

### Overview

#### HPE 16Gb Fibre Channel Host Bus Adapter

The HPE 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.

#### What's New

- HPE ProLiant Gen10.5 Servers support

#### Models

##### Description

##### SKU

##### Single Port

###### SN1200E Single Port

HPE SN1200E 16Gb Single Port Fibre Channel Host Bus Adapter

Q0L13A

###### SN1100Q Single Port

HPE SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter

P9D93A

###### SN1100E Single Port

HPE SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter

C8R38A

###### SN1000Q Single Port

HPE SN1000Q 16Gb 1-port PCIe Fibre Channel Host Bus Adapter

QW971A

##### Dual Port

###### SN1200E Dual Port

HPE SN1200E 16Gb Dual Port Fibre Channel Host Bus Adapter

Q0L14A

###### SN1100Q Dual Port

HPE SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter

P9D94A

###### SN1100E Dual Port

HPE SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter

C8R39A

###### SN1000Q Dual Port

HPE SN1000Q 16Gb 2-port PCIe Fibre Channel Host Bus Adapter

QW972A

##### Quad Port

###### SN1100E Quad Port

HPE SN1100E 4-port 16Gb Fibre Channel Host Bus Adapter

P9D99A

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## Standard Features

### Key Features and Benefits

#### Performance

Delivers, up to three times the IOPS\*, twice the data throughput (MB/s) and cuts latency by half compared to 8Gb FC HBAs

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.

**Notes:** \* The HPE SN1200E delivers up to 1.6 million IOPS on a single port or in aggregate across both ports

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#### Support for greater Server Virtualization

Ideal for high density server virtualization environments

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

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#### Provides HPE ProLiant Connectivity to HPE Storage And Network

Robust interoperability testing

- 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.
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#### 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.

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#### 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](#)

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#### NVMe over Fibre Channel Ready

The SN1200E & SN1100Q 16Gb Fibre Channel Host Bus Adapters are NVMe-enabled to support emerging NVM Express (NVMe) over Fibre Channel storage networks.

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#### 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.

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#### Secure Firmware download

The SN1200E delivers enhanced security via the new secure firmware update feature which protects and ensures the authenticity of device firmware.

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#### 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.

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#### Class-specific Control (CS\_CTL)

QoS capability that enables administrators to prioritize storage traffic to meet the needs of critical VM workloads

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## Standard Features

### Link cable beaconing (LCB)

LED beaconing for ports on both ends of a physical link simplifies cable identification and management.

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### 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.

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### 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.

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### 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.

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### Fabric-assigned Port Worldwide Name (FA\_WWN)

Using SN1100Q & SN1000Q 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.

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### Fabric-based Boot LUN (F\_BLD)

Allows SN1100Q & SN1000Q to acquire Boot-LUN information directly from Gen 5 16Gb switch, speeding up deployment of new servers in a SAN environment.

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### Buffer-to-Buffer Credit Recovery (BB\_CR)

The SN1100Q enhances performance and resiliency by automatically recovering buffer credits, which can be lost on long distance and lossy connections with the potential to stall I/O or degrade performance.

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### Virtual Machine ID (VM-ID)

The SN1100Q enables System/SAN administrator to monitor FC traffic from VM to LUN

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## Service and Support

### 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.

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#### 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.

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#### 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 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 Hewlett Packard Enterprise due to malfunction.

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#### 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.

<http://www.hpe.com/services>

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#### 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 Pointnext operational packaged hardware and software services.

**Notes:** Certain restrictions and exclusions apply. [Consult the HPE Customer Support Center for details.](#)

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## Technical Specifications

### Family Information

HPE 16Gb Fibre Channel Host Bus Adapter					
	P9D99A	P9D93A	P9D94A	Q0L13A	Q0L14A
<b>Number of channels</b>	Quad	Single	Dual	Single	Dual
<b>Port Speed</b>	16 Gbps	16 Gbps	16 Gbps	16Gbps	16Gbps
<b>Slot type supported</b>	PCI Express 3.0 to Fibre Channel				
<b>OS Supported</b>	<p><b>Notes:</b> Always refer to the <a href="#">HPE Single Point of Connectivity Knowledge for HPE Storage Products at: <a href="http://www.hpe.com/storage/spock">http://www.hpe.com/storage/spock</a></a> for specific product support information and specific OS versions supported.</p>				
Windows Server 2019/2016/ 2012 / 2012 R2 & HyperV	x64	x64	x64	x64	x64
RHEL 8.x, 7.x, 6.x	x64	x64	x64	x64	x64
VMware ESX/ESXi 7.0,6.7,6.5,6.0,5.5	x64	x64	x64	x64	x64
SLES 15.x,12.x, 11.x	x64	x64	x64	x64	x64
<b>Servers Supported</b>	<p>Select HPE ProLiant Gen8 ,Gen9 &amp; Gen10 servers</p> <p><b>Notes:</b> Refer to <a href="#">server Quick Specs</a> for details regarding supported options.</p>				
<b>Array Platforms Supported</b>	Refer to <a href="http://www.hpe.com/storage/spock">http://www.hpe.com/storage/spock</a> for specific product support information				
<b>What's Included in the Box?</b>	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
<b>Environmental - Operating Temperature</b>	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)	
<b>Environmental - Storage Temperature</b>	-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)	
<b>Environmental - Relative Humidity - Operating</b>	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)	
<b>Product Dimensions (W x D x H)</b>	6.59 x 0.49 x 4.4 in (12.34x167.51x11.15mm)	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)	
<b>Media</b>	Multi-mode Optic (SFP+)				
<b>Connector</b>	Short wave laser with LC type connector				
<b>PCIe Connector</b>	PCIe 3.0 x8				
<b>Auto-negotiation</b>	16/8/4 Gbps				
<b>Brackets</b>	Shipped with both ½ height and full-height brackets				

## Technical Specifications

	QW971A	QW972A	C8R38A	C8R39A
<b>Number of channels</b>	Single	Dual	Single	Dual
<b>Port Speed</b>	16 Gbps	16 Gbps	16Gbps	16Gbps
<b>Slot type supported</b>	PCI Express 3.0 to Fibre Channel			
<b>OS Supported</b>	<b>Notes:</b> Always refer to the HPE Single Point of Connectivity Knowledge for HPE Storage Products at: <a href="http://www.hpe.com/storage/spock">http://www.hpe.com/storage/spock</a> 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
<b>Servers Supported</b>	Select HPE ProLiant Gen8 and HPE ProLiant Gen9 servers <b>Notes:</b> Refer to server Quick Specs for details regarding supported options.			
<b>Array Platforms Supported</b>	Refer to <a href="http://www.hpe.com/storage/spock">http://www.hpe.com/storage/spock</a> for specific product support information			
<b>What's Included in the Box?</b>	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
<b>Environmental - Operating Temperature</b>	32° F to 131° F (0° C to 55° C)		32° F to 131° F (0° C to 55° C)	
<b>Environmental - Storage Temperature</b>	-4° F to 158° F (-20° C to 70° C)		-4° F to 185° F (-20° C to 85° C)	
<b>Environmental - Relative Humidity - Operating</b>	10% to 90% RH at 40° C (non-condensing)		10% to 90% RH at 40° C (non-condensing)	
<b>Product Dimensions (W x D x H)</b>	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)	
<b>Media</b>	Multi-mode Optic (SFP+)		Multi-mode Optic (SFP+)	
<b>Connector</b>	Short wave laser with LC type connector		Short wave laser with LC type connector	
<b>PCIe Connector</b>	PCIe 3.0 x8			
<b>Auto-negotiation</b>	16/8/4 Gbps			
<b>Brackets</b>	Shipped with both ½ height and full-height brackets			



## Summary of Changes

Date	Version History	Action	Description of Change
03-Aug-2020	Version 18	Changed	QuickSpecs layout was updated and Branding Refresh was applied.
15-Jun-2020	Version 17	Changed	Overview and Technical Specification sections were updated
06-Apr-2020	Version 16	Changed	QuickSpecs layout was updated
07-Aug-2017	Version 15	Changed	Feature changes and Gen10 support
08-May-2017	Version 14	Changed	Changed Environmental data for SN1200E cards
17-Feb-2017	Version 13	Changed	Feature and table of specifications are cleaned up with latest information
28-Nov-2016	Version 12	Changed	Added Information on SN1200E 16Gb Single port and Dual Port adapters
07-Jun-2016	Version 11	Changed	Changes made throughout the QuickSpecs
31-Mar-2016	version 10	Changed	Changes made throughout the QuickSpecs
17-Oct-2014	Version 9	Changed	Removed the SN1000 from the name, Update the Technical Specifications section table.
09-May-2014	Version 8	Changed	Operate and Support and Basic Care were revised.
28-Mar-2014	Version 7	Changed	PCIe Connector was revised in Technical Specifications.
14-Feb-2014	Version 6	Removed	SN1000E Single Port and SN1000E Dual Port were removed.
20-Sep-2013	Version 5	Changed	Changes made to the following Sections; Overview, Models and Technical Specifications
19-Aug-2013	Version 4	Changed	QuickSpecs layout was updated
04-Dec-2012	Version 3	Changed	Changes made throughout the QuickSpecs. Note that the title has changed.
18-Jun-2012	Version 2	Changed	QuickSpecs layout was updated
13-Feb-2012	Version 1	New	New QuickSpecs



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