

Overview

HPE B-series SN6000B Fibre Channel Switch

To remain competitive, IT organizations must keep pace with ever-increasing workloads without a similar increase in their budgets or resources. While virtualization has provided some relief by enabling the benefits of faster deployment and consolidation, it also tends to put additional stress on data center networks. In addition, the move toward cloud computing, which promises greater efficiency and a more service-oriented business model, means that these networks will face even greater demands.

The HPE SN6000B Fibre Channel Switch meets the demands of hyper-scale, private cloud storage environments by delivering market-leading 16 Gb Fibre Channel technology and capabilities that support highly virtualized environments. Designed to enable maximum flexibility and investment protection, the SN6000B Switch is configurable in 24, 36, or 48 ports and supports 4, 8, 10, or 16 Gbps speeds in an efficiently designed 1U package. It also provides a simplified deployment process and a point-and-click user interface-making it both powerful and easy to use. The SN6000B Switch offers low-cost access to industry-leading Storage Area Network (SAN) technology while providing "pay-as-you-grow" scalability to meet the needs of an evolving storage environment.

The SN6000B is available in six models:

- HPE SN6000B 16Gb 48-port/48-port Active Power Pack+ Fibre Channel Switch
- HPE SN6000B 16Gb 48-port/24-port Active Power Pack+ Fibre Channel Switch
- HPE SN6000B 16Gb 48-port/48-port Active Fibre Channel Switch
- HPE SN6000B 16Gb 48-port/24-port Active Fibre Channel Switch
- HPE SN6000B 16Gb 48-port/24-port Active Port Side Air Intake Fibre Channel Switch
- HPE SN6000B 16Gb Bundled Fibre Channel switch

Power Pack+ 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.



HPE SN6000B Fibre Channel Switch

What's New

- Added HPE SANnav Management Software with 1-year, 3-year and 5-years term-license
- Updated SKUs (suffix changed from B to C),

Standard Features

Key Features and Benefits

- Delivers 16 Gbps performance with up to 48 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
 - Provides a flexible, simple, and easy-to-use SAN solution with industry-leading technology
 - Supports highly virtualized, private cloud 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
 - Metro cloud connectivity features including integrated DWDM and dark fiber support (optional license)
 - In-flight compression and encryption included providing efficient link utilization and security.
 - Yields exceptional price/performance value, exceeding comparable Ethernet storage-based alternatives
 - Unique Bundle model: The HPE SN6000B 16Gb Bundled Fibre Channel switch model facilitates ease of ordering by offering the HPE SN6000B 48/24 Fibre channel switch along with twenty-four 16Gb optical transceivers in one package. The HPE SN6000B 16Gb Bundled Fibre Channel switch model is offered at a lower price than the sum of the list prices of the HPE SN6000B 48/24 Fibre Channel switch and the 16Gb optical transceivers
-

SN6000B 16Gb FC Switch

- Simplifies enterprise SAN deployment by combining higher edge switch port density with exceptional scalability, performance and reliability
 - Delivers 24, 36, or 48-ports in a 1U enclosure
 - Provides 4 Gb/s, 8 Gb/s, 10 Gb/s, 16 Gb/s* performance
Notes: * 16 Gb/s performance can be obtained between two 16 Gb/s capable devices.
 - Employs optional Inter-Switch Link (ISL) Trunking to provide a high-speed data path between switches which enables a high speed data path between 16 Gb/s switches up to 128 Gb/s
-

Configuration Support

https://h20628.www2.hp.com/km-ext/kmcsdirect/emr_na-c00403562-78.pdf

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 and Encryption
 - Access Gateway
 - Dynamic and System Monitoring Capabilities for High Reliability
 - Virtual Fabrics
-

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.

Notes: To order factory integration, add 0D1 after the part number on your sales order.



Standard Features

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 and Fabric Vision functionality.

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 and Encryption

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. Compression can be used in conjunction with in-flight encryption.

In-flight encryption minimizes the risk of unauthorized access for traffic within the data center and over long-distance links. It is switch-to-switch encryption, not device or data-at-rest encryption. Data is encrypted at the source and decrypted at the destination. Encryption and decryption are performed in hardware using the AES-GCM-256 algorithm, minimizing any impact on performance. Encryption can be used in conjunction with in-flight compression. This is complementary to data-at-rest encryption provided by the Encryption SAN Switch and the Encryption Blade for B-series SAN Directors.

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.
- **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.

Server Application Optimization

Server Application Optimization (SAO) improves overall application performance for physical servers and virtual machines. SAO, when deployed with B-Series Fibre Channel HBAs, extends B-Series Adaptive Networking from the B-series SAN fabric to the server infrastructure. This delivers application-level, fine-grain Quality of Service (QoS) management to the HBAs and related server applications.

Solution Requirements:

- SAO requires B-series HBA installed in the server



Standard Features

Software Components, Optional

SN6000B 16Gb Switch Power Pack+ Software Bundle

The Power Pack+ Software Bundle comes with the (SN6000B16Gb 48/48 Power Pack+ Switch and SN6000B 16Gb 48/24 Power Pack+ Switch) or as an optional software (bundle for the SN6000B 16Gb 48/48 FC Switch, the SN6000B 48/24 FC Switch and the SN6000B Bundled Fibre Channel switch). It includes the following:

- Fabric Vision
- Extended Fabric
- ISL Trunking

Fabric Vision

Fabric Vision offers innovative diagnostic, monitoring and management capabilities to help accelerate new application deployments, address SAN problems before they impact operations and reduce operational costs. 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.
- Flow Vision: A comprehensive tool that enables administrators to identify, monitor, and analyze specific application data flows without using taps to ensure optimized performance
- Health and performance dashboard: A single customizable screen displayed in HPE Management Portal 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 E-ports to provide a high bandwidth trunk between two switches. Each 16Gb switch needs its own license. The switch operating system views the trunk as a single, high bandwidth resource (up to 128Gb) when routing connections between 16Gb switches. Connections are load-balanced across the individual links, which comprise the logical trunk group.

HPE SANnav Management Software

HPE SANnav Management Software is the next-generation SAN management application suite for HPE B-series SAN environments. It consists of SANnav Management Portal Software and SANnav Global View Software:

- SANnav Management Portal is a next-generation SAN management application with a simple browser-based user interface (UI) streamlining common workflows, such as configuration, zoning, deployment, troubleshooting, and reporting.
- SANnav Global View helps administrators visualize the health, performance and inventory of multiple SANnav Management Portal instances at data centers across the globe or a single multi-tenant data center using a simple, intelligent dashboard.

SANnav Management Portal and SANnav Global View not only transform SAN telemetry data into useful insights, such as health and performance scores, but also enable administrators to quickly associate real-time data with historical metrics and logs for in-depth analysis. This can help with spotting trends, establishing baselines, and identifying any behavioral changes over time.

HPE SANnav Management Software is available as a term-license for 1-year, 3-years and 5-years period as both – physical and electronic License-to-Use (LTU). It supports 8Gb, 16Gb and 32Gb FC Switches and Directors.



Standard Features

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 Directors Management including enterprise-class features/environments such as FICON, 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, 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.

Notes: HPE SAN Network Advisor 14.4.5 supports only the Enterprise edition. Any migrations to 14.4.5 utilizing a Professional+ license will provide Enterprise level equivalent functionality while on 14.4.5. The Professional and Trial editions as well as the head-less SMI agent only editions are not supported in 14.4.5 for new installations or migration from previous HPE SAN Network Advisor versions.

See the HPE Single Point of Connectivity Knowledge (SPOCK) B-series stream for HPE SAN Network Advisor version support. <https://www.hpe.com/storage/spock>

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 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 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://www.hpe.com/storage/3par>

Notes:

- Supports B-series 16Gb and 8Gb FC switches with FOS 7.4.0a or later.
- A list of supported HPE FC Adapters can be found at <http://www.hpe.com/storage/spock>
- Supports 3PAR StoreServ storage with 3.2.2 or later with only 16Gb target ports on HPE 3PAR StoreServ storage.



Service and Support

Warranty

(1-1-1) Hardware Warranty; 1-year parts; 1-year on-site (standard business hours, next business day response) and 1-year labor.

Notes:

- The hardware warranty covers firmware and embedded non-saleable software. For extended hardware installation and maintenance information, click the link below: <http://h20565.www2.hpe.com/portal/site/hpsc/>
- 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.

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.

[HPE Managed Services | HPE](#)

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



Service and Support

- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

<https://www.hpe.com/services/completecure>

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>



Configuration Information

Step 1: Base Configuration

Select one:

Step 2: Options

Fibre Channel Transceivers

Description

SKU

HPE B-series 8Gb Shortwave Fibre Channel 1 Pack SFP+ Transceiver

AJ716B

Notes: [AJ716A is not supported with the SN6000B 16Gb FC Switch.](#)

HPE B-series 16Gb SFP+ Short Wave Transceiver

QK724A

Distance - Maximum	HPE Standard OM3 Cable	HPE PremierFlex OM3+ Cable	HPE PremierFlex OM4 Cable
16Gb performance:	100 meters	100 meters	125 meters
8Gb performance:	150 meters	150 meters	190 meters
4Gb performance:	380 meters	380 meters	400 meters

HPE B-series 8Gb Long Wave 10km Fibre Channel 1 Pack SFP+ Transceiver

AJ717A

HPE B-series 16Gb SFP+ Short Wave 1-pack Secure Transceiver

R6B10A

HPE B-series 16Gb SFP+ Short Wave 8-pack Secure Transceiver

R6W28A

HPE B-series 16Gb SFP+ Long Wave 10km 1-pack Secure Transceiver

R6B11A

HPE B-series 16Gb SFP+ Extended Long Wave 25km 1-pack Secure Transceiver

R6B21A

HPE SN6000B supports the following HPE Complete SmartOptics 16Gb Tranceivers—16G FC embedded DWDM Solution

Notes: [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

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 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

Notes: For Fabric OS (FOS) minimum requirements, please refer to: <https://h20272.www2.hpe.com/spock/>

Software for SN6000B 16Gb FC Switch

SANnav Software Licenses:

Notes: For users purchasing SANnav licenses for the first time, one of the following SKUs should be purchased. For users wanted to renew a SANnav license, a renewal license should be selected from the SANnav Renewal Software License in the next section.

Description

	SKU
HPE SANnav Management Portal Base 1yr E-LTU	R3P45AAE
HPE SANnav Management Portal Enterprise 1yr E-LTU	R3P46AAE
HPE SANnav Global View 1yr E-LTU	R3P47AAE
HPE SANnav Management Portal Base 3yr E-LTU	R3P48AAE
HPE SANnav Management Portal Enterprise 3yr E-LTU	R3P49AAE
HPE SANnav Global View 3yr E-LTU	R3P50AAE
HPE SANnav Management Portal Base 5yr E-LTU	R4P29AAE
HPE SANnav Management Portal Enterprise 5yr E-LTU	R4P30AAE
HPE SANnav Global View 5yr E-LTU	R4P31AAE

Notes:

- The Base edition of HPE SANnav Management Portal does not support management of director class switches.
- HPE SANnav Management Software License-to-Use (LTU/E-LTU) includes maintenance and support for the duration of the license. At the end of the license period, customers have the option to renew the license, maintaining the same license key, by selecting from the SANnav Renewal Software License section below Software renewal via HPE Services is not allowed/supported.
- Trial Licenses: depending on the version of SANnav license, the trial period is different.
 - o 90-day trial license available with all SANnav releases through v2.2.0
 - o 30-day trial license available with SANnav v2.2.1 and v2.2.2
 - o No trial license available with SANnav v2.3.0

SANnav Renewal Software Licenses

Notes: For users who currently have a SANnav license and want to renew their software license, one of the following licenses should be selected. The SANnav license must align with the current type of software license i.e. in order to renew a Base license, the Base renewal licenses will need to be selected.

HPE SANnav Management Portal Base 1-year Renewal E-LTU	S1S52AAE
HPE SANnav Management Portal Enterprise 1-year Renewal E-LTU	S1S55AAE
HPE SANnav Global View 1-year Renewal E-LTU	S1S58AAE

Notes:

- The Base edition of HPE SANnav Management Portal does not support management of director class switches.
- HPE SANnav Management Software License-to-Use (LTU/E-LTU) includes maintenance and support for the duration of the license.
- Trial Licenses – depending on the version of SANnav license, the trial period is different.
 - o 90-day trial license available with all SANnav releases through v2.2.0
 - o 30-day trial license available with SANnav v2.2.1 and v2.2.2
 - o No trial license available with SANnav v2.3.0



Configuration Information

Description

	SKU
HPE B-series Mid/High End Extended Fabric E-LTU	J4V63AAE
<ul style="list-style-type: none"> • Physical License J4V63A 	
HPE B-series Mid/High End SAN Switch ISL Trunking E-LTU	J4V61AAE
<ul style="list-style-type: none"> • Physical License - 313452-B21 	
HPE B-series Integrated Routing E-LTU	T5528BAE
<ul style="list-style-type: none"> • Physical License – T5528A 	
HPE 8/40 and 1606 Extension SAN Switch FICON CUP E-LTU	TA748BAE

Notes:

- The FICON CUP support is contingent upon IBM certification. Please refer to The HPE B-Series FICON connectivity stream at HPE "Single Point of Connectivity Knowledge" (SPOCK) for the latest information.
- Most HPE B-series software licenses are now available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses with part numbers listed in this document are functionally equivalent to the corresponding physical licenses with different part numbers. Some software licenses in this document are represented by two part numbers, the first of which is the E-Delivery version (ending with AE) and the second is the physical version.
- Universal Temporary Licenses (UTLs) are available for trial usage or to test select features before purchasing permanent licenses. These UTLs enable optional features on B-series Directors and Switches on a temporary basis for one-time usage. Additional information can be found at the following URL using your HPE Passport credentials:
<https://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=BROCADETRIAL>



Technical Specifications

Family Information

Features	8/8 SAN Switch Base and 8/8 SAN Switch	8/24 SAN Switch Base	SN3000B 16Gb FC Switch	SN3600B 32Gb FC Switch and SN3600B 32Gb FC Power Pack+
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	8Gbps	8Gbps	16Gbps	32Gbps
Aggregate device bandwidth	64-192 Gbps	128-192 Gbps	192-384 Gbps	768 Gbps
OS Support	Notes: Please Refer to SPOCK https://h20272.www2.hpe.com/spock/			
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA			
FC Ports	8 Enabled 24 Max	16 Enabled 24 Max	12 or 24 Enabled 24 Max	8 or 24 Enabled 24 Max
SFP	B-series	B-series	B-series	B-series
Advanced Trunking	Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ Upgrade	Included with Power Pack+ or Optional Upgrade
Adaptive Networking	Included	Included	Included	Included
Form factor	1U	1U	1U	1U
Zoning Software	Yes (Included)	Yes (Included)	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	No	No	Optional	No
Hot plug fans	No	No	Yes (integrated with power supply)	Yes (integrated with power supply)



Technical Specifications

Features	SN6000B 16 Gb FC Switch and SN6000B 16 Gb FC Power Pack+	SN6600B 32 Gb FC Switch
Targeted Environment	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	16 Gbps	32 Gbps
Aggregate device bandwidth	384- 768 Gbps	2 Tbps
OS Support	Notes: Please Refer to SPOCK https://h20272.www2.hpe.com/spock/	
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
SFP	B-series	B-series Optics (16 Gb or 32 Gb)
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)



Technical Specifications

Features	SN6500B 16Gb FC Switch and SN6500B 16Gb FC Power Pack+	SN4000B Power Pack+ SAN Extension Switch	1606 Extension SAN Switch
Targeted Environment	Workgroups, Departments	Data Centers; long distance replication, multiprotocol SAN Fabrics	Data Centers
Fibre Channel Port Bandwidth	16Gbps	16Gbps	8Gbps
Ethernet		1/10/40 Gbps Ethernet	1Gbps Ethernet
Aggregate device bandwidth	768-1536-Gbps		
OS Support	Notes: Please Refer to SPOCK https://h20272.www2.hpe.com/spock/		
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA		
FC Ports	48 or 96 Enabled 96 Max	24 FC Ports Enabled 24 Max	4 or 16 Enabled 16 Max
Ethernet Ports	N/A	16 Enabled	2 or 6 Enabled 6 Max
SFP	B-series	B-series	B-series
Advanced Trunking	Included with Power Pack+ or Optional Upgrade	Included	Included with Power Pack+ or Optional Upgrade
Adaptive Networking	Included	Included	Included
Form factor	2U	2U	1U
Zoning Software	Yes (Included)	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	Yes	Yes	Yes
Hot plug fans	Yes	Yes	Yes



Technical Specifications

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	20.48 Tbps
OS Support	Notes: Please Refer to SPOCK https://h20272.www2.hpe.com/spock/	
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA	
Ports	Up to 512 SFP	512 32 Gbps ports or a 640-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



Technical Specifications

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	10.24 Tbps
OS Support	Notes: Please Refer to SPOCK https://h20272.www2.hpe.com/spock/	
Storage system support	3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA	
Ports	Up to 256 SFP	Up to 256 32 Gbps ports or a 320-port equivalent with 16 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



Technical Specifications

Features	Brocade 16Gb SAN Switch for HPE c-Class BladeSystem	Brocade 16Gb Fibre Channel SAN Switch Module for HPE Synergy	Brocade 32Gb Fibre Channel SAN Switch Module for HPE Synergy
Targeted Environment	Enterprise, Datacenters, Workgroups, Departments	Enterprise, Datacenters, Workgroups, Departments	Enterprise, Datacenters, Workgroups, Departments
Port Bandwidth	16 Gbps	16 Gbps	32 Gbps
Aggregate device bandwidth	448 Gbps	576 Gbps (36 ports X 16 Gbps)	896 Gbps (28 ports x 32Gbps)
OS Support	Notes: Please Refer to SPOCK https://h20272.www2.hpe.com/spock/		
Storage system Support	3PAR StoreServ, Nimble, StoreVirtual 4000, P9000/XP7, MSA 2050/1050		
Ports	12 external /16 internal	8 SFP+ external, 4 QSFP external /12 internal	8 SFP+ external, 2 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 Synergy Frame	Yes, in Synergy Frame
Hot plug fans	Yes, in BladeSystem Enclosure	Yes, in Synergy Frame	Yes, in Synergy Frame



Technical Specifications

System Architecture

Fibre Channel ports

Switch mode (default): 24-, 36-, and 48-port configurations (12-port increments through Ports on Demand [PoD] licenses); universal (E, F, M, D, EX) ports

Scalability

Full fabric architecture: <http://www.hpe.com/support/san-documentation>

Certified maximum

Refer to **SAN Design Guide** for current configuration information.

Interoperability

- 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

Auto-sensing of 4, 8, and 16 Gbps port speeds; 10 Gbps and optionally programmable to fixed port speed.

ISL Trunking

Frame-based trunking with up to eight 16 Gbps ports per ISL trunk; up to 128 Gbps 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

768Gbit/sec

Fabric latency

Latency for locally switched ports is 700 ns; encryption/compression is 5.5 sec per node; Forward Error Correction (FEC) adds 400 ns between E_Ports (enabled by default).

Maximum frame size

2112-byte payload

Classes of service

Class 2, Class 3, Class F (inter-switch frames)



Technical Specifications

Port types

D_Port (Diagnostic Port), E_Port, EX_Port, F_Port, M_Port (Mirror Port); self-discovery based on switch type (U_Port); optional port type control.

Access Gateway mode: F_Port and NPIV-enabled N_Port.

Data traffic types

Fabric switches supporting unicast

Media types

Hot-pluggable, B-Series Branded 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 SFP+ (16/10/8 Gbit/sec) optical transceivers.

USB

One USB port for system log file downloads or firmware upgrades

Fabric services

Adaptive Networking (Ingress Rate Limiting, Traffic Isolation, QoS); Bottleneck Detection; Advanced Zoning (default zoning, port/WWN zoning, broadcast 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; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Server Application Optimization (SAO); Simple Name Server (SNS); Virtual Fabrics (Logical Switch, Logical Fabric)

System Architecture

- **Security**
AES-GCM-256 encryption on ISLs; DH-CHAP (between switches and end devices), FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP with IPv6, Port Binding, RADIUS, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch.
 - **Extension**
Fibre Channel, in-flight compression and encryption (AES-GCM-256); integrated 10 Gbps Fibre Channel for DWDM MAN connectivity
 - **Options**
SFP media, USB Device
-

Management

- **Management software supported**
HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; Advanced Web Tools, SAN Network Advisor Enterprise or SAN Network Advisor Professional/Professional Plus; Command Line Interface (CLI); SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities
 - **Management access**
10/100 Mbps Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45), and one USB port
 - **Diagnostics**
D_Port offline diagnostics, including electrical/ optical loopback, link traffic/latency/distance; POST and embedded online/offline diagnostics, including environmental monitoring, FCping and Pathinfo (FC traceroute), frame viewer, non-disruptive daemon restart port mirroring (SPAN port), optics health monitoring, power monitoring, RAStrace logging, and Rolling Reboot Detection (RRD)
-



Technical Specifications

Mechanicals

- **Enclosure**
Port side Intake and Port side Exhaust airflow models available; power from back; 1U
 - **Size**
Width: 438 mm (17.23 in.)
Height: 43 mm (1.7 in.)
Depth: 443 mm (17.45 in.)
 - **System Weight**
9.16 kg (20.20 lb) with two power supply FRUs, without transceivers
-

Environment

- **Temperature**
Operating: 0° to 40° C (32° to 104° F)
Non-operating: -25° to 70° C (-13° to 158° F)
 - **Humidity**
Operating: 10 to 85 percent non-condensing
 - **Altitude**
Operating: Up to 3000 meters (9,842 feet)
Storage: Up to 12 kilometers (39,370 feet)
 - **Shock**
Operating: 20 g, 6 ms half-sine
Non-operating: Half sine, 33G 11ms. 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
-

Power

- **Power Supply**
Dual, hot-swappable redundant power supplies with integrated system cooling fans
 - **AC input**
85 V to 264 V ~5 A to 2.5 A
 - **Input line frequency**
47 Hz to 63 Hz
 - **Power Consumption**
110 watts with all 48 ports populated with 16 Gbps SWL optics 72 watts for empty chassis with no optics
-



Summary of Changes

Date	Version History	Action	Description of Change
13-Nov-2023	Version 33	Changed	HPE Services Rebranding
05-Jun-2023	Version 32	Changed	Overview, Configuration Information and Technical Specifications sections were updated SANnav renewal offerings added
01-Nov-2021	Version 31	Changed	Added Secure Transceivers
04-Oct-2021	Version 30	Changed	Service and Support section was updated
02-Aug-2021	Version 29	Changed	Overview, Service and Support and Configuration Information sections were updated.
05-Oct-2020	Version 28	Changed	Updated physical software licenses
03-Aug-2020	Version 27	Changed	QuickSpecs layout was updated and Branding Refresh was applied.
15-Jun-2020	Version 26	Changed	Added PP+ LTU to list of Optional Software
06-Apr-2020	Version 25	Changed	Overview, Standard Features, Configuration Information and Technical Specifications sections were updated
03-Feb-2020	Version 24	Changed	Added SANnav 5-years LTU
03-Sep-2019	Version 23	Changed	Updated SANnav details
24-Oct-2018	Version 22	Changed	Overview, Product Highlights, Family Information, Service and Support, technical Specifications and Configuration Information sections were revised
23-Oct-2017	Version 21	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
16-Dec-2016	Version 20	Added	Smartoptics was added
07-Jun-2016	Version 19	Changed	Changes made to the Models, overview, service and support and Family information sections.
22-Jan-2016	Version 18	Changed	Changes were made throughout the entire QuickSpecs.
24-Sept-2015	Version 17	Changed	Changes made the Technical Specs Section
04-Sep-2015	Version 16	Changed	Changes made the Products Highlights, Family Info, Configuration Info and Technical Specs Sections.
10-Jun-2014	Version 15	Changed	Product highlights and Configuration Information were revised.
23-May-2014	Version 14	Changed	Text formatted in Configuration Information section.
20-Dec-2013	Version 13	Changed	HPE B-series 16b Long Wave 25km Fibre Channel SFP+ 1 Pack Fibre Channel Switches was added.
09-Dec-2013	Version 12	Changed	HPE SreFabric B-series 8Gb and 16Gb Mid-Range Switch Fabric Vision LTU was added Software for SN6000B 16Gb FC Switch in Configuration Information HPE 8/40 SAN Switch and 8/40 SAN Switch Power Pack+ was removed from Family Information
15-Oct-2013	Version 11	Changed	Fabric Vision was added Product Highlights SN3000B and SN6500B Fibre Channel Switches were added Interoperability 2408 FCoE CN Switch and 2408 FCoE CN Switch Power Pack+ was removed from Family Information chart
30-Sep-2013	Version 10	Changed	Optional Software was revised.
22-Mar-2013	Version 9	Changed	Configuration Information- Removed part numbers and descriptions.
08-Mar-2013	Version 8	Changed	Family Information Updated Srage system support.
15-Feb-2012	Version 7	Changed	Changes made the Family Information Section.
21-Dec-2011	Version 6	Changed	Change made in Configuration Information: description update in Optical Cables.
04-Dec-2011	Version 5	Changed	Changes were made throughout the entire QuickSpecs.



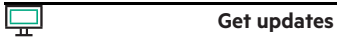
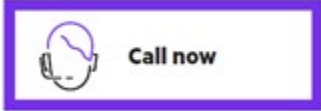
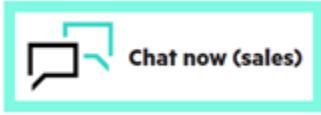
Summary of Changes

Date	Version History	Action	Description of Change
13-Aug-2011	Version 4	Changed	Changes were made in Overview, Models, Product Highlights, Configuration Information and Technical Specifications sections.
14-Nov-2011	Version 3	Changed	HPE 16GB Long Wave B-series 10km FC SFP+ 1 Pack was added and HPE LC-SC Optical Cables were removed from Step 2 in Configuration Information.
28-Oct-2011	Version 2	Changed	Key Features and Benefits was revised in Features and Benefits SN6000B 16Gb FC Switch, Advanced Fabric Services, Integrated Fibre Channel Extension and SAN Network Advisor Professional were updated and In-flight Compression and Encryption were added. Product Highlights Configuration Information was revised throughout Aggregate bandwidth and Media types were modified in System Architecture
26-Sep-2011	Version 1	New	New QuickSpecs



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