Overview

HPE SN1700 series 64Gb Fibre Channel Host Bus Adapter

A Fibre Channel Host Bus Adapter is a server peripheral designed to be installed in a server and allow to transport data to a consolidated storage device like an HPE Flash Array. The Fibre Channel Host Bus Adapter is externally coupled to a Fibre Channel switch which builds a Fibre Channel network allowing many servers access to the shared storage array. With a Fibre Channel HBA installed in every participating server, the resulting configuration is called a Storage Area Network or SAN based on Fibre Channel. The HPE 64GFC Host Bus Adapters bring datacenter infrastructure components to a higher level of performance and efficiency with the ability to deliver twice the bandwidth performance of 32Gb HBAs. A 64GFC HBA purchased today is backward compatible with 32Gb and 16Gb storage networks and will protect future investments.

Supported generations of Fibre Channel Host Bus Adapters and Fibre Channel Switches

	4Gb Switch[1]	**8Gb Switch**[1]	**16Gb Switch**	**32Gb Switch**	**64Gb Switch**
4Gb HBA[1]	Yes	Yes	Yes	No	No
8Gb HBA[1]	Yes	Yes	Yes	Yes	No
16Gb HBA	Yes	Yes	Yes	Yes	Yes
32Gb HBA	No	Yes	Yes	Yes	Yes
64Gb HBA	No	No	Yes	Yes	Yes

Notes:

- Always check HPE's Single Point of Configuration Knowledge (SPOCK) for complete compatibility.
- [1] Obsolete

The Fibre Channel and FC-NVMe protocols leverage a block-based design which is paired with data-intensive workloads. Those workloads leverage database deployments like Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Financial Applications, Reservation Systems, Support Systems, Virtual Server warehouses, Media & Entertainment, Video Surveillance Systems, traditional backup and restore, and multi-server workload configurations.
Customers that have multiple workloads on multiple physical or virtual servers are ideal candidates for a Storage Area Network where the data can be stored on a consolidated array instead of each individual server. Each server running these workloads would require HBA connectivity. Enterprise customers would seek 64Gb connectivity for the highest levels of SAN performance.

Overview

Models

Single Port

SN1700Q

Description	SKU
HPE SN1700Q 64Gb 1-port Fibre Channel Host Bus Adapter	R7N86A

SN1700E

HPE SN1700E 64Gb 1-port Fibre Channel Host Bus Adapter	R7N77A

Dual Port

SN1700Q

HPE SN1700Q 64Gb 2-port Fibre Channel Host Bus Adapter	R7N87A

SN1700E

HPE SN1700E 64Gb 2-port Fibre Channel Host Bus Adapter	R7N78A

What's New

- HPE SN1700Q Fibre Channel Host Bus Adapters

Standard Features

Key Features and Benefits

Standards-based design

HPE is a member of the Storage Networking Industry Association (SNIA) and the Fibre Channel Industry Association (FCIA). Since the inception of these groups, HPE has helped design the standards that drive the Fibre Channel Industry. Suppliers and competitors with Fibre Channel components follow the Fibre Channel standard (T-11 committee) that enables a level of interoperability between devices and operating systems. This level of industry cooperation contributed to Fibre Channel customer acceptance. The industry and HPE have complied with all the standards making Fibre Channel one of the most robust, widely accepted protocols in the industry. An example of important standards include:

- Definitions of ports and their capabilities (N_Port, E_port, F_Port, etc).
- Definitions of media connections (SFP+, SFP28, SFP56, SFP-DD, etc).
- Definitions of cabling (Multi-mode (50um), Single-mode (9um), MPO, etc.).
- Definition of identification (unique worldwide names (FCP) and namespace (FC-NVME) for every FC device).
- Definitions of delivery, error correction, re-tires, product health, and many others.

Security

Because Fibre Channel and FC-NVMe are data-only protocols, the design does not deploy IP addresses exposing the SAN to external communications which make the design inherently more secure.

- Secure Firmware download - HPE Host Bus Adapter support the delivery of enhanced security via the new secure firmware update feature. An encryption key validates firmware files as authentic. This feature introduced with HPE Gen10 servers, continues today, and ensures the authenticity of device firmware.
- Firmware Integrity Protection with Hardware Root of Trust (RoT) - 64Gb FC HBAs incorporate a hardware RoT that keeps malicious firmware from hijacking the adapter. The adapters RoT enables both integrity and authenticity during adapter firmware updates by both validating embedded signatures with hardware embedded keys to ensure that only bona fide firmware executes, protecting updates that are applied over public networks.

Performance

Bandwidth – The maximum amount of data transmitted in a given amount of time. 64GBFC is the data transfer rate as defined by the industry standard of this generation of products. Older products had bandwidth of 32GBFC, 16GBFC, 8GBFC, 4GBFC, 2GBFC, and 1GBFC.

IOPs – a quantitative number measuring the maximum number of read/write operations per second. The maximum throughput per port is 12,800MBps full duplex line.

Latency - a measurement of response time doing an I/O request. More processing, translating, and routing of the I/O will increase latency and lower overall performance. Latency can be reduced by “offloading” the I/O processing from the host CPU to the HBA. All HPE Fibre Channel HBAs are fully offloaded to reduce latency and free up host CPU resources for other tasks.
The combination of increased Fibre Channel IOPS and throughput with reduced latency enables increased application and database transactions per second, faster large block transfers, and increases the number of VMs that can be supported per server.

PCIe 4.0

The SN1700 Series 64Gb FC HBAs use an eight-lane (x8) PCIe 4.0 bus on the single-port and dual-port models (with backward compatibility to PCIe 3.0 supported).

Standard Features

Support for greater Server Virtualization
Higher bandwidth and the ability to virtualize physical ports with QoS in the adapter makes these adapters ideal for high density server virtualization environments. This results in reduced cabling and a higher return on IT investment.

Connectivity to HPE Server and Storage
Provides an HPE-branded HBA solution that has undergone extensive HPE interoperability testing for connecting HPE ProLiant and Apollo servers into HPE Storage and networking environments.

LUN Prioritization and QoS
HPE 64Gb FC HBAs support Class Specific Control (CS_CTL) which allows prioritization and bandwidth allocation at the LUN level. In addition, they support Virtual Machine ID (VM-ID) which further enhances prioritization and monitoring of the virtual machine within the SAN, providing a VM-aware storage network.

FC-NVMe
HPE 64Gb Fibre Channel Host Bus Adapters are NVMe-enabled to support emerging NVM Express (NVMe) over Fibre Channel storage networks. The HBAs can run both the SCSI protocol and NVME protocol on the same wire at the same time.

Active Health System
All HPE 64GFC adapters support the HPE ProLiant Active Health System. This helps administrators accurately troubleshoot and resolves problems within the server faster.

Fabric Notifications for the Modern Data Center
The SN1700 Series HBAs support new industry standards that further enhance autonomous SAN innovations to self-learn, self-optimize, and self-heal, proactively keeping the SAN running at maximum speed and avoiding downtime. The new industry standards around Fabric Performance Impact Notifications (FPINs) include Link Integrity notification (FPIN-LI), Congestion notification (FPIN-CN), Peer Congestion notification (FPIN-PN), and Delivery notification (FPIN-DN).

T10 Protection Information (T10-PI)
HPE 64GFC adapters support T10-PI for enhanced data integrity when connected to T10-PI enabled arrays like HPE Alletra Storage.

Forward error correction (FEC)
FEC is enabled and improved at 32GFC as required by the FC Specification, automatically correcting transmission errors and improving network performance and resiliency.

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 can be quickly identified and resolved.

Standard Features

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.

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)

Administrators can preconfigure WWN settings at the switch port allowing Fibre Channel adapter to acquire port WWN address from the 64Gb or 32GFCfabric. This allows SAN administrator to configure SAN zoning without need for servers to be present.

Fabric-based Boot LUN (F_BLD)

Allows Boot-LUN information directly from 64Gb or 32GFCswitch, speeding up deployment of new servers in a SAN environment.

Firmware Integrity Protection with Hardware Root of Trust

All HPE 64GFC adapters incorporate a silicon-based Root of Trust (RoT) that keeps malicious firmware from hijacking the adapter. The adapter's RoT validates embedded signatures in the firmware against hardware-embedded keys during adapter initialization and firmware updates. This ensures that only valid and authorized firmware executes and keeps firmware updates that are applied over public networks secure.

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 7 x 24 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.
https://www.hpe.com/services

Consulting services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.
https://www.hpe.com/services/consulting

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

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

Service and Support

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

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.

Service and Support

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

SN1700E	R7N77A	R7N78A
Number of channels	Single	Dual
Port Speed	64GFC	
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.	
Microsoft Windows Server & HyperV	2022 x64 Edition 2019 x64 Edition 2016 x64 Edition	
Red Hat Enterprise Linux	9.x x64 Release 8.x x64 Release 7.x x64 Release	
VMware ESX/ESXi	8.x x64 7.0 x64 6.7 x64	
SUSE Linux Enterprise Server	15.x x64 12.x x64	
Oracle Linux	9.x x64	
Servers Supported	Select Alletra systems **Notes:** Refer to server Quick Specs for details regarding supported options.	
Array Platforms Supported	Alletra Arrays Primera Arrays Nimble Arrays MSA Arrays XP Arrays 3PAR Arrays StoreOnce Secondary Storage Devices Refer to **http://www.hpe.com/storage/spock** for specific product support information	
What's Included in the Box?	64 Gbps HBA with standard bracket, one 64 Gbps SFP+ transceiver, low-profile bracket, documentation	64 Gbps HBA with standard bracket, two 64 Gbps SFP+ transceiver, low-profile bracket, documentation
Environmental - Operating Temperature	32° F to 131° F (0° C to 55° C)	
Environmental - Storage Temperature	-4° F to 158° F (-20° C to 70° C)	
Environmental - Relative Humidity - Operating	10% to 90% RH at 40° C (non-condensing)	5% to 95% (non-condensing)
Product Dimensions (W x D x H)	6.6 x 0.43 x 2.71 in (167.64 x 10.92 x 68.83mm)	6.6 x 0.49 x 2.73 in (167.64 x 12.44 x 69.34mm)
Media	Multi-mode Optic (SFP+56)	
Connector	Short wave laser with LC type connector	
PCIe Connector	PCIe 4.0 x8	
Auto-negotiation	64/32/16 Gbps	

Technical Specifications

SN1700Q	R7N86A	R7N87A
Number of channels	Single	Dual
Port Speed	64GFC	
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.	
Microsoft Windows Server & HyperV	2022 x64 Edition 2019 x64 Edition 2016 x64 Edition	
Red Hat Enterprise Linux	9.x x64 Release 8.x x64 Release 7.x x64 Release	
VMware ESX/ESXi	8.x x64 7.0 x64 6.7 x64	
SUSE Linux Enterprise Server	15.x x64 12.x x64	
Oracle Linux	9.x x64	
Servers Supported	Select Alletra systems **Notes:** Refer to server QuickSpecs for details regarding supported options.	
Array Platforms Supported	Alletra Arrays Primera Arrays Nimble Arrays MSA Arrays XP Arrays 3PAR Arrays StoreOnce Secondary Storage Devices Refer to **http://www.hpe.com/storage/spock** for specific product support information	
What's Included in the Box?	64 Gbps HBA with standard bracket, one 64 Gbps SFP+ transceiver, low-profile bracket, documentation	64 Gbps HBA with standard bracket, two 64 Gbps SFP+ transceiver, low-profile bracket, documentation
Environmental - Operating Temperature	32° F to 131° F (0° C to 55° C)	
Environmental - Storage Temperature	-4° F to 158° F (-20° C to 70° C)	
Environmental - Relative Humidity - Operating	10% to 90% RH at 40° C (non-condensing)	
Product Dimensions (W x D x H)	6.6 x .0.6 x 2.7” (167.6 x 15.7 x 68.5mm)	6.6 x .0.6 x 2.7” (167.6 x 15.7 x 68.5mm)
Media	Multi-mode Optic (SFP+56)	
Connector	Short wave laser with LC type connector	
PCIe Connector	PCIe 4.0 x8	
Auto-negotiation	64/32/16 Gbps	
Media	Multi-mode Optic (SFP+)	
Connector	Short wave laser with LC type connector	
PCIe Connector	PCIe 4.0 x8	
Auto-negotiation	64/32/16 Gbps	

Summary of Changes

Date	Version History	Action	Description of Change
13-Nov-2023	Version 5	Changed	HPE Services Rebranding
06-Feb-2023	Version 4	Changed	Overview, Standard Features and Technical Specification sections were updated. New SN1700Q HBAs were added.
07-Feb-2022	Version 3	Changed	QS name has changed
06-Dec-2021	Version 2	Changed	Overview, Standard Features and Technical Specification section were updated.
01-Nov-2021	Version 1	New	New QuickSpecs

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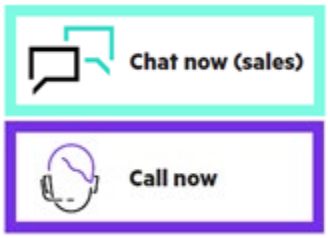

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