

### Overview

### HPE StoreFabric 16Gb Host Bus Adapters

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.

### What's New

- HPE StoreFabric SN1100E 4-port 16Gb Fibre Channel Host Bus Adapter (P9D99A)

### Key Features and Benefits

#### Performance

Delivers, up to six 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.

#### 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

Robust interoperability testing

#### And Network

- 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.

#### Active Health System

Administrators need cutting-edge diagnostic tools to more quickly find and fix their toughest issues. In addition, the consolidated health and service alerts with precise time stamping are synchronized to

## Overview

improve root cause diagnosis across systems and solution

With this advanced system telemetry you can accurately troubleshoot and resolve problems faster. And because it's completely agentless, Active Health doesn't impact application performance.

All information collected by Active Health is logged securely, isolated from the operating system and separate from any customer data. In 3-4 minutes, you can securely export the Active Health file to an HP Support professional to help you resolve your issue faster and more accurately. The 16 Gb Single port and Dual port card supports HPE Active Health System in HPE ProLiant Servers

### Improved IOPS performance per watt

Power savings result in lower operating expenditure.

### HPE Smart SAN Adapter End-to-end SAN orchestration and SAN automation with HPE 3PAR StoreServ Integration

HPE Smart SAN for HPE 3PAR makes end-to-end SAN configuration and management simple and autonomic, reducing the probability of errors through SAN automation. It is an application embedded in the SAN that leverages StoreFabric components with intelligence from the array (hosts and switches), which enables the 3PAR to automate configuration for settings and policies across the SAN. Smart SAN is only supported on HPE 3PAR storage, B-series Switches, HPE Q and E 16Gb FC adapters (HBAs). HPE Smart SAN for 3PAR leverages Industry Standards based Peer zoning, called Target Driven Peer Zoning (TDPZ). Smart SAN features enable customers to automate peer zoning, resulting in the creation of fewer zones, and enables configuration of zones in minutes, not hours. Additional information can be found here: <http://www8.hp.com/us/en/products/storage-software/product-detail.html?oid=8295863#!tab=features>

**NOTE:** HPE Smart SAN is not available as a factory install on 3PAR StoreServ 7000 and 3PAR StoreServ 10000 until 3.2.2 MU2 or higher is available as a factory install. However, if the OS is updated to 3.2.2 MU2 or higher you can order the electronic license to use (ELTU) SKUs to enable Smart SAN Software

**NOTE:** Requires 3PAR StoreServ 3.2.2 or later with HP 3PAR StoreServ 7000 2-port 16Gb Fibre Channel Adapter E7X47A.

**NOTE:** Requires 3PAR StoreServ 3.2.2 or later with HP 3PAR StoreServ 8000 4-port 16Gb Fibre Channel Adapter H6Z00A.

**NOTE:** Requires 3PAR StoreServ 3.2.2 or later with HP 3PAR StoreServ 10000 2-port 16Gb Fiber Channel Upgrade Host Bus Adapter E7Y67A.

**NOTE:** Requires 3PAR StoreServ 3.2.2 or later with HP 3PAR StoreServ 20000 4-port 16Gb Fiber Channel Upgrade Host Bus Adapter C8S96A

**NOTE:** Supports HPE FlexFabric 5900CP Series switches and HPE Flexfabric 5930 Series switches with 24-port CP 2QSFP option, Comware Software version 7.1.045, release 2422PO1 or later.

**NOTE:** Supports HPE StoreFabric B-series Brocade 16/8Gb FC switches with FOS 7,4a or later.

**NOTE:** Supports HPE StoreFabric HPE 16GB FC adapters: SN1000Q 2P (QW972A), SN1000Q 1P (QW971A) and QLE2560 - 81q (AK344A), QLE2562 - 82q (AJ764A).

## Models

### Models

|                            | <b>Description</b>  | <b>Part Number</b> |
|----------------------------|---|--------------------|
| <b>SN1000Q Single Port</b> | HPE StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter | QW971A             |
| <b>SN1000Q Dual Port</b>   | HPE StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter | QW972A             |
| <b>SN1100E Single Port</b> | HPE StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter | C8R38A             |
| <b>SN1100E Dual Port</b>   | HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter   | C8R39A             |
| <b>SN1100Q Single Port</b> | HPE StoreFabric SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter | P9D93A             |
| <b>SN1100Q Dual Port</b>   | HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter   | P9D94A             |
| <b>SN1100E Quad Port</b>   | HPE StoreFabric SN1100E 16Gb 4- port Fibre Channel Host Bus Adapter     | P9D99A             |

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## Service and Support, and Warranty Information

### 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.**

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### Service and Support

#### Services to accelerate time to results

HPE Storage Services bring you a rich portfolio of consulting and support services designed to add value to our core storage products and solutions. We have the know-how and experience to put storage technology to work for you. We work closely with you as your strategic partner, leveraging our full services portfolio to make sure that everything works to optimize your enterprise.

- Choose from services aligned to our storage product offerings and lifecycle. From mission-critical onsite services to innovative web-based remote support, you choose the precise level of attention and support your business demands.
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### Discover, plan, and design

Choose from a rich portfolio of services to make the most of HPE StoreFabric Storage, so you can efficiently and affordably consolidate, manage, and extract value from unstructured data.

#### **HPE Services can help you discover needs and create a plan for simplifying the environment, reducing risk, and maximizing your storage investments**

**HPE Backup Recovery Efficiency Analysis** - Assessment of how efficiently backup components are being used as the amount of data to be backed up continues to grow exponentially via analysis intelligence and a snapshot of your current backup environment.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8490ENW.pdf>

**HPE Backup Recovery Impact Analysis** - Focus placed on service requirements and design as the key to success for gaining a clear understanding of the role of increasingly diverse data protection strategies. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-1175ENW.pdf>

**HPE Backup Recovery Modernization** - Initial discovery, interviews, reference architecture design, proposal content development, vendor grading, and final recommendations carried out so as to require minimal resources and locations on your part.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-1199ENW.pdf>

- **HPE Storage Cloud Design Service** - Build a scalable, low-cost enterprise storage environment with inherent cloud benefits to meet big data needs.
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### Deploy and integrate

We can help you configure, set up, and efficiently use your HPE StoreFabric Storage, as well as help

## Service and Support, and Warranty Information

migrate data, improve capacity utilization, and establish information management standards used across backup, replication, and archiving needs.

**HPE Enhanced Implementation Service for SANs** - Select this service for complete design and implementation support for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components

**HPE Storage Data Migration Services** - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network or network attached storage environment and using innovative software to help you migrate to HPE storage quickly and efficiently.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-0774ENW.pdf>

**HPE Storage and Data Consultant Residency Service** - Strategic augmentation of your current environment with Hewlett Packard Enterprise technical resources who become your trusted advisor to provide answers that are right for your storage and backup environment.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-9481ENW.pdf>

**HPE Proactive Select** - A flexible way to purchase services to fit your environment with an extensive menu of HPE Proactive Select event and technical services, such as onsite firmware upgrades, health checks, assessments, and education.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

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### Operate and support

Choose the right support to maximize uptime, free up your resources, and achieve improved value-as you get the most out of the existing IT assets while accelerating time-to-revenue.

**HPE Proactive Care 24x7** - Hardware and software support services designed specifically for your technology with rapid access to Advanced Solution Center Specialists plus firmware and software management and best practice advice

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

**HPE Proactive Care Personalized Support** - An option-if you have HPE Proactive Care- to bring increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3446ENW.pdf>

**HPE Foundation Care 24x7 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 and software call back within two hours after opening your case. Three years' coverage recommended with HPE Care Pack Service.

**HPE Education Services** - Comprehensive training for new, as well as experienced, storage administrators designed to expand your skills and keep you up to speed with the latest storage and virtualization technology from HPE Storage.

<http://education.hp.com/curr-storsan.htm>

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**Optimized Care** - Delivers the highest levels of performance and stability through deployment and proactive management

Choose from three levels of operate and support care  
**HPE Proactive Care 24x7-Plus, 20 credits per year**

**Additional options** - HPE Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HPE Personalized Support, and 10 additional HPE Proactive Select credits per year

## Service and Support, and Warranty Information

practices

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**Standard Care**-maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support

**HPE Proactive Care 24x7-Plus, 10 credits per year**  
**Additional options** - HPE Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HPE Personalized Support, and 10 additional HPE Proactive Select credits per year

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**Basic Care**-Minimum recommended support

HPE Foundation Care 24x7 Service - Plus, 10 credits per year  
**Additional options** - 10 HPE Proactive Select credits per year

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**Remote Support Automation**

HPE Insight Remote Support-Available at no additional cost to all warranty, HPE Care Pack Service and service agreement customers, uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis and problem resolution.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-4676ENW.pdf>

<http://h18004.www1.hp.com/products/servers/management/insight-remote-support/overview.html>

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**For more information** <http://www.hp.com/services/storage>

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

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

- Services for customers purchasing from Hewlett Packard Enterprise or an enterprise reseller are quoted using Hewlett Packard Enterprise order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Support Services at <http://www.hp.com/go/lookuptool>

## Technical Specifications

|   | P9D99A  | P9D93A  | P9D94A  | C8R38A  | C8R39A  |
|---|---|---|---|---|---|
| <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  | PCI Express 3.0 to Fibre Channel  | PCI Express 3.0 to Fibre Channel  | PCI Express 3.0 to Fibre Channel  | PCI Express 3.0 to Fibre Channel  |
| <b>OS Supported</b>   |   |   |   |   |   |
| <b>NOTE: Always refer to the HPE Single Point of Connectivity Knowledge for HPE Storage Products at: <a href="http://www.hp.com/storage/spock">http://www.hp.com/storage/spock</a> for specific product support information and specific OS versions supported.</b> |   |   |   |   |   |
| Windows Server 2008   | x64   | x64   | x64   | x86, x64  | x86, x64  |
| Windows Server 2008 R2 Hyper-V  | x64   | x64   | x64   | x64   | x64   |
| RHEL  | x64   | x64   | x64   | x64   | x64   |
| VMware ESX/ESXi   | x64   | x64   | x64   | x64   | x64   |
| SLES  | x64   | x64   | x64   | x86, x64  | x86, x64  |
| <b>Servers Supported</b>  | Select HPE ProLiant Gen8 and HPE ProLiant Gen9 servers<br><b>NOTE: Refer to server Quick Specs for details regarding supported options.</b> |   |   |   |   |
| <b>Array Platforms Supported</b>  | Refer to <a href="http://www.hp.com/storage/spock">http://www.hp.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)   | 32° F to 113° F (0° C to 45° C)   | 32° F to 113° F (0° C to 45° 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 158° F (-20° C to 70° C)   | -40° F to 158° F (-40° C to 70° C)  | -40° F to 158° F (-40° C to 70° 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)   | 15% to 80% RH at 40° C (non-condensing)   | 15% to 80% RH at 40° C (non-condensing)   |
| <b>Product Dimensions (W x D x H)</b>   | 6.59 x 0.49 x 4.4 in (12.34x167.51x111.15mm)  | 6.63 x 0.63 in. (119 x 168 x 16mm)  | 6.63 x 0.63 in. (119 x 168 x 16mm)  | 9 x 5 x 1.25 in. (230 x 130 x 35mm)   | 9 x 5 x 1.25 in. (230 x 130 x 35mm)   |
| <b>Media</b>  | Multi-mode Optic (SFP+)   | Multi-mode Optic (SFP+)   | Multi-mode Optic (SFP+)   | 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   | Short wave laser with LC type connector   | Short wave laser with LC type connector   | Short wave laser with LC type connector   |
| <b>PCIe Connector</b>   | PCIe 3.0 x8   | PCIe 3.0 x8   | PCIe 3.0 x8   | PCIe 3.0 x8   | PCIe 3.0 x8   |
| <b>Auto-negotiation</b>   | 16/8/4 Gbps   | 16/8/4 Gbps   | 16/8/4 Gbps   | 16/8/4 Gbps   | 16/8/4 Gbps   |

## Technical Specifications

|                 |   |   |   |   |   |
|-----------------|---|---|---|---|---|
| <b>Brackets</b> | Shipped with both ½ height and full-height brackets | Shipped with both ½ height and full-height brackets | Shipped with both ½ height and full-height brackets | Shipped with both ½ height and full-height brackets | Shipped with both ½ height and full-height brackets |
|-----------------|---|---|---|---|---|

| Date        | Version History       | Action  | Description of Change   |
|-------------|-----------------------|---------|---|
| 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<br><br>Overview - What's New<br><br>Models<br><br>Technical Specifications |
| 04-Dec-2012 | From Version 2 to 3   | Changed | Changes made throughout the QuickSpecs. Note that the title has changed.  |
| 18-Jun-2012 | From Version 1 to 2   | Changed | Changes made in the North America and Canada versions only.   |



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c04154364 - 14202 - Worldwide - V11 - 07-June-2016