QuickSpecs

Overview

HPE StoreFabric SN3600B Fibre Channel Switch

Today's mission-critical storage environments require greater consistency, predictability, and performance to keep pace with growing business demands. Faced with explosive data growth, the all-flash data centers need more IO capacity to accommodate the massive amounts of data, applications, and workloads. In addition to this surge in data, collective expectations for availability continue to rise. Users expect applications to be available and accessible from anywhere, at any time, on any device.

To meet these dynamic and growing business demands, organizations need to deploy and scale up applications quickly. As a result, many are moving to higher Virtual Machine (VM) densities to enable rapid deployment of new applications and deploying all-flash storage to help those applications that demand more performance and reduced latency, scaling to support thousands of users. To increase agility, reduce expenses, and realize the full benefits of these architectures, organizations need the storage network to deliver the performance required by today's server and all-flash storage environments. In addition, storage networks are becoming increasingly important to application performance, which means that they also must become easier to administer and manage. By treating the network as a strategic part of a highly virtualized environment, organizations can increase optimization and efficiency even as they rapidly scale their environments.

The HPE SN3600B Fibre Channel Switch meets the demands of hyper-scale virtualization, larger cloud infrastructures, and growing all-flash-based storage environments by delivering market-leading 32 Gigabit (Gb) Fibre Channel technology and capabilities. It provides a high-density building block for increased scalability, designed to support growth, demanding workloads, and data center consolidation in small to large-scale enterprise infrastructures.   It is built for maximum affordability and flexibility, performance, and ease of use.

The HPE SN3600B is an affordable entry-level 8-24-port Gen6 Fibre Channel switch that doesn't compromise on Gen6 functionality. Supported by FOS v8.1.0 it offers 24 x 32 Gigabyte per second (Gbps) SFP+ ports in a 1U form-factor. You can start small with as little as 8-ports and select 16Gb FC or 32Gb FC optics to meet your budget requirements. Each of the twenty-four (24) SFP+ ports supports 4, 8, 16 and 32 Gbps Fibre Channel speeds. The HPE SN3600B is designed to support the SAN requirements of a small to medium-sized workgroup as well as customers who demand enterprise SAN switch capabilities. With industry leading highest FC port density in a slim 1U height, the HPE SN3600B enables the creation of very dense fabrics in a relatively small space for tighter budgets.

With its flexible Ports on Demand (PoD) capability, the HPE SN3600B provides excellent overall value as the foundation of a SAN with the ability to grow with an organization's SAN needs. Even as an entry-level switch, the HPE SN3600B delivers operational simplicity as it can be configured in as little as 3-steps. The switch provides excellent SAN management and SAN health tools with HPE StoreFabric PowerPack+ Software for optimal SAN health, and it supports HPE Smart SAN for 3PAR software to automatically orchestrate 3PAR all –flash fabric deployments (SAN zoning) in just a few click of a mouse all centralized from the array. It also delivers high IOPs, high bandwidth and low-latency with flash-ready performance and always on reliability, while delivering seamless interoperability and ease of use advantages found only in the HPE StoreFabric B-series product family.
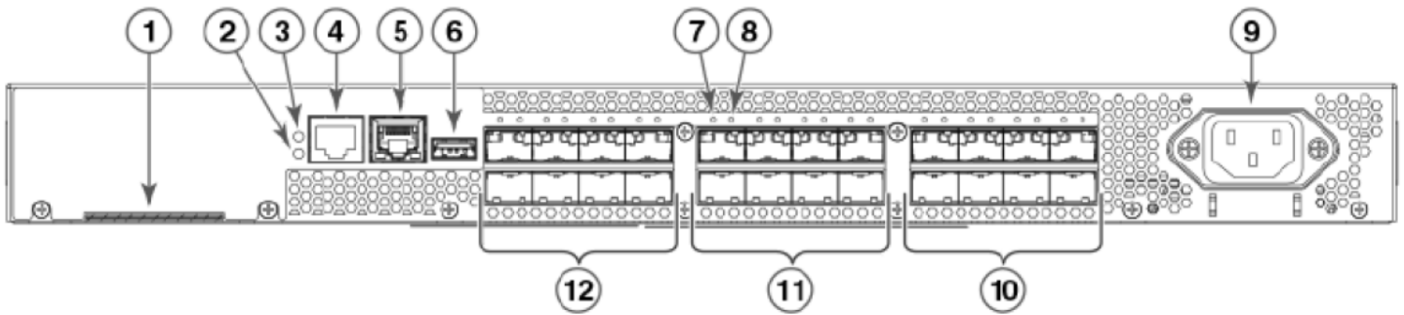
The SN3600B is available in three models:

Standalone StoreFabric B-series models :

- HPE StoreFabric SN3600B 32Gb 24/8 Fibre Channel Switch
- HPE StoreFabric SN3600B 32Gb 24/24 Fibre Channel Switch
- HPE StoreFabric SN3600B 32Gb 24/24 Power Pack+ Fibre Channel Switch

Overview

HPE StoreFabric Power Pack+ Software includes additional software: Fabric Vision, ISL Trunking, and Extended Fabric. HPE Power Pack+ Software provides the SAN administrator with the necessary tools to monitor the health and performance of the network, while also ensuring the highest levels of security, scalability and manageability.

1. Switch ID pull-out tab
2. System status LED
3. System power LED
4. System RS232 console port (RJ-45)
5. Ethernet port with two Ethernet status LEDs
6. USB port
7. SFP+ FC port 8 (upper) status LED
8. SFP+ FC port 12 (lower) status LED
9. AC power receptacle
10. Trunk port group 2 (SFP+ FC ports 16-23)
11. Trunk port group 1 (SFP+ FC ports 8-15)
12. Trunk port group 0 (SFP+ FC ports 0-7)

Figure 1 HPE StoreFabric SN3600B 32 Gb FC Switch Front Panel

Features and Benefits

Key Features and Benefits

- Delivers Gen6 32 Gb flash ready-performance, affordability, in as little as 8-ports with no compromise in Gen6 functionality, with up to 24 ports in an energy-efficient 1U form factor, providing maximum flexibility for diverse deployment and tighter budgets.

- Investment protection SAN interoperability as the SN3600B is capable of replacing two generations of StoreFabric entry-level FC switches, including the StoreFabric 8/24 8 Gb FC SAN Switch and StoreFabric SN3000B 16 Gb FC Switch.

- Features dynamic Ports on Demand (PoD) capabilities for fast, easy, and cost-effective scaling in small 8-port Port on Demand (PoD) increments.

- HPE StoreFabric SN3600B supports 32Gb FC SFP+ and the more affordable 16 Gb SFP+ optics providing flexibility for users to accommodate their budgets and slower FC speeds such as 8Gb FC

- NVMe over Fabric Ready support – available support when the SAN infrastructure supports it and demands it for all-flash environments that are latency sensitive

- Virtual Machine Identity (VMID) support via VM Insight – provides granular visibility of virtualized applications which allows storage admins to obtain granular performance stats which helps them troubleshoot and classify VM IO flows to the fabric for better performance outcomes.

- Support for HPE Smart SAN for 3PAR –Automated SAN orchestration for 3PAR all-flash Fibre Channel SAN deployments, simplifying traditional SAN zoning from hours to minutes.

- Support high-density server virtualization, cloud architectures and flash-based storage environments.
- Supports F/E/M_Port and D_Port types on the SFP+ ports with FOS v8.1.0

- Inter-Switch Link (ISL) Trunking allows up to eight ports between a pair of switches to be combined to form a single logical ISL with a speed of up to 256 Gbps (512 Gbps full duplex) for optimal bandwidth utilization, high availability and load balancing.
- Port-to-port latency is minimized to <900 nanoseconds with no contention (destination port is free) through the use of cut-through frame switching at 32 Gbps for latency sensitive applications and 768 end-to-end full duplex aggregate bandwidth for all-lash storage SANs. ll-flash storage SANs. ll-flash storage SANs.
- Real time power monitoring enables users to monitor the power usage of the switch in real time.

- Supports only Back-to-front (non port-side intake) airflow.

Models

HPE SN3600B 32 Gb FC Switch Models	HPE StoreFabric SN3600B 32Gb 24/8 Fibre Channel Switch	Q1H70A
	HPE StoreFabric SN3600B 32Gb 24/24 Fibre Channel Switch	Q1H71A
	HPE StoreFabric SN3600B 32Gb 24/24 Power Pack+ Fibre Channel Switch	Q1H72A

Product Highlights

SN3600B 32 Gb FC Switch	- Delivers 8, 16 and 24-ports in a 1U enclosure. - Provides 4 Gbps, 8 Gbps, 16 Gbps, 32 Gbps* performance - Employs optional Inter-Switch Link (ISL) Trunking to provide a high-speed data path between switches which enables a high speed data path between 32 Gbps switches up to 256 Gbps (512 Gbps full duplex). **NOTE:*** 32 Gbps performance can be obtained between two 32 Gbps capable devices.
Configuration Support	**http://h18000.www1.hp.com/products/storageworks/san/documentation.html**
High-availability features	- Integrated single power supply and 4 built-in cooling fans (Minimum 2 fans required for the switch to continue functioning properly). - Achieve continuous uptime with the industry's lowest failure rate and high availability. - Monitor proactively the overall health of your storage network and VM performance with StoreFabric Power Pack+ Software. - Enhanced Fault Detection Logic. - Parity protection on all data paths and system memory.
Advanced Fabric Services	- Hardware Enforced Zoning. - Frame Filtering. - Built-in Web browser management tools. - Access Gateway. - Dynamic and System Monitoring Capabilities for High Reliability. - HPE B-series SAN Network Advisor software (optional).
Cabinet Support	HPE (22U, 36U, and 42U) 10000 G2 Series, the Intelligent Series racks, and HPE (14U, 22U, 36U, 42U, and 47U) 11000 G2 Series racks. **NOTE:** To order factory integration, add 0D1 after the part number on your sales order.

Software Components, Standard, Base Models

Frame Filtering	An ASIC based capability that enables new applications and features. The switch has the ability to "view" the first 64 bytes of the Fibre Channel frame. At this time, Frame Filtering enables advanced capabilities such as Advanced Zoning.
Advanced Zoning	WWN Zoning and Access Control are enforced by hardware that provides the same simple administration previously enforced only with software. Administrators can organize a physical fabric into logical groups and prevent unauthorized access by devices outside the Zone.
Web Tools	Web Tools is an intuitive and easy-to-use graphical interface that enables organizations to monitor and manage SAN fabrics. Tasks can be performed through a Java-capable Web browser from a standard laptop, desktop PC or workstation from any location within the enterprise.
Adaptive Networking	Adaptive Networking (AN) is a family of technologies which allow flexible control of traffic movement within the fabric which deliver application aware management of fabric resources. Applications may be used with multiple protocols and multiple classes of service. It includes the following features: **Ingress Rate Limiting:** Allows the ingress bandwidth of a port to be throttled to a rate lower than negotiated with the SAN node. This could be very useful for enterprises offering stepped levels of service and enforcing SLAs.

Product Highlights

Quality of Service (QoS):

Enables zones with high, medium, and low priorities within a fabric on a zone by zone basis. This can be very useful for prioritizing array replication over MANs and WANs over less critical traffic.

Traffic Isolation Zones:

Defines paths through a fabric for some or all nodes. Failover allows a non-preferred path to be used if the preferred fails. TIZs use failover by default but it can be disabled if traffic should stop if a preferred path fails. TIZ can be used to manually map out traffic flows within a fabric based on application, priority, and topology.

Software Components, Optional

SN3600B 32 Gb Switch Power Pack+ Software Bundle

The HPE Power Pack+ Software Bundle comes with the SN3600B 32 Gb 24/24 Power Pack+ Software. The customers can purchase it separately as an optional software bundle for the SN3600B 32 Gb FC Switch. Power Pack+software includes the following:

- Fabric Vision
- Extended Fabric
- ISL Trunking

Fabric Vision

Fabric Vision technology provides a breakthrough hardware and software solution that helps simplify monitoring, maximize network availability, and dramatically reduce costs. Featuring innovative monitoring, management, and diagnostic capabilities, Fabric Vision technology enables administrators to avoid problems before they impact operations, helping their organizations meet SLAs. It Includes:

- Monitoring and Alerting Policy Suite (MAPS): A policy-based monitoring tool with pre-built rules and automation that simplifies fabric-wide threshold configuration and monitoring. Configuration and Operational Monitoring Policy Automation Services Suite (COMPASS): Simplifies deployment, safeguards consistency, and increases operational efficiencies of larger environments with automated switch and fabric configuration services. Administrators can configure a template or adopt an existing configuration to seamlessly deploy a configuration across the fabric.
- ClearLink Diagnostics: Ensures optical and signal integrity for Fibre Channel optics and cables, simplifying deployment and support of high-performance fabrics. ClearLink Diagnostic Port (D_Port) is an advanced capability of Fibre Channel platforms.
- Flow Vision: A comprehensive tool that enables administrators to identify, monitor, and analyze specific application data flows in order to simplify troubleshooting, maximize performance and avoid congestion without using taps to ensure optimized performance.
- Health and performance dashboard: A single customizable screen displayed in HPE SAN Network Advisor that contains all critical SAN information for convenient review and analysis.

Extended Fabric

Optional license which extends all of the scalability, reliability, and performance benefits of Fibre Channel Storage Area Networks (SANs) beyond the native 10 km distance specified by the Fibre Channel standard.

ISL Trunking

For high performance enhanced Trunking, this optional license logically groups up to eight 32 Gbps SFP+ ports per ISL trunk to provide a high bandwidth trunk between two switches. Each 32 Gb switch needs its own license. The switch operating system views the trunk as a single, high bandwidth

Product Highlights

resource (up to 256 Gbps) when routing connections between 32 Gb switches. Connections are load-balanced across the individual links, which comprise the logical trunk group.

SAN Network Advisor Professional

HPE SAN Network Advisor Professional is a server based management application available at no-charge that comes with B-series SAN Switches and includes the following features:

- Allows management of up to two SAN Fabric OS (FOS) fabrics (up to 300 B-Series switch ports and 1000 devices).
- Performs group switch management beyond the scope of Web Tools.

Targeted for SMB customers that use FOS based SAN fabrics and require a management solution for smaller SANs based on a single or dual fabric.

SMB customers that initially start off with SAN Network Advisor Professional and have a small SAN environment may over time feel the need for an enterprise-class product (SAN Network Advisor Professional+ or SAN Network Advisor Enterprise) as their environments start to grow in size and complexity, and as they start to uptake more enterprise-class functionality (such as Fibre Channel Routing, FCIP, etc.). A non-disruptive upgrade path is available from SAN Network Advisor Professional to SAN Network Advisor Professional+ or SAN Network Advisor Enterprise.

SAN Network Advisor Enterprise and Professional+

HPE SAN Network Advisor Enterprise and Professional+ are the enterprise-class products that support FOS products. SAN Network Advisor Enterprise provides complete B-series Director Management including enterprise-class features/environments such as, Fibre Channel Routing, FCIP, adaptive networking, etc., while SAN Network Advisor Professional+ provides the same feature set except for support for the DC SAN Backbone Director, SN8000B 8-Slot Director, SN8600B 8-Slot Director and FICON.

SAN Network Advisor Enterprise delivers unprecedented scalability, up to 100 fabrics and 15,000 switch ports, while SAN Network Advisor Professional+ scales to 36 SAN Fabrics and 2560 switch ports. To accommodate growth, there is an upgrade available to SAN Network Advisor Enterprise from SAN Network Advisor Professional+.

HPE Smart SAN for 3PAR

HPE Smart SAN for 3PAR software automatically orchestrates SAN fabrics for HPE 3PAR all-flash deployments. The software defined networking solution simplifies fabric deployments and reduces the probability of human errors through Fibre Channel T-11 Standards-basedTarget Driven Peer Zoning (TDPZ), all from the 3PAR CLI or 3PAR SSMC. It is a distributed application embedded in HPE 3PAR StoreServ Storage and StoreFabric SAN components (array, hosts and switches) that enables 3PAR arrays to orchestrate host configuration, settings and SAN diagnostics across the SAN. HPE Smart SAN is supported with HPE StoreFabric B-series (32 Gb, 16 Gb and 8 Gb FC Switches), StoreFabric (32 Gb, 16 Gb and 8 Gb FC) HBAs, HPE FlexFabric 5900 Series Switches and 3PAR storage. HPE Smart SAN for 3PAR through its Target and 3PAR Federated Driven Peer Zoning features enables storage administrators to automate switch zoning in a few clicks of a mouse, resulting in the creation of fewer zones and enables configuration of zones in minutes and not in hours. Through automation, it reduces the probability of errors and potential downtime.

Additional information can be found here:
http://www8.hp.com/us/en/products/storage-software/product-detail.html?oid=8295863#!tab=features
NOTE: Supports StoreFabric B-series 32 Gb, 16 Gb and 8 Gb FC switches with FOS 7.4.0a or later.
NOTE: A list of supported HPE StoreFabric (32 Gb, 16 Gb and 8 Gb) FC HBAs can be found at **https://h20272.www2.hp.com/spock/**
NOTE: Supports 3PAR StoreServ storage with 3.2.2 or later with only 16 Gb target ports on HPE **3PAR StoreServ storage.**

Product Highlights

NOTE: For 3PAR SSMC support, you need 3PAR SSMC 3.1 and OS version 3.3.1.

Service and Support

Warranty	(3-3-3) Hardware Warranty; 3-year parts; 3-year on-site (standard business hours, next business day response) and 3-year labor.

NOTE: The hardware warranty covers firmware and embedded non-saleable software. For extended hardware installation and maintenance information, click the link below:
http://www.hp.com/hps/carepack/services/

NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details. Hardware or Software product installation is not included in the warranty, but is available and highly recommended.

Service and Support

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.

Connect your devices
Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%[1] reduction in down time, near 100%[2] diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.
1- IDC
2 – HP CSC reports 2014 - 2015

Optimized Care

HPE Proactive Care* with 6 hour call-to-repair commitment, three year Support Service - HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing tailored, proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our highest level of hardware support - HPE's 24x7, six hour hardware call-to-repair. HPE is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable storage systems. **https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf**

Standard Care

HPE Proactive Care* with 24x7 coverage, three year Support Service - HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. **https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf**

Basic Care

HPE Foundation Care 24x7, three-year Support Service – HPE Foundation Care 24x7 gives you access to HPE 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. Simplify your support experience and make HPE your first call to help resolve hardware or software problems.
https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA4-8876ENW

Service and Support

	*HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to make the most of these services and receive all the deliverables.
Related Services	**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. **http://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-9356EN.pdf** **HPE SAN Deployment Service** Hewlett Packard Enterprise delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components. **http://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-8527EN.pdf**
Remote Support Automation	HPE Automation provides 24x7 coverage, proactive problem prevention, accurate problem diagnosis and faster problem resolution, as well as interactive support portals and tools. This is an integral, and cost-free, part of your Hewlett Packard Enterprise support relationship and we are continually investing in additional cutting-edge capabilities to make it better.
Additional Services Information	**http://www.hpe.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. If you have specific questions, contact your local HPE representative. Contact information for a representative in your area can be found at "Contact HPE" **https://www.hpe.com/us/en/contact-hpe.html** 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: **https://ssc.hpe.com/portal/site/ssc/**

Family Information

Features	8/8 SAN Switch Base and 8/8 SAN Switch	8/24 SAN Switch Base
Targeted Environment	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	8 Gigabit per second (Gbit/sec)	8 Gbit/sec
Aggregate device bandwidth	64 - 192 Gbit/sec	128 - 192 Gbit/sec
OS Support	**NOTE:** Please Refer to SAN Design Guide **http://www.hpe.com/storage/sandesignguide**	
Storage system support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA**	
FC Ports	8 Enabled 24 Max	16 Enabled 24 Max
SFP	B-series	B-series
Advanced Trunking	Optional Upgrade	Included with Power Pack+ or Optional Upgrade
Adaptive Networking	Included	Included
Form factor	1U	1U
Zoning Software	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	No	No
Hot plug fans	No	No

OS Support	**NOTE:** Please Refer to SAN Design Guide **http://www.hpe.com/storage/sandesignguide**		
Storage system support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP7, P6000/EVA, P2000/MSA**		
FC Ports	12 or 24 enabled 24 Max	8 or 24 Enabled 24 Max	
SFP	B-series	B-series	
Advanced Trunking	Included with Power Pack+ Upgrade	Included with Power Pack+ or Optional Upgrade	
Adaptive Networking	Included	Included	
Form factor	1U	1U	
Zoning Software	Yes (Included)	Yes (Included)	
Hot plug, redundant power supplies	Optional	No	
Hot plug fans	Yes (integrated with power supply)	Yes (integrated with power supply)	

Family Information

Features	SN6000B 16 Gb FC Switch and SN6000B 16 Gb FC Power Pack+	SN6600B 32 Gb FC Switch and SN6600B 32 Gb FC Power Pack+	SN6600B 32 Gb Bundled (SFP+) FC Switch and SN6600B 32 Gb Power Pack+ Bundled (SFP+) FC Switch
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	16 Gbit/sec	32 Gbit/sec	32 Gbit/sec
Aggregate device bandwidth	384- 768 Gbit/sec	2 Terabyte per second (Tbps)	2 Tbps
OS Support	**NOTE:** Please Refer to SAN Design Guide **https://www.hpe.com/storage/sandesignguide**		
Storage system support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA**		
FC Ports	24 or 48 Enabled 48 Max	24 or 48 enabled 64 Max	24 or 48 Enabled 64 Max
SFP	B-series	B-series (16 Gb or 32 Gb)	B-series, 24 or 48 32 Gb SFP+ included in the box
Advanced Trunking	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
Adaptive Networking	Included	Included	Included
Form factor	1U	1U	1U
Zoning Software	Yes (Included)	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	Yes	Yes	Yes
Hot plug fans	Yes (integrated with power supply)	Yes (integrated with power supply)	Yes (integrated with power supply)

Features	1606 Extension SAN Switch	SN4000B SAN Extension Switch
Targeted Environment	Data Centers	Data Centers
Fibre Channel Port Bandwidth	8 Gbit/sec	16 Gbit/sec
Ethernet	1 Gb Ethernet	1/10/40 Gb Ethernet
OS Support	**NOTE:** Please Refer to SAN Design Guide **htpps://www.hpe.com/storage/sandesignguide**	
Storage system support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA**	
FC Ports	4 or 16 Enabled 16 Max	24 Enabled 24 Max
Ethernet Ports	2 or 6 Enabled 6 Max	16 ports 1/10GbE Enabled 16 Max 2 – 40 GbE ports
SFP	B-series	B-series

Family Information

Advanced Trunking	Included with Power Pack+ or Optional Upgrade	Included
Adaptive Networking	Included	Included
Form factor	1U	2U
Zoning Software	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	Yes	Yes
Hot plug fans	Yes	Yes

Features	SN8000B 8-Slot SAN Director Power Pack+	SN8600B 8-Slot SAN Director Power Pack+
Targeted Environment	Cloud Optimized Data Centers	Cloud Optimized Data Centers
Port Bandwidth	Up to 16 Gbit/sec	Up to 32 Gbit/sec
Aggregate device bandwidth	10.2 Terabit per second (Tbit/sec)	16.2 Tbit/sec
OS Support	**NOTE:** Please Refer to SAN Design Guide **https://www.hpe.com/storage/sandesignguide**	
Storage system support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA**	
Ports	Up to 512 SFP	384 32 Gb ports or a 512-port equivalent with 128 Gb (32 Gbps×4 QSFP ports)
SFP	B-series	B-series
Advanced Trunking	Included with Power Pack	Included with Power Pack
Adaptive Networking	Included	Included
Form factor	14U	14U
Zoning Software	Yes (included)	Yes (included)
Hot plug, redundant power supplies	Yes	Yes
Hot plug fans	Yes	Yes

Features	SN8000B 4-Slot SAN Director and 4-Slot SAN Director Power Pack+	SN8600B 4-slot SAN Director Power Pack+
Targeted Environment	Cloud Optimized Data Centers	Cloud Optimized Data Centers
Port Bandwidth	Up to 16 Gbit/sec	Up to 32 Git/secb
Aggregate device bandwidth	5.1 Tbit/sec	8.1 Tbit/sec
OS Support	**NOTE:** Please Refer to SAN Design Guide **https://www/hpe.com/storage/sandesignguide.com**	
Storage system support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA**	
Ports	Up to 256 SFP	Up to 192 32 Gbps ports or a 256-port equivalent with 16 UltraScale ICL ports.
SFP	B-series	B-Series
Advanced Trunking	Included with Power Pack or Optional Upgrade	Included with Power Pack
Adaptive Networking	Included	Included

Family Information

Form factor	9U	9U
Zoning Software	Yes (included)	Yes (Included)
Hot plug, redundant power supplies	Yes	Yes
Hot plug fans	Yes	Yes

Features	Brocade 16 Gb SAN Switch for HPE c-Class BladeSystem	Brocade 8 Gb SAN Switch for HPE c-Class BladeSystem	Brocade 16 Gb Fibre Channel SAN Switch Module for HPE Synergy
Targeted Environment	Enterprise, Datacenters, Workgroups, Departments	Workgroups, Departments	Enterprise, Datacenters, Workgroups, Departments
Port Bandwidth	16 Gbit/sec	8 Gbit/sec	16 Gbit/sec
Aggregate device bandwidth	448 Gbit/sec	192 Gbit/sec	576 Gbit/sec
OS Support	**NOTE:** Please Refer to SAN Design Guide **https://www.hpe.com/storage/sandesignguide**		
Storage system Support	**3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA**		
Ports	12 external /16 internal	4 or 8 external / 8 or 16 internal	8 SFP+ external, 4 QSFP external /12 internal
SFP	B-series	B-series	B-series
Advanced Trunking	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
Adaptive Networking	Included	Included	Included
Form factor	Embedded	Embedded	Embedded
Zoning Software	Yes (Included)	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	Yes, in BladeSystem Enclosure	Yes, in BladeSystem Enclosure	Yes, in Synergy Frame
Hot plug fans	Yes, in BladeSystem Enclosure	Yes, in BladeSystem Enclosure	Yes, in Synergy Frame

Configuration Information

Step 1 - Base Configuration

Select one:

Model	Model Description	Part Number
SN3600B 32Gb 24/24 Power Pack+ Fibre Channel Switch		Q1H72A

32 Gb 24-port FC Switch with 24 active ports; accessory kit (Rackmount kit, enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, serial cable, base software of Advanced Fabric OS, Advanced Web Tools, Advanced Zoning and Power Pack+ Software of Fabric Vision.
   NOTE: Requires optical transceivers listed below.

SN3600B 32Gb 24/24 Fibre Channel Switch		Q1H71A

32 Gb 24-port FC Switch with 24 active ports; accessory kit (rackmount kit, enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, serial cable, base software of Advanced Fabric OS, Advanced Web Tools and Advanced Zoning.
   NOTE: Requires optical transceivers listed below.

SN3600B 32Gb 24/8 Fibre Channel Switch (most economical configuration)		Q1H70A

32 Gb 24-port FC Switch with 8 active ports; accessory kit (rackmount kit, enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, serial cable, base software of Advanced Fabric OS, Advanced Web Tools and Advanced Zoning.
   NOTE: Requires optical transceivers listed below.

SN3600B 8-port Fibre Channel Upgrade E-LTU		Q1Z10AAE (Physical License - Q1Z10A)

8-port upgrade license for - SN3600B 32 Gb 24/8 FC Switch (Q1H70A).

NOTE: HPE B-series software licenses are available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses are functionally equivalent to the corresponding physical licenses. The E-Delivery version (ending with AE) is listed first and the physical version is second.

Step 2 - Options

	Model Description	Part Number
Fibre Channel	HPE B-series 32Gb SFP+ SW 1-pack XCVR	P9H32A
Transceivers	HPE B-series 32Gb SFP+ LW 1-pack XCVR	P9H29A

Configuration Information

HPE B-series 16Gb SFP+ Short Wave Transceiver   QK724A

HPE B-series 16Gb LW 25km FC SFP 1-pack Transceiver   H6Z29A

NOTE: 8 Gb FC and 4 Gb speeds are only supported with 16 Gb FC SFP+ optics connected to the switch

Distance - Maximum	HPE Standard OM3 Cable	HPE PremierFlex OM3+ Cable	HPE PremierFlex OM4 Cable
32 Gb Performance:	70 meters	70 meters	100 meters
16 Gb performance:	100 meters	100 meters	125 meters

HPE B-series 16Gb SFP+ Long Wave 10km Transceiver   QK725A

HPE SN3600B supports the following HPE Complete SmartOptics 16 Gb Tranceivers – 16 Gb FC embedded DWDM Solution.

NOTE: For more information regarding Smartoptics SKUs/Accessories/Cables and ordering rules please refer HPE Complete Smartoptics Quickspecs.

https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=c05205226

Accessories   HPE B-series 4 Gb USB Drive   N9Y63A

NOTE: The Accessory Kit contains a Rack Mount Kit including rails, rail mounting hardware and plenum and HPE product documentation including Read Me First, Safety Guides, User License, and Warranty.

Optical Cables   **HPE PremierFlex OM4+ Fiber Optic Cables**

HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A
HPE Premier Flex MPO/MPO OM4 100m (12ft) Cable	H6Z30A

HPE PremierFlex OM4+ QSFP Fiber Optic Cables

HPE Premier Flex MPO/MPO OM4 12f 1m Cable	Q1H63A
HPE Premier Flex MPO/MPO OM4 12f 2m Cable	Q1H64A
HPE Premier Flex MPO/MPO OM4 12f 5m Cable	Q1H65A
HPE Premier Flex MPO/MPO OM4 12f 10m Cable	QK729A
HPE Premier Flex MPO/MPO OM4 12f 15m Cable	Q1H66A
HPE Premier Flex MPO/MPO OM4 12f 30m Cable	Q1H67A
HPE Premier Flex MPO/MPO OM4 12f 50m Cable	QK731A
HPE Premier Flex MPO/MPO OM4 12f 100m Cable	H6Z30A

Configuration Information

HPE PremierFlex MPO to 4xLC OM4 Splitter Cables

HPE Premier Flex MPO to 4xLC 5m Cable	K2Q46A
HPE Premier Flex MPO to 4xLC 15m Cable	K2Q47A
HPE Premier Flex MPO to 4xLC 30m Cable	Q1H68A

HPE OM3 LC-LC Optical Cables

HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A

Step 3 - Optional Software*
NOTE; * For Fabric OS (FOS) minimum requirements, please refer to: **http://spock.corp.hp.com/**

Software for SN3600B 32 Gb FC Switch		
	HPE Smart SAN for HPE 3PAR 7xxx E-LTU	L7D48AAE (Physical License L7D48A)
	HPE Smart SAN for HPE 3PAR 8xxx E-LTU	L7D49AAE (Physical License L7D49A)
	HPE Smart SAN for HPE 3PAR 10xxx E-LTU	L7D50AAE (Physical License L7D50A)
	HPE Smart SAN for HPE 3PAR 20xxx E-LTU	L7D51AAE (Physical License L7D51A)
	HPE SAN Network Advisor Enterprise Software E-LTU	TC352BAE, (TC352B Physical License)
	HPE SAN Network Advisor Professional Plus Software E-LTU	TC353BAE, (TC353B Physical License)
	HPE SAN Network Advisor Professional Plus Upgrade E-LTU	TC354BAE, (TC354B (Physical License)
	HPE StoreFabric SN3600B PowerPack+ Upgrade E-LTU **NOTE:** The Power Pack+ Software Bundle kit includes Fabric Vision, ISL Trunking and Extended Fabric.	Q1Z11AAE (Physical License – Q1Z11A)
	HPE Intelligent Infrastructure Analyzer Software v2 E-LTU **NOTE:** HPE SAN Network Advisor software will no longer be shipped as a DVD to customers. Instead, customers will be able to access and download the software from The HPE Product Download web site	TC472AAE (Physical License - TC472A)

Technical Specifications

HPE StoreFabric SN3600B 32 Gb FC Switch Specifications

System Architecture	
Fibre Channel ports	Switch mode (default): 8, 16, and 24-port configurations (8-port increment through Ports on Demand [PoD] license); E, F, M, S and D ports. Access Gateway default port mapping: 16 F_Ports, 8 N_Ports
Scalability	Full-fabric architecture with a maximum of 239 switches.
Certified maximum	9,000 active nodes; 56 switches, 19 hops in Fabric OS® fabrics; larger fabrics certified as required.
Performance	Fibre Channel: 8.5 Gbps line speed, full duplex; 14.025 Gbps line speed an 28.05 Gbps line speed, full duplex; auto-sensing of 4, 8, 16 and 32 Gbps port speeds.
ISL trunking	Frame-based Trunking with up to eight 32 Gbps ports per ISL trunk; up to 256 Gbps per ISL trunk. Exchange-based load balancing across ISLs with DPS included in Fabric OS.
Aggregate bandwidth	768 Gb end-to-end full duplex.
Maximum fabric latency	Latency for locally switch ports is 900 ns (including FEC).
Maximum frame size	2,112-byte payload.
Frame buffers	2,000 dynamically allocated.
Classes of service	Class 2, Class 3, Class F (inter-switch frames).
Port types	F_Port, E_Port, M_Port, D_Port (ClearLink Diagnostic Port) on 24 SFP+ ports. Access Gateway mode: F_Port and NPIV-enabled N_Port.
Data traffic types	Fabric switches supporting unicast.
Media types	32 Gbps: HPE SN3600B requires HPE hot-pluggable SFP+, LC connector; 32 Gbps SWL, LWL. 16 Gbps: HPE SN3600B requires HPE hot-pluggable SFP+, LC connector; 16 Gbps SWL, LWL, ELWL. Fibre Channel distance subject to fiber-optic cable and port speed.
USB	One USB port for system log file downloads or firmware upgrades.
Fabric services **NOTE:** Some fabric services do not apply or are unavailable in Access Gateway mode.	Monitoring and Alerting Policy Suite (MAPS); Flow Vision; Adaptive Networking (Traffic Isolation, QoS); Fabric Performance Impact (FPI) monitoring; Slow Drain Device Quarantine (SDDQ); Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning, peer zoning, target driven zoning); Dynamic Fabric Provisioning (DFP); Dynamic Path Selection (DPS); Extended Fabrics; Enhanced BB credit recovery; FDMI; Frame Redirection; Frame-based Trunking; FSPF; ISL Trunking; Management Server; NPIV; NTP v3; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server (SNS Read Diagnostics Parameter (RDP), VM Insight.
Management	
Supported management software	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; Advanced Web Tools; Network Advisor SAN Enterprise or Network Advisor SAN Professional/Professional Plus; Command Line Interface (CLI); SMI-S compliant; trial licenses for add-on capabilities.

Technical Specifications

Security	DH-CHAP (between switches and end devices), FCAP switch authentication; HTTPS, IPsec, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, Secure Syslog, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch.
Management access	10/100/1000 Mb Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45) and one USB port.
Diagnostics	ClearLink optics and cable diagnostics, including electrical/optical loopback, link traffic/latency/distance; flow mirroring; built-in flow generator; POST and embedded online/offline diagnostics, including environmental monitoring, FCping and Pathinfo (FC traceroute), frame viewer, non-disruptive daemon restart, optics health monitoring, power monitoring, RAStrace logging, and Rolling Reboot Detection (RRD).

Mechanical

Enclosure	Back-to-front airflow (non-port-side intake); power from back, 1U
Size	Width: 42.88 mm (16.88 in.) Height: 4.29 mm (1.69 in.) Depth: 30.66 mm (12.07in.)
System weight	5.76 kg (12.65 lb.) with one integrated power supply, without transceivers.

Environment

Operating environment	Temperature: 0°C to 40°C/32°F to 104°F. Humidity: 10% to 85% (non-condensing).
Non-operating environment	Temperature: -25°C to 70°C/-13°F to 158°F. Humidity: 10% to 90% (non-condensing).
Operating altitude	Up to 3,000 m (9,842 ft.).
Storage altitude	Up to 12 km (39,370 ft.).
Shock	Operating: Up to 20 G, 6 ms half-sine. Non-operating: Half sine, 33 Gb 11 ms, 3 Gb axis.
Vibration	Operating: 0.5 g sine, 0.4 grms. random, 5 Hz to 500 Hz. Non-operating: 2.0 g sine, 1.1 grms. random, 5 Hz to 500 Hz.
Heat dissipation	24 ports at 215 BTU/hr @100VAC(typical); 209.56 BTU/hr @ 200VAC (typical).

Power

Power supply	Base switch includes a single, fixed power supply with four integrated system cooling fans.
AC input	90 V to 264 V.
Maximum input current	2.2 A.
Input line frequency	47 Hz to 63 Hz.
Power consumption	76.52 W with all 24 ports populated with 32 Gbps SWL optics. 55.83 W for idle configuration (all optics loaded but not initialized).

Summary of Changes

Date	Version History	Action	Description of Change
23-Jan-2017	Version 1	Created	Document created

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