

Overview

HPE FlexFabric 20Gb 2-port 650FLB Adapter

The HPE FlexFabric 20Gb 2-port 650FLB adapter for ProLiant Gen9 server blades provides full-featured, high performance converged 20Gb Ethernet that accelerates IT services and increases data center efficiency across a broad range of I/O intensive enterprise, cloud and Telco workloads.

When connected to HPE Virtual Connect FlexFabric 20/40 F8 Modules, the HPE FlexFabric 650FLB adapter provides 20GbE performance. It offers a rich set of offload technologies including overlay network tunneling and storage, increasing virtualization performance and host efficiency. The HPE 650FLB is a dual-speed adapter that can also operate at 10GbE when connected to HPE Virtual Connect Flex-10/10D Module or HPE 6125XLG Ethernet Switch.

Combining both the FlexibleLOM and Mezzanine adapters in a single BladeSystem ProLiant server can provide up to 80Gbps of converged bi-directional Ethernet bandwidth, helping to alleviate network bottlenecks.



HPE FlexFabric 20Gb 2-port 650FLB Adapter

Models

HPE FlexFabric 20Gb 2-port 650FLB Adapter

700763-B21

HPE FlexFabric 20Gb 2-port 650FLB FIO Adapter

700764-B21

Overview

NOTE: The HPE 650FLB on each server blade connects to a 20Gb interconnect in bays 1-2 (HPE BladeSystem c7000 Enclosure) or bay 1 (HPE BladeSystem c3000 Enclosure).

NOTE: The 650FLB requires a minimum of 2 GB of server memory.

NOTE: The 650FLB supports linking at 10Gbps when not connected to a Flex-20 device.

Kit Contents

- HPE FlexFabric 20Gb 2-port 650FLB Adapter
- Quick install card
- Product warranty statement
- Drivers, user guide, and utilities via: <http://www.hpe.com>

Compatibility

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

Supported Interconnect Modules

- HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem
- HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem with TAA
- HPE Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem
- HPE Virtual Connect FlexFabric 10/24 Enterprise Edition BLc7000 Option
- HPE Virtual Connect Flex-10/10D Module for c-Class BladeSystem
- HPE Virtual Connect Flex-10/10D Module Enterprise Edition for BLc7000 Option
- HPE Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem
- HPE Virtual Connect Flex-10 Ethernet Module Enterprise Edition for BLc7000 Option
- HPE 6127XLG Ethernet Blade Switch
- HPE 6127XLG Ethernet Blade Switch with TAA
- HPE 6125XLG Ethernet Blade Switch
- HPE 6125XLG Ethernet Blade Switch with TAA
- HPE 6125G/XG Ethernet Blade Switch
- HPE 6125G/XG Ethernet Blade Switch with TAA
- HPE 6125G Ethernet Blade Switch
- HPE 6125G Ethernet Blade Switch with TAA

NOTE: Supported features with VC modules and Ethernet switches

Feature	VC FF20/40 F8	VC FF 10/24	VC Flex-10/10D	VC Flex-10	6125 XLG	6127XLG
20G	✓	-	-	-	-	✓
10G	✓	✓	✓	✓	✓	✓
Tunnel Offload	✓	✓	✓	✓	✓	✓
FCoE	✓	✓	✓	-	✓	✓

HPE FlexFabric 650FLB Adapter also supports 1Gb or 10Gb connections with the following modules:

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

Standard Features

Product Features

- Dual 20Gb ports provide up to 80Gb bi-directional per adapter
- Multi-speed adapter operates at either 20GbE or 10GbE
- Converges FCoE
- Tunnel Offload support for VXLAN and NVGRE
- Advanced storage offload processing freeing up valuable CPU cycles
- Supports UEFI and legacy boot options
- Mixed Storage – supports NIC + FCoE on one port, and NIC + iSCSI on the other
- Concurrent Storage – concurrently supports NIC, FCoE, and iSCSI storage functions on the same port (NIC + FCoE + iSCSI)
- Industry-leading throughput and latency performance
- Supports the HPE Flex-20 blade interconnect technology
- Over eight million small packets/s, ideal for web/mobile applications, mobile messaging, and social media
- User configurable bandwidth settings when combined with the 20Gb Flex-20 Virtual Connect module. From 100Mb/s to 10Gb/s on up to eight "Physical Function" NICs per port, in increments of 100Mb/s for NIC. The combined bandwidth of NICs cannot exceed port bandwidth i.e. 20 Gb/s.
- Greater bandwidth with PCIe 3.0
- Jumbo Frames support
- Supports Wake On LAN (WOL)
- Support for Preboot eXecution Environment (PXE)
- Support for Microsoft Windows SMB Direct
- Optimized host virtualization density with SR-IOV support
- CNU Support

Dual-port 20 Gigabit Ethernet Throughput (theoretical bandwidth)

The HPE 650FLB adapter delivers 40,000 Mbps bi-directional Ethernet transfer rate per port (80 Gbps aggregate bi-directional), providing the network performance needed to improve response times and alleviate bottlenecks that impact the performance of next generation data centers. 20Gb Ethernet bandwidth is ideal for high performance computing and database clusters.

HPE Virtual Connect FlexFabric 20Gb Ethernet Module for the c-Class BladeSystem

Evolve 20GbE at your own speed! When paired with the HPE Virtual Connect FlexFabric 20Gb Ethernet

Modules you can take advantage of four FlexNICs, which are PCI Physical Function devices that are OS/ Hypervisor independent. In addition, take advantage of new storage I/O functionality making it a full-Converged Network Adapter (CNA)

- Server ROM recognizes them as individual NICs
 - Speeds can be set per NIC from 100Mbps to 20Gbps in 100Mbps increments
 - Threefold increase in number of network connections per port.
 - Up to eight physical function NICs per adapter.
 - Ideal for virtualized server environments, especially for dedicated bandwidth application like virtual machine migration from one physical server to another.
-

Standard Features

-
- Jumbo Frames** The HPE 650FLB adapter supports Jumbo Frames, permitting up to a 9,200 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 lower CPU utilization. These attributes are particularly useful for storage, database transfer and tape backup operations.
-
- MSI-X** Message Signaled Interrupt (Extended) provides performance benefits for multi-core servers by load balancing interrupts between CPUs/cores.
-
- 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 650FLB 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.
-
- TCP/IP Stateless Offloading** For overall improved system response, the HPE 650FLB supports standard TCP/IP stateless offloading techniques including:
- TCP/IP checksum offload (TCO) moves the TCP and IP checksum offloading from the CPU to the network adapter.
 - Large send offload (LSO), also known as TCP segmentation offload (TSO), allows TCP segmentation to be handled by the adapter rather than the CPU.
-
- 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 migration flexibility and network scale with minimal impact to performance. HPE Tunnel Offloading increases I/O throughput, reduces CPU utilization, and lowers power consumption. Tunnel Offload supports VMware's VXLAN and Microsoft's NVGRE solutions.
-
- CNU** The HPE 650FLB adapter supports Converged Network Utility (CNU) a manageability application to configure converged network adapters (CNAs) and Ethernet adapters on HPE servers. This host based utility supports for both GUI and Command Line Interface (scriptable), and can be used to configure Ethernet, FCoE, iSCSI and NPAR related features/functionality on multiple OS platforms including Windows and Linux. CNU is able to configure multiple HPE adapters from various network controllers at the same time. Users can benefit easier setup steps, shorter re-boot time, and one-stop solution for multiple adapters via CNU.
-
- 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 increasing server efficiency. SR-IOV provides a 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.
-

Standard Features

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.

Optimized for Virtualization I/O Virtualization support for VMware NetQueue and Microsoft VMQ help meet the performance demands of consolidated virtual workloads.

iSCSI/FCoE Boot The HPE FlexFabric 650FLB supports iSCSI INT 13 Boot and FCoE Boot from SAN.

Ease of Deployment and Management

PXE Boot Support Supports the Preboot eXecution Environment (PXE) which 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 650FLB adapter's 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 650FLB 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 650FLB adapter can also be managed by other applications with SNMP support.

Warranty Hewlett Packard Enterprise branded hardware options qualified for BladeSystem c-Class and p-Class servers 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.

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

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

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://h20566.www2.hpe.com/portal/site/hpsc?ac.admitted=1467740454177.125225703.1>

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.

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

Service and Support

Related Services

Related HPE Care Pack Services to enhance your HPE product experience **3-Year HPE Foundation Care 24x7**

HPE Foundation Care 24x7 connects you to HPE around the clock for assistance on resolving issues - hardware onsite response within four hours and software call back within two hours after opening your case.

<http://h20566.www2.hp.com/portal/site/hpsc?ac.admitted=1467740454177.125225703.1>

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.hp.com/h20195/v2/GetDocument.aspx?docname=4AA3-8855ENW>

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=c04844073>

Related Options

HPE 10/20Gb interconnects	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
	HPE 6127XLG Ethernet Blade Switch	787635-B21
	HPE 6127XLG Ethernet Blade Switch for TAA	787635-B22
	HPE 6125XLG Ethernet Blade Switch	711307-B21
	HPE 6125XLG Ethernet Blade Switch with TAA	737230-B21
	HPE 6125G/XG Ethernet Blade Switch	658250-B21
	HP 6125G/XG Ethernet Blade Switch with TAA	737226-B21
	HPE 6125G Ethernet Blade Switch	658247-B21
	HPE 6125G Ethernet Blade Switch with TAA	737220-B21
	HP 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem	538113-B21
	HP 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	Emulex XE-104
	Data rate	Two ports, each at 40 Gbps bi-directional; 80 Gbps aggregate bi-directional theoretical bandwidth.
	Bus type	PCI Express v3.0 (Gen 3) x8
	Form factor	FlexibleLOM
	IEEE Compliance	802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad/LACP, 802.1AB(LLDP), 802.1Qbg, 802.1Qbb, 802.1Qaz, 802.3ap
Power and Environmental Specifications	Operating Temperature	0°C to 55°C / 32°F to 131°F
	Humidity	15% to 80% non-condensing
	Power requirement	7.6W typical, 8.7W maximum
	Agency approvals	USA: FCC (CFR Title 47 Part 15) and UL 60950-1:2007 Canada: ICES-003:2012 Japan: VCCI:2012 Korea: MSIP - KN22, KN24 Australia: AS/NZS EN55022:2010 / CISPR22:2009+A1, EN55024:2010 / CISPR24:2010 European Union: EN55022:2010 (CISPR 22), EN55024:2010, and IEC60950-1:2007 2nd Edition Taiwan: BSMI - CNS 13438:2006
RoHS Compliance	6 of 6	

Operating System Support	Microsoft: Microsoft Windows Server 2008 SP2, R2 w/SP1 (x86 and 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: For more operating system support & certification information, please visit: http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/redhat_linux.aspx#.V4e8tPkrJD8

Technical Specifications

1. Minimum Linux versions for FCoE support include RHEL 6.4 and SLES11SP3.
2. For RHEL 7.x, RHEL 7.2 is the minimum version for FCoE Boot from SAN support.
3. vSphere 5.5 is the minimum version of VMware for 20Gb support and SRIOV support.
4. vSphere 6.0 is the minimum version of VMware for uEFI FCoE Boot from SAN support.
5. Boot from SAN via the iSCSI offload path is supported for VMware.
6. Networking only support for Solaris and Citrix XenServer.
7. FCoE is supported on XenServer
8. 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:

<https://www.hpe.com/us/en/living-progress.html>. To recycle your product, please go to: <https://www.hpe.com/us/en/living-progress.html> 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:

<https://www.hpe.com/us/en/living-progress.html>. 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
10-Feb-2017	From Version 9 to 10	Changed	Compatibility, Standard Features, Related Options, and Technical Specifications sections were updated.
		Removed	Obsolete SKU was deleted: 516733-B21
05-Dec-2016	From Version 8 to 9	Changed	Standard Features and Technical Specifications sections were updated.
30-Sep-2016	From Version 7 to 8	Changed	Operating System Support notes were updated.
22-Jul-2016	From Version 6 to 7	Changed	QuickSpecs sections were updated.
20-May-2016	From Version 5 to 6	Changed	Sections were updated in QuickSpecs.
02-Oct-2015	From Version 4 to 5	Changed	Compatibility and Related Options sections were updated.
17-Nov-2014	From Version 3 to 4	Changed	Compatibility section was updated
		Added	SKUs Added on HPE 10/20Gb interconnects: 737230-B21, 737226-B21, 658247-B21, 737220-B21.
30-Sep-2014	From Version 2 to 3	Changed	Updates to Standard Features and Technical Specifications sections.
12-Sep-2014	From Version 1 to 2	Changed	Small changes made to Standard Features and Technical Specifications sections.






[Sign up for updates](#)

© Copyright 2017 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Windows is a US registered trademark of Microsoft Corporation.

c04347341 - 15049 - Worldwide - V10 - 10-February-2017

