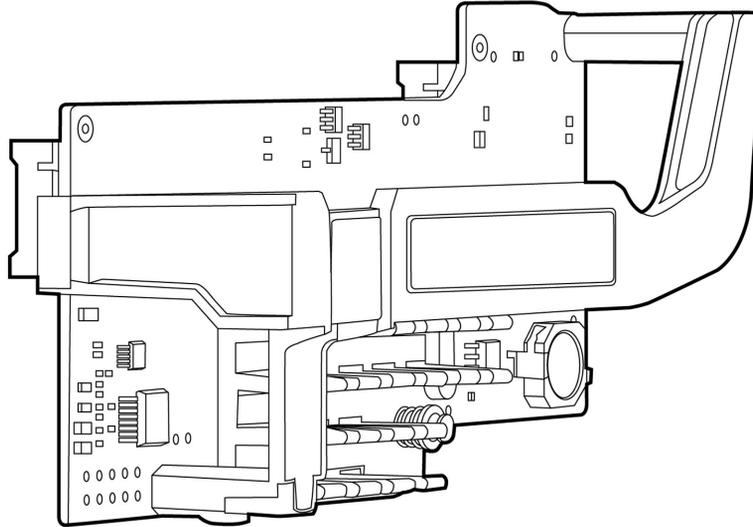


### Overview

The HP Ethernet 1Gb 2-port 361FLB Adapter is a ProLiant c-Class BladeSystem FlexibleLOM network adapter with PCIe Gen 2.1 compliance providing two Gigabit Ethernet ports that utilizes only a maximum of 2.8 watts of power. The HP 361FLB is a 1Gb FlexibleLOM that has been designed for use with select HP BladeSystem c-Class Gen8 servers, featuring bridgeless Intel® Ethernet I350 Controller. 361FLB has performance enhancing features and new power management technologies. With the introduction of the 361FLB FlexibleLOM, ProLiant c-Class customers now have the choice and flexibility of choosing 1GbE solution that could pave the way for a future 10GbE upgrade. The 361FLB is ideal for virtualization, security, network segmentation, and other BladeSystem applications requiring 1GbE bandwidth.

Tested and proven to meet demanding BladeSystem standards, the 361FLB ships with the advanced server features that ProLiant customers have come to expect, such as support for failover and load balancing, TCP/IP checksum offloading, large send offloading, Wake-on-LAN, jumbo frames, PXE, VLAN tagging, Virtualization, advanced power management features, new I/O technologies, IEEE 1588 and much more.



**HP Ethernet 1Gb 2-port 361FLB Adapter**

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### Models

HP Ethernet 1Gb 2-port 361FLB Adapter

652500-B21

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### Kit contents

- HP Ethernet 1Gb 2-port 361FLB 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
- BL ProLiant BL660c Gen8

### Standard Features

#### Product Features

- Dual Gigabit Ethernet ports
- Maximum 2.8 watts power usage
- Supported on Select Gen8 ProLiant c-Class servers in FlexibleLOM slot
- Intel® Ethernet I350 controller
- Designed with server needs in mind:
  - IEEE 802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x, 1588, 802.1AS
  - ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing
  - Jumbo frames
  - TCP/IP checksum offload (TCO) and large send offload (LSO)
  - Interrupt/DMA coalescing
  - PXE
  - Wake-on-LAN (WOL)
  - IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agent for Windows

Intel® Integrated I/O and Data Direct I/O for increased performance and reduced latency

#### Performance

##### Dual-port Gigabit Ethernet Throughput

Up to 1000 Mbps full duplex Ethernet transfer rate per port (2000 Mbps combined) delivers outstanding network performance that improves response time and removes bottlenecks across the entire network.

##### Jumbo Frames

Jumbo frames (also known as extended frames) permit a 9.5K byte transmission unit (MTU), which is six times the size of standard 1500 byte Ethernet frame. The 361FLB supports jumbo frames as a way to achieve higher throughput and better CPU utilization. Jumbo frames are particularly useful for database transfers and tape backups.

##### 802.1Q VLANs with 802.1p QoS Tagging

IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the 361FLB 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. 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.

##### TCP/IP Stateless Offloading

For overall improved system response, the 366M supports standard TCP/IP offloading techniques including:

- TCP/IP checksum offload (TCO) moves the TCP and IP checksum offloading from the CPU to the network adapter.
- Large send offload (LSO) or TCP segmentation offload (TSO) allows the TCP segmentation to be handled by the adapter rather than the CPU.

##### 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.

##### DMA Coalescing

Supports DMA Coalescing, the incoming data packets and interrupts associated with these DMA calls are intelligently batched to keep the system devices in lower power states.

##### Intel® Integrated I/O with Data Direct I/O

New on HP ProLiant Gen8 servers, Intel® Integrated I/O features reduces memory access from I/O on local socket which speeds up CPU data transfer and accelerates inbound and outbound traffic flows. Together, Integrated I/O and Data Direct I/O technologies reduce system power, increases I/O performance and reduced I/O latency.

### Standard Features

**Optimized for Virtualization**

I/O Virtualization support for VMware NetQueue, Microsoft VMQ and Intel's Virtualization Machine Device Queues (VMDq) 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

**IEEE1588 & 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.

**HP Sea of Sensors 3D**

Support for HP Sea of Sensors 3D Technology 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.

**PXE Boot**

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows a new or existing server to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

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**High Availability****Redundant adapters**

With multiple quad port adapters supported per server connected to up to two redundant pairs of interconnect modules per enclosure, a very wide variety of high availability I/O configurations are possible.

**Network Adapter Teaming**

ProLiant Network Adapter Teaming provides fault tolerance and load balancing across a team of two or more network adapters. The team of adapters works together as a single virtual adapter. Support for several different types of teaming is included. Teaming offers IT professionals an easy, efficient, and cost-effective way to provide network fault tolerance and increased network bandwidth. For more information, refer to the ProLiant Network Adapter Teaming Whitepaper available at:

<ftp://ftp.compaq.com/pub/products/servers/networking/TeamingWP.pdf>

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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 Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI**

When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage.

#### **Protect your business beyond warranty**

When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

#### **HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively**

HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment, and education services.

HP server and storage lifecycle support services offer a full spectrum of customer care—from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs—from purchase to equipment retirement.

Learn more: [www.hp.com/services/servers](http://www.hp.com/services/servers) and [www.hp.com/services/storage](http://www.hp.com/services/storage)

**NOTE:** Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>

### Service and Support

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

##### Recommended Services **Hardware Options Support**

HP Care Packs provide support for all HP-branded hardware options qualified for inclusion in your server or storage solution. Any additional HP-qualified options installed within the server are covered at the same service level and for the same period as the server and no additional cost.

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

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

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

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.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

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

##### **HP Installation and Startup of HP ProLiant Servers**

Provides for the installation of your new HP ProLiant server and operating system to assist you in bringing your new HP ProLiant server and operating system into operation in a timely and professional manner.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Delivery of the service at a mutually scheduled time convenient to your organization
- Availability of an HP service specialist to answer basic questions during the onsite delivery of this service
- Custom installation as detailed in "Delivery specifications" or in a Statement of Work (SOW)
- Verification prior to installation that all service prerequisites are met

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-7572ENN.pdf>

### Service and Support

#### Optional HP Care Pack Services that will enhance your HP product experience

##### Optional Services

##### **3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour**

As an alternative to our recommended support level, for customers who need committed call-to-repair for server hardware.

Provides your IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 or 24 hours of the initial service request to the HP Global Solution Center.

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

##### **3-Year HP Support Plus 24**

As an alternative to our recommended support level, for customers who need access to responsive 24x7 hardware and software support plus software updates on HP and selected third party products:

For a higher return on your server and storage technology, our 3-year combined reactive support service delivers integrated onsite hardware/software support services available 24x7x365, including access to HP technical resources, 4-hour response onsite hardware support and software updates.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EEE>

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

Customer needs on demand access to consulting, technical proactive services and education courses

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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##### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

##### **Support Portal**

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

##### **Features include:**

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

### Service and Support

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

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#### **Customer Technical Training**

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

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#### **HP Services Awards**

HP Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

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#### **Additional Services Information**

To learn more on HP ProLiant servers, HP BladeSystem servers and HP storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: [www.hp.com/services/proliant](http://www.hp.com/services/proliant) or [www.hp.com/services/bladesystem](http://www.hp.com/services/bladesystem) or <http://www.hp.com/hps/storage>

### Related Options

#### c-Class BladeSystem Interconnect Modules

**NOTE:** This is a list of supported options. Some may be discontinued.

HP Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem	455880-B21
HP 1:10Gb Ethernet Blade Switch for c-Class BladeSystem	438031-B21
HP 1/10Gb-F Virtual Connect Ethernet Module for c-Class BladeSystem	447047-B21
Cisco Catalyst Blade Switch 3020 for HP c-Class BladeSystem	410916-B21
Cisco Catalyst 1GbE 3120G Blade Switch	451438-B21
Cisco Catalyst 1/10GbE 3120X Blade Switch	451439-B21
HP GbE2c Layer 2/3 Ethernet Blade Switch	438030-B21
HP 1GB Ethernet Pass-Thru Module for c-Class BladeSystem	406740-B21
HP 6120XG Blade Switch	516733-B21
HP 6120G/XG Ethernet Blade Switch	498358-B21

### Technical Specifications

<b>General Specifications</b>	<b>Network controller</b>	Intel® Ethernet I350 Controller	
	<b>Data rate</b>	Two ports, each at 1000 Mbps full duplex (theoretical maximum) <b>NOTE:</b> The 361FLB adapter transmits from the server at only 1 Gbps full duplex per port.	
	<b>Bus type</b>	x4 PCI Express 2.1	
	<b>Form factor</b>	Type I mezzanine card compatible with all Gen8 ProLiant c-Class server FlexibleLOM mezzanine slots	
	<b>IEEE Compliance</b>	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x, IEEE1588, 802.1AS	
<b>Power and Environmental Specifications</b>	<b>Operating</b>	<b>Temperature</b> 50° - 95° F (10° - 35° C) <b>Humidity</b> 10% to 90% non-condensing	
	<b>Non-operating</b>	<b>Temperature</b> -40° to 158° F (-40° to 70° C) <b>Humidity</b> 5% to 95% non-condensing	
	<b>Power requirement</b>	<b>Maximum Watts</b> 2.7W typical / 2.8W maximum 1.2W for Wake on LAN support	
	<b>Emissions</b>	FCC Class A	
	<b>Agency Approvals</b>	<b>USA</b>	FCC (CFR 47 part 15) and UL 60950
		<b>Canada</b>	CSA60950
		<b>Japan</b>	VCCI
		<b>Korea</b>	MIC (RRL), EMC Registration
		<b>Australia</b>	ACA, AS/NZS3548/EN55022:1998, EN55024:1998
	<b>European Union</b>	EN55022:1998 (CISPR 22), EN55024:1998, and IEC60950:1999 (EN60950:2000)	
<b>RoHS Compliance</b>	6 of 6		
<b>Safety</b>	UL Mark (USA and Canada) CE Mark EN 60590		
<b>Operating System Support</b>	<ul style="list-style-type: none"><li>● Microsoft Windows Server 2008</li><li>● Microsoft Windows HPC Server 2008</li><li>● Red Hat Enterprise Linux 5.7, 6.1</li><li>● SUSE Linux Enterprise Server</li><li>● Solaris 10</li><li>● VMware ESX/ESXi 4.1u2 and ESXi 5.0u1</li><li>● Citrix XenServer 6.0</li><li>● Microsoft Windows Hyper-V</li></ul>		

**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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