

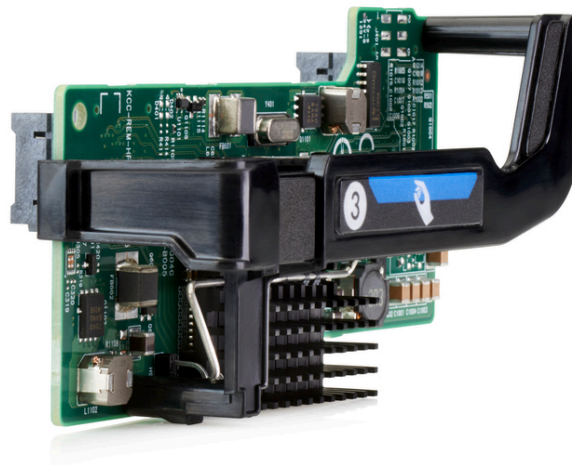
Overview

HPE FlexFabric 10Gb 2-port 536FLB Adapter

The HPE FlexFabric 10Gb 2-port 536FLB adapter features the next generation of 10Gb Ethernet offering in 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 BladeSystem c-Class Gen9 servers.

It provides full duplex high performance Ethernet connectivity with support for HPE Virtual Connect FlexFabric blade interconnect technology, allowing each 10GbE port to be divided into four physical NICs and optimize bandwidth management for virtualized servers. The HPE 536FLB FlexFabric network adapter, in conjunction with HPE Virtual Connect FlexFabric technology, helps to extend the benefits of virtualization beyond the server and into the rest of the infrastructure.

The HPE 536FLB supports enterprise class features such as VLAN tagging, adaptive interrupt coalescing, MSI-X, NIC teaming (bonding), Tunnel offload, Receive Side Scaling (RSS), jumbo frames and PXE boot. It also supports virtualization features such as SR-IOV, VMware NetQueue and Microsoft VMQ.



HPE FlexFabric 10Gb 2-port 536FLB Adapter

Models

HPE FlexFabric 10Gb 2-port 536FLB Adapter

766490-B21

HPE FlexFabric 10Gb 2-port 536FLB FIO Adapter

766491-B21

NOTE: The HPE 536FLB on each server blade connects to a 10Gb interconnect in bays 1-2 (HPE BladeSystem c7000 Enclosure) or bay 1 (HPE BladeSystem c3000 Enclosure).

NOTE: The 536FLB requires a minimum of 2 GB of server memory.

NOTE: The 536FLB supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 device.

NOTE: The 536FLB will only support 1000Mbps when connected to a 1Gb Ethernet interconnect.

Overview

Kit Contents

- HPE FlexFabric 10Gb 2-port 536FLB Adapter
- Quick install card
- Product warranty statement

Compatibility

- HPE ProLiant Server Support**
- HPE ProLiant BL460c Gen9
 - HPE ProLiant BL660c Gen9
 - HPE ProLiant WS460c Gen9

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- Supported Interconnect Modules**
- HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem
 - HPE FlexFabric 10Gb/24-port Module
 - HPE Virtual Connect Flex-10/10D Module for BladeSystem c-Class
 - HPE 6120XG Blade Switch
 - HPE 6120G/XG Blade Switch
 - HPE 6125G/XG Ethernet Blade Switch
 - HPE 6125G Ethernet Blade Switch
 - HPE 6125XLG Blade Switch
 - HPE 6127XLG Ethernet 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
 - HPE GbE2c Layer 2/3 Ethernet Blade Switch

NOTE: HP FlexFabric 536FLB Adapter also supports 1Gb or 10Gb connections with the following modules:

- HP 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem
- HP 1Gb Ethernet Pass-Thru Module for c-Class BladeSystem
- HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class

Standard Features

Product Features

- Full hardware offload of iSCSI and FCoE storage protocol processing for highest performance converged Ethernet data and storage networks.
- Dual-port 10GbE Flex-10 FlexibleLOM network adapter that provides the flexibility to choose the type of LOM to meet growing infrastructure needs
- Industry-leading throughput and latency performance
- Optimized for virtual server environments with support for HPE Flex-10 Technology, Network Partitioning (NPAR) and Single-Root I/O Virtualization (SR-IOV) User configurable bandwidth settings when combined with the 10Gb Flex-10 Virtual Connect module. From 100Mb/s to 10Gb/s on up to four "Physical Function" NICs per port, in increments of 100Mb/s for NIC. The combined bandwidth of NICs cannot exceed port bandwidth i.e. 10 Gb.
- Up to 40Gb/s bi-directional near line rate throughput
- Hardware acceleration and offloads for stateless TCP/IP
- Improved small packet performance
- Support for Tunnel Offload (NVGRE, VXLAN)
- Support for Preboot eXecution Environment (PXE)
- Integrated PHY and MAC

Dual-port 10 Gigabit Ethernet Throughput (theoretical bandwidth) The HPE 536FLB adapter delivers 20,000 Mbps full duplex Ethernet transfer rate per port (40 Gbps aggregate full duplex), providing the network performance needed to improve response times and alleviate bottlenecks. 10Gb Ethernet bandwidth is ideal for high performance computing, database clusters.

HPE Virtual Connect FlexFabric 10Gb Ethernet Module for the c-Class BladeSystem Evolve 10Gb at your own speed! When paired with the HPE Virtual Connect FlexFabric 10Gb Ethernet Modules, take advantage of four Flex Nics, which are PCI Physical Function devices that are OS/ Hypervisor independent. In addition take advantage of iSCSI and FCoE storage offload capability making it a full-Converged Network Adapter (CNA) Server ROM recognizes them as individual NICs
Speeds can be set per NIC from 100Mb to 10Gbs in 100Mb increments
Threefold increase in number of network connections per port.
Up to four physical function NICs per port.
Ideal for virtualized server environment, especially for dedicated bandwidth application like virtual machine migration from one physical server to another physical server.

Jumbo Frames The HPE 536FLB adapter supports jumbo frames (also known as extended frames), permitting up to a 9K 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.

DPDK The HPE 536FLB adapter supports DPDK with benefit for packet processing acceleration and use in NFV deployments.

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.

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

Tunnel Offload Minimize the impact of overlay networking on host performance with tunnel offload support for VXLAN and NVGRE. By offloading packet processing to adapters, customers can use overlay networking to increase VM

Standard Features

migration flexibility and network scale with minimal impact to performance. HPE Tunnel Offloading increases I/O throughput, reduces CPU utilization, and lowers power consumption. NVGRE tunnel offload supports Microsoft OS environments and VxLAN supports select VMware and Linux (RHEL and SUSE) environments.

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 the HPE 536FLB 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.
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 supports SR-IOV with applicable Server BIOS and OS support.
Optimized for Virtualization	I/O Virtualization support for VMware NetQueue and Microsoft VMQ help meet the performance demands of consolidated virtual workloads.
RDMA	Not Supported
iSCSI/FCoE	The HPE 536FLB supports accelerated iSCSI or iSCSI boot and FCoE.
Ease of Deployment and Management	
PXE Boot Support	Supports the Preboot eXecution Environment (PXE) allows the server to boot over the network and download software residing in the network
FlexibleLOM slot Compatibility	Compatible with HPE FlexibleLOM slot for c-Class Gen9 blade servers
Network Adapter Teaming	The HPE 536FLB adapter support for NIC teaming helps IT administrators increase network fault tolerance and improve workload balance. These capabilities optimize availability, improve performance and help reduce costs
Management Support	The HPE 536FLB adapter 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 534FLB adapter can also be managed by other applications with SNMP support.
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 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.
Warranty	Hewlett Packard Enterprise branded hardware options qualified for BladeSystem c-Class and p-Class servers

Standard Features

are covered by a global limited warranty and supported by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. The Hewlett Packard Enterprise 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 HPE Care Pack services or customized service agreements.

NOTE: Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hp.com/us/en/enterprise/servers/warranty/index.aspx>

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. If you are running business critical environments, Hewlett Packard Enterprise offers Proactive Care. 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 Services

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

Hewlett Packard Enterprise recommends Proactive Care for your BladeSystem servers, enclosures and components to prevent problems with proactive advice and assistance, resolve issues and rapidly recover by connecting to the Hewlett Packard Enterprise enhanced call experience and advanced technical expertise.

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.

<https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=5981-9356EN>

Related Services

Related HPE Care Pack Services to enhance your HPE product experience

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.

<https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=4AA5-3259ENW>

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.

<https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=4AA3-8855ENW>

Service and Support

Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more <http://h20564.www2.hp.com/hpsc/doc/public/display?docId=c04844073t>

Related Options

Additional c-Class BladeSystem Adapters	FlexibleLOM Adapters	
	HP FlexFabric 20Gb 2-port 630FLB Adapter	700065-B21
	HP FlexFabric 20Gb 2-port 650FLB Adapter	700763-B21
	HP Ethernet 10Gb 2-port 560FLB Adapter	655639-B21
	HP FlexFabric 10Gb 2-port 554FLB Adapter	647586-B21
	HP Ethernet 1Gb 2-port 361FLB Adapter	652500-B21
	Mezzanine Adapters	
	HP FlexFabric 20Gb 2-port 630M Adapter	700076-B21
	HP FlexFabric 20Gb 2-port 650M Adapter	700767-B21
	HP Ethernet 10Gb 2-port 560M Adapter	665246-B21
	HP Ethernet 1Gb 4-port 366M Adapter	615729-B21
HPE 10Gb interconnects	HP Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem	455880-B21
	HP Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem	691367-B21
	HP Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem with TAA	691367-B22
	HP Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem	571956-B21
	HP Virtual Connect FlexFabric 10/24 Enterprise Edition BLc7000 Option	605865-B21
	HP Virtual Connect Flex-10/10D Module for c-Class BladeSystem	638526-B21
	HP Virtual Connect Flex-10/10D Module Enterprise Edition for BLc7000 Option	662048-B21
	HP 6127XLG Ethernet Blade Switch	787635-B21
	HP 6127XLG Ethernet Blade Switch for TAA	787635-B22
	HP 6125XLG Ethernet Blade Switch	711307-B21
	HP 6125XLG Ethernet Blade Switch with TAA	737230-B21
	HP 6125G/XG Ethernet Blade Switch	658250-B21
	HP 6125G/XG Ethernet Blade Switch with TAA	737226-B21
	HP 6125G Ethernet Blade Switch	658247-B21
	HP 6125G Ethernet Blade Switch with TAA	737220-B21
	HP 6120XG Blade Switch	516733-B21
	HPE 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem	538113-B21
HPE 1Gb Ethernet Pass-Thru Module for c-Class BladeSystem	406740-B21	
HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class	657787-B21	

Technical Specifications

General Specifications	Network processor	QLogic 57840S with integrated MAC/PHY	
	Data rate	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth.	
	Onboard memory	900MB (distributed memory)	
	Bus type	PCI Express v3.0 (Gen3) x8	
	Form factor	FlexibleLOM	
	IEEE Compliance	802.3, 802.1ab, 802.3x, 802.3ad, 802.3p, 802.1q, 802.3ae, 802.1Qau, 802.3ap	
Power and Environmental Specifications	Operating Temperature	0°C to 55°C / 32°F to 131°F	
	Humidity	10% to 90% non-condensing	
	Power requirement	<12W	
	Emissions classification	FCC Class A	
	Agency approvals	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	
	RoHS Compliance	6 of 6	
	Safety	UL Mark (USA and Canada) CE Mark EN 60590	
Operating System Support	Microsoft:	Microsoft Windows Server 2008 SP2, R2 w/SP1 x64 Microsoft Windows Server 2012 and 2012 R2	
	Linux:	Red Hat Enterprise Linux (x86 and x64) 5.9, 5.10, 6.4, 6.5, 6.7, 7.0 Red Hat Enterprise (x64) 7.1, 7.2 SUSE Linux Enterprise Server 11, SP2 & SP3 (x86 & x64) SUSE Linux Enterprise Server 11 SP4 (x64) SUSE Linux Enterprise Server 12, SP1 (x64)	
	Solaris:	Solaris 10 U10 Solaris 11 x64	
	Virtualization:	VMware ESXi 5.0 U3, 5.1 U2 VMware vSphere 5.5, 6.0	

NOTE:

1. For more operating system support & certification information, please visit: <http://h10018.www1.hp.com/wwsolutions/index.html>.
2. Minimum Linux versions for FCoE support include RHEL 6.4 and SLES11SP3.

Technical Specifications

3. For RHEL 7.x, RHEL 7.2 is the minimum version for FCoE Boot from SAN support.
4. vSphere 5.5 is the minimum version of VMware for 20Gb support and SRIOV support.
5. vSphere 6.0 is the minimum version of VMware for uEFI FCoE Boot from SAN support.
6. Boot from SAN via the iSCSI offload path is not supported for VMware.
7. Networking only support for Solaris and Citrix XenServer.
8. FCoE is not supported on XenServer
9. UEFI is not supported for Xenserver

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://www8.hp.com/us/en/hpe/HPE-information/livingprogress/>. To recycle your product, please go to: <http://www8.hp.com/us/en/hpe/HPE-information/livingprogress/> 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://www8.hp.com/us/en/hpe/HPE-information/livingprogress/> 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
21-Oct-2016	From Version 6 to 6	Changed	Add DPK, update servers and add SKU 455880-B21
29-Apr-2016	From Version 4 to 5	Changed	Compatibility, Related Options, and Technical Specifications sections were updated.
		Added	SKUs added in Related Options section: 787635-B21, 787635-B22.
17-Dec-2015	From Version 3 to 4	Changed	Overview, Compatibility, Standard Features, Service and Support, and Technical Specifications sections were updated.
19-Jun-2015	From Version 2 to 3	Changed	Overview, compatibility, standard features, and technical specifications sections were updated.
28-Nov-2014	From Version 1 to 2	Changed	Compatibility, Standard Features and Related Options sections were updated
		Added	SKUs Added on HPE 10/20Gb interconnects: 691367-B21, 691367-B22, 571956-B21, 605865-B21, 638526-B21, 662048-B21, 737230-B21, 737226-B21, 658247-B21, 737220-B21, 406740-B21, 657787-B21
		Removed	Obsolete SKUs removed: 455880-B21



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