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
- FC-NVMe support in Windows, VMware and Linux OSes

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
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

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

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.

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.

Smart SAN support
Smart SAN is a protocol agnostic application embedded in SAN components that enables SCSI-attached Alletra/Primera/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
The SN1200E & SN1100Q 16Gb Fibre Channel Host Bus Adapters are NVMe-enabled to support emerging NVM Express (NVMe) over Fibre Channel storage networks.
- FC-NVMe support in Windows Server 2016 / 2019 with Native Multipathing (Asymmetric namespace access (ANA)) and Boot from SAN (BFS) for SN1100Q adapter
- FC-NVMe support for ESX 7.0 U1, RHEL 8.3, RHEL 7.9, SLES 15 SP2 for SN1100Q adapter
- Supports FC-NVMe-2 Sequence Level Error Recovery (SLER)

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.

Standard Features

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.

Universal SAN Congestion Mitigation (UCSM)
USCM support (Fabric Performance Impact Notifications, FPIN) for SN1100Q adapter in the following tools & OS distros:
- QCC CLI, ESX CLI, Windows / Linux / ESX drivers
- USCM I/O Throttling mitigation support.

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
Quickly check connectivity to SAN devices and query the switch management server for in-depth details on connected devices.

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 & SN1200E 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.

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.

Virtual Machine ID (VM-ID)
The SN1100Q enables System/SAN administrator to monitor FC traffic from VM to LUN

Service and Support

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 24x7 hardware technical phone support for the duration of the warranty. In addition, available service offerings include a full range of HPE Services operational packaged hardware and software services**.**
Notes: Certain restrictions and exclusions apply. Consult the HPE Customer Support Center for details.

HPE Services
No matter where you are in your transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.
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Consulting services
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HPE Managed Services
HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.
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Operational services
Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.
https://www.hpe.com/services/operational

Recommended Services

HPE Tech Care Service
HPE Tech Care Service is the operational support service experience for HPE products. The service goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

https://www.hpe.com/services/techcare

Service and Support

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

https://www.hpe.com/services/completecare

Other related services from HPE Services

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

https://www.hpe.com/services/lifecycle

- For a list of the most frequently purchased services using service credits, see the **HPE Service Credits Menu**

HPE SAN Deployment Service

Hewlett Packard Enterprise delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components.

Learn more: **https://www.hpe.com/psnow/doc/5981-8527enw?jumpid=in_lit-psnow-red**

HPE Installation Service

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

Learn more: **https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=5981-9356enw**

HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.

https://www.hpe.com/services/training

Service and Support

Defective Media Retention
An option available with HPE-Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

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 QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

How to purchase services
Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:
- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at **https://ssc.hpe.com/portal/site/ssc/**

AI Powered and Digitally Enabled Support Experience
Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience.

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.

https://support.hpe.com/hpesc/public/home/signin

Consume IT on your terms
HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.
- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html

For more information: **http://www.hpe.com/services**

Technical Specifications

Family Information

	P9D93A	P9D94A	Q0L13A	Q0L14A
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 **Notes:** Always refer to the HPE Single Point of Connectivity Knowledge for HPE Storage Products at: **http://www.hpe.com/storage/spock** for specific product support information and specific OS versions supported.				
Windows Server 2019/2016/ 2012 / 2012 R2 & HyperV	x64	x64	x64	x64
RHEL 8.x, 7.x, 6.x	x64	x64	x64	x64
VMware ESX/ESXi 7.0,6.7,6.5,6.0,5.5	x64	x64	x64	x64
SLES 15.x,12.x, 11.x	x64	x64	x64	x64
Servers Supported	Select HPE ProLiant & Apollo Gen10 and above platforms **Notes:** Refer to server Quick Specs for details regarding supported options.			
Array Platforms Supported	Refer to **http://www.hpe.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
Environmental - Operating Temperature	32º F to 113º F (0º C to 45º C)		32º F to 131º F (0º C to 55º C)	
Environmental - Storage Temperature	-40º F to 158º F (-40º C to 70º C)		-4º F to 158º F (-20º C to 70º C)	
Environmental - Relative Humidity - Operating	15% to 80% RH at 40º C (non-condensing)		10% to 90% RH at 40º 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)	
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	PCIe 3.0 x8			
Auto-negotiation	16/8/4 Gbps			
Brackets	Shipped with both ½ height and full-height brackets			

Summary of Changes

Date	Version History	Action	Description of Change
13-Nov-2023	Version 22	Changed	HPE Services Rebranding
10-Jan-2022	Version 21	Changed	Corrected NVMe information
07-Sep-2021	Version 20	Changed	Added UCSM and removed some of the deprecated features
04-May-2021	Version 19	Changed	Removed OBS products and added FC-NVMe OS information
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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