

Overview

HPE Ethernet 10Gb 2-port 560SFP+ Adapter

The HPE Ethernet 10Gb 2-port 560SFP+ Adapter features the latest Intel 82599 controller. It is a low-cost, low-power dual port PCIe v2.0 x8 adapter designed for HPE ProLiant Gen8 and select G7 ML/DL/SL servers. The HPE 560SFP+ addresses the demanding needs of the next-generation data center by providing unmatched features for virtualization and scalability that complement the HPE Gen8 server platform.

The HPE 560SFP+ comes with both low profile and standard brackets and has two SFP+ cages that enable connections with DACs as well as SR fiber optic modules. The HPE 560SFP+ adapter supports SR-IOV and high performance networking features such as VLAN tagging, low latency interrupts, TCP and UDP checksum offloading, MSI-X, NIC teaming (bonding), Receive Side Scaling (RSS), jumbo frames, and PXE boot.



HPE Ethernet 10Gb 2-port 560SFP+ Adapter

Platform Information

Models

HPE Ethernet 10Gb 2-port 560SFP+ Adapter

665249-B21

Kit Contents	HPE Ethernet 10Gb 2-port 560SFP+ Adapter Quick install card Product warranty statement
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Compatibility - Supported Servers

HPE ProLiant DL20 Gen9
HPE ProLiant DL60 Gen9
HPE ProLiant DL80 Gen9
HPE ProLiant DL120 Gen9
HPE ProLiant DL160 Gen9
HPE ProLiant DL180 Gen9
HPE ProLiant DL360 Gen9
HPE ProLiant DL380 Gen9
HPE ProLiant DL560 Gen9
HPE ProLiant DL580 Gen9
HPE ProLiant ML110 Gen9
HPE ProLiant ML30 Gen9
HPE ProLiant ML110 Gen9
HPE ProLiant ML150 Gen9
HPE ProLiant ML350 Gen9
HPE Apollo 2000 XL170r Gen9
HPE Apollo 2000 XL190r Gen9
HPE Apollo 4200 Gen9
HPE Apollo 4500-XL450 Gen9
HPE Apollo 6500-XL270d

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

Standard Features

At a Glance Features

- Hardware acceleration TCP/IP/UDP stateless intelligent offloads.
- Industry-leading throughput and latency performance
- Up to 40 Gb/s bi-directional near-line rate throughput
- No firmware updates required - less management and downtime
- Low profile design shipping with standard height and low-profile brackets.
- On chip temperature monitor
- Integrated PHY and MAC
- Intel® 82599 controller offers TCP/IP stateless intelligent offloading capability.
- Support for Preboot eXecution Environment (PXE)
- Supports SR-IOV (requires server FW, SW and OS support)
- Standard NC series option kit warranty, support, services
- Standard server operating system support
- Field replaceable and upgradeable.
- PXE, Jumbo Frames, Checksum and Segmentation Offload, IPv6 and RSS
- IEEE 1588 (Time Synchronization)

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.

802.1Q 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.

Checksum & Segmentation Offload Normally the TCP Checksum is computed by the protocol stack. Segmentation Offload is technique for increasing outbound throughput of high-bandwidth network connections by reducing CPU overhead. The technique is also called TCP segmentation offload (TSO) when applied to TCP, or generic segmentation offload (GSO).

Configuration Utilities This adapter ships with a suite of operating system-tailored configuration utilities that allow the user to enable initial diagnostics and configure adapter teaming. This includes a patented teaming GUI for Microsoft Windows operating systems. Additionally, support for scripted installations of teams in a Microsoft Windows environment allow for unattended OS installations.

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

Standard Features

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.

IPv6	IPv6 uses 128-bit addressing allowing for more devices and users on the internet. IPv4 supported 32-bit addressing.
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.
LED Indicators	LED indicators show link integrity and network activity for easy troubleshooting.
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.
PCI Express Interface	This adapter is designed with an eight lane (x8) PCI Express bus based on the PCIe 2.0 standard. The adapter is backward compatible with four lane (x4) PCI Express, automatically auto-sensing between x8 and x4 slots.
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.
Receive Side Scaling (RSS)	RSS resolves the single-processor bottleneck by allowing the receive side network load from a network adapter to be shared across multiple processors. RSS enables packet receive-processing to scale with the number of available processors.

Standard Features

Server Integration

This adapter is a validated, tested, and qualified solution that is optimized for HPE ProLiant servers. Hewlett Packard Enterprise validates a wide variety of major operating systems drivers with the full suite of web-based enterprise management utilities including HPE Intelligent Provisioning and HPE Systems Insight Manager that simplify network management.

This approach provides a more robust and reliable networking solution than offerings from other vendors and provides users with a single point of contact for both their servers and their network adapters.

Single-Root I/O Virtualization

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.

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.

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.

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](#).

Related Options

Cables - Direct Attach	HPE BladeSystem c-Class 10GbE SFP+ to SFP+ 0.5m Direct Attach Copper Cable	487649-B21
	HPE BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable	487652-B21
	HPE BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable	487655-B21
	HPE BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable	537963-B21
	HPE BladeSystem c-Class Small Form-Factor Pluggable 7m 10GbE Copper Cable	487658-B21
	HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
	HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
	HPE X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HPE X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HPE X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HPE BladeSystem c-Class QSFP+ to 4x10G SFP+ 7m Active Optical Cable	721070-B21
	NOTE: Direct Attach Cable (DAC) must be purchased separately for copper environments.	

Cables - Fiber Optic	HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
	HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
	HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
	HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
	HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
	HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A
NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.		

Transceivers	HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver	455883-B21
	HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver	455886-B21
NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.		

Technical Specifications

General Specifications	Network Processor Data Rate	Intel® 82599 Controller Two ports, each at 20 Gb/s bi-directional; 40 Gb/s aggregate bi-directional theoretical bandwidth.
	Bus type Form Factor IEEE Compliance	PCI Express 2.0 (Gen 2) x8 Standard and low profile adapter compliant with the PCIe standard. 802.3, 802.1ab, 802.3x, 802.3ad, 802.3p, 802.1q, 802.3ae, 802.1Qau, 802.3ap, 802.1as, 802.3ak, 802.1Qaz, 802.1Qbb
Power and Environmental Specifications	Power Temperature - Operating Temperature - Non-Operating Humidity - Operating Humidity - Non-operating Emissions Classification Agency Approvals	10W typical 10.8W maximum 0° to 55°C (32° to 131°F) -65° to 85° C (-85° to 185° F) 10% to 90% non-condensing 5% to 95% non-condensing Class B USA: FCC Part 15 Class B Canada: ICES-003, Issue 5 Japan: VCCI 2011-04 Class B International: EN55022:2010 + Class B, EN55024:2010; EN61000-3-2:2006, EN61000-3-3:2008 Taiwan: BSMI, CNS13438 (2006) Class B Australia/New Zealand (AS/NZS): AS/NZS CISPR 22: 2009+A1:2010 Class Korea: KN22 Class B, KN24
	RoHS Compliance Safety	5 of 6 UL Mark (USA and Canada) CE Mark EN 60590-1 2nd edition
Operating System and Virtualization Support	The Operating Systems supported by this adapter are based on the server OS support. Please refer to the OS Support Matrix at https://www.hpe.com/us/en/servers/server-operating-systems.html .	
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
06-Nov-2017	Version 19	Added	SKUs added in Related Options section: 487658-B21, J9281B, J9283B, J9285B
23-Oct-2017	Version 18	Changed	Technical specifications - operating system, Service and Support and Part and Materials sections were updated.
10-Feb-2017	Version 17	Changed	Compatibility, Related options - updated part names, Technical specifications - operating system support - added vSphere 6.5
07-Oct-2016	Version 16	Changed	Add DPDK support updated
23-Sep-2016	Version 15	Changed	Sections in QuickSpecs were updated.
		Added	SKU added in Related Options sections: 721070-B21
		Removed	Obsolete SKUs deleted in Related Options sections: 221691-B21, 221691-B22, 221691-B23, 221692-B21, 221692-B22, 221692-B23, 221692-B26, 221692-B27, 503746-B21, 412648-B21, 435508-B21, 394791-B21, 538696-B21, 458492-B21, 468332-B21, 593717-B21, 489892-B21, 581201-B21, 614203-B21, 629135-B21, 629138-B21, 629142-B21.
10-Apr-2015	Version 14	Changed	Compatibility and Technical Specifications sections were updated
07-Nov-2013	Version 13	Changed	Correction made to the Operating System Support section only.
10-Sep-2013	Version 12	Changed	Compatibility, 10 Gigabit Server Adapters, and FlexibleLOM Servers were revised.
09-Aug-2013	Version 11	Added	Mentions of Supports SR-IOV were added.
12-Jun-2013	Version 10	Changed	Cables were revised in Related Options.
01-Mar-2013	Version 9	Changed	Changes were made to update the Related Options Section.
19-Feb-2013	Version 8	Changed	Changes made in the Overview and Related Options sections.
04-Dec-2012	Version 7	Changed	Changes made in the Compatibility and Related Options sections.
28-Sep-2012	Version 6	Changed	Changes made in the Related Options section.
13-Sep-2012	Version 5	Added	Added the Operating System Support section.
24-Aug-2012	Version 4	Changed	Changes made to the Compatibility and Related Options sections.
17-Aug-2012	Version 3	Changed	Changes made to the Compatibility section.
14-Aug-2012	Version 2	Changed	Changes made to the Technical Specifications section.
13-Aug-2012	Version 1	New	Initial version.



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