Overview

HPE Ethernet 10Gb 2-port 560FLB Adapter

Recommended SKU - This adapter is a recommended option that has been selected by HPE experts to provide the right technology for a range of workloads and market segments offering the best combination of performance, value and availability.

The HPE 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 HPE BladeSystem c-Class Gen8 servers.

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

The HPE 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 Intels VMDq.

HPE Ethernet 10Gb 2-port 560FLB Adapter

Platform Information

Models

HPE Ethernet 10Gb 2-port 560FLB Adapter   655639-B21
HPE Ethernet 10Gb 2-port 560FLB FIO Adapter   684214-B21
NOTE: **This adapter on each server blade connects to a 10 Gb interconnect in bays 1-2 (HPE BladeSystem c7000 Enclosure) or bay 1 (HPE BladeSystem c3000 Enclosure).**
NOTE: **This adapter requires a minimum of 2 GB of server memory.**
NOTE: **This adapter supports linking at 1000 Mb/s or 10000 Mb/s when not connected to a Flex-10 device.**
NOTE: **This adapter will only support 1000 Mb/s when connected to a 1 Gb Ethernet interconnect.**

Kit Contents	HPE Ethernet 10Gb 2-port 560FLB Adapter Quick install card Product warranty statement
Compatibility - Supported Servers	HPE ProLiant BL460c Gen9 Server Blade HPE ProLiant BL460c Gen10 Server Blade HPE ProLiant BL660c Gen9 Server Blade HPE ProLiant WS460c Gen9 Server Blade **NOTE:** **Thermal reporting for Gen10 is in server design not in adapters.**
Compatibility - Supported Interconnect Modules	HPE 6125XLG Ethernet Blade Switch HPE 6127XLG Ethernet Blade Switch HPE 6120XG Blade Switch HPE 6120G/XG Blade Switch HPE 1:10Gb Ethernet BL-c Switch Cisco Catalyst 3120G Blade Switch for HPE Cisco Catalyst 3120X Blade Switch for HPE Cisco Catalyst 3020 Blade Switch Cisco Fabric Extender B22HP for HPE HPE GbE2c Layer 2/3 Ethernet Blade Switch HPE 1GbE Pass Thru Module 10GbE Ethernet Pass-Thru Module HPE 6125G Ethernet Blade Switch HPE 6125G/XG Ethernet Blade Switch **NOTE:** **10GbE converged connectivity is supported in all HPE 6120XG, HPE 6125XG series switches, Cicso B22 Fabric Extender and HPE 10GbE Pass-Thru modules. All other supported interconnects and switches are limited to 1GbE per connection for Ethernet-ony traffic.**

Standard Features

At a Glance 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 40 Gb/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

Throughput-Theoretical Bandwidth

This adapter delivers 20 Gb/s bi-directional Ethernet transfer rate per port (40 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.

DPDK

This adapter supports DPDK with benefit for packet processing acceleration and use in NFV deployments.

HPE Sea Of Sensors 3D

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 initiate fans and make other adjustments to reduce energy usage. A significant improvement lies in the ability to apply fan speed increases only to the portion of the system that is rising in temperature, rather than all six fans in unison, which reduces 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.

Jumbo Frames

This adapter supports Jumbo Frames (also known as extended frames), permitting up to a 9,000 byte (KB) transmission unit (MTU) when running Ethernet I/O traffic. This is over five 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.

Standard Features

Management Support	This adapter ships with agents that can be managed from HPE Systems Insight Manager or other management application that support SNMP.
Message Signaled Interrupt (Extended) (MSI-X)	Message Signaled Interrupt (Extended) provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores.
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.
Precision Time Protocol (IEEE 1588 PTP)	Synchronization of system clocks throughout a network, achieving clock accuracy in the sub-microsecond range, making it suitable for measurement and control systems.
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 and 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 Hewlett Packard Enterprise due to malfunction.
For more information	Visit the Hewlett Packard Enterprise Service and Support **website**.

Technical Specifications

General Specifications	Network Processor	Intel 82599 Ethernet Controller
	Data Rate	Two ports, each at 20 Gb/s bi-directional; 40 Gb/s aggregate bi-directional theoretical bandwidth.
	Bus type	PCI Express 2.0 (Gen 2) x8
	Form Factor	FlexibleLOM
	IEEE Compliance	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

Power and Environmental Specifications	Power	<8W
	Temperature - Operating	0° to 55°C (32° to 131°F)
	Humidity - Operating	10% to 90% non-condensing
	Agency Approvals	USA: FCC Part 15 Class A
		Canada: ICES-003, 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
	RoHS Compliance	6 of 6

Operating System and Virtualization Support

- Microsoft Windows Server 2008 SP2, R2 w/SP1 (x86, x64)
- Microsoft Windows Hyper-V, R2 w/SP1
- Red Hat Enterprise Linux (RHEL) 5.7, 6.1 (x86, EM64T/AMD64)
- SUSE Linux Enterprise Server (SLES) (x86, EM64T/AMD64)
- Solaris 10
- VMware ESX/ESXi 4.1u2, ESXi 5.0u1
- vShpere 6.5
- Citrix XenServer 6.0

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 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
05-Feb-2018	Version 20	Changed	Overview section was updated
04-Dec-2017	Version 19	Changed	Compatibility section was updated.
11-Jul-2017	Version 18	Changed	Compatibility section was updated. Year from version 1 to version 5 was corrected in Summary of Changes
05-Jun-2017	Version 17	Changed	Synchronizing Product Bulletin content.
27-Mar-2017	Version 16	Changed	Related Options was updated.
10-Feb-2017	Version 15	Changed	Compatibility and Technical Specifications sections were updated.
		Removed	Obsolete SKU was deleted: 516733-B21
21-Oct-2016	Version 14	Changed	Add DPDK support and update servers
22-Jul-2016	Version 13	Changed	QuickSpecs sections were updated.
		Removed	Obsolete SKUs were deleted: 451438-B21; 451439-B21.
19-Jun-2015	Version 12	Changed	Compatibility section was updated.
18-Apr-2014	Version 11	Changed	Compatibility, Service and Support, and Related Options were revised.
21-Mar-2014	Version 10	Added	HPE 6125XLG Ethernet Blade Switch was added to Supported Interconnect Modules.
01-Oct-2013	Version 9	Changed	Corrected a part number in the Related Options section.
05-Jul-2013	Version 8	Changed	Changes made to the following sections: Compatibility - Supported Interconnect Models Related Options - Additional c-Class blade System Gen8 Adapter
14-Jun-2013	Version 7	Changed	Changes made to the following sections: Compatibility - Supported Interconnect Models Related Options - Additional c-Class blade System Gen8 Adapters
15-Mar-2013	Version 6	Changed	Updated the Standard Features section under the Product Features Section
14-Dec-2012	Version 5	Changed	Changes were made in the following sections: Compatibility: Supported Interconnect Models note change.
		Added	Overview: in Models section, added new model
24-Aug-2012	Version 4	Changed	Changes were made Compatibility section.
22-Jun-2012	Version 3	Changed	Changes were made in Overview, Compatibility and Standard Features.
15-Jun-2012	Version 2	Changed	Changes were made in Overview and Compatibility.
04-Jun-2012	Version 1	New	Initial Version

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