

Overview

HPE Virtual Connect 16Gb 24-port Fibre Channel Module for c-Class BladeSystem

The HPE Virtual Connect 16Gb 24-port Fibre Channel Module for c-Class BladeSystem is a new class of blade interconnect that simplifies server connections by cleanly separating the server enclosure from the SAN. It simplifies the process of connecting servers to fibre channel networks by reducing cables and your SAN switch management domain, and by allowing you to change servers in just minutes.

You can reduce costs and simplify connections to SANs, consolidate your network connections and enable administrators to add, replace and recover server resources on-the-fly. Being standards-based it looks like a pass-thru device to the fibre channel network, yet provides all the key benefits of integrated switching including high performance 16Gb uplinks to the SAN. The integrated design frees up rack space, reduces power and cooling requirements, and reduces cables and small form-factor pluggable transmitters. Enhanced N-port trunking support with external Brocade switches provides higher bandwidth to enable demanding applications and high density server virtualization.

The HPE Virtual Connect 16Gb 24-port Fibre Channel Module is protected by HPE Services 3-Years Next Business Day 9x5 Hardware Support.

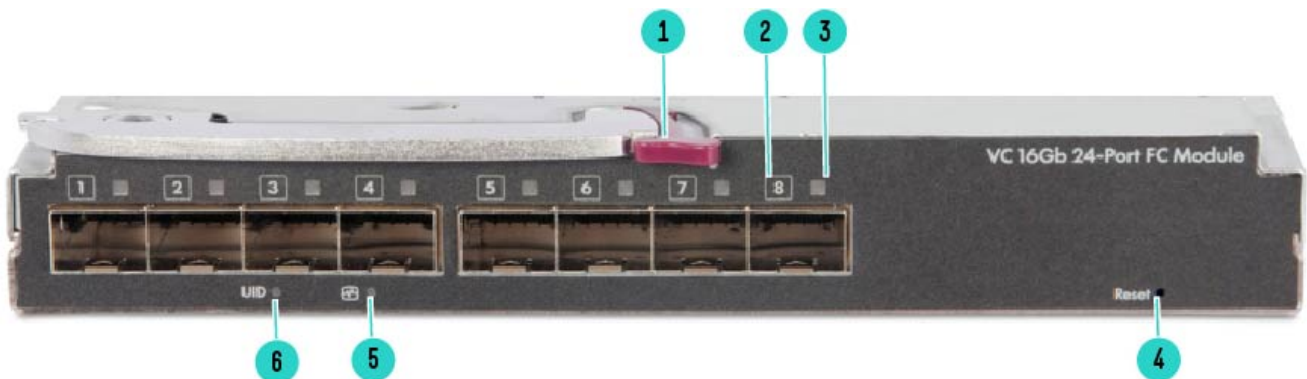


Figure 1 HPE Virtual Connect 16Gb 24-Port Fibre Channel Module Front View

- | | |
|---------------------------------|----------------------------|
| 1. Ejector | 4. Reset Pinhole |
| 2. Port ID Indicator | 5. Module Status Indicator |
| 3. Port Link/Activity Indicator | 6. Module Locator (UID) |

Models

HPE Virtual Connect 16Gb 24-port Fibre Channel Module for c-Class BladeSystem

P08475-B21

Standard Features

Supported Products

Compatibility

Due to changes in support model, new HW SKUs are being introduced to facilitate tracking. The old SKUs 751465-B21 and 778720-B21 are being deprecated and will no longer be orderable.

The new SKU will be supported on Virtual Connect Firmware v4.63 and VCSU 1.13.1 and later. For customers using OneView, the new SKU will only be supported on OV 4.20 and later. For customers on older OneView releases, the new SKU will be supported via the patch releases 4.00.11 and 4.10.02. Customers will have to be on the supported VCM and OneView releases in order to use the modules with new SKUs.

HPE BladeSystem ProLiant and Integrity Servers

HPE ProLiant Servers:

- Gen9 ProLiant Servers (16Gb and 8G support via 16G HBAs): BL460, BL660
- Gen8 ProLiant Servers (16Gb and 8G support via 16G HBAs, 8G support via 8G HBAs): BL460, BL465, BL660
- Gen7 ProLiant Servers (8Gb support via 8G HBAs): BL460c, BL490c, BL465c, BL685, BL620c, BL680c

HPE Integrity Servers:

- HPE Integrity BL860x i2 Server series
- HPE Integrity BL860c i4 Server series
- HPE Integrity BL870c i2 Server series
- HPE Integrity BL870c i4 Server series
- HPE Integrity BL890c i4 Server series
- HPE Integrity BL860c i6 Server series
- HPE Integrity BL870c i6 Server series
- HPE Integrity BL890c i6 Server series

For the latest additional information on required firmware versions and to download firmware upgrades, see the Hewlett Packard Enterprise website: <https://www.hpe.com/us/en/products/servers/smart-update.html>

Fibre Channel Host Bus Adapters (HBA)

- QLogic QMH2672 16Gb FC HBA, Emulex LPe1605 16Gb FC HBA
- QLogic QMH2572 8Gb FC HBA, Emulex LPe1205A 8Gb FC HBA
- QLogic QMH2562 8Gb FC HBA, Emulex LPe1205 8Gb FC HBA, Brocade 804 8Gb FC HBA

HPE ProLiant BL c-Class

Server Blade Enclosures

HPE BladeSystem c-Class c7000 Enclosure with Onboard Administrator:

- HPE BLc7000 Platinum Enclosure (16G and 8G support)
- HPE BLc7000 Enclosure (8G only support)

Notes:

- The HPE BladeSystem c7000 Platinum Enclosure is required to permit 16 Gbps speed on the internal ports. Other HPE BladeSystem c7000 Enclosures will have a maximum speed of 8 Gbps.
- The Virtual Connect 16Gb 24-port Fibre Channel modules are supported on c7000 enclosures with the following SKUs: 5XXXXX-B21, 6XXXXX-B21, and 7XXXXX-B21. 5XXXXX-XXX has been discontinued, but the module is supported in these deployed enclosures.
- VC 16Gb 24-port modules are not supported in BladeSystem c3000 enclosures.

For the latest additional information on required firmware versions and to download firmware upgrades, see the Hewlett Packard Enterprise website: <https://www.hpe.com/us/en/products/servers/smart-update.html>



Standard Features

HPE B-Series Switches

- SN8000B Director Switch (Enterprise)
- SN6500B Fibre Channel Switch (High-end)
- SN6000B Fibre Channel Switch (Midmarket)
- SN3000B Fibre Channel Switch (Entry)
- DC SAN Backbone Director
- DC04 SAN Director
- 8/80 SAN Switch
- 8/40 SAN Switch
- 8/24 SAN Switch
- 8/8 SAN Switch
- Embedded switch for HPE 4400 Enterprise Virtual Array
- Encryption SAN Switch
- Brocade 8Gb SAN Switch for HPE c-Class BladeSystem
- Brocade 4Gb SAN Switch for HPE c-Class BladeSystem
- 4/8 SAN Switch
- 4/16 SAN Switch
- 4/32B SAN Switch
- 4/64 SAN Switch
- 4/256 SAN Director
- HP Storageworks MSA2324fc

Virtual Connect Enterprise Manager

Supported by Virtual Connect Enterprise Manager (VCEM) 7.4.1 and higher for centralized connection and workload management for hundreds of Virtual Connect domains. Learn more at: <http://www.hpe.com/info/vcem>

HPE Service Pack for ProLiant Gen 9 Servers: Version 2014.09.0 or greater.

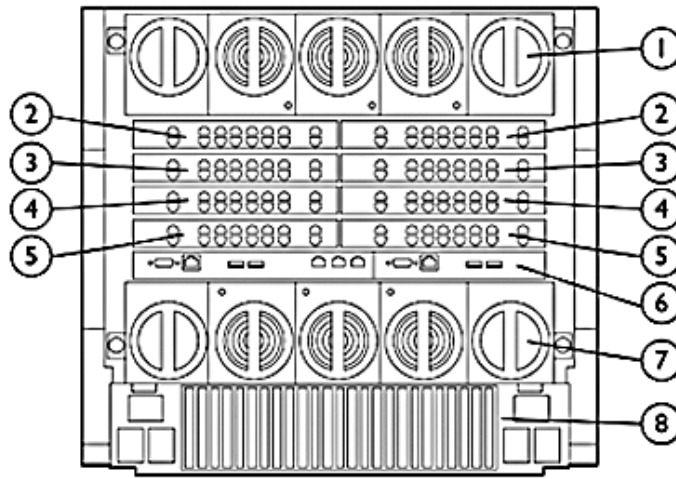
The HPE Service Pack for ProLiant (SPP) with HPE Smart Update Manager (HPE SUM) as the deployment engine provides a comprehensive approach to firmware and system software maintenance. The SPP is a comprehensive collection of firmware and system software components, all tested together as a single solution stack that include drivers, agents, utilities, firmware packages for HPE ProLiant servers, controllers, storage, blades and enclosures, and other options. It is available on all supported HPE ProLiant Gen 9 and Gen 8 servers (HPE ProLiant SL/ML/DL/BL 100, 200, 300, 500, 700, 900 servers, and HPE CloudSystem Matrix) in addition to earlier generation HPE ProLiant servers. The SPP is released with most major HPE ProLiant server releases. To access the latest HPE Service Pack for ProLiant click here:

<https://www.hpe.com/us/en/products/servers/smart-update.html>



Standard Features

Supported Configurations



HPE BladeSystem c7000 Enclosure - Rear View

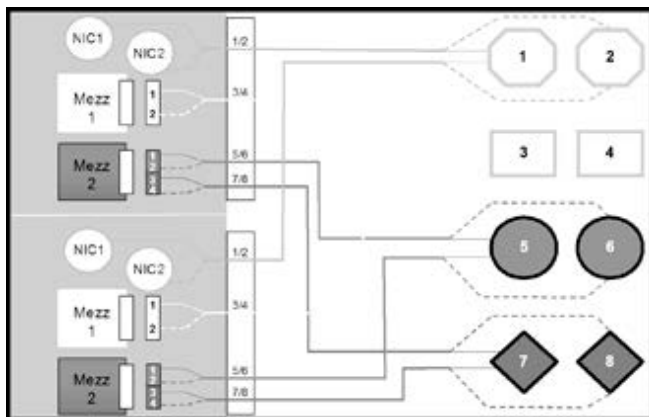
- | | |
|----------------------------|---------------------------------|
| 1. Upper Fan System | 5. Interconnect Bays 7 / 8 |
| 2. Interconnect Bays 1 / 2 | 6. On Board Administrator |
| 3. Interconnect Bays 3 / 4 | 7. Lower Fan System |
| 4. Interconnect Bays 5 / 6 | 8. Rear Redundant Power Complex |

Mezzanines

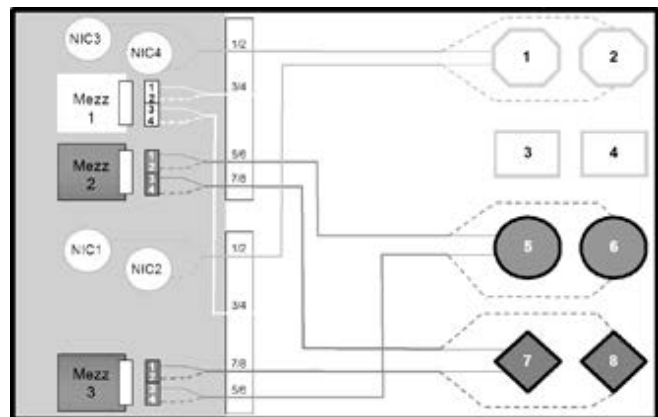
Port Mapping

Port mapping differs slightly between full height and half height server blades due to the support for additional Mezzanine cards on the full height version.

Hewlett Packard Enterprise has simplified the processes of mapping Mezzanine ports to switch ports by providing intelligent management tools via the Onboard Administrator and HPE Insight Manager Software. The Onboard Administrator Guide, Enclosure Setup and Installation Guide provides detailed information on port mapping.



c7000 Half Height Server Blade



c7000 Full Height Server Blade



Standard Features

The following are supported configurations for the HPE Virtual Connect 16Gb 24-Port Fibre Channel Module. Please note that other interconnect options can be installed in the enclosure, but they do not inherit the benefits of Virtual Connect. Switches and Pass-Thru modules will operate per their default configurations. Any moves, additions, or changes to servers which are connected to non-Virtual Connect modules will require reconfiguration on the LAN and/or SAN. The Virtual Connect Manager will only manage Virtual Connect Modules.

The HPE Virtual Connect 16Gb 24-Port Fibre Channel Module requires a Virtual Connect Ethernet Module installed in the system for management and administration.

HPE BladeSystem c7000 Enclosure

Notes: The following tables show a number of typical, supported configurations for an HPE BladeSystem c7000 Enclosure.

Table 1

[Bay 1] VC-Enet	[Bay 2] Empty
[Bay 3] VC-FC 16G	[Bay 4] Empty
[Bay 5] Other/empty	[Bay 6] Other/empty
[Bay 7] Other/empty	[Bay 8] Other/empty

Table 2

[Bay 1] VC-Enet	[Bay 2] VC-Enet
[Bay 3] VC-FC 16G	[Bay 4] VC-FC 16G
[Bay 5] Other/empty	[Bay 6] Other/empty
[Bay 7] Other/empty	[Bay 8] Other/empty

Table 3

[Bay 1] VC-Enet	[Bay 2] VC-Enet
[Bay 3] VC-Enet	[Bay 4] VC-Enet
[Bay 5] VC-FC 16G	[Bay 6] VC-FC 16G
[Bay 7] Empty	[Bay 8] Empty

Table 4

[Bay 1] VC-Enet*	[Bay 2] VC-Enet
[Bay 3] VC-Enet	[Bay 4] VC-Enet
[Bay 5] VC-FC 16G	[Bay 6] VC-FC 16G
[Bay 7] VC-FC 16G	[Bay 8] VC-FC 16G

Notes: *This configuration is only applicable for enclosures with full-height servers.



Standard Features

Table 5

[Bay 1] VC-Enet	[Bay 2] VC-Enet
[Bay 3] VC-FC 16G	[Bay 4] VC-FC 16G
[Bay 5] VC-Enet	[Bay 6] VC-Enet
[Bay 7] Empty	[Bay 8] Empty

Table 6

[Bay 1] VC-Enet	[Bay 2] VC-Enet
[Bay 3] VC-FC 16G	[Bay 4] VC-FC 16G
[Bay 5] VC-Enet	[Bay 6] VC-Enet
[Bay 7] VC-Enet	[Bay 8] VC-Enet

Table 7

[Bay 1] VC-Enet	[Bay 2] VC-Enet
[Bay 3] Other/empty	[Bay 4] Other/empty
[Bay 5] VC-FC 16G	[Bay 6] VC-FC 16G
[Bay 7] Empty	[Bay 8] Empty

Table 8

[Bay 1] VC-Enet	[Bay 2] VC-Enet
[Bay 3] VC-FC 16G	[Bay 4] VC-FC 16G
[Bay 5] VC-FC 16G	[Bay 6] VC-FC 16G
[Bay 7] Empty	[Bay 8] Empty
[Bay 1] VC-Enet**	[Bay 2] VC-Enet
[Bay 3] VC-FC 16G	[Bay 4] VC-FC 16G
[Bay 5] VC-FC 16G	[Bay 6] VC-FC 16G
[Bay 7] VC-FC 16G	[Bay 8] VC-FC 16G

Notes: **This configuration is only applicable for single enclosure, not for multi-enclosure

Product Features

Performance

- (8) 4/8/16Gb Auto-negotiating Fibre Channel uplinks connected to external SAN switches
- (2) 16Gb Fibre Channel SFP+ Transceivers included with the Virtual Connect Fibre Channel Module
- (16) 8/16Gb Auto-negotiating Fibre Channel downlink ports provide maximum HBA performance
- HBA Aggregation on uplinks ports using ANSI T11 standards-based N_Port ID Virtualization (NPIV) technology
- Allows up to 255 virtual machines running on the same physical server to access separate storage resources
- Extremely low latency throughput provides switch-like performance.
- FIPS 140-2 support

Management

- Storage management is no longer constrained to a single physical HBA on a server blade
- Managed with the Virtual Connect Ethernet Module
- Does not add to SAN switch domains or require traditional SAN management

Virtual server profiles

- Provisioned storage resource is associated directly to a specific virtual machine - even if the virtual server is re-allocated within the BladeSystem
- Ability to pre-configure server I/O connections
- Ability to move, add, or change servers on the fly
- Once defined, SAN Administrators don't have to be involved in server changes



Standard Features

Trunking

- Support for a single trunk made up of up to eight SAN ports for a total of up to 128 Gbps balanced throughput.
- Trunking of the SAN-facing ports with external Brocade or HPE B-series switches provides a high-bandwidth solution while lowering costs through fewer SFPs and cables.
- N-Port trunking supported in NPIV mode.

Notes: Trunking is supported by external Brocade SAN switches, and can be configured only on the external Brocade switch, not on the Virtual Connect Fibre Channel module.

Options

- HPE Virtual Connect FlexFabric-20/40 F8 Module for c-Class BladeSystem
- HPE Virtual Connect FlexFabric 10Gb/24-port Module for c-Class BladeSystem
- HPE Virtual Connect Flex-10/10D Module for c-Class BladeSystem
- Virtual Connect Enterprise Manager <http://www.hpe.com/info/vcem>

Stacking Configuration

Stacking is only supported on Virtual Connect Ethernet Modules. The Virtual Connect Fibre Channel modules are managed via the Virtual Connect Ethernet Modules. The Virtual Connect firmware is dynamically mirrored between modules so all configuration data is updated simultaneously in a stack. Fibre Channel data packets are not transmitted between modules in a stacked configuration.

Product Specifications Software

Industry Standard NPIV Support

The Virtual Connect Fibre Channel module works by aggregating multiple FC HBA ports over a single N-port uplink through the use of N_port_ID virtualization (NPIV). NPIV allows multiple distinguishable identities (multiple port WWNs and port IDs) over a single N-port connection. Most Fibre Channel SAN switch vendors have support for NPIV in their latest firmware release. By conforming to the NPIV standard, SAN equipment interoperability simplified. The Virtual Connect Fibre Channel Module Provides basic 4:1, 8:1, or 16:1 NPIV Fibre Channel concentration.

Data Center Connectivity

Each Virtual Connect Fibre Channel module supports up to 8 SAN fabrics and is typically connected to a Fibre Channel switch that has been configured to run in NPIV mode. The 8 uplink ports are speed selectable from 16, 8 or 4Gb/s.

The setup wizard allows SAN administrators to name the fabric that servers will connect into and set the oversubscription rate. Fibre Channel boot parameters and WWN administration are configurable options that can be integrated into server profiles.

In an NPIV environment, there is an initial brief login function between the Virtual Connect Fibre Channel Module and the data center switch. Once completed, all HBA connections appear as though they are directly connected between the server and the SAN switch. The Virtual Connect Fibre Channel Module appears as a pass-thru device to the SAN, yet cables are reduced as much as 16:1.



Standard Features

Management Features

- An HPE Virtual Connect Ethernet Module must be present in order to configure the VC FC Modules. This provides a complete Virtual Connect Environment for the server connections.
 - Simple and intuitive Graphical User Interface (GUI) and Command Line Interface (CLI) for defining, configuring, and managing all elements of the Virtual Connect Domain.
 - Setup Wizards for initial domain installation and configuration and network and SAN configuration.
 - Comprehensive administration, definition, and management of Ethernet Networks, Shared Uplink Sets using VLANs, SAN Fabric management, and Server Profiles
 - Domain Management of user accounts, enclosure, Virtual Connect domain settings, and firmware updates
 - The location and status of Virtual Connect Modules in the HPE c-Class Enclosure and Onboard Administrator can be viewed from the Hardware Status page. Including at-a-glance detailed information of the hardware elements via mouse-over pop-up windows.
 - WWN Address Administration allows local administration of predefined WWN addresses ranges to allow pre-provisioning of SAN volumes.
 - VC manager runs as a high-availability pair when HPE VC-Ethernet Modules are installed in adjacent bays. All configuration data is stored in flash memory and check-pointed to the standby module. Configurations can also be backed up to a workstation via the GUI and CLI.
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Service and Support

Service and Support

HPE Technology Services for Industry Standard Servers

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. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HPE Pointnext operational services

HPE Pointnext operational services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

Recommended HPE Pointnext operational services for your HPE product

Optimized Care

Foundation Care CTR, three-year Care Pack Service

HPE Foundation Care Call-To-Repair Service connects you to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues -this includes our highest level commitment to repair hardware within six hours after opening your case and respond to software questions within two hours. Hewlett Packard Enterprise is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable servers. Collaborative software support is included and provides troubleshooting assistance on industry leading software running on your server. Simplify your support experience and make HPE your first call for hardware or software questions.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Standard Care

Foundation Care 24x7, three-year Care Pack Service

HPE Foundation Care 24x7 connects you to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues. Hardware onsite response within four hours if needed; collaborative software included in this Care Pack service provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make HPE your first call for hardware or software questions.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Related Services

HPE Installation and Startup Service for HPE BladeSystem c-Class Enhanced Network

Provides for the configuration and testing of BladeSystem Ethernet interconnect switches and Virtual Connect to facilitate proper implementation of network protocols and access to advanced features.

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa0-5969enw.pdf>

HPE Installation of ProLiant Add On Options Service

This easy-to-buy, easy-to-use HPE Pointnext operational service helps ensure that your new Hewlett Packard Enterprise hardware is installed smoothly, efficiently, and with minimal disruption of your IT and business operations

Additional HPE Pointnext operational services can be found at: <http://ssc.hpe.com/portal/site/ssc/>

Get connected to HPE to improve your support experience

Connecting products to Hewlett Packard Enterprise will help prevent problems with 24x7 monitoring, prefailure alerts, automatic call logging, and parts dispatch. With Connected products, you can have a dashboard to manage your IT anywhere, anytime, from any device.



Service and Support

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 HPE experts, access support resources or collaborate with peers. Learn more <http://www.hpe.com/info/hpesc>

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 a HPE warranty, HPE Pointnext operational or Hewlett Packard Enterprise contractual support agreement. Learn more about Insight Remote Support <http://www.hpe.com/info/insightremotesupport/docs> and Insight Online <http://www.hpe.com/info/insightonline>

Notes: HPE 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.

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 QuickSpecs, 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 HPE due to malfunction.

Warranty

Server Blade Interconnect Limited Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/>

Service Coverage

HPE Virtual Connect 16Gb 24-port Fibre Channel Module and HPE Virtual Connect 16Gb 24-Port Fibre Channel TAA Module for c-Class BladeSystem include 3 years 9x5 Next Business Day hardware support. If you have requirements for longer durations of service, quicker response times or more comprehensive services, HPE Pointnext operational services for the HPE Virtual Connect 16Gb 24-port Fibre Channel Module and HPE Virtual Connect 16Gb 24-Port Fibre Channel TAA Module are available to uplift or extend your coverage.

For more information

To learn more on HPE services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit: <http://www.hpe.com/services/bladeSystem>



Related Options

Transceivers

16Gb Optical Transceivers (SFP+)

HPE B-series 16Gb SFP+ Short Wave Transceiver QK724A

8Gb Optical Transceivers (SFP+)

HPE B-series 8Gb Shortwave Fibre Channel 1 Pack SFP+ Transceiver AJ716B

Optical Cables

PremierFlex OM4 type cables

HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable QK732A
 HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable QK733A
 HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable QK734A
 HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable QK735A
 HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable QK736A
 HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable QK737A

LC-LC for between 4/8 Gb and 4/8 Gb Fibre Channel devices

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 2.0m 1-Pack Fiber Optic Cable AJ835A
 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

Service and Support Offerings

Notes: Some options, including HPE Virtual Connect 16Gb 24-port Fibre Channel Module and HPE Virtual Connect 16Gb 24-Port Fibre Channel TAA Module for c-Class BladeSystem, are not covered under the c7000 enclosure HPE Pointnext operational. HPE Virtual Connect 16Gb 24-port Fibre Channel Module and HPE Virtual Connect 16Gb 24-Port Fibre Channel TAA Module for c-Class BladeSystem include 3 years 9x5 Next Business Day support. Care Pack service level support should always be uplifted to match existing BladeSystem service level.

Foundation Care Services

HPE 3 year Foundation Care 24x7 Virtual Connect 16Gb 24-Port Service U8AL6E
 HPE 3 year Foundation Care Call to Repair Virtual Connect 16Gb 24-Port Service U8AL9E

Installation Services

HPE BladSys c7000 Encd Network Startup Service UE603E
 HPE Installation AddOn/In Option Service UH745E

Additional HPE Pointnext operational services can be found at: <http://www.hpe.com/info/cpc>



Technical Specifications

Shipping Dimensions	
Length	16.25in (412.75mm)
Width	11.875in (301.62mm)
Height	3.5 in (88.9mm)
Shipping Weight	2.268kg (5.0 lbs)
Product Specifications Hardware	
Performance	16 Gb/sec line speed, full duplex Maximum frame size 2148 bytes (2112 byte payload)
Bandwidth	424 MB, Full Duplex @ 2-Gbps 852 MB, Full Duplex @ 4-Gbps 1704 MB, Full Duplex @ 8-Gbps 3408 MB, Full Duplex @ 16-Gbps
Aggregate Bandwidth	Up to 768 Gbps (24 ports x 16 Gbps x 2 for full duplex)
Fabric Latency (intra-switch)	700 nSec. Latency increases as input port speed is lower than the output port speed.
Number of Fibre Channel Ports	8 external 4/8/16-Gbps ports 16 internal 8/16-Gbps ports
External Port Type	Configured as Node port s (N_Port), 16Gb, 8Gb or 4Gb auto- negotiating SFP ports
Internal Port Type	Configured as Fabric Node port (N_Port), 16Gb or 8Gb auto- negotiating
Classes of Service	Class 2 and Class 3 Fibre Channel services
Scalability	Does not contribute to the total switch limit. See the SAN Design Guide for latest supported configurations.
Buffer Credits	8 buffer credits per port, ASIC embedded memory
Connectors and Cabling	SFP+ optical hot-pluggable transceiver with LC connector
Indicators	Port ID Indicator Module Status Indicator Port Link/Activity Indicator Module Locator (UID)
Dimensions	Width 7.59 in (192.79mm) Depth 10.57 in (268.48mm) Height 1.1 in (27.94mm)
Weight	1.497kg (3.3 lbs)
Environmental Ranges	Specification 10C to 35C (50F to 95F)
	Temperature Range
	Operating 10C to 35C (50F to 95F)
	Shipping -40C to 60C (-40F to 140F)
	Storage -20°C to 60°C (-4F to 140°F)
	Maximum wet bulb temperature 30C (80F)
	Relative humidity (noncondensing)**
	Operating 10% to 90%
	Shipping 10% to 90%
	Storage 10% to 95%
	Specification 10C to 35C (50F to 95F)
Notes: **Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.	
Power Specification	12V @ 4.65A (56 W)



Technical Specifications

Management and Standards Support

Standards

- ANSI T11 N_Port ID Virtualization
 - FC-PH Rev. 4.3
 - FC-PH-2
 - FC-PH-3
 - FC-AL Rev 4.6
 - FC-AL-2 Rev 7.0
 - FC-FLA
 - FC-GS
 - FC-GS-2
 - FC-GS-3
 - FC-FG
 - FC-VI
 - FC Element MIB RFC 2837
 - Fibre Alliance MIB Version 4.0
-

Safety and Compliance

Safety Certifications

- UL/CUL Recognition to UL/CSA 60950-1
 - TUV to EN 60950-1
 - CB report and certificate to IEC 60950-1 with all country deviations
 - CE Marking
-

Electromagnetic Emissions Certifications FCC Part 15 Class A

- FCC Part 15 Class A
 - EN 55022 Class A (CISPR22 Class A)
 - VCCI Class A
 - AS/NZS 3548 Class A or AS/NZS CISPR22 Class A
 - MIC Class A
 - CE Marking
-

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.hpe.com/info/recycle>. To recycle your product, please go to: <http://www.hpe.com/info/recycle> 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.hpe.com/info/recycle>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HPE OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.



Summary of Changes

Date	Version History	Action	Description of Change
17-Aug-2020	Version 8	Changed	Related Options sections was updated. Rebranding applie to document.
05-Nov-2018	Version 7	Changed	Overview and Supported Products sections were updated.
		Added	SKUs added: P08475-B21, P08476-B21.
		Removed	SKUs deleted: 751465-B21, 778720-B21.
23-Oct-2017	Version 6	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
04-Sep-2017	Version 5	Changed	Supported Products section was updated.
08-May-2017	Version 4	Changed	Supported Products section was updated. URLs were updated to hpe.com
12-Dec-2016	Version 3	Changed	Supported Products sections.
26-Oct-2016	Version 2	Changed	Branding edition.
09-Feb-2015	Version 1	Created	New QuickSpecs



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