Overview

HPE B-series SN6500B 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 SN6500B 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 SN6500B Switch is configurable in 48, 72 or 96 ports and supports 4, 8 or 16 Gbps speeds in an efficiently designed 2U package. It also provides a simplified deployment process and a point-and-click user interface-making it both powerful and easy to use. The SN6500B Switch is ideal for medium- to large-sized organizations that need a scalable, high-availability solution that will facilitate consolidation and the flexibility to meet rapidly evolving storage requirements
The SN6500B is available in the following models:
- HPE SN6500B 16Gb 96-port/96-port Active Power Pack+ Fibre Channel Switch
- HPE SN6500B 16Gb 96-port/48-port Active Power Pack+ Fibre Channel Switch
- HPE SN6500B 16Gb 96-port/48-port Active 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.

Models

HPE SN6500B 16Gb FC Switch Models

Description	SKU
HPE SN6500B 16Gb 96/96 Power Pack+ FC Switch	C8R42B
HPE SN6500B 16Gb 96/48 Fibre Channel Switch	C8R45B

Standard Features

Key Features and Benefits

- Delivers 16 Gbps performance with up to 96 ports in an ultra-dense, optimized 2U form factor
- Features Ports on Demand (PoD) capabilities for fast, easy, and cost-effective scaling from 48 to 96 ports in 24-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 high-end enterprise SAN switches, along with redundant, hot-pluggable components and non-disruptive software upgrades
- In-flight compression and encryption included providing efficient link utilization and security Yields exceptional price/performance value
- Provides Adaptive Networking services such as Quality of Service (QoS) to help optimize application performance in consolidated, virtual environments. The Adaptive Networking and Server Application Optimization (SAO) features are included by default in all SN6500B switch models and do not require a separate license

SN6500B 16Gb FC Switch

- Simplifies enterprise SAN deployment by combining higher edge switch port density with exceptional scalability, performance and reliability
- Delivers 48, 72, or 96-ports in a 2U enclosure
- Provides 4 Gb/s, 8 Gb/s, 16 Gb/s* 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 16 Gb/s switches up to 128 Gb/s

Notes: * 16 Gb/s performance can be obtained between two 16 Gb/s capable devices.

Configuration Support
https://support.hpe.com/hpsc/doc/public/display?docId=c00403562

High-availability features

- Two integrated redundant, hot swappable power supplies with three hot-swappable redundant 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

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.

Software Components, Standard, Base Models

Standard Features

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 an optional 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

SN6500B 16Gb Switch Power Pack+ Software Bundle
The Power Pack+ Software Bundle comes with the SN6500B 16Gb 96/96 Power Pack+ Switch and
SN6500B 16Gb 96/48 Power Pack+ Switch or as an optional software bundle for the SN6500B 16Gb 96/96
FC Switch and the SN6500B 96/48 FC Switch. It includes the following:
- Fabric Vision
- Extended Fabric
- ISL Trunking

Notes: Adaptive Networking and Server Application Optimization features are included by default in all four
switch configurations and do not require a separate license

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: 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 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 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.

Standard Features

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.

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 HP 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:
https://www.hpe.com/us/en/product-catalog/storage/storage-software/pip.hpe-smart-san-for-3par.8295863.html
Notes:

− Supports B-series 32Gb, 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.
− 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

SAN Fabric Integration and Migration service

HPE Data Storage Services - SAN Fabric Integration and Migration simplifies the introduction of and migration to new HPE B-series SAN fabric devices. It helps maximize the value of your investment in your new HPE B-series SAN fabric devices by leveraging HPE Services expertise and best practices.
https://www.hpe.com/psnow/doc/a50011015enw

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

Service and Support

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

https://www.hpe.com/services/completecare

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

Service and Support

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

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**

Service and Support

Configuration Information

Step 1 - Base Configuration (Select one)

Description	SKU
HPE SN6500B 16Gb 96/96 Power Pack+ FC Switch	C8R42B

16Gb 96-port FC Switch with 96 active ports; rackmount kit; accessory 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, Brocade EZ Switch and Power Pack+ software of ISL Trunking, Extended Fabric and Fabric Vision.
Notes: Requires optical transceivers listed below.

HPE SN6500B 16Gb 96/48 Fibre Channel Switch	C8R45B

16Gb 96-port FC Switch with 48 active ports; rackmount kit; accessory kit (enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, serial cable, base software of Advanced Fabric OS, Advanced Web Tools, Brocade EZ Switch and Advanced Zoning.
Notes: Requires optical transceivers listed below.

HPE SN6500B SAN Switch 24-port Upgrade E-LTU	TC440AAE

24 port upgrade license for SN6500B 16Gb 96/48 Power Pack+ FC Switch (C8R44A) and SN6500B 16Gb 96/48 FC Switch (C8R45A)
Notes:

– (Physical License - TC440A)

– Some HPE B-series software licenses are now available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses with new 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.

Step 2 - Options

Fibre Channel Transceivers

Description	SKU
HPE B-series 16Gb SFP+ Short Wave Transceiver	QK724A
HPE B-series 8Gb Shortwave Fibre Channel 1 Pack SFP+ Transceiver	AJ716B

Notes: AJ716A is not supported with the SN6000B and SN6500B 16Gb FC Switches

Distance - Maximum	HPE Standard OM2 Cable	HPE Standard OM3 Cable	HPE PremierFlex OM3+ Cable	HPE PremierFlex OM4 Cable
16Gb performance:	35 meters	100 meters	100 meters	125 meters
8Gb performance:	50 meters	150 meters	150 meters	190 meters
4Gb performance:	150 meters	380 meters	380 meters	400 meters

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

Configuration Information

USB

Description	SKU
HPE B-series 4G USB Drive	N9Y63A
HPE B-Series Switch Rack-Mount Kit	A7511A

Notes: When any of the SN6500B Switch models is ordered, an accessory kit which contains the Rack Mount Kit is included in the package by default. A7511A is required when the original accessory kit or Rack Mount Kit is unavailable

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

Step 3 - Optional Software

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

Software for SN6500B 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

Configuration Information

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.

Description	SKU
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

HPE SN6500B SAN Switch Power Pack+ E-LTU	TC441BAE

Configuration Information

Notes:
− (Physical License - TC441B)
− The Power Pack+ Software Bundle kit includes Fabric Vision, , ISL Trunking, and Extended Fabric.
− Adaptive Networking and Server Application Optimization features are included by default in all four switch configurations and do not require a separate license.

HPE 8/16Gb High End Switch Fabric Vision E-LTU   TC511AAE

Notes: (Physical License - TC511B)

HPE B-series Mid/High End Extended Fabric E-LTU   J4V63AAE

Notes: (Physical License - J4V63A)

HPE B-series Mid/High End SAN Switch ISL Trunking E-LTU   J4V61AAE

Notes: (Physical License - 313452-B21)

HPE 8/80 and Encryption Switch Integrated Routing E-LTU   T5529BAE

Notes: (Physical License - T5529B)

Notes:
− Some HPE B-series software licenses are now available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses with new 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 and SN3000B 16Gb FC Power Pack+	SN3600B 32Gb FC Switch and SN3600B 32Gb FC Power Pack+
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	8Gbit/sec	8Gbit/sec	16Gbit/sec	32Gbps
Aggregate device bandwidth	64-192 Gbit/sec	128-192 Gbit/sec	192-384 Gbit/sec	768 Gbps
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**			
Storage system support	**HPE Primera, 3PAR StoreServ, Nimble, StoreVirtual 4000, P9000/XP7, MSA 2050/1050**			
FC Ports	8 Enabled 24 Max	16 Enabled 24 Max	12-24 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+	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	Yes (integrated with power supply)

Features	SN6600B 32 Gb FC Switch and SN6600B 32 Gb FC Power Pack+	SN6000B 16Gb FC Switch and SN6000B 16Gb FC Power Pack+	SN6500B 16Gb FC Switch and SN6500B 16Gb FC Power Pack+
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	32 Gbps	16Gbit/sec	16Gbit/sec
Aggregate device bandwidth	2 Tbps	384-768 Gbit/sec	768-1536Gbit/sec
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**		
Storage system support	**HPE Primera, 3PAR StoreServ, Nimble, StoreVirtual 4000, P9000/XP7, MSA 2050/1050**		
FC Ports	24 or 48 enabled 64 Max	24 or 48 Enabled 48 Max	48 or 96 Enabled 96 Max
SFP	B-series Optics (16 Gb or 32 Gb)	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	1U	1U	2U

Technical Specifications

Zoning Software	Yes (Included)	Yes (Included)	Yes
Hot plug, redundant power supplies	Yes	Yes	Yes
Hot plug fans	Yes (integrated with power supply)	Yes (integrated with power supply)	Yes

Features	1606 Extension SAN Switch	SN4000B SAN Extension Switch
Targeted Environment	Data Centers	Data Centers
Fibre Channel Port Bandwidth	8 Gbit/sec	16 Gbit/sec
Ethernet	1 Gbit/sec Ethernet	10 Gbit/sec Ethernet
FCIP/FICON	Yes, optional license required for FICON	Yes, optional license required for FICON
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**	
Storage system support	**HPE Primera, 3PAR StoreServ, Nimble, StoreVirtual 4000, P9000/XP7, MSA 2050/1050**	
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 with Power Pack+
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

Technical Specifications

Features	SN8000B 8-Slot SAN Director Power Pack+	SN8000B 4-Slot SAN Director and 4-Slot SAN Director Power Pack+	SN8600B 8-Slot SAN Director Power Pack+	SN8600B 4-slot SAN Director Power Pack+
Targeted Environment	Cloud Optimized Data Centers	Cloud Optimized Data Centers	Cloud Optimized Data Centers	Cloud Optimized Data Centers
Port Bandwidth	Up to 16Gbit/sec	Up to 16Gbit/sec	Up to 32 Gbps	Up to 32Gbps
Aggregate device bandwidth	10.2 Tbit/sec	5.1 Tbit/sec	16.2 Tbps	8.1 Tbps
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**			
Storage system Support	**HPE Primera, 3PAR StoreServ, Nimble, StoreVirtual 4000, P9000/XP7, MSA 2050/1050**			
Ports	Up to 512 SFP	Up to 256 SFP	384 32 Gbps ports or a 512-port equivalent with 128 Gbps (32 Gbps×4 QSFP ports)	Up to 192 32 Gbps ports or a 256-port equivalent with 16 ICL ports.
SFP	B-series	B-series	B-series	B-Series
Advanced Trunking	Included with Power Pack	Included with Power Pack or Optional Upgrade	Included with Power Pack	Included with Power Pack
Adaptive Networking	Included	Included	Included	Included
Form factor	14U	9U	14U	9U
Zoning Software	Yes (included)	Yes (included)	Yes (included)	Yes (Included)
Hot plug, redundant power supplies	Yes	Yes	Yes	Yes
Hot plug fans	Yes	Yes	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	16Gbit/sec	8Gbit/sec	16 Gbit/sec
Aggregate device bandwidth	448 Gbit/sec (24 ports x 16Gb/s) Gbit/sec	192 Gbit/sec	576 Gb/s (36 ports x 16 Gb/s)
OS Support	**Notes:** Please Refer to SPOCK https://h20272.www2.hpe.com/spock/		
Storage system Support	**HPE Primera, 3PAR StoreServ, Nimble, StoreVirtual 4000, P9000/XP7, MSA 2050/1050**		
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

Technical Specifications

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

System Architecture

Fibre Channel ports	Switch mode (default): 48-, 72-, and 96-port configurations (24-port increments through Ports on Demand [PoD] licenses); universal (E, F, M, D, EX) ports
Scalability	Full fabric architecture: https://support.hpe.com/hpsc/doc/public/display?docId=emr_na-c04787660
Certified maximum	Refer to SAN Design Guide for current configuration information: https://support.hpe.com/hpsc/doc/public/display?docId=emr_na-c04787660
Interoperability	8/8 SAN Switch 8/24 SAN Switch - SN3000B SAN Switch - SN6000B SAN Switch - SN6500B SAN Switch 1606 Extension SAN Switch - SN4000B SAN Extension Switch - SN8000B 8-Slot SAN Backbone Director - SN8000B 4-Slot SAN Director - 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;
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	1536 Gbps
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)
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

Technical Specifications

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)

Fabric services	**Extension**	Fibre Channel, in-flight compression (Brocade LZO) and encryption (AES-GCM-256); integrated 10 Gbps Fibre Channel for DWDM MAN connectivity
	Options	SFP media, USB Device
Management	**Management software supported**	HTTPS, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; Brocade Advanced Web Tools, ; SAN Network Advisor Enterprise or SAN Network Advisor Professional/Professional Plus; HPE SANnav Management Software, Command Line Interface (CLI); SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities
	Management access	10/100/1000 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)
Mechanicals	**Enclosure**	Port side Intake and Port Side Exhaust airflow models available; power from back; 2U
	Size	Width: 429.25 mm (16.90 in.)
		Height: 86.74 mm (3.42 in.)
		Depth: 609.75 mm (24.01 in.)
	System Weight	16.92 kg (37.3 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
		Non-operating: 10 to 90 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
	AC input	85 V to 264 V ~5 A to 2.5 A
	Input line frequency	47 Hz to 63 Hz
	Power Consumption	450 W with all 96 ports populated with 16 Gbps SWL optics
		350 W for empty chassis with no optics

Summary of Changes

Date	Version History	Action	Description of Change
03-Sep-2024	Version 24	Changed	Service and Support section was updated Obsolete SKU removed - AJ717A
13-Nov-2023	Version 23	Changed	HPE Services Rebranding
05-Jun-2023	Version 22	Changed	Overview, Configuration Information and Technical Specifications sections were updated. SANnav renewal offerings added
01-Nov-2021	Version 21	Changed	Added Secure Transceivers
04-Oct-2021	Version 20	Changed	Service and Support section was updated.
02-Aug-2021	Version 19	Changed	Service and Support and Configuration Information sections were updated.
05-Oct-2020	Version 18	Changed	Updated physical software licenses
03-Aug-2020	Version 17	Changed	QuickSpecs layout was updated and Obso SKUs were removed
06-Apr-2020	Version 16	Changed	Overview, Standard Features, Configuration Information and Technical Specifications sections were updated
03-Feb-2020	Version 15	Changed	Added SANnav 5-yr LTU
03-Sep-2019	Version 14	Changed	Updated SANnav details
01-Oct-2018	Version 13	Changed	Overview, Models, Product Highlights, Service and Support, Family Information and Configuration Information sections were updated SKUs were updated (suffix roll from A to B)
27-Mar-2017	Version 12	Changed	Changes made to the Family Information tables
07-Jun-2016	Version 11	Changed	Changes made to the Features and Benefits, Product Highlights, Service and Support and Family Information sections.
10-Oct-2014	Version 10	Changed	Update the SKU number for the HPE B-series Integrated Routing E-LTU.
10-Jun-2014	Version 9	Changed	Text formatted in Configuration Information section.
31-Mar-2014	Version 8	Changed	Minor edits made throughout
20-Dec-2013	Version 7	Changed	Updated the following: Configuration Information - Step 2 - Options - added HPE B-series 16Gb Long Wave 25km Fibre Channel SFP+ 1 Pack, H6Z29A.
09-Dec-2013	Version 6	Changed	Model descriptions and product descriptions were revised throughout Configuration Information HPE 8/40 SAN Switch and 8/40 SAN Switch Power Pack+ was removed from Family Information
18-Nov-2013	Version 5	Changed	Updated the following: Configuration Information - removed QK726A and QK727A from Step 2-Options, Fibre Channel Transceivers.
15-Oct-2013	Version 4	Changed	Fabric Vision was added to Product Highlights 2408 FCoE CN Switch and 2408 FCoe CN Switch Power Pack+ was removed from Family Information chart
30-Sep-2013	Version 3	Changed	Optional Software was revised.
12-Apr-2013	Version 2	Changed	Added part number to the Configuration Information Section under step 1
25-Mar-2013	Version 1	New	New QuickSpecs

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