

Overview

HPE B-series SN4000B SAN Extension Switch

Today's IT organizations are under pressure to keep pace with the growing avalanche of data traffic between data centers and the changes driven by virtualized application workloads. Faced with this challenge, coupled with rising Service Level Agreement (SLA) requirements and recovery expectations, enterprise data centers need their disaster recovery plans to enable fast, continuous, and easy access to mission-critical data from anywhere in the world. Ultimately, storage administrators want to replicate large amounts of data quickly, reliably, and simply while minimizing operational and capital expenses. To address this challenge, the HPE SN4000B Extension Switch with Brocade Fabric Vision technology delivers unprecedented performance, continuous availability, and simplified management to handle the unrelenting growth of data traffic between data centers. The HPE SN4000B is a purpose-built data center extension solution that maximizes performance and scalability for large, complex environments, allowing IT organizations to future-proof their storage extension infrastructure by adding more throughput capacity as their needs grow. The HPE SN4000B Data Center Extension Switch is a robust platform for large scale, multi-site data center environments implementing disk and tape data protection solutions. HPE B-series SN4000B SAN Extension Switch Data Center Extension Switch is ideal for:

- Data protection for open systems and mainframe
- Multi-site synchronous and asynchronous storage replication
- Centralized tape backup, recovery, and archiving

The HPE SN4000B configuration is a bundle including a comprehensive set of advanced services: Fabric Vision, Extension Trunking, Adaptive Rate Limiting, ISL Trunking, IPsec, Compression, Open Systems Tape Pipelining (OSTP), Fast Write, Adaptive Networking and Extended Fabric. Optional value-add licenses for Integrated Routing, FICON CUP, and Advanced FICON® Accelerator are available to address challenging extension and storage networking requirements in open system and mainframe environments. The SN4000B SAN Extension Switch is fully compatible with the entire B-Series family of FC switching platforms, delivering advanced 16 Gbit/sec fabric services end-to-end over distance and providing investment protection for hardware as well as the ability to leverage expertise and training across the data center staff.



HPE SN4000B SAN Extension Switch

What's New

- Updated SKUs (Suffix changed from A to B)

Standard Features

Key Features

Maximize the Value of SANs

- FCIP Extension of Fibre Channel SANs provides connectivity over longer distances that would otherwise be technologically not possible, impractical, and too expensive with native Fibre Channel or when dark fiber resources are unavailable.
- Achieve bandwidth savings and higher bandwidth utilization via data compression by compressing FC frames before they are encapsulated into FCIP packets.
- Extensive diagnostics, system-monitoring capabilities, and performance monitoring (including extensive and granular TCP statistics graphing in Webtools).

Superior Performance

- TCP acceleration helps to overcome latency between source and target locations by adjusting the TCP window size and performing selective acknowledgements.
- Advanced Quality of Service (QoS) techniques can be used to prioritize traffic and guarantee that necessary bandwidth requirements are met.
- Key protocol features are enabled in the FCIP implementation to optimize performance of SAN extension over IP networks, including Storage-Optimized TCP.

Outstanding Scalability and operational flexibility

- FCIP Trunking feature allows multiple IP source and destination address pairs (defined as FCIP circuits) to provide high bandwidth FCIP tunnel and failover resiliency.
- Adaptive Rate Limiting feature meets minimum bandwidth guarantee for each tunnel while allowing full utilization of the available network bandwidth without adverse impact to throughput performance during high traffic loads.
- Optional FC Routing delivers fabric isolation in conjunction with FCIP, enabling separate fabrics to share devices without merging across the IP network.

SN4000B SAN Extension Switch

- 24 Fibre Channel ports with link speeds of 4, 8, and 16 Gbps, compatible with short wavelength (SWL), long wavelength (LWL) and extended long wavelength (ELWL) SFP+ transceivers
- Sixteen 1 GbE/10 GbE ports, compatible with copper, ultra-short reach (USR), short reach (SR) and long reach (LR) SFP/SFP+ transceivers
- Two 40 GbE ports, compatible with short reach (SR) and long reach (LR) QSFP transceivers
- Rack-mountable 2U chassis
- One RJ-45 Ethernet management port with 10/100/1000 Mbps auto negotiating capability
- One USB port that provides storage for firmware updates, switch support data, and storage for configuration uploads and downloads

Configuration Support

The HPE SN4000B SAN Extension Switch is fully compatible with the B-series FC switches and directors. For complete interoperability information please check:
<https://support.hpe.com/hpsc/doc/public/display?docId=c00403562>

Simplified Management

Brocade 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.

Standard Features

The HPE SN4000B Extension Switch supports the following Fabric Vision technology features for storage extension management:

- **Monitoring and Alerting Policy Suite (MAPS):** Provides a pre-built, policy-based threshold monitoring and alerting tool that proactively monitors storage extension network health based on a comprehensive set of metrics at tunnel, circuit, and QoS layers. Administrators can configure multiple fabrics at one time using pre-defined or customized rules and policies for specific ports or switch elements.
- **Fabric Performance Impact (FPI) Monitoring:** Uses pre-defined thresholds and alerts in conjunction with MAPS to automatically detect and alert administrators to severe levels of latency and identifies slow drain devices that might impact the network. This feature uses advanced monitoring capabilities and intuitive MAPS dashboard reporting to indicate various latency severity levels, pinpointing exactly which devices are causing or impacted by a bottlenecked port.
- **Dashboards:** Provides integrated dashboards that display an overall SAN health view, along with details on out-of-range conditions, to help administrators easily identify trends and quickly pinpoint issues occurring on a switch or in a fabric.

Hardware Based Compression

Hardware-based compression delivers the ability to maximize throughput over lower bandwidth links in the wide area network, optimizing the cost efficiencies of FCIP. The SN4000B Extension Provides multiple modes to optimize compression ratios for various throughput requirements.

IPSec

The HPE SN4000B SAN Extension Switch IPSec function is capable of supporting both Ipv4 and Ipv6, mix of secure and non-secure tunnels on the same GE port, jumbo frames, and VLAN tagged connections.

Scalability

Refer to the guidelines described in the Heterogeneous Open SAN Design Reference Guide available at: <https://support.hpe.com/hpsc/doc/public/display?docId=c00403562>

Cabinet Support

HPE (22U, 36U and 42U) 10000 G2 Series and 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

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 SANnav Management Portal that contains all critical SAN information for convenient review and analysis

Extended Fabric

Standard Features

Optional license which comes bundled with the SN4000B and 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, which comes bundled with the SN4000B, logically aggregates 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 16G switches.

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.

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 SN8000B 8-Slot Director management including enterprise-class features/environments such as FICON, Fibre Channel Routing, FCIP, adaptive networking, etc while HPE SAN Network Advisor Professional+ provides the same feature set except for support for the SN8000B 8-Slot Director, DC SAN Backbone Director, and FICON.

HPE SAN Network Advisor Enterprise delivers unprecedented scalability, up to 100 fabrics and 15,000 switch ports, while HPE 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://h20272.www2.hpe.com/spock/>

Standard Features

WebTools

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.

Software Components, Optional

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 blade or switch. 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 SN4000B 10Gb WAN Rate Upgrade and HPE SN4000B 40Gb WAN Rate Upgrade Licenses

HPE SN4000B 10Gb WAN Rate and HPE SN4000B 40Gb WAN Rate are optional licenses which enable additional WAN throughput. The 10Gb WAN Rate Upgrade license will increase the maximum available aggregate bandwidth for all tunnels to 10Gbps while the 40Gb WAN Rate Upgrade license will increase the maximum available aggregate bandwidth for all tunnels to 40Gbps.

FICON

Optional software allows FICON Switching to provide Fibre Channel and FICON intermix, FICON Control Unit Port (CUP), and FICON cascading for more than one B-Series SAN Director in XP Storage Array environments. The license feature provides Control Unit Port (CUP) in-band management function designed to allow mainframe applications to perform configuration, monitoring, management and statistics collection. These applications include System Automation for OS/390 (SA/390), Dynamic Channel Management Facility (DCM) and Resource Management Facility (RMF). Hardware-enforced FICON and FCP port zoning enhances separation with intermix operation.

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 only 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 Brocade 16/8Gb FC switches with FOS 7.4.0a or later.
 - A list of supported HPE FC Adapters can be found at <https://h20272.www2.hpe.com/spock/>
 - Supports 3PAR StoreServ storage with 3.2.2 or later with only 16Gb target ports on HPE 3PAR StoreServ storage.
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Service and Support

Warranty

(1-1-1) Hardware Warranty - One-year on-site warranty, 8x5, next business day response, installation not included.

Notes: The hardware warranty covers firmware and embedded non-saleable software. Saleable software carries its own warranty, see below.

Software Warranty - Hewlett Packard Enterprise warrants only that the software media will be free of physical defects for a period of ninety (90) days from delivery.

Exclusive Remedy

The entire liability of Hewlett Packard Enterprise and its suppliers and your exclusive remedy for software that does not conform to this Limited Warranty shall be the repair or replacement of the defective media. This warranty and remedy are subject to your returning the defective media during the warranty period to Hewlett Packard Enterprise in the country in which you obtained the software.

For bundled Software Support

Your HPE storage product includes comprehensive support and software updates to enhance the performance and availability of your software. The service provides access to HPE technical resources for assistance in resolving software operations issues, and, also provides access to software updates and reference manuals in electronic form.

HPE Pointnext - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services**, focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms

HPE GreenLake 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 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

Managed services to run your IT operations

HPE GreenLake Management Services provides 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.

Service and Support

Free up resources with Operational Services from HPE Pointnext

HPE delivers services for IT by using proven best practices as well as automation and methodologies that have been tested and refined by HPE experts and artificial intelligence through thousands of deployments globally. Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller. Services are quoted using Hewlett Packard Enterprise order configuration tools.

Recommended Services

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care 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 Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care 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 Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care 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/completecure>

Related Services

HPE SAN Deployment Service

Hewlett Packard Enterprise delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components.

<http://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-8527ENW.pdf>

HPE Basic Installation Service

Provides for the basic hardware installation of HPE branded storage devices to assist you in bringing your new hardware into operation in a timely and professional manner.

<https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=5981-9356enw>

HPE Service Credits

Offers flexible services and technical skills to meet your IT demands as your business evolves. With a menu of services, you can access additional resources and specialist skills to help you maintain peak performance of your IT. HPE Service Credits help you proactively respond to your dynamic IT and business needs.

HPE Education Services

Service and Support

Provides comprehensive training designed to expand the skills of your IT staff and keep them up to speed with the latest technologies.

Consult your Hewlett Packard Enterprise Sales Representative or Authorized Channel Partner of choice for any additional questions and support options.

Parts and Materials

Hewlett Packard Enterprise 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.

Defective Media Retention

An option available with HPE Pointnext Complete Care and HPE Pointnext Tech Care and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a brand-new digital and data driven customer experience.

Sign into the customer engagement platform, featuring modern self-serve case creation and management capabilities with inline knowledge recommendations. You will find powerful troubleshooting support through a new intelligent virtual agent with seamless transition when needed to a live support agent.

<https://support.hpe.com/hpesc/public/home/signin>

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers.

Learn more <http://www.hpe.com/support/hpesc>

Hewlett Packard Enterprise Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.

Notes : *HPE Support Center Mobile App is subject to local availability

For more information

- <http://www.hpe.com/services>
- <https://www.hpe.com/us/en/services/operational.html>

To learn more on HPE Storage 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>

HPE Support 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.
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Service and Support

- Customers purchasing from a commercial reseller can find HPE Support Services at <https://ssc.hpe.com/portal/site/ssc/>
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Configuration Information

Step 1 - Base Configuration + Power Pack (Select one)

HPE SN4000B Power Pack+ SAN Extension Switch

Description	SKU
HPE SN4000B Power Pack+ SAN Extension Switch	E7Y73C
42 ports (24 16Gb Fibre Channel , 16 1/10 GbE and 2 40 Gigabit Ethernet) Extension switch for Fibre Channel over Internet Protocol (FCIP) traffic forwarding over IP wide area networks (WAN). Includes Power Pack.	

Notes:

- Fibre Channel ports require optical transceivers listed below. Ethernet ports require optical or copper transceivers listed below.
- 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

16 Gb Transceivers

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

8 Gb Transceivers

HPE B-series 8Gb Shortwave Fibre Channel 1 Pack SFP+ Transceiver	AJ716B
HPE B-series 8Gb Long Wave 10km Fibre Channel 1 Pack SFP+ Transceiver	AJ717A

10 GbE Transceivers

HPE B-series 10GbE Short Wave SFP+ Transceiver	AP823A
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40 GbE Transceivers

HPE B-series 40GbE Long Range QSFP+ Transceiver	E7Y75A
HPE B-series 40GbE Short Range QSFP+ Transceiver	E7Y76A

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

MPO/MPO Multi-mode Cables

HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 10m Cable	QK729A
HPE Premier Flex MPO/MPO Multi-mode OM4 8 Fiber 50m Cable	QK731A
HPE Premier Flex MPO/MPO OM4 100m Cable	H6Z30A

OM3 LC-LC type 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

Configuration Information

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/>

Optional Software

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.

Software for SN6500B 16Gb FC Switch

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 PointNext 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:

Configuration Information

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

Description	SKU
HPE SN4000B FICON Accelerator E-LTU	D4U29BAE
HPE B-series Integrated Routing E-LTU	T5528BAE
Notes: (Physical License - T5528B)	
HPE 8/40 and 1606 Extension SAN Switch FICON CUP E-LTU	TA748BAE
Notes: The FICON CUP and the FICON CUP accelerator 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.	
HPE SN4000B 10Gb WAN Rate Upgrade E-LTU	D4U27BAE
Notes: (Physical License - D4U27B)	
HPE SN4000B 40Gb WAN Rate Upgrade E-LTU	D4U28BAE

Notes: (Physical License - D4U28B)

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?>

Configuration Information

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)

Features	SN6000B 16 Gb FC Switch and SN6000B 16 Gb FC Power Pack+	SN6600B 32 Gb FC Switch and SN6600B 32 Gb FC Power Pack+	SN6600B 32 Gb Bundled (SFP+) FC Switch and SN6600B 32 Gb Power Pack+ Bundled (SFP+) FC Switch
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	16 Gbps	32 Gbps	32 Gbps
Aggregate device bandwidth	384- 768 Gbps	2 Tbps	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	24 or 48 Enabled 64 Max
SFP	B-series	B-series (16 Gb or 32 Gb)	B-series, 24 or 48 32 Gb SFP+ included in the box

Technical Specifications

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

Features	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	N/A	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

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 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 Gbit/sec	8 Gbit/sec	16 Gbit/sec
Aggregate device bandwidth	448 Gbit/sec	192 Gbit/sec	576 Gb/s (36 ports x 16 Gb/s)
OS Support	Notes: Please Refer to SAN Design Guide https://h20272.www2.hpe.com/spock/		
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

System Architecture

Ports	42 ports: 24 Fibre Channel (E, F, M, FL, EX) , sixteen 1/10 and two 40 Gigabit Ethernet (VE) ports
B-series switch interoperability	<ul style="list-style-type: none"> • 8/8 SAN Switch • 8/24 SAN Switch • 1606 SAN Extension Switch • SN4000B SAN Extension 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 • SN8000B Director Switches • SN6000B Fibre Channel Switch • SN6500B Fibre Channel Switch • SN3000B Fibre Channel Switch
Performance	Auto-sensing of 4, 8, and 16 Gbps port speeds. FCIP Performance: 1/10/40Gbps line speed
ISL Trunking	Up to eight 16 Gbps ports per Brocade Trunk; up to 128 Gbps per trunk.
Fibre Channel aggregate bandwidth	384 Gbps Full Duplex
FCIP aggregate bandwidth	40 Gbps: 2 ports at 20 Gbps (data rate)
Fabric latency	700 ns with no contention, cut-through routing at 16 Gbps
Maximum frame size	2112-byte payload
Maximum MTU size	Ethernet Jumbo Frames at 9,000-bytes

Technical Specifications

Classes of service	Class 2, Class 3, Class F (inter-switch frames)
Port types	F_Port, E_Port, EX_Port, (FCR E_Port), D_Port (Diagnostic), M_Port (Mirror), and self-discovery based on switch type (U_Port). VE_Port (FCIP and virtual E_Port)
Data traffic types	Fabric switches supporting unicast, multicast (255 groups), and broadcast
USB	One USB port for system log file downloads or firmware upgrades
Media types	<p>Fibre Channel: Brocade hot-pluggable Small Form Factor (SFP) and SFP+, short wavelength (SWL), long wavelength (LWL), and extended long wavelength (ELWL) transceivers (available wavelength options vary for 8 Gbps and 16 Gbps SFPs)</p> <p>Ethernet: Brocade hot-pluggable Small Form Factor (SFP) and SFP+, short reach wavelength (SRWL), long reach wavelength (LRWL), extended long wavelength (ELWL), and copper SFP/SFP+ transceivers (available reach options vary from 1 GbE, 10 GbE, and 40 GbE)</p>
Fabric services	<p>Simple Name Server (SNS); Registered State Change Notification (RSCN), NTP, RADIUS, RCS (Reliable Commit Service), Dynamic Path Selection (DPS), Exchange-based routing, device-based routing, port-based routing, lossless), Brocade Advanced Zoning, Web Tools, Adaptive Networking with QoS, Extended Fabric, ISL Trunking, Fabric Vision technology, and Advanced Extension.</p> <p>Optional Fabric Services include: Integrated Routing, (FCR), FICON CUP, FICON Management Server (FMS), and Advanced Accelerator for FICON.</p>

Licensing options	<p>HPE SN4000B 10Gb WAN Rate Upgrade license</p> <ul style="list-style-type: none"> This upgrade license will increase the maximum available aggregate bandwidth for all tunnels to 10Gbps. <p>HPE SN4000B 40Gb WAN Rate Upgrade license</p> <ul style="list-style-type: none"> This upgrade license will increase the maximum available aggregate bandwidth for all tunnels to 40Gbps. This license can only be installed when the 10Gb WAN Rate Upgrade license is already installed. If removing a WAN Rate Upgrade license, users will need to adjust the aggregate bandwidth capacity for all tunnels to lower limits before removing one or both upgrade license(s). If both the 10 Gb WAN Rate Upgrade and 40Gb WAN Rate Upgrade licenses are installed on a switch, users cannot remove the 10Gb WAN Rate Upgrade license before removing the 40Gb WAN Upgrade license. <p>Notes: The base configuration without either upgrade license will support a maximum aggregate bandwidth for all tunnels at 5Gbps. The 10Gb WAN Rate Upgrade and 40Gb WAN Rate Upgrade licenses apply to all FCIP ports on the switch. Without these licenses the switch will only allow 5Gb of FCIP traffic and the 40GbE ports will be disabled. By Adding the 10Gb WAN Upgrade license the throughput limitation is increased to 10Gbps. If the 40Gb WAN Upgrade license is added the 40GbE ports are enabled and all FCIP throughput restrictions are removed.</p> <p>HPE B-series Integrated Routing license: Integrated Routing is an optional license which provides native Fibre Channel Routing (FCR) on a per port basis.</p> <p>HPE SAN Switches FICON CUP license: Control Unit Port (CUP) enables host control of switches in mainframe environments</p>
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Technical Specifications

	HPE SN4000B FICON Accelerator license:	
	<ul style="list-style-type: none"> Accelerates IBM zGM (XRC), FICON tape read/writes, and z/OS host connection to Teradata systems 	
Management	Supported management software	SSH v2, HTTP/HTTPS, SNMP v1/v3, Telnet; SNMP (FE MIB, FC Management MIB); Web Tools; Network Advisor SAN Enterprise or Network Advisor Professional/ Professional Plus (optional); HPE SANnav Management Software; Command Line Interface (CLI); SMI-S RADIUS, LDAP
	Security	AES-GCM-256 encryption on ISLs, AES-GCM-256 IPsec encryption on virtual ISLs (VE_Port), DH-CHAP (between switches and end devices), FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch
	Management access	10/100/1000 Ethernet (RJ-45), in-band over Fibre Channel ports; serial port (RJ-45) and one USB port
	Diagnostics	POST and embedded online/offline diagnostics, including FCping, Pathinfo (FCtraceroute), etc.
Mechanical	Enclosure	Back-to-front airflow; 2U, 19-inch EIA-compliant, power from back
	Size	Width: 44 cm (17.3 in.) Height: 8.6 cm (3.2 in.) Depth: 60.9 cm (24.01 in.)
	System weight	19 kg (42.0 lb) with two power supplies, without SFP/SFP+

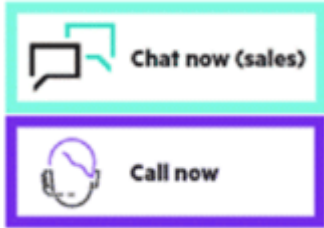
Environmental	Temperature	Operating: 0°C to 40°C (32°F to 104°F) Non-operating: -25°C to 70°C (-13°F to 158°F)
	Humidity	Operating: 10% to 85% (non-condensing) Non-operating: 10% to 90% (non-condensing)
	Altitude	Operating: Up to 3000 m (9842 ft) Storage: Up to 12 km (39,370 ft)
	Shock	Operating: 20 g, 6 ms, half-sine Non-operating: 33 g, 11 ms, half-sine, 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	Maximum 22 ports: 590 BTU/hr
	Airflow	Maximum 60 CFM; nominal 44 CFM
Power	Power supply	Dual hot-swappable redundant power supplies
	Power inlet	C14; requires C13 plug
	Input voltage	85 to 264 VAC nominal
	Input line frequency	47 to 63 Hz
	Inrush current	Maximum of 60 amps for period of 10 to 150 ms
	Power	Short-range optics: Nominal 388 watts/1,324 BTU/hr; maximum 454 watts/1,550 BTU/hr Long-range optics: Nominal 426 watts/1,454 BTU/hr; maximum 492 watts/1,679 BTU/hr

Summary of Changes

Date	Version History	Action	Description of Change
05-Jun-2023	Version 15	Changed	Standard Features, Configuration Information and Technical Specifications sections were updated SANnav renewal offerings added
04-Oct-2021	Version 14	Changed	Service and Support section was updated
02-Aug-2021	Version 13	Changed	Service and Support and Configuration Information sections were updated.
05-Oct-2020	Version 12	Changed	Updated physical software licenses
03-Aug-2020	Version 11	Changed	QuickSpecs layout was updated and Obso SKUs were removed
06-Apr-2020	Version 10	Changed	Standard Features, Configuration Information and Technical Specifications sections were updated
03-Feb-2020	Version 9	Changed	Updated SANnav 5-year term-license
03-Sep-2019	Version 8	Changed	Updated SANnav details
05-Nov-2018	Version 7	Changed	Overview, Product Highlights, Service and Support, Standard Features and Configuration Information sections were updated SKUs descriptions were updated Obsolete SKUs were removed
23-Oct-2017	Version 6	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
07-Jun-2016	Version 5	Changed	Updated SAN network advisor SKU/E-LTU and added Smart SAN details
08-Apr-2016	Version 4	Changed	Changes made to the Services Sections
16-Feb-2016	Version 3	Changed	Changed made to the entire document
05-Jun-2015	Version 2	Changed	SKUs description updated, Obsolete SKUs removed (AK870A), Changed made throughout the entire document
30-Feb-2015	Version 1	New	New QuickSpecs

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