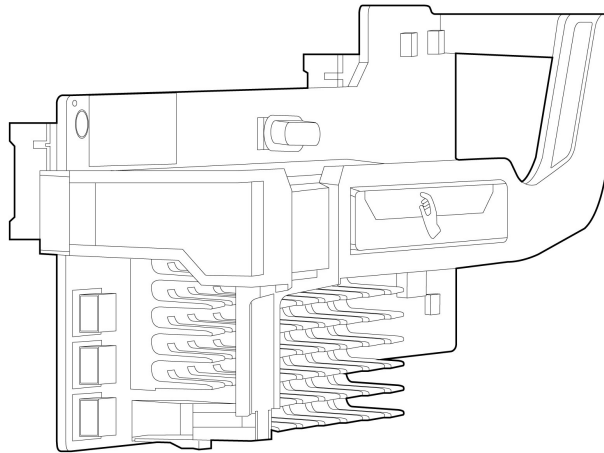


### Overview

The HP FlexFabric 10Gb 2-port 534FLB adapter features the next generation of 10Gb Ethernet offering in a single chip solution 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 with support for HP Virtual Connect FlexFabric blade interconnect technology, allowing each 10GbE port to be divided into four physical NICs and optimize bandwidth management for virtualized servers. The HP 534FLB FlexFabric network adapter, in conjunction with HP Virtual Connect FlexFabric technology, helps to extend the benefits of virtualization beyond the server and into the rest of the infrastructure.

The HP 530FLB supports enterprise class features such as VLAN tagging, adaptive interrupt coalescing, MSI-X, NIC teaming (bonding), Receive Side Scaling (RSS), jumbo frames and PXE boot. It also supports virtualization features such as SR-IOV (Windows, Linux, VMWare), VMware NetQueue and Microsoft VMQ.



**HP FlexFabric 10Gb 2-port 534FLB Adapter**

### Models

HP FlexFabric 10Gb 2-port 534FLB Adapter

700741-B21

HP FlexFabric 10Gb 2-port 534FLB FIO Adapter

700742-B21

**NOTE:** The HP 534FLB 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 534FLB requires a minimum of 2 GB of server memory.

**NOTE:** The 534FLB supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 device.

**NOTE:** The 534FLB will only support 1000Mbps when connected to a 1Gb Ethernet interconnect.

**NOTE:** P/N 700742-B21 (HP FlexFabric 10Gb 2-port 534FLB FIO Adapter) is for Factory Integrated Models only.

### Kit Contents

- HP FlexFabric 10Gb 2-port 534FLB Adapter
- Quick install card
- Product warranty statement
- Drivers, user guide, and utilities via: <http://www.hp.com>

### Compatibility

#### HP ProLiant Server Support

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

#### Supported Interconnect Modules

- HP FlexFabric 10Gb/24-port Module
- HP Virtual Connect Flex-10/10D Module for BladeSystem c-Class
- HP 6120XG Blade Switch
- HP 6120G/XG Blade Switch
- HP 6215XLG 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 10GbE Pass-Thru Module
- HP 1GbE Pass Thru Module

**NOTE:** Except for the HP Virtual Connect Flex-10 Ethernet Module, HP Virtual Connect Flex Fabric Module, HP 6120XG, HP 10GbE Pass-Thru Module and the Cisco B22 Fabric Extender, all other supported interconnects are limited to 1Gb per port connection.

### Standard Features

#### Product Features

- Full hardware offload of iSCSI and FCoE storage protocol processing for highest performance converged Ethernet data and storage networks.
- Dual-port 10GbE Flex-10 FlexibleLOM network adapter that provides the flexibility to choose the type of LOM to meet growing infrastructure needs
- Industry-leading throughput and latency performance
- Supports HP's Flex-10 blade interconnect technology
- User configurable bandwidth settings when combined with the 10Gb Flex-10 Virtual Connect module. From 100Mb/s to 10Gb/s on up to four "Physical Function" NICs per port, in increments of 100Mb/s for NIC. The combined bandwidth of NICs cannot exceed port bandwidth i.e. 10 Gb.
- Up to 40Gb/s bi-directional near line rate throughput
- Hardware acceleration and offloads for stateless TCP/IP, TCP Offload Engine (TOE)
- Improved small packet performance
- Support for Preboot eXecution Environment (PXE)
- Integrated PHY and MAC
- Supports for SR-IOV (Windows)

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

The HP 534FLB 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.

#### HP Virtual Connect FlexFabric 10Gb Ethernet Module for the c-Class BladeSystem

Evolve 10Gb at your own speed! When paired with the HP Virtual Connect FlexFabric 10Gb Ethernet Modules, take advantage of four Flex Nics, which are PCI Physical Function devices that are OS/ Hypervisor independent. In addition take advantage of new storage I/O functionality making it a full-Converged Network Adapter (CNA)  
Server ROM recognizes them as individual NICs  
Speeds can be set per NIC from 100Mb to 10Gbs in 100Mb increments  
Three fold increase in number of network connections per port.  
Up to four physical function NICs per port.  
Ideal for virtualized server environment, especially for dedicated bandwidth application like virtual machine migration from one physical server to another physical server.

#### Jumbo Frames

The HP 534FLB 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.

#### 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.

#### MSI and MSI-X

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

### Standard Features

<b>802.1p QoS Tagging</b>	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.
<b>802.1Q VLANs</b>	IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the HP 530FLB 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.
<b>TOE</b>	TCP/IP Offload Engine (TOE) shifts the processing of data in the TCP protocol stack from the server CPU to the adapter's processor, freeing server CPU cycles for other operations.
<b>Single-Root I/O Virtualization</b>	Single-Root I/O Virtualization (SR-IOV) provides a mechanism to bypass the host system hypervisor in virtual environments providing near metal performance and server efficiency. SR-IOV provides mechanism to create multiple Virtual Functions (VFs) to share single PCIe resources. The device is capable of SR-IOV, and requires Server BIOS support, controller firmware, and OS support.
<b>Optimized for Virtualization</b>	I/O Virtualization support for VMware NetQueue and Microsoft VMQ help meet the performance demands of consolidated virtual workloads.
<b>RDMA</b>	Not Supported
<b>iSCSI/FCoE</b>	The HP 534FLB does support accelerated iSCSI or iSCSI boot and FCoE.
<b>Network Partitioning</b>	The HP 534FLB supports NIC partitioning for ProLiant Gen8 blade servers. Allowing administrators to configure a 10Gb port as four separate partitions or physical functions. Each PCI function is associated with a different virtual NIC. To the OS and the network, each physical function appears as a separate NIC port.

### Ease of Deployment and Management

<b>PXE Boot Support</b>	Supports the Preboot eXecution Environment (PXE) allows the server to boot over the network and download software residing in the network
<b>FlexibleLOM slot Compatibility</b>	Compatible with HP FlexibleLOM slot for c-Class Gen8 blade servers
<b>Network Adapter Teaming</b>	The HP 534FLB 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

### Standard Features

**Management Support**

The HP 534FLB 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 534FLB adapter can also be managed by other applications with SNMP support.

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**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.

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**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. If you are running business critical environments, HP offers Proactive Care. 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

HP recommends Proactive Care for your BladeSystem servers, enclosures and components to prevent problems with proactive advice and assistance, resolve issues and rapidly recover by connecting to HP's enhanced call experience and advanced technical expertise.

##### 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>

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#### 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

### Service and Support

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 Adapters

##### FlexibleLOM Adapters

HP Ethernet 10Gb 2-port 560FLB Adapter	655639-B21
HP FlexFabric 10Gb 2-port 554FLB Adapter	647586-B21
HP Flex-10 10Gb 2-port 530FLB Adapter	656590-B21
HP Ethernet 1Gb 2-port 361FLB Adapter	652500-B21

##### Mezzanine Adapters

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

#### HP 10Gb interconnects

HP Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem	455880-B21
HP 6125XLG Ethernet Blade Switch	711307-B21
HP 6125G/XG Ethernet Blade Switch	658250-B21
HP 6120XG Blade Switch	516733-B21
HP 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem	538113-B21



### Technical Specifications

<b>General Specifications</b>	<b>Network processor</b>	Broadcom BCM 57810S with integrated MAC/PHY	
	<b>Data rate</b>	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth.	
	<b>Onboard memory</b>	900MB (distributed memory)	
	<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, 802.1Qau, 802.3ap	
<b>Power and Environmental Specifications</b>	<b>Operating</b>	<b>Temperature</b>	0°C to 55°C / 32°F to 131°F
		<b>Humidity</b>	10% to 90% non-condensing
	<b>Power requirement</b>	<12W	
	<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	
		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	
		Korea: KN22 Class A, KN24	
	<b>RoHS Compliance</b>	6 of 6	
	<b>Safety</b>	UL Mark (USA and Canada)	
		CE Mark	
		EN 60590	
<b>Operating System Support</b>	<b>Microsoft:</b>	Microsoft Windows Server 2008 SP2, R2 w/SP1 (x86 and x64)	
		Microsoft Windows Hyper-V, R2 w/SP1	
	<b>Linux:</b>	Red Hat Enterprise Linux (x86 and EM64T/AMD64) 5.7, 6.1	
		SUSE Linux Enterprise Server (x86 and EM64T/AMD64)	
	<b>Solaris:</b>	Solaris 10	
	<b>Virtualization:</b>	vSphere 4.1 and vSphere 5.0	
		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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