Overview

HPE Ethernet 1Gb 2-port 361FLB Adapter

The HPE 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 HPE 361FLB is a 1 Gb FlexibleLOM that has been designed for use with select HPE 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.

HPE Ethernet 1Gb 2-port 361FLB Adapter

Platform Information

Models

HP Ethernet 1Gb 2-port 361FLB Adapter   652500-B21

Kit Contents	HPE Ethernet 1Gb 2-port 361FLB Adapter Quick install card Product warranty statement
Compatibility - Supported Servers	HPE ProLiant BL420c Gen8 HPE ProLiant BL460c Gen8 HPE ProLiant BL465c Gen8 HPE ProLiant BL660c Gen8 **NOTE:** This is a list of supported servers. Some may be discontinued.
Compatibility - Supported Interconnect Modules	HPE 1GB Ethernet Pass-Thru Module for c-Class BladeSystem HPE 6120XG Blade Switch HPE 6125XLG Ethernet Blade Switch HPE 6127XLG Ethernet Blade Switch HPE Cisco B22HP Fabric Extender for BladeSystem c-Class HPE Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class **NOTE:** This is a list of supported servers. Some may be discontinued.

Standard Features

At a Glance 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
    - Supports 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

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Throughput-Theoretical Bandwidth
This adapter delivers 2 Gb/s bi-directional Ethernet transfer rate per port (4 Gb/s per adapter), providing the network performance needed to improve response times and alleviate bottlenecks.

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 this 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.

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.

HPE Sea Of Sensors
Support for the HPE 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.

Interrupt Coalescing
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.

Standard Features

Intel Integrated I/O with Data Direct I/O	New on HPE 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.
Jumbo Frames	This adapter supports Jumbo Frames (also known as extended frames), permitting up to a 9,500 byte (KB) transmission unit (MTU) when running Ethernet I/O traffic. This is over six times 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.
Network Adapter Teaming	This adapter support for NIC teaming helps IT administrators increase network fault tolerance and increased network bandwidth, the team of adapters can work together as a single virtual adapter, providing support for several different types of teaming enabling IT administrators to optimize availability, improve performance and help reduce costs.
Optimized for Virtualization	I/O Virtualization support for VMware NetQueue and Microsoft VMQ helps meet the performance demands of consolidated virtual workloads.
Preboot eXecution Environment (PXE)	Support for 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.
TCP/UDP/IP	For overall improved system response, this adapter supports standard TCP/IP offloading techniques including: TCP/IP, UDP 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.
Time Sync Implementatations (PTP)	Synchronization of system clocks throughout a network, achieving clock accuracy in the sub-microsecond range, making it suitable for measurement and control systems.
VMware NewQueue and Microsoft Virtual Machine Queue (VMQ)	VMware NetQueue is technology that significantly improves performance of 10 Gigabit Ethernet network adapters in virtualized environments. Windows Hyper-V VMQ (VMQ) is a feature available on servers running Windows Server 2008 R2 with VMQ-enabled Ethernet adapters. VMQ uses hardware packet filtering to deliver packet data from an external virtual machine network directly to virtual machines, which reduces the overhead of routing packets and copying them from the management operating system to the virtual machine.

Standard Features

Wake-on-LAN   This adapter provides Wake-on-LAN (WoL) support through the PCI Express bus. A system that supports Wake-on-LAN can remain available to the systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

Warranty   Maximum: The remaining warranty of the HPE product in which it is installed (to a maximum three-year, limited warranty).
Minimum: One year limited warranty.
NOTE: Additional information regarding worldwide limited warranty and technical support is available at: **http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/index.aspx#.V4e3tPkrJhE**

Service & Support

Service and Support	**NOTE:** This adapter is covered under HPE Support Services/ Service Contract applied to the HPE ProLiant Server or enclosure. No separate HPE Support Services# need to be purchased.
	Most HPE branded options sourced from HPE that are compatible with your product will be covered under your main product support at the same level of coverage, allowing you to upgrade freely. Additional support is required on select workload accelerators, switches, racks and UPS options 12KVA and over. Coverage of the UPS battery is not included under HPE support services; standard warranty terms and conditions apply.
Warranty and Support Services	Warranty and Support Services will extend to include HPE options configured with your server or storage device. The price of support service is not impacted by configuration details. HPE sourced options that are compatible with your product will be covered under your server support at the same level of coverage allowing you to upgrade freely. Installation for HPE options is available as needed. To keep support costs low for everyone, some high value options will require additional support. Additional support is only required on select high value workload accelerators, fibre switches, InfiniBand and UPS options 12KVA and over. Coverage of the UPS battery is not included under TS support services; standard warranty terms and conditions apply.
Protect your business beyond warranty with HPE Support Services	HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HPE to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support you need for your IT and business. Protect your product, beyond warranty.
Parts and Materials	Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.
For more information	Visit the Hewlett Packard Enterprise Service and Support **website**.

Technical Specifications

General Specifications	**Network Processor**	Intel® Ethernet I350 Controller
	Data Rate	Two ports, each at 1 Gb/s bi-directional (theoretical maximum) NOTE: The 361FLB adapter transmits from the server at only 1 Gb/s bi-directional per port.
	Bus type	x4 PCI Express 2.1
	Form Factor	Type I mezzanine card compatible with all Gen8 ProLiant c-Class server FlexibleLOM mezzanine slots
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x, IEEE1588, 802.1AS

Power and Environmental Specifications	**Power**	2.7W typical / 2.8W maximum 1.2W for Wake on LAN support
	Temperature - Operating	10° - 35° C (50° - 95° F)
	Temperature - Non-Operating	-40° to 70° C (-40° to 158° F)
	Humidity - Operating	10% to 90% non-condensing
	Humidity - Non-operating	5% to 95% non-condensing
	Emissions Classification	FCC Class A
	Agency Approvals	USA: FCC (CFR 47 part 15) and UL 60950 Canada: CSA60950 Japan: VCCI Korea: MIC (RRL), EMC Registration Australia: ACA, AS/NZS3548/EN55022:1998, EN55024:1998 European Union: EN55022:1998 (CISPR 22), EN55024:1998, and IEC60950:1999 (EN60950:2000)
	RoHS Compliance	6 of 6
	Safety	UL Mark (USA and Canada) CE Mark EN 60590

Operating System and Virtualization Support	• Microsoft Windows Server 2008 • Microsoft Windows HPC Server 2008 • Red Hat Enterprise Linux (RHEL) 5.7, 6.1 • SUSE Linux Enterprise Server (SLES) • Solaris 10 • VMware ESX/ESXi 4.1u2, ESXi 5.0u1 • Citrix Xenserver 6.0 • Microsoft Windows Hyper-V

NOTE: For more operating system support and certification information, please visit: **http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/ redhat_linux.aspx#.V4e8tPkrJD8**

Environment-friendly Products and Approach - End-of-life Management and Recycling	Hewlett Packard Enterprise offers end-of-life **product return, trade-in, and recycling programs**, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE Directive (2012/19/EU) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on

Technical Specifications

the **Hewlett Packard Enterprise web site**. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
27-Mar-2017	From Version 9 to 10	Changed	Related Options was updated.
17-Dec-2015	From Version 8 to 9	Removed	Obsolete SKUs were deleted: 455880-B21, 410916-B21, 438031-B21, 438030-B21, 447047-B21, 498358-B21, 451438-B21, 451438-B21, 451439-B21.
18-Apr-2014	From Version 7 to 8	Changed	Service and Support were revised.
21-Mar-2014	From Version 6 to 7	Added	HPE 6125XLG Ethernet Blade Switch was added to Related Options.
11-Oct-2013	From Version 5 to 6	Changed	Changes made to the Compatibility Section
12-Apr-2013	From Version 4 to 5	Added	Related Options: Added new parts to c-Class BladeSystem Interconnect Modules section.
28-Dec-2012	From Version 3 to 4	Changed	Service & Support: URL change made in Additional Services Information section.
14-Dec-2012	From Version 2 to 3	Removed	Removed At a Glance section. Standard Features: removed Product Features
		Added	Standard Features: removed Product FeaturesAdded Compatibility section Added Standard Features section Related Options: in c-Class Bladesystem Interconnect Modules added note.
24-Aug-2012	From Version 1 to 2	Changed	Changes were made in Standard Features section.

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