Overview

HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter

The HPE Ethernet 10Gb 2-port 560FLR-SFP+ adapter, featuring the next generation of 10Gb Ethernet integration offering 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 HPE ProLiant Gen8 Rack and Scale-Out servers.

The HPE 560FLR dual-port design is ideal for high performance computing, server virtualization, security, server consolidation, and other applications requiring highest throughput. The total aggregate throughput of 20Gb meets the needs for customers desiring highest bandwidth.

The HPE 560FLR supports SR-IOV and enterprise class features such as Receive Side Scaling (RSS), Jumbo frames, PXE boot, Checksum and segmentation offload, and time stamping (IEEE 1588) along with virtualization features such as VMware NetQueue, Microsoft VMQ and Intel Virtualization Technology for Connectivity (VT-c).
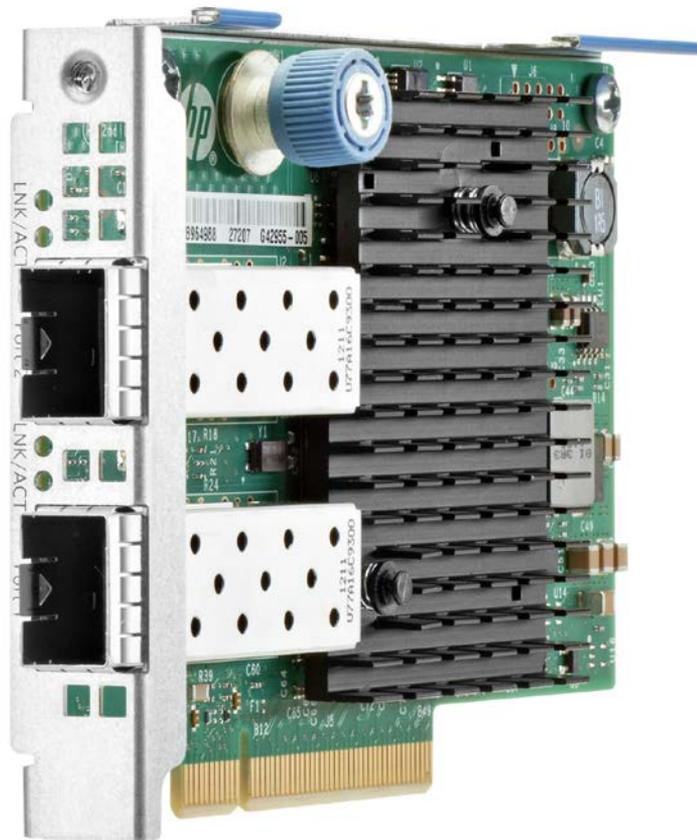
Models

HP Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21

Kit contents   • HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter

Hewlett Packard Enterprise

Overview

- Quick install card
- Product warranty statement

Compatibility

Servers

ProLiant DL (rack-optimized):
- 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 DL160 Gen8
- HPE ProLiant DL360p Gen8
- HPE ProLiant DL380p Gen8
- HPE ProLiant DL385p Gen8
- HPE ProLiant DL560 Gen8
- HPE ProLiant DL580 Gen8

ProLiant SL (scalable line):
- HPE ProLiant SL210t Gen8
- HPE ProLiant SL230 Gen8
- HPE ProLiant SL250 Gen 8
- HPE ProLiant SL270 Gen8

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

Standard Features

Product Features

- Dual-port 10GbE FlexibleLOM that provides the flexibility to meet growing infrastructure needs. Industry-leading throughput and latency performance
- Up to 40Gb/s bi-directional near line rate throughput
- Supports SR-IOV (requires server FW, SW and OS support)
- Hardware acceleration and offloads for stateless TCP/IP
- Support for Preboot eXecution Environment (PXE)
- Supports Wake-on-LAN (at 1 Gb)
   NOTE: Wake-on-LAN is supported only on Port 1 from system power state S5.
- Improved small packet performance
- Integrated PHY and MAC

Dual-port 10 Gigabit Ethernet Throughput

The HPE 560FLR FlexibleLOM delivers 20Gbps full duplex Ethernet transfer rate per port (40 Gbps aggregate full duplex), providing the network performance needed to improve response times and alleviate bottlenecks that impact performance of next generation data centers. 10Gb Ethernet bandwidth is ideal for high performance computing, database clusters, and more.

Jumbo Frames

The HPE 560FLR FlexibleLOM supports jumbo frames (also known as extended frames), permitting up to a 9.5K 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.

802.1Q VLANs

IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the HPE 560FLR FlexibleLOM 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.

Optimized for Virtualization

I/O Virtualization support for VMware NetQueue and Microsoft VMQ 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 HPE 560FLR-SFP+ supports SR-IOV, and requires Firmware, Software and OS support.

MSI and MSI-X

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

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.

FlexibleLOM slot Compatibility

Compatible with HPE FlexibleLOM slot for select HPE ProLiant Gen8 Rack and Scale-Out servers.

Network Adapter

The HPE 560FLR FlexibleLOM 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

Standard Features

Teaming adapter. The HPE 560FLR provides support for several different types of teaming enabling IT administrators to optimize availability, improve performance and help reduce costs.

Network Management

Management Support The HPE 560FLR FlexibleLOM can be administered from HPE Systems Insight Manager (SIM). The adapters can be managed individually or in teams, providing SNMP based statistics for reporting purposes. The HPE 560FLR adapter can also be managed by other applications with SNMP support.

Server Integration The HPE 560FLR FlexibleLOM 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 venders and provides users with a single point of contact for both their servers and their network adapters.

Configuration Utilities Each HPE 560FLR 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.

LED Indicators The colored LEDs on each port of the HPE 560FLR adapter indicate link status and link activity.

Preboot Execution Environment (PXE) PXE allows the server to boot over the network and download software residing in the network. The HPE 560FLR supports PXE.

HPE Sea of Sensors 3D Support for HPE'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.

Active Health System Supports HPE Active Health System monitors and records changes in the server hardware and configuration enabling customers to have accurate information that will assist in diagnosing problems and delivering rapid resolution when server failures occur.

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.

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   **HPE Technology Services**

HPE 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 HPE Care Pack Services

When you buy HPE Options, it's also a good time to think about what level of service you may need. HPE Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

HPE Foundation Care services deliver scalable support-packages for Hewlett Packard Enterprise industry-standard servers and software. You can choose the type and level of service that is most suitable for your business needs. New to this portfolio is HPE Collaborative Support. If you are running business critical environments, Hewlett Packard Enterprise offers Proactive Care or Critical Advantage. 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, Hewlett Packard Enterprise can work with you to tailor a service solution for your unique support requirements using broader services portfolio of Foundation Care and Proactive Care.

Recommended HPE Care Pack Services for optimal satisfaction with your HPE product

Recommended Services

3-Year HPE 24x7 4 hour Response, Hardware Support Onsite Service

Provides you with rapid remote support and if required an Hewlett Packard Enterprise 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.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf

OR

3-Year HPE 24x7 4 hour Response, HPE Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution, and basic software problem diagnosis, fault isolation, and resolution if available to Hewlett Packard Enterprise. If the problem is with HPE HW, the representative 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. In case, the issue is with Hewlett Packard Enterprise or supported third-party software product and cannot be resolved by applying known fixes, Hewlett Packard Enterprise will contact the third-party vendor and create a problem incident on your behalf.

HPE ProLiant Server Hardware Installation

Provides for the basic hardware installation of Hewlett Packard Enterprise 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

Related HPE Care Pack Services to enhance your HPE product experience

Related Services   **3-Year HPE 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

Service and Support

http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-2140ENW.pdf

OR
3-Year HPE 6-hour Onsite Call-to-Repair, HPE 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 HPE Global Solution Center, and basic software problem diagnosis, fault isolation, and resolution if available to Hewlett Packard Enterprise. In case, the issue is with Hewlett Packard Enterprise or supported third-party software product and cannot be resolved by applying known fixes, Hewlett Packard Enterprise will contact the third-party vendor and create a problem incident on your behalf.

HPE Proactive Select Service
Provides a flexible way to purchase Hewlett Packard Enterprise 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**

Insight Remote Support	Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more **http://www.hp.com/go/insightremotesupport**
HPE Support Center	Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc The HPE Support Center Mobile App allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HPE Insight Remote Support and HPE Support Center are available at no additional cost with an Hewlett Packard Enterprise warranty, HPE Care Pack or Hewlett Packard Enterprise contractual support agreement. **NOTE:** The Hewlett Packard Enterprise Support Center Mobile App is subject to local availability
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. Supplies and consumable parts will not be provided as part of this service; standard warranty terms and conditions apply. Parts and components that have exceeded their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual or the technical product data sheet will not be provided, repaired or replaced as part of this service.
Warranty / Service Coverage	For ProLiant servers and storage systems, this service covers HPE-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by Hewlett Packard Enterprise as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

Service and Support

**For more
information**

To learn more on services for HPE ESSN Options, please contact your Hewlett Packard Enterprise sales
representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit:
http://www.hp.com/services/proliant or **http://www.hp.com/services/bladesystem**

Related Options

Direct Attach Cable	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 0.5m Direct Attach Copper Cable	487649-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable	487652-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable	487655-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable	537963-B21
	NOTE: Direct Attach Cable (DAC) must be purchased separately for copper environments.	

Fiber Optic Modules	HP BladeSystem c-Class 10Gb SFP+ SR Transceiver	455883-B21
	NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.	
	HP BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver	453151-B21
	HP BladeSystem c-Class 10Gb SFP+ LR Transceiver	455886-B21

Additional Supported	HP X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C

Fiber Optic Cables	HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
	HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
	HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
	HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
	HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
	HP 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.	
	NOTE: For additional information on 10Gb cable specifications go to:	
	http://www.HewlettPackardEnterprise.com/rnd/pdfs/10gig_cabling_technical_brief.pdf	

Cables (Plug into HPN5900)	HP X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
	HP X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
	HP X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable	JC784C

Additional Supported Cables (Plug into HPN6600)	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B

Gigabit Server Adapters	HP NC365T 4-port Ethernet Server Adapter	593722-B21
	HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
	HP Ethernet 1Gb 2-port 332T Adapter	615732-B21
	HP Ethernet 1Gb 2-port 361T Adapter	652497-B21

10 Gigabit Server Adapters	**NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.**	
	HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
	HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21

Related Options

HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21
HP Ethernet 10Gb 2-port 570SFP+ Adapter	718904-B21

FlexibleLOM Adapters

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

Ethernet Adapters

HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B21
HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
HP Ethernet 10Gb 2-port 530FLR-SFP+ Adapter	647581-B21
HP Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
HP Ethernet 10Gb 2-port 570FLR-SFP+ Adapter	717491-B21

FlexFabric Adapters

HP FlexFabric 10Gb 2-port 526FLR-SFP+ Adapter	629138-B21
HP FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
HP FlexFabric 10Gb 2-port 554FLR-SFP+ Adapter	629142-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:

http://www.hp.com/go/ProLiantNICs

Technical Specifications

General Specifications	Network Processor	Intel® 82599 Controller	
	Data Rate	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth.	
	Bus Type	PCI Express v2.0 (Gen 2) x8 (FlexibleLOM slot)	
	Form Factor	FlexibleLOM	
	IEEE Compliance	802.3, 802.1ab, 802.3x, 802.3ad, 802.1p/ 802.1q, 802.3ae, 802.1Qau	

Power and Environmental Specifications	Operating	Temperature	32° to 131° F (0° to 55° C)
		Humidity	10% to 90% non-condensing
	Power	<12W	
	Emissions	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	
	Safety	6 of 6	
	Other	UL Mark (USA and Canada) CE Mark EN 60590	

Operating System Support	Microsoft Windows Server 2008, Server 2008R2, Server 2012 and HPC Server 2008, 32 and 64-bit
	Microsoft Windows Server Hyper-V
	Red Hat Enterprise Linux 5.x and 6.0
	SLES 10 and 11
	VMware 4.0 and 4.1
	VMware ESX/ESXi 4.1 and ESXi 5.0
	Solaris 10

NOTE: For more Linux OS support & certification information, please visit our the ProLiant & BladeSystem Server Linux matrix:
http://h18004.www1.hp.com/products/servers/linux/hplinuxcert.html

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise 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 Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise 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 Enterprise web site at: **http://www.hp.com/go/green**. 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.

Technical Specifications

Summary of Changes

Date	Version History	Action	Description of Change
xx-Jan-2016	From Version 7 to 8	Changed	Compatibility and Related Options sections were updated.
		Removed	Obsolete SKUs were deleted: 221692-B21, 412648-B21, 458492-B21, 221692-B22, 435508-B21, 468332-B21, 221692-B23, 394791-B21, 489892-B21, 221692-B26, 394793-B21, 581201-B21, 221692-B27, 538696-B21, 503746-B21
13-Jun-2014	From Version 6 to 7	Changed	Cables was revised in Related Options.
10-Sep-2013	From Version 5 to 6	Changed	Compatibility, 10 Gigabit Server Adapters, and FlexbleLOM Adapters were revised
09-Aug-2013	From Version 4 to 5	Changed	Changes made to: Overview Compatibility - Servers Standard Features - Product Features, Optimized for Virtualization
05-Jul-2013	From Version 3 to 4	Changed	HPE BLc Virtual Connect 1Gb SX Small Form Factor Pluggable Option Kit and HPE BladeSystem c- Class 10Gb Long Range Small Form Factor Pluggable Option were added to Fiber Optic Modules Additional Support was added to Related Options HPE X240 Direct Attach Copper Cables was removed from Direct Attach Cable HPE X240 QSFP+ 4x10G SFP+ 1m DAC Cable was removed from Cables
15-Mar-2013	From Version 2 to 3	Changed	Updated the Product Features Section
01-Mar-2013	From Version 1 to 2	Added	The following was added to the Related Options Section: Cables (Plug into HPN5900) Additional Supported Cables (Plug into HPN6600)

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