

Overview

HPE StoreFabric SN6600B 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, 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 flash storage to help those applications scale to support thousands of users. To increase agility, reduce expenses, and realize the full benefits of these architectures, organizations need the network to deliver the performance required by today's server and 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 SN6600B Fibre Channel Switch meets the demands of hyper-scale virtualization, larger cloud infrastructures, and growing flash-based storage environments by delivering market-leading 32 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 flexibility, scalability, and ease of use. Organizations can scale from 24 to 64 ports with 48 SFP+ and 4 QSFP ports, all in an efficient 1U package. It also provides a simplified deployment process and a point-and-click user interface-making it both powerful and easy to use. With the SN6600B Switch organizations gain the best of both worlds: high-performance access to industry-leading storage technology and "pay-as-you-grow" scalability to support an evolving storage environment.

The SN6600B is available in eight models:

Standalone models :

- HPE StoreFabric SN6600B 32Gb 48/24 Fibre Channel Switch
- HPE StoreFabric SN6600B 32Gb 48/24 Power Pack+ Fibre Channel Switch
- HPE StoreFabric SN6600B 32Gb 48/48 Fibre Channel Switch
- HPE StoreFabric SN6600B 32Gb 48/48 Power Pack+ Fibre Channel Switch

Bundled models (with 32Gb SFP+):

- HPE StoreFabric SN6600B 32Gb 48/24 24-port 32Gb Short Wave SFP+ Integrated FC Switch
- HPE StoreFabric SN6600B 32Gb 48/24 Power Pack+ 24-port 32Gb Short Wave SFP+ Integrated FC Switch
- HPE StoreFabric SN6600B 32Gb 48/48 48-port 32Gb Short Wave SFP+ Integrated FC Switch
- HPE StoreFabric SN6600B 32Gb 48/48 Power Pack+ 48-port 32Gb Short Wave SFP+ Integrated FC Switch

Power Pack+ software includes additional software: Fabric Vision, ISL Trunking, and Extended Fabric. 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.

Overview



Features and Benefits

Key Features and Benefits

- Delivers 32 Gbps performance with up to 64 ports in an energy-efficient, 1U form factor, providing maximum flexibility for diverse deployment and cooling strategies
- Features Ports on Demand (PoD) capabilities for fast, easy, and cost-effective scaling from 24 to 48 ports in 12-port increments along with a 16-port QSFP PoD for full 64 port support.
- HPE StoreFabric SN6600B is available in both bundled (32Gb SFP+ included) and un-bundled variants providing flexibility to customers.
- Support high-density server virtualization, cloud architectures and flash-based storage environments
- Provides proactive, non-intrusive, real-time monitoring and alerting of storage IO health and performance with IO Insight, the industry's first integrated network sensors
- Increases resiliency by automatically discovering and recovering from device or network errors
- Simplifies troubleshooting with real-time and historical visibility in a single dashboard
- Provides a flexible, simple, and easy-to-use SAN solution with industry-leading technology
- Supports highly virtualized, flash storage with multi-tenancy and non-stop operations
- Offers best-in-class port density and scalability for midrange enterprise SAN switches, along with redundant, hot-pluggable components and non-disruptive software upgrades
- In-flight compression included providing efficient link utilization.
- Yields exceptional price/performance value, exceeding comparable Ethernet storage-based alternatives

Models

HPE SN6600B 32Gb FC Switch Models	HPE StoreFabric SN6600B 32Gb 48/24 Fibre Channel Switch	Q0U54A
	HPE StoreFabric SN6600B 32Gb 48/24 Power Pack+ Fibre Channel Switch	Q0U55A
	HPE StoreFabric SN6600B 32Gb 48/48 Fibre Channel Switch	Q0U56A
	HPE StoreFabric SN6600B 32Gb 48/48 Power Pack+ Fibre Channel Switch	Q0U57A
	HPE StoreFabric SN6600B 32Gb 48/24 24-port 32Gb Short Wave SFP+ Integrated FC Switch	Q0U58A
	HPE StoreFabric SN6600B 32Gb 48/24 Power Pack+ 24-port 32Gb Short Wave SFP+ Integrated FC Switch	Q0U59A
	HPE StoreFabric SN6600B 32Gb 48/48 48-port 32Gb Short Wave SFP+ Integrated FC Switch	Q0U60A
	HPE StoreFabric SN6600B 32Gb 48/48 Power Pack+ 48-port 32Gb Short Wave SFP+ Integrated FC Switch	Q0U61A

Product Highlights

SN6600B 32Gb FC Switch

- Simplifies enterprise SAN deployment by combining higher edge switch port density with exceptional scalability, performance and reliability
- Delivers 24, 36, 48 or 64-ports in a 1U enclosure
- Provides 4, 8, 10, 16 and 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

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

- Two integrated redundant, hot swappable power supplies with integrated cooling fans
- 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
- In-flight Compression
- Access Gateway
- Dynamic and System Monitoring Capabilities for High Reliability
- Virtual Fabrics
- 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 #OD1 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.

In-flight Compression

In-flight compression optimizes network performance within the data center and over long-distance links. Data is compressed at the source and uncompressed at the destination. Performance varies by data type, but generally achieve 2:1 compression with minimal impact on performance.

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

Product Highlights

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.

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

SN6600B 32Gb Switch Power Pack+ Software Bundle

The Power Pack+ Software Bundle comes with the SN6600B 32Gb 48/24 Power Pack+ Switch and SN6600B 32Gb 48/48 Power Pack+ Switch (for both standalone and 32Gb SFP+ integrated switch models). The customers can purchase it separately as an optional software bundle for the SN6600B 32Gb 48/24 FC Switch and the SN6600B 48/48 FC Switch (both standalone and 32Gb SFP+ bundles switch). It 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

- IO Insight: Proactively and non-intrusively monitors storage device IO performance and behavior through integrated network sensors at the storage tier, providing deep insight into problems and ensuring service levels
- 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,

Product Highlights

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 or up to two 128 Gbps QSFP ports per ISL trunk to provide a high bandwidth trunk between two switches. Each 32Gb switch needs its own license. The switch operating system views the trunk as a single, high bandwidth resource (up to 256Gb) when routing connections between 32Gb 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-SlotDirector 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 Plus.

Integrated Routing

Integrated Routing is an optional license which provides native Fibre Channel Routing (FCR) on a per-port basis, rather than limiting routing ports to those on a dedicated routing switch or blade. Just like traditional FCR, Integrated Routing uses EX_Ports to import/export devices between fabrics, enabling

Product Highlights

selective device sharing while maintaining remote fabric isolation. Integrated Routing provides architecture flexibility to route on a port-by-port basis, enabling increased scalability and fault isolation.

HPE Smart SAN for 3PAR

HPE Smart SAN, optional software for HPE 3PAR, makes end-to-end SAN configuration and management simple and reduces the probability of errors through automation. It is an application embedded in SAN components (array, hosts and switches) that enables 3PAR arrays to orchestrate configuration, settings and policies across the SAN. Smart SAN is supported with B-series Switches, HPE StoreFabric Fibre Channel adapters (HBAs) and 3PAR storage. HPE Smart SAN for 3PAR through its Target Driven Peer Zoning (TDPZ) feature enables customers to automate peer zoning, 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 B-series 32Gb, 16Gb and 8Gb FC switches with FOS 7.4.0a or later.

NOTE: A list of supported HPE FC Adapters can be found at <https://h20272.www2.hp.com/spock/>

NOTE: Supports 3PAR StoreServ storage with 3.2.2 or later with only 16Gb target ports on HPE 3PAR StoreServ storage.

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

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.

Discover, plan, and design

Choose from a rich portfolio of services to make the most of HPE StoreFabric 32Gb, 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 Storage Efficiency Analysis - The HPE Storage Efficiency Analysis provides customers with a view of their storage infrastructure and operating environment; highlighting recommendations for improvements. The report provides extensive insight about the existing storage environment, opportunities for efficiency gains, asset aging and replacement through interaction with key decision makers

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA3-6727ENW.pdf>

HPE Storage Impact Analysis (SIA): The HPE Storage Impact Analysis service provides a 2-4 week discovery engagement with executive summary presentation. The goal of this service is to help provide customers guidance on storage related issues and develop remediation plans.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-1174ENW.pdf>

HPE Storage Modernization Service: The HPE Storage Modernization service is a 4-6 week service that defines the customers envisioned target storage environment based on a proven solution design methodology. Hewlett Packard Enterprise architects will quickly perform tool-assisted automatic discovery and facilitate a two-day strategy workshop with all key stakeholders involved in the storage infrastructure initiative

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA3-4620ENW.pdf>

Deploy and integrate

We can help you configure, set up, and efficiently use your StoreFabric 32Gb, as well as help 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.

Service and Support

<https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-8527EN.pdf>

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.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA3-0774ENW.pdf>

HPE Storage and Data 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.

<https://www.hpe.com/h20195/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.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

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

<https://www.hpe.com/h20195/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.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-3446ENW.pdf>

HPE Foundation Care 24x7 - HPE Foundation Care 24x7 connects you to HPE around the clock for assistance on resolving issues with hardware onsite response within four hours and software call back within two hours after opening your case.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-0226ENW.pdf>

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>

Optimized Care - delivers best performance and stability through deployment and proactive management practices	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
Basic Care - Minimum recommended support	HPE Foundation Care 24x7 Additional options - 10 HPE Proactive Select credits per year
Remote	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

Service and Support

Support Automation cost-free, part of your Hewlett Packard Enterprise support relationship and we are continually investing in additional cutting-edge capabilities to make it better.

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 Care Pack 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 Care Pack Services at <http://www.hp.com/go/lookuptool>

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	8Gbps	8Gbps	
Aggregate device bandwidth	64 - 192 Gbps	128 - 192 Gbps	
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/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	

Features	SN3000B 16 Gb FC Switch	SN3600B 32 Gb FC Switch	SN6000B 16Gb FC Switch and SN6000B 16Gb FC Power Pack+
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	16 Gbps	32 Gbps	16Gbps
Aggregate device bandwidth	384 – 768 Gb full duplex	768 Gb end-to-end full duplex	384- 768 Gb
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	24 or 48 Enabled 48 Max
SFP	B-series	B-series	B-series
Advanced Trunking	Included with Power Pack+ Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
Adaptive	Included	Included	Included

Family Information

Networking			
Form factor	1U	1U	1U
Zoning Software	Yes (Included)	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	Optional	No	Yes
Hot plug fans	Yes (integrated with power supply)	Yes (integrated with power supply)	Yes (integrated with power supply)

Features	SN6600B 32Gb FC Power Pack+	SN6600B 32Gb Power Pack+ Bundled (SFP+) FC Switch
Targeted Environment	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	32 Gbps	32 Gbps
Aggregate device bandwidth	2 Tbps	2 Tbps
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/sandesignguide	
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA	
FC Ports	24 or 48 enabled 64 Max	24 or 48 Enabled 64 Max
SFP	B-series (16Gb or 32Gb)	B-series, 24 or 48 32Gb SFP+ included in the box
Advanced Trunking	Included with Power Pack+ or 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	Yes	Yes
Hot plug fans	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	8Gbps	16Gbps
Ethernet	1Gbps Ethernet	1/10/40Gbps Ethernet
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/sandesignguide	
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA	

Family Information

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 – 40GbE ports
SFP	B-series	B-series
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 16Gbps	Up to 32 Gbps
Aggregate device bandwidth	10.2Tbps	16.2 Tbps
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/sandesignguide	
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA	
Ports	Up to 512 SFP	384 32 Gbps ports or a 512-port equivalent with 128 Gbps (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 16Gbps	Up to 32Gbps
Aggregate device bandwidth	5.1 Tbps	8.1 Tbps
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/sandesignguide	

Family Information

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	
Form factor	9U	9U	
Zoning Software	Yes (included)	Yes (Included)	
Hot plug, redundant power supplies	Yes	Yes	
Hot plug fans	Yes	Yes	
Features	Brocade 16Gb SAN Switch for HPE c-Class BladeSystem	Brocade 8Gb SAN Switch for HPE c-Class BladeSystem	Brocade 16Gb Fibre Channel SAN Switch Module for HPE Synergy
Targeted Environment	Enterprise, Datacenters, Workgroups, Departments	Workgroups, Departments	Enterprise, Datacenters, Workgroups, Departments
Port Bandwidth	16 Gbps	8 Gbps	16 Gbps
Aggregate device bandwidth	448 Gbps	192 Gbps	576 Gbps
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/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
SN6600B 32Gb 48/48 Power Pack+ Fibre Channel Switch	32Gb 48-port FC Switch with 48 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, ISL Trunking and Extended Fabric NOTE: Requires optical transceivers listed below.	Q0U57A
SN6600B 32Gb 48/48 Power Pack+ 48-port 32Gb Short Wave SFP+ Integrated FC Switch	32Gb 48-port FC Switch with 48 active ports bundled with 48 32Gb SFP+; 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, ISL Trunking and Extended Fabric	Q0U61A
SN6600B 32Gb 48/24 Power Pack+ Fibre Channel Switch	32Gb 48-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, ISL Trunking, and Extended Fabric NOTE: Requires optical transceivers listed below.	Q0U55A
SN6600B 32Gb 48/24 Power Pack+ 24-port 32Gb Short Wave SFP+ Integrated FC Switch	32Gb 48-port FC Switch with 24 active ports bundled with 24 32Gb SFP+; 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, ISL Trunking and Extended Fabric	Q0U59A
SN6600B 32Gb 48/48 Fibre Channel Switch	32Gb 48-port FC Switch with 48 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.	Q0U56A
SN6600B 32Gb 48/48 48-port 32Gb Short Wave SFP+ Integrated FC Switch	32Gb 48-port FC Switch with 48 active ports bundled with 48 32b SFP+; 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.	Q0U60A
SN6600B 32Gb 48/24 Fibre Channel Switch	32Gb 48-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.	Q0U54A

Configuration Information

NOTE: Requires optical transceivers listed below.

SN6600B 32Gb 48/24 24-port 32Gb Short Wave SFP+ Integrated FC Switch

Q0U58A

32Gb 48-port FC Switch with 24 active ports bundled with 24 32Gb SFP+; 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: 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 Transceivers	HPE B-series 4x32Gb 4-pack Short Wave QSFP Transceiver	Q0U62A
	HPE B-series 32Gb SFP+ SW 1-pack XCVR	P9H32A
	HPE B-series 32Gb SFP+ LW 1-pack XCVR	P9H29A
	HPE B-series 16Gb SFP+ Short Wave Transceiver	QK724A
	HPE B-series 4x16Gb SW SFP+ 16Pk Transceiver	H6Z76A
	HPE B-series 4x16Gb SW QSFP Transceiver	K2Q87A
	HPE B-series 16Gb LW 25km FC SFP 1-pack Transceiver	H6Z29A
	HPE B-series 16Gb SFP+ Long Wave 10km Transceiver	QK725A
	HPE B-series 10Gb SFP+ Short Range Transceiver	QK726A
	HPE B-series 10Gb SFP+ Long Range Transceiver	QK727A
HPE SN6600B supports the following HPE Complete SmartOptics 16Gb Tranceivers –		
16G 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 4G USB Drive	N9Y63A

Configuration Information

Optical Cables Performance:

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

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 Premier Flex 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

HPE QSFP to 4xLC Breakout 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

Configuration Information

Step 3 - Optional Software*

NOTE; * For Fabric OS (FOS) minimum requirements, please refer to: <http://spock.corp.hp.com/>

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.

Software for SN6600B SN6600B 12-port Fibre Channel Upgrade E-LTU 32Gb FC Switch

Q0T76AAE
(Physical License -
Q0T76A)

12-port upgrade license for -
SN6600B 32Gb 48/24 FC Switch (Q0U54A),
48/24 Power Pack+ FC Switch (Q0U55A),
48/24 24-port 32Gb Short Wave SFP+ Integrated FC Switch (Q0U58A) and
48/24 Power Pack+ 24-port 32Gb Short Wave SFP+ Integrated FC Switch
(Q0U59A).

SN6600B 16-port 4xQSFP Upgrade E-LTU

Q0T77AAE
(Physical License -
Q0T77A)

16-port upgrade license to activate QSFP ports for -
48/24 Fibre Channel Switch (Q0U54A),
48/24 Power Pack+ Fibre Channel Switch (Q0U55A),
48/48 Fibre Channel Switch (Q0U56A),
48/48 PowerPack+ Fibre Channel Switch (Q0U57A),
48/24 24-port 32Gb Short Wave SFP+ Integrated FC Switch (Q0U58A),
48/24 Power Pack+ 24-port 32Gb Short Wave SFP+ Integrated FC Switch
(Q0U59A),
48/48 48-port 32Gb Short Wave SFP+ Integrated FC Switch (Q0U60A) and
48/48 Power Pack+ 48-port 32Gb Short Wave SFP+ Integrated FC Switch
(Q0U61A)

HPE StoreFabric SN6600B PowerPack+ Upgrade E-LTU

Q0T78AAE
(Physical License -
Q0T78A)

NOTE: The Power Pack+ Software Bundle kit includes Fabric Vision, Fabric Watch, ISL Trunking, Extended Fabric and Advanced Performance Monitor.

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, (Physical
License - TC352B)

Configuration Information

HPE SAN Network Advisor Professional Plus Software E-LTU	TC353BAE, (Physical License - TC353B)
HPE SAN Network Advisor Professional Plus Upgrade E-LTU	TC354BAE, ((Physical License - TC354B)
HPE B-series Integrated Routing E-LTU	T5528AAE (Physical License - T5528A)
HPE Intelligent Infrastructure Analyzer Software v2 E-LTU	TC472AAE (Physical License - TC472A)

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](#).

Technical Specifications

System Architecture	Fibre Channel ports	Switch mode (default): Minimum of 24 ports and maximum of 64 ports configuration. Port numbers above minimum are enabled through 12-port SFP+ increments via Ports on Demand (PoD) licenses and through one 4-port QSFP PoD, providing 16-port increments through a license; E_Ports, F_Ports, D_Ports, EX_Ports.	
	Scalability	Full fabric architecture with a maximum of 239 switches: http://h18006.www1.hp.com/products/storageworks/san/documentation.html	
	Certified maximum	6,000 active nodes; 56 switches, 19 hops in Fabric OS® fabrics; larger fabrics certified as required Refer to SAN Design Guide for current configuration information: http://h18006.www1.hp.com/products/storageworks/san/documentation.html	
	Interoperability	<ul style="list-style-type: none"> • 8/8 SAN Switch • 8/24 SAN Switch • 1606 Extension SAN Switch • SN4000B SAN Extension Switch • SN8000B 8-Slot SAN Backbone Director • SN8000B 4-Slot SAN Director • SN6500B Fibre Channel Switch • SN6000B Fibre Channel Switch • SN3000B Fibre Channel Switch • Brocade 8Gb SAN Switch for HPE BladeSystem c-Class • Brocade 16Gb SAN Switch for HPE BladeSystem c-Class • Brocade 16Gb Fibre Channel SAN Switch Module for HPE Synergy 	
	Performance	Fibre Channel: 4.25 Gbps line speed, full duplex; 8.5 Gbps line speed, full duplex; 10.53 Gbps line speed, full duplex; 14.025 Gbps line speed, full duplex; 28.05 Gbps, full duplex; 112.2 Gbps, full duplex; auto-sensing of 4, 8, 16, 32 Gbps port speeds and capable of supporting 128 Gbps speeds; 10 Gbps optionally programmable to fixed port speed	
	ISL Trunking	Frame-based trunking with up to eight 32 Gbps ports per ISL trunk; up to two 128 Gbps QSFP ports per ISL trunk. Exchange-based load balancing across ISLs with DPS included in Fabric OS. There is no limit to how many trunk groups can be configured in the switch.	
	Aggregate bandwidth	2 Tbps	
	Maximum Fabric latency	Latency for locally switched ports is 700 ns; compression is 1 μ s per	
	Maximum frame size	2112-byte payload	
	Frame buffers	15,360 dynamically allocated	
	Classes of service	Class 2, Class 3, Class F (Inter-switch frames)	
	Port types	D_Port (ClearLink Diagnostic Port), E_Port, EX_Port, F_Port, AE_Port; optional port-type control	
	Data traffic types	Access Gateway mode: F_Port and NPIV-enabled N_Port	
		Fabric switches supporting unicast	

Technical Specifications

Management	Media types	Hot-pluggable, B-Series Branded QSFP, MPO connector, Small Form Factor Pluggable (SFP), LC connector; Short-Wave Laser (SWL), Long-Wave Laser (LWL); distance depends on fiber-optic cable and port speed. Supports QSFP (128Gbps), SFP+ (32/16/10/8 Gbps) optical transceivers.
	USB	One USB port for system log file downloads or firmware upgrades
	Fabric services	Monitoring and Alerting Policy Suite (MAPS); Flow Vision; Adaptive Networking (Ingress Rate Limiting, 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; Integrated Routing; IPoFC; ISL Trunking; Management Server; NPIV; Time Server; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server (SNS); Virtual Fabrics (Logical Switch, Logical Fabric); Read Diagnostics Parameter (RDP)
	Extension	Fibre Channel, in-flight compression; integrated optional 10 Gbps Fibre Channel for DWDM MAN connectivity
	Options	SFP media, USB Device
	Management software supported	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, SyslogAdvanced Web Tools, SAN Network Advisor Enterprise or SAN Network Advisor Professional/Professional Plus; EZ Switch, Command Line Interface (CLI); SMI-S compliant; REST API; Administrative Domains; trial licenses for add-on capabilities
	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 Mbps 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, RAS trace logging, and Rolling Reboot Detection (RRD)
	Enclosure	Port side Intake airflow models available; power from back; 1U
Mechanicals	Size	Width: 440 mm (17.32 in.) Height: 43.9 mm (1.73 in.) Depth: 355.6 mm (14 in.)
	System Weight	7.73 kg (17 lb) with two power supply FRUs, without transceivers
Environment	Operating environment	Temperature : 0° to 40° C (32° to 104° F)
		Humidity: 10% to 85% (non-condensing):

Technical Specifications

Power	Non-operating	Temperature: -25° to 70° C (-13° 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 G 11 ms, 3/eg axis
	Vibration	Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz Non-operating: 2.0 g sine, 1.1 grms random, 5 to 500 Hz
	Heat dissipation	64 ports at 716 BTU/hr
	Power Supply	Dual, hot-swappable redundant power supplies with integrated system cooling fans
	AC input	90 V to 264 V ~3.5 A
	AC Input line frequency	47 Hz to 63 Hz
	AC Power Consumption	204 W with all 64 ports populated with 48×32 Gbps SFP+ SWL optics and 4× (4×32 Gbps) QSFP SWL optics 85 W for empty chassis with no optics

Summary of Changes

Date	Version History	Action	Description of Change
27-Mar-2017	From Version 4 to 5	Changed	Added optics and cables
27-Jan-2017	From Version 3 to 4	Changed	Added a MPO/MPO OM4 100m (12ft) Cable, and changed the Warranty Section
16-Dec-2016	From Version 2 to 3	Changed	Image was changed
28-Nov-2016	From Version 1 to 2	Changed	Version number updated to match PB
28-Nov-2016	Version 1	Created	Document created



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