-life Management  
and Recycling**

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: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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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