

Overview

HPE StoreFabric 16Gb Host Bus Adapter

The HPE StoreFabric 16Gb Host Bus Adapters are designed to support ProLiant Servers with PCI-Express I/O slots to connect to Hewlett Packard Enterprise Storage Arrays using the 16/8/4 Gb Fibre Channel protocol.

The HPE 16Gb Host Bus Adapters bring datacenter infrastructure components to a higher level of performance and efficiency with the ability to deliver twice the I/O performance of 8Gb HBAs at lower latency. A 16Gb FC HBA purchased today is backward compatible with 8 Gb and 4 Gb storage networks and will protect future investments. When using storage intensive applications, such as backup/restore, database transactions, virtualization, and rich media, the increased performance of the 16 Gb infrastructure enables more rapid storage and retrieval of critical information. Designed for environments with greater virtual machine density and bandwidth requirements, the 16Gb HBAs enable more applications and VMs to run on a single host server and Fibre Channel port, resulting in reduced cabling and a higher return on IT investment. The four port adapters are specially designed for PCIe slot constrained servers which run workloads that demand extremely high storage networking bandwidth.

- Windows Server 2016 support

Key Features and Benefits

Performance	Delivers, up to three times the IOPS ^[1] , twice the data throughput (MB/s) and cuts latency by half compared to 8Gb FC HBAs <ul style="list-style-type: none"> • Best Fibre Channel IOPS, latency and throughput performance enables increased application and database transactions per second, enables faster large block transfers and increases the number of VMs that can be supported per server.
Support for greater Server Virtualization	Ideal for high density server virtualization environments <ul style="list-style-type: none"> • Enables more applications and VMs to run on a single server and Fibre Channel port, resulting in reduced cabling and a higher return on IT investment
Provides HPE ProLiant Connectivity to HPE Storage And Network	Robust interoperability testing <ul style="list-style-type: none"> • Provides an HPE-branded HBA solution which has undergone extensive HPE interoperability testing for connecting HPE ProLiant servers into HPE Storage and networking environments. • Optimal for connecting to The HPE 16Gb FC edge/core network switches.
Smart SAN support	Smart SAN is a protocol agnostic application embedded in SAN components that enables the 3PAR to orchestrate configuration, settings and policies in a SAN. HPE Smart SAN's Target Driven Zoning enables you to configure zones accurately in minutes and not in hours and its automatic discovery mechanism creates a powerful platform which would enable real-time diagnostics with self-healing in the near future.
Express Lane prioritization	The SN1200E enables I/O prioritization of physical or virtual server to a LUN or a group of LUNs ensuring priority delivery in high-traffic or congested storage networks. Managed with the Emulex OneCommand management software downloadable from HPE Software Downloads
NVMe over Fibre Channel Ready	The SN1200E 16Gb Fibre Channel Host Bus Adapters are NVMe-enabled to support emerging NVM Express (NVMe) over Fibre Channel storage networks.

Active Health System	All HPE 16Gb Fibre Channel adapters support HPE ProLiant Active Health System integration. This helps administrators accurately troubleshoot and resolves problem within the server faster.
Secure Firmware download	The SN1200E delivers enhanced security via the new secure firmware update feature which protects and ensures the authenticity of device firmware.
Forward error correction (FEC)	FEC is enabled and improved at 16Gb as required by the FC Specification, automatically correcting transmission errors and improving network performance and resiliency.
Class-specific Control (CS_CTL)	QoS capability that enables administrators to prioritize storage traffic to meet the needs of critical VM workloads
Link cable beaconing (LCB)	LED beaconing for ports on both ends of a physical link simplifies cable identification and management.
D-Port Diagnostics	Quickly run automated diagnostic tests in a single step, across multiple adapters, servers, and fabric components to assess connectivity. Optics and cable problems are identified and resolved.
FDMI,FC Ping, FC Trace Route	Quickly check connectivity to SAN devices and query the switch management server for in-depth details on connected devices. Trace Route capability supported on SN1100Q.
Read Diagnostic Parameters (RDP)	Identify the source of network and media errors like cyclic redundancy check (CRC) and loss of sync (LOS) by remotely accessing diagnostic information from anywhere in the fabric.
Fabric-assigned Port Worldwide Name (FA_WWN)	Using SN1100Q, administrators can preconfigure WWN settings at the switch port allowing Fibre Channel adapter to acquire port WWN address from the Gen 5 16Gb or Gen 6 32GFCfabric. This allows SAN administrator to configure SAN zoning without need for servers to be present.
Fabric-based Boot LUN (F_BLD)	Allows SN1100Q to acquire Boot-LUN information directly from Gen 5 16Gb switch, speeding up deployment of new servers in a SAN environment.

Models

Models	Description	Part Number
Single Port		
SN1200E Single Port	HPE StoreFabric SN1200E 16Gb Single Port Fibre Channel Host Bus Adapter	Q0L13A
SN1100Q Single Port	HPE StoreFabric SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter	<u>P9D93A</u>
SN1100E Single Port	HPE StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	<u>C8R38A</u>
SN1000Q Single Port	HPE StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	<u>QW971A</u>

Dual Port

SN1200E Dual Port	HPE StoreFabric SN1200E 16Gb Dual Port Fibre Channel Host Bus Adapter	<u>Q0L14A</u>
SN1100Q Dual Port	HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter	<u>P9D94A</u>
SN1100E Dual Port	HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	<u>C8R39A</u>
SN1000Q Dual Port	HPE StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	<u>QW972A</u>

Quad Port

SN1100E Quad Port	HPE StoreFabric SN1100E 16Gb 4- port Fibre Channel Host Bus Adapter	<u>P9D99A</u>
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Service and Support, and Warranty Information**HPE Support Services and Warranty Information****Protect your business beyond warranty with HPE Support Services**

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new storage solution, giving you full entitlement for the support for need for your IT and business.

Recommended Services

Support for this adapter is at the level of server it is a part of. Please check the quick specs of the server.

Parts and Materials

HPE will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Learn More:

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or HPE Authorized Channel Partner

HPE Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners.

Warranty

3-0-0 Three-year parts exchange warranty. Additional warranty protection can be purchased.

HPE Global Services provides a three-year, limited warranty, fully supported by a worldwide network of resellers and service providers and toll-free 7 x 24 hardware technical phone support for the duration of the warranty. In addition, available service offerings include a full range of HPE Care Pack packaged hardware and software services.

NOTE: Certain restrictions and exclusions apply. Consult the HPE Customer Support Center for details.

Technical Specifications

	<u>P9D99A</u>	<u>P9D93A</u>	<u>P9D94A</u>	<u>Q0L13A</u>	<u>Q0L14A</u>
Number of channels	Quad	Single	Dual	Single	Dual
Port Speed	16 Gbps	16 Gbps	16 Gbps	16Gbps	16Gbps
Slot type supported	PCI Express 3.0 to Fibre Channel				
OS Supported					
NOTE: Always refer to the HPE Single Point of Connectivity Knowledge for HPE Storage Products at: for specific product support information and specific OS versions supported.					
Windows Server 2016/ 2012 / 2012 R2 & HyperV	x64	x64	x64	x64	x64
RHEL 7.x, 6.x	x64	x64	x64	x64	x64
VMware ESX/ESXi 6.5,6.0,5.5	x64	x64	x64	x64	x64
SLES 12.x, 11.x	x64	x64	x64	x64	x64
Servers Supported	Select HPE ProLiant Gen8 and HPE ProLiant Gen9 servers				
NOTE: Refer to server Quick Specs for details regarding supported options.					
Array Platforms Supported	Refer to http://www.hp.com/storage/spock for specific product support information				
What's Included in the Box?	16 Gbps HBA with standard bracket, four 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, one 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, two 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, one 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, two 16 Gbps SFP+, low-profile bracket, documentation
Environmental - Operating Temperature	32° F to 113° F (0° C to 45° C)	32° F to 131° F (0° C to 55° C)		32° F to 131° F (0° C to 55° C)	
Environmental - Storage Temperature	-40° F to 158° F (-40° C to 70° C)	-4° F to 158° F (-20° C to 70° C)		-4° F to 185° F (-20° C to 85° C)	
Environmental - Relative Humidity - Operating	15% to 80% RH at 40° C (non-condensing)	10% to 90% RH at 40° C (non-condensing)		10% to 90% RH at 40° C (non-condensing)	
Product Dimensions (W x D x H)	6.59 x 0.49 x 4.4 in (12.34x167.51x111.15mm)	6.63 x 0.63 in. (119 x 168 x 16mm)		6.6 x 0.69 x 2.71 in (167.6 x 17.5 x 68.9 mm)	
Media Connector	Multi-mode Optic (SFP+)				
PCIe Connector	Short wave laser with LC type connector PCIe 3.0 x8				

Auto-negotiation	16/8/4 Gbps			
Brackets	Shipped with both ½ height and full-height brackets			
	<u>QW971A</u>	<u>QW972A</u>	<u>C8R38A</u>	<u>C8R39A</u>
Number of channels	Single	Dual	Single	Dual
Port Speed	16 Gbps	16 Gbps	16Gbps	16Gbps
Slot type supported	PCI Express 3.0 to Fibre Channel			

OS Supported

NOTE: Always refer to the HPE Single Point of Connectivity Knowledge for HPE Storage Products at: for specific product support information and specific OS versions supported.

Windows Server 2016/2012/2012 R2	x64	x64	x64	x64
RHEL 7.x, 6.x	x64	x64	x64	x64
VMware ESX/ESXi 6.5,6.0,5.5	x64	x64	x64	x64
SLES	x64	x64	x64	x64

Servers Supported

Select HPE ProLiant Gen8 and HPE ProLiant Gen9 servers

NOTE: Refer to server Quick Specs for details regarding supported options.

Array Platforms Supported

Refer to <http://www.hp.com/storage/spock> for specific product support information

What's Included in the Box?

16 Gbps HBA with standard bracket, one 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, two 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, one 16 Gbps SFP+, low-profile bracket, documentation	16 Gbps HBA with standard bracket, two 16 Gbps SFP+, low-profile bracket, documentation
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Environmental - Operating Temperature

32° F to 131° F
(0° C to 55° C)

32° F to 131° F
(0° C to 55° C)

Environmental - Storage Temperature

-4° F to 158° F
(-20° C to 70° C)

-4° F to 185° F
(-20° C to 85° C)

Environmental - Relative Humidity - Operating

10% to 90% RH at 40° C (non-condensing)

10% to 90% RH at 40° C (non-condensing)

Product Dimensions (W x D x H)

6.63 x 0.63 in.
(119 x 168 x 16mm)

6.6 x 0.69 x 2.71 in.
(167.6 x 17.5 x 68.9 mm)

Media

Multi-mode Optic (SFP+)

Multi-mode Optic (SFP+)

Connector

Short wave laser with LC type connector

Short wave laser with LC type connector

PCIe Connector Auto-negotiation Brackets

PCIe 3.0 x8
16/8/4 Gbps

Shipped with both ½ height and full-height brackets

Summary of Changes

Date	Version History	Action	Description of Change
08-May-2017	From Version 13 to 14	Changed	Changed Environmental data for SN1200E cards
17-Feb-2017	From Version 12 to 13	Changed	Feature and table of specifications are cleaned up with latest information
28-Nov-2016	From Version 11 to 12	Changed	Added Information on SN1200E 16Gb Single port and Dual Port adapters
07-Jun-2016	From Version 10 to 11	Changed	Changes made throughout the QuickSpecs
31-Mar-2016	From version 9 to 10	Changed	Changes made throughout the QuickSpecs
17-Oct-2014	From Version 8 to 9	Changed	Removed the SN1000 from the name, Update the Technical Specifications section table.
09-May-2014	From Version 7 to 8	Changed	Operate and Support and Basic Care were revised.
28-Mar-2014	From Version 6 to 7	Changed	PCIe Connector was revised in Technical Specifications.
14-Feb-2014	From Version 5 to 6	Removed	SN1000E Single Port and SN1000E Dual Port were removed.
20-Sep-2013	From Version 4 to 5	Changed	Changes made to the following Sections Overview - What's New Models Technical Specifications
04-Dec-2012	From Version 2 to 3	Changed	Changes made throughout the QuickSpecs. Note that the title has changed.



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