Overview

HPE Storage SAN Extension Switch B-series SN2600B

With the world's embrace of digital business, data has become more valuable than ever. Expectations for that data to be accessible from anywhere, at any time, on any device are pushing infrastructures to the limit. IT organizations are under pressure to keep pace with the growing avalanche of data and ensure their valuable information is protected from a disaster. The loss of any crucial data could lead directly to lost revenue or damage to the company's brand reputation. To safeguard data from a disaster, storage administrators need a way to achieve sufficient replication performance over distance, keep data flowing over unreliable WAN connections, and secure data-in-flight while containing costs for equipment and long-distance connections.

The HPE Storage SAN Extension Switch B-series SN2600B addresses these challenges by providing a modern replication connectivity solution that cost-effectively and quickly replicates data across sites for fast, continuous data protection. With powerful performance, non-stop reliability, and strong security, the HPE Storage SAN Extension Switch B-series SN2600B can handle the unrelenting transfer of data between data centers, minimize the impact of disruptions to maintain service-level agreements (SLAs), and secure data-in-flight between data centers. The switch has built-in technology that overcomes the inherent challenges of latency and packet loss over long distance. It dramatically speeds up replication performance and enables organizations to substantially reduce costs by deploying less-expensive WAN connections.

The HPE Storage SAN Extension Switch B-series SN2600B is a cost-effective solution that securely moves data faster over distance for continuous data protection. This powerful, reliable, and secure platform is purpose built to handle the unrelenting growth of data traffic between data centers in Fibre Channel and IP storage environments.

The HPE Storage SAN Extension Switch B-series SN2600B is a robust platform for medium scale, multi-site data center environments implementing disk and tape data protection solutions. HPE Storage SAN Extension Switch B-series SN2600B is ideal for:
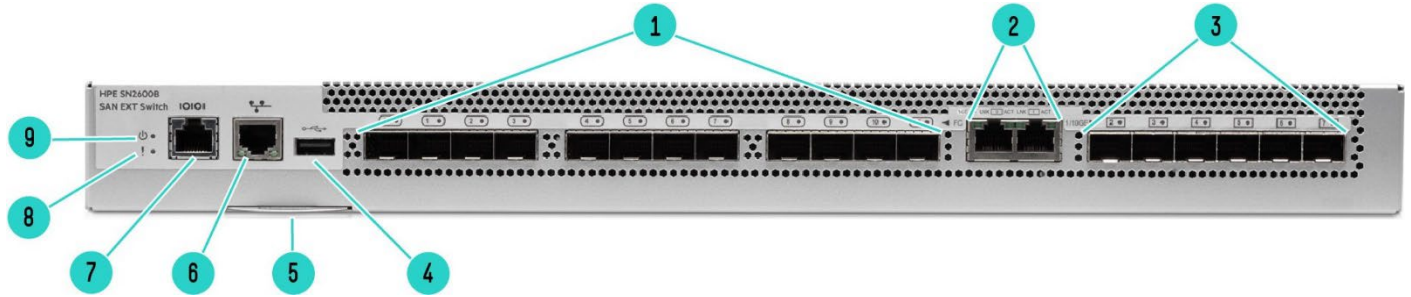- Multi-site synchronous and asynchronous storage replication
- Centralized tape backup, recovery, and archiving

The HPE Storage SAN Extension Switch B-series SN2600B base configuration provides four 32 Gb/s-capable Fibre Channel ports and two 1GbE Ethernet ports with Adaptive Rate Limiting (ARL) and encryption (IPsec). The on-demand upgrade license enables all 12 Fibre Channel ports, 10Gb FCIP/FC, Fabric Vision technology, Extension Trunking, Fibre Channel Trunking, and Integrated Routing (FCR). The full configuration is a comprehensive bundle enabling all ports and includes Brocade Fabric Vision technology, Extension Trunking, Fibre Channel Trunking, ARL, IPsec, and Integrated Routing.

HPE Storage SAN Extension Switch B-series SN2600B

Overview

HPE Storage SAN Extension Switch B-series SN2600B Port Numbering

1. 32Gb/s SFP+ FC ports (0-11)
2. 1 GbE copper (RJ-45) ports (0-1)
3. 1/10GbE SFP+ ports (2-7)
4. USB port
5. Serial number pull-out tab

6. Ethernet management port (RJ-45)
7. Serial console port (RJ-45)
8. System status LED
9. System power LED

Notes: All the ports are connected to a single Gen6 ASIC.

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
- 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 FCIP Trunking feature allows multiple IP source and destination address pairs (defined as FCIP circuits) to provide high bandwidth FCIP tunnel and failover resiliency.
- Optional FC Routing delivers fabric isolation in conjunction with FCIP, enabling separate fabrics to share devices without merging across the IP network.

HPE Storage SAN Extension Switch B-series SN2600B
- 12 Fibre Channel ports with link speeds of 4, 8, 16 and 32 Gbps, compatible with short wavelength (SWL) and long wavelength (LWL) a SFP+ transceivers
- Six 1 GbE/10 GbE ports, compatible with copper, ultra-short reach (USR), short reach (SR) and long reach (LR) SFP/SFP+ transceivers
- Two 1 GbE copper (RJ-45) ports
- One RJ-45 Ethernet management port with 10/100/1000 Mbps auto negotiating capability
- One RJ-45 serial management port
- One USB port that provides storage for firmware updates, switch support data, and storage for configuration uploads and downloads
- Rack-mountable 1U chassis

Configuration Options - Functionality

HPE Storage SAN Extension Switch B-series SN2600B Model	Base	Full or Base w/ Upgrade
FC Port Limits	4	12
VE Port Limits	2	4
GE WAN Port Limits	2	6
GE LAN Port LImits	4	4
GE Port Speed Limit	10Gb/s	10Gb/s
WAN Bandwidth Limit	1Gb/s	2.5Gb/s
Max IP Extension flows (LAN TCP connections)	256	256
Max UDP Connections	32	32

Standard Features

Configuration Support
The HPE Storage SAN Extension Switch B-series SN2600B 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
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.

The HPE Storage SAN Extension Switch B-series SN2600B 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.
- Configuration and Operational Monitoring Policy Automation Services Suite (COMPASS): Simplifies deployment, safeguards consistency, and increases operational efficiencies of larger environments with automated switch and fabric configuration services. Administrators can configure a template or adopt an existing configuration as a template and seamlessly scale the configuration across the fabric. In addition, they can ensure settings do not drift over time with COMPASS configuration and policy violation monitoring within dashboards.
- ClearLink Diagnostics: Ensures optical and signal integrity for Fibre Channel optics and cables, simplifying deployment and support of high-performance fabrics. ClearLink Diagnostic Port (D_Port) is an advanced capability of Fibre Channel platforms.
- Flow Vision: Enables administrators to identify, monitor, and analyze specific application flows in order to simplify troubleshooting, maximize performance, avoid congestion, and optimize resources.
- Flow Vision includes:
    - Flow Learning: Enables administrators to non-disruptively discover all flows that go to or come from a specific host port or a storage port, or traverse Inter-Switch Links/Inter-Fabric Links (ISLs/IFLs) or FCIP tunnels to monitor fabric wide application performance. In addition, administrators can discover top and bottom bandwidth-consuming devices and manage capacity planning.
    - Flow Monitor: Provides comprehensive visibility into flows across a storage extension network, including the ability to automatically learn flows and non-disruptively monitor flow performance. Administrators can monitor all flows from a specific storage device that are writing to or reading from a destination storage device/LUNs, or across a storage extension network. Additionally, they can perform LUN-level monitoring of specific frame types to identify resource contention or congestion that is impacting application performance.
    - Flow Generator: Provides a built-in traffic generator for pretesting and validating storage extension infrastructure including route verification, QoS zone setup, extension trunking configuration, WAN access, IPsec policy setting, and integrity of optics, cables, and ports-for robustness before deploying applications.
- Forward Error Correction (FEC): Enables recovery from bit errors in Fibre Channel ISLs, enhancing transmission reliability and performance.
- Credit Loss Recovery: Helps overcome performance degradation and congestion due to buffer credit loss in Fibre Channel links.

Standard Features

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 HPE Storage SAN Extension Switch B-series SN2600B Provides multiple modes to optimize compression ratios for various throughput requirements.

IPSec
The HPE Storage SAN Extension Switch B-series SN2600B 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 Options

HPE Storage SAN Extension Switch B-series SN2600B Model	Base	Full or Base w/ Upgrade
IPsec Support	Yes	Yes
Compression Support	Yes	Yes
FC Trunking	No	Yes
Extension Trunking	No	Yes
Fabric Vision	No	Yes
Adaptive Rate Limiting	Yes	Yes
FICON Support	No	No
FC Routing	No	Yes
Extended Fabrics	No	Yes

Software Components, Standard
Encryption (IPsec)
IPsec support: Ensures secure transport over IP WAN links by encrypting data-in-flight with a standard 256-bit AES algorithm.

Adaptive Rate Limiting (ARL)
Adaptive Rate Limiting (ARL): Dynamically adjusts bandwidth limits to ensure efficient utilization and sharing of available bandwidth.

Software Components, Optional
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

Standard Features

Extension Trunking

Extension Trunking: Combines multiple WAN connections into a single, logical, high-bandwidth trunk, providing active load balancing and network resilience to protect against WAN link failures.

Integrated Routing (FCR)

Integrated Routing (FCR) is an optional licensed feature that leverages the latest ASIC technology to provide Fibre Channel routing on a per-port basis. Because a Fibre Channel E_Port can be made into an EX_Port, data can be communicated between fabrics while maintaining remote fabric isolation. Integrated Routing (FCR) eliminates the need for a dedicated router or consumption of chassis slots with special routing blades-thereby reducing cost, complexity, and management overhead.

HPE SANnav Management Software

HPE SANnav Management Software is the next-generation SAN management application suite for HPE B-series SAN environments.

- 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 not only transforms 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.

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 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

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 that works best for your business with flexible continuous learning options.

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

Service and Support

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**

Configuration Information

Step 1 – Base Configuration (Select one)

HPE Storage SAN Extension Switch B-series SN2600B Base

Description	SKU
HPE SN2600B 32Gb 12/4 4-port 16Gb Short Wave SFP+ SAN Extension Switch	R6W20A

4 ports 32 Gbps Fibre Channel ports (loaded w/ 4 - 16Gb SW SFP+ optics) and 2 1GbE Ethernet WAN ports with Adaptive Rate Limiting (ARL) and IPsec. All 6 Ethernet ports are active and can be used as ingress ports for IP Extension.

Notes:
– Optional Fibre Channel transceivers are 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.

HPE Storage SAN Extension Switch B-series SN2600B Full

HPE SN2600B 32Gb 12/12 Power Pack+ 12-port 16Gb Short Wave SFP+ SAN Extension Switch	R6W21A

12 ports 32Gbps Fibre Channel ports (loaded w/ 12 -16Gb SW SFP+ optics), enables 4 additional ports 1/10GbE Ethernet WAN ports and Power Pack Plus (includes Fabric Vision technology, Extension Trunking, Fibre Channel Trunking, ARL, IPsec, and Integrated Routing)

Notes:
– Optional Fibre Channel transceivers are 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 – Optional Upgrade Kit (Software Upgrade License & Optics Included)

HPE Storage SAN Extension Switch B-series SN2600B Upgrade License with Optics Kit

HPE SN2600B 8-port POD Power Pack+ Upgrade License w/16Gb SFP+ Short Wave Transceiver Kit	R6W30A

8-port Port On Demand (POD) Power Pack Plus Upgrade License with 8 - 16Gb SFP+ Short Wave Transceiver Kit, enables 4 additional 1/10GbE ports andPower Pack Plus including Fabric Vision technology, Extension Trunking, Fibre Channel Trunking, ARL, IPsec, and Integrated Routing.

Step 3 – Options

32 Gb Transceivers

HPE B-series 32Gb SFP28 Short Wave 1-pack Secure Transceiver	R6B12A
HPE B-series 32Gb SFP28 Long Wave 10km 1-pack Secure Transceiver	R6B13A

16 Gb Transceivers

HPE B-series 16Gb SFP+ Short Wave 1-pack Secure Transceiver	R6B10A
HPE B-series 16Gb SFP+ Long Wave 10km 1-pack Secure Transceiver	R6B11A

1 GbE Transceivers

HPE B-series 1GbE SFP RJ45 CAT5 1-pack Transceiver	R6W22A
HPE B-series 1GbE SFP 1-pack Transceiver	R6W25A

10 GbE Transceivers

HPE B-series 10GbE SFP+ Short Wave 1-pack Transceiver	R6W23A
HPE B-series 10GbE SFP+ Long Wave 10km 1-pack Transceiver	R6W24A

Configuration Information

Optical Cables

Description	SKU
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
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
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 4 - 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.

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

Configuration Information

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

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	Primera, 3PAR StoreServ, Nimble, StoreVirtual , P9500/XP, 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 and SN6600B 32 Gb FC Power Pack+	SN6600B 32 Gb Bundled (SFP+) FC Switch and SN6600B 32 Gb Power Pack+ Bundled (SFP+) FC Switch	SN6700B 64Gb with 24 32Gb Integrated Secure SFP28
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	16 Gbps	32 Gbps	32 Gbps	64Gb
Aggregate device bandwidth	384- 768 Gbps	2 Tbps	2 Tbps	3.5 Tbps
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**			
Storage system support	Primera, 3PAR StoreServ, Nimble, StoreVirtual, P9500/XP, MSA			
FC Ports	24 or 48 Enabled 48 Max	24 or 48 enabled 64 Max	24 or 48 Enabled 64 Max	24 Enabled 56 Max
SFP	B-series	B-series (16 Gb or 32 Gb)	B-series, 24 or 48 32 Gb SFP+ included in the box	B-series Secure 24 32Gb SFP28 included
Advanced Trunking	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included in Power Pack+ on all switches
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	Yes	Yes	Yes	Yes
Hot plug fans	Yes (integrated with power supply)	Yes (integrated with power supply)	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	SN2600B SAN Extension Switch
Targeted Environment	Workgroups, Departments	Data Centers; long distance replication, multiprotocol SAN Fabrics	Data Centers; long distance replication, multiprotocol SAN Fabrics
Fibre Channel Port Bandwidth	16Gbps	16Gbps	32Gbps
Ethernet	N/A	1/10/40 Gbps Ethernet	1/10Gbps Ethernet
Aggregate device bandwidth	768-1536-Gbps		
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**		
Storage system support	Primera, 3PAR StoreServ, Nimble, StoreVirtual, P9500/XP, MSA		
FC Ports	48 or 96 Enabled 96 Max	24 FC Ports Enabled 24 Max	4 or 12 FC Enabled 12 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 Optional Upgrade
Adaptive Networking	Included	Included	NA
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+	SN8700B 8-Slot SAN Director Power Pack+
Targeted Environment	Cloud Optimized Data Centers	Cloud Optimized Data Centers	Cloud Optimized Data Centers
Port Bandwidth	Up to 16Gbps	Up to 32 Gbps	Up to 64Gbps
Aggregate device bandwidth	10.2Tbps	20.48 Tbps	31 Tbps
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**		
Storage system support	Primera, 3PAR StoreServ, Nimble, StoreVirtua, P9500/XP, MSA		
Ports	Up to 512 SFP	512 32 Gbps ports or a 640-port equivalent with 128 Gbps (32 Gbps×4 QSFP ports)	512 ports - 384 device ports with a 64Gb/s data rate plus 32 4xGen7 ICLs or 640 ports - 512 device ports with a 32Gb/s data rate plus 32 4xGen7 ICLs
SFP	B-series	B-series	B-series Secure
Advanced Trunking	Included with Power Pack	Included with Power Pack	Included with Power Pack
Adaptive Networking	Included	Included	Yes (included)
Form factor	14U	14U	14U
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 4-Slot SAN Director and 4-Slot SAN Director Power Pack+	SN8600B 4-slot SAN Director Power Pack+	SN8700B 8-Slot SAN Director Power Pack+
Targeted Environment	Cloud Optimized Data Centers	Cloud Optimized Data Centers	Cloud Optimized Data Centers
Port Bandwidth	Up to 16Gbps	Up to 32Gbps	Up to 64Gbps
Aggregate device bandwidth	5.1 Tbps	10.24 Tbps	31 Tbps
OS Support	**Notes:** Please Refer to SPOCK **https://h20272.www2.hpe.com/spock/**		
Storage system support	Primera, 3PAR StoreServ, Nimble, StoreVirtual , P5000/XP, MSA		
Ports	Up to 256 SFP	Up to 256 32 Gbps ports or a 320-port equivalent with 16 ICL ports.	512 ports - 384 device ports with a 64Gb/s data rate plus 32 4xGen7 ICLs or 640 ports - 512 device ports with a 32Gb/s data rate plus 32 4xGen7 ICLs
SFP	B-series	B-Series	B-series Secure
Advanced Trunking	Included with Power Pack or Optional Upgrade	Included with Power Pack	Included with Power Pack
Adaptive Networking	Included	Included	Yes (included)
Form factor	9U	9U	14U
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	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 SPOCK **https://h20272.www2.hpe.com/spock/**		
Storage system Support	Primera, 3PAR StoreServ, Nimble, StoreVirtual, P9500/XP, 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

Technical Specifications

System Architecture

Ports	12 ports 32 Gb/s Fibre Channel capable, universal (E, F, M, D, and EX ports), 6 ports 1GbE/10GbE for LAN and WAN connectivity, two 1GE copper ports for WAN/LAN connectivity, one 10/100/1000 Ethernet (RJ-45); one serial port (RJ-45) and one USB port
B-series switch 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 - Brocade 32Gb Fibre Channel SAN Switch Module for HPE Synergy - SN3600B Fibre Channel Switch - SN6600B Fibre Channnle Switch - SN6650B Fibre Channel Switch - SN8600B 8-Slot SAN Director - SN8600B 4-Slot SAN Director - SN8700B 8-Slot SAN Director - SN8700B 4-Slot SAN Director - SN6700B Fibre Channel Switch
Performance	Auto-sensing of 8, 16 and 32 Gbps port speeds. FCIP Performance: 1/10 line speed
ISL Trunking	Up to eight 32 Gb/s links aggregating to 256 Gb/s per trunk. There is no limit to how many trunk groups can be configured per switch.
Maximum Fibre Channel replication throughput	10 Gb/s
FCIP aggregate bandwidth	2.5 Gbps
Fabric latency	Non-blocking shared memory, 900 ns with no contention, cut-through switching at 32 Gb/s
Maximum frame size	2112-byte payload
Maximum MTU size	Ethernet Jumbo Frames 1280 bytes to 9216 bytes
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 IP extension)
Data traffic types	Fibre Channel, FCIP, and IP extension
USB	One USB port for system log file downloads or firmware upgrades
Media types	**Fibre Channel: B-series hot-pluggable Small Form Factor** (SFP) and SFP+, short wavelength (SWL) and long wavelength (LWL), a (available wavelength options vary for 16 Gbps and 32Gb SFPs) **Ethernet**: B-series hot-pluggable Small Form Factor (SFP) and SFP+, short reach wavelength (SRWL), long reach wavelength (LRWL), and copper SFP/SFP+ transceivers (available reach options vary from 1 GbE and 10 GbE)
Fabric services	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, portbased routing, lossless, Advanced Zoning, Web Tools, Trunking, Extended Fabrics, Fabric Vision, SDDQ

Technical Specifications

Licensing options	The following optional extension features can be enabled on the HPE SN2600B SAN Extension base configuration via the upgrade license: • Enable WAN-side throughput from 1 Gb/s to 2.5 Gb/s • Enable 10 GbE port speed on the Ethernet ports • Turn on additional 8 Fibre Channel ports, includes 16 Gb/s SFPs • Enable advanced software features, including Fabric Vision technology, Extension Trunking, Fibre Channel Trunking, and Integrated Routing	
Management	Supported management software	Serial port (9600, 8, 1, no parity, no flow), Command Line Interface (CLI): SSHv2 or Telnet, Web Tools: HTTP/HTTPS, SNMPv1/v3 (FE MIB, FC Management MIB), SANnav Management Portal and SANnav Global View (optional), SMI-S, RADIUS, LDAP
	Security	DH-CHAP (between switch and end-device), FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, Role-Based Access Control (RBAC), Secure Copy (SCP), SFTP, SSHv2, SSL, Switch Binding, Trusted Switch
	Extension security	Encryption: AES-GCM-256 IPsec on tunnel (VE_Port), Authentication: ECDSA-P384, Diffie-Hellman: ECDH-P384, PRF: PRF-HMAC-384, Integrity: HMAC-384-192, ESP, Suite B, Connected pWWN FCIP checking
	Management access	10/100/1000 Ethernet (RJ-45); serial port (RJ-45) and one USB port
	Diagnostics	POST and embedded online/offline diagnostics, including D_Port, WAN Test Tool, FCIP ping, FCIP traceroute, FCping, Pathinfo (FCtraceroute), SupportSave, RAS Log, Syslog, MAPS, SDDQ, Flow Vision, and Ftrace
Mechanical	Enclosure	Back-to-front airflow/non-port-side air intake and power, 1 RU, 19-in., EIA-compliant
	Size	Width: 44.0 cm (17.32 in.) Height: 4.4 cm (1.73 in.) Depth: 45.7 cm (17.74 in.)
	System weight	7.98 kg (17.6 lb.) empty 8.35 kg (18.4 lb.) fully loaded
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% at 40°C (104°F) Non-operating: 10% to 90%
	Altitude	Operating: 0 to 3000m (9842 ft) Storage: 0 to 12 km (39,370 ft)
	Shock	Operating: 10G, 10 ms, half-sine wave Non-operating: 33G, 11 ms, half-sine wave, 3G Axis
	Vibration	Operating: 0.25g sine, 0.4 grms random, 5 Hz to 500 Hz Non-operating: 5 Hz at 0.5 grms, 10 Hz to 500 Hz at 1.0 grms (sine vibration), 3 Hz to 500 Hz at 1.12 grms (random vibration)
	Airflow	Maximum: 45.0 CFM Nominal: 22.4 CFM
Power	Power supply	Dual, hot-swappable, redundant, AC input power supplies with integrated system cooling fans
	Power inlet	C14; requires C13 plug
	Input voltage	100 VAC to 240 VAC (nominal), 90 VAC to 264 VAC (range)
	Input line frequency	50/60 Hz (nominal), 47 Hz to 63 Hz (range)
	Inrush current	50A peak at 240 VAC for 150 ms
	Power	100 VAC: 1.29A, 130W, 444 BTU/hr, 135 VA (max config) 200 VAC: 0.65A, 132W, 449 BTU/hr, 146 VA (max config)

Summary of Changes

Date	Version History	Action	Description of Change
15-Apr-2024	Version 6	Changed	Rebranding Series Name applied
13-Nov-2023	Version 5	Changed	HPE Services Rebranding
05-Jun-2023	Version 4	Changed	Overview, Configuration Information and Technical Specifications sections were updated. Added SANnav renewal licenses
04-Oct-2021	Version 3	Changed	Service and Support section was updated
02-Aug-2021	Version 2	Changed	Service and Support and Configuration Information sections were updated.
01-Feb-2021	Version 1	New	New QuickSpecs

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