

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

Description

SKU

HPE SN6500B 16Gb FC Switch Models

HPE SN6500B 16Gb 96/96 Power Pack+ FC Switch	C8R42B
HPE SN6500B 16Gb 96/48 Power Pack+ FC Switch	C8R44B
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
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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 OD1 after the part number on your sales order.



Standard Features

Software Components, Standard, Base Models

Frame Filtering

An ASIC based capability that enables new applications and features. The switch has the ability to "view" the first 64 bytes of the Fibre Channel frame. At this time, Frame Filtering enables advanced capabilities such as Advanced Zoning and Fabric Vision functionality.

Advanced Zoning

WWN Zoning and Access Control are enforced by hardware that provides the same simple administration previously enforced only with software. Administrators can organize a physical fabric into logical groups and prevent unauthorized access by devices outside the Zone.

Web Tools

Web Tools is an intuitive and easy-to-use graphical interface that enables organizations to monitor and manage SAN fabrics. Tasks can be performed through a Java-capable Web browser from a standard laptop, desktop PC or workstation from any location within the enterprise.

In-flight Compression and Encryption

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

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

Adaptive Networking

Adaptive Networking (AN) is 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.

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



Standard Features

SAN Network Advisor Enterprise and Professional+

HPE SAN Network Advisor Enterprise and Professional+ are the enterprise-class products that support FOS products. SAN Network Advisor Enterprise provides complete B-series Directors Management including enterprise-class features/environments such as FICON, Fibre Channel Routing, FCIP, adaptive networking, etc. while SAN Network Advisor Professional+ provides the same feature set except for support for the DC SAN Backbone Director, SN8000B 8-Slot Director, and FICON.

SAN Network Advisor Enterprise delivers unprecedented scalability, up to 100 fabrics and 15,000 switch ports, while SAN Network Advisor Professional+ scales to 36 SAN Fabrics and 2560 switch ports. To accommodate growth, there is an upgrade available to SAN Network Advisor Enterprise from SAN Network Advisor Professional Plus.

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

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

Integrated Routing

Integrated Routing is an optional license which provides native Fibre Channel Routing (FCR) on a per-port basis, rather than limiting routing ports to those on a dedicated routing switch or blade. Just like traditional FCR, Integrated Routing uses EX_Ports to import/export devices between fabrics, enabling selective device sharing while maintaining remote fabric isolation. Integrated Routing provides architecture flexibility to route on a port-by-port basis, enabling increased scalability and fault isolation.

HPE Smart SAN for 3PAR

HPE Smart SAN, optional software for 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.

Service and Support

Achieve maximum return from your IT investment

Get the expertise you need at every step of your IT journey with **HPE Pointnext services and support**. We help you lower your risks and costs using proven best practices, automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. With **Advisory Services**, we 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 Flex Capacity combines the simplicity, agility, and economics of public cloud with the security and performance benefits of on-premises IT. You determine your own “Right Mix” of Hybrid IT and workload placement without having to use.

With its agile pay-per-use service, HPE GreenLake Flex Capacity can help your IT organization:

- Avoid IT expenses stemming from overprovisioning
- Improve time to market by maintaining a safe buffer of capacity, ready for use when you need it
- Keep capacity ahead of demand with regular monitoring—and a simple change order to replenish
- Pay for only the capacity used, not the capacity deployed
- Reduce IT risk with tailored support

Free up resources with Operational Services from HPE Pointnext

Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller are quoted using Hewlett Packard Enterprise order configuration tools.

HPE Datacenter Care

Helps customers to address the pressing needs of IT today and smoothly transform to a more agile cloud-like IT operations model. We help run and monitor your IT by offloading the day to day routine tasks, helping customers be more predictive and proactive, and saving time with one place to call with for all of their IT. Datacenter Care is available as both tailored statement of work and as a packaged service for 3, 4, and 5 year terms.

Partner with an assigned account team backed by local and global experts, access HPE enhanced call experience with priority access, use specialized support for complex, technologies, choose hardware and software support for your devices, implement proactive monitoring to stay ahead of issues, and access HPE IT best practices and IP. HPE Datacenter Care advantage options are available to add to your agreement to give you specialized expertise for performance, security, back up analysis, and much more.



Service and Support

Connect your devices

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time, increase diagnostic accuracy and have a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.

Learn more about getting connected at

<http://www.hpe.com/services/getconnected>

Recommended Support Services

Optimized Care

HPE Proactive Care* with 6 hour call-to-repair commitment, three year Support Service

HPE Proactive Care gives customers an enhanced call experience plus helps prevent problems and maintains IT stability by utilizing tailored, proactive reports with recommendations and advice when your products are connected to Hewlett Packard Enterprise. This Service combines three years' proactive reporting and advice with our highest level of hardware support - The Hewlett Packard Enterprise 24x7, six hour hardware call-to-repair. Hewlett Packard Enterprise is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable storage systems.

<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Standard Care

HPE Proactive Care* with 24x7 coverage, three year Support Service

HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to Hewlett Packard Enterprise. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. <https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

Notes:*HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to make the most of these services and receive all the deliverables.

Basic Care

HPE Foundation Care 24x7, three-year Support Service

HPE Foundation Care 24x7 gives you access to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. Simplify your support experience and make Hewlett Packard Enterprise your first call to help resolve hardware or software problems.

<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA4-8876ENW>

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 quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.



Service and Support

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 Installation Service

Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options 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

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

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and support options

More Information

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 HPE 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.

<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 HPE 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 HPE Support Services at

<https://ssc.hpe.com/portal/site/ssc/>



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 Power Pack+ FC Switch

C8R44B

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, Advanced Zoning 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

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

HPE B-series 16Gb LW 25km FC SFP 1-pack Transceiver

H6Z29A

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+ Long Wave 10km Transceiver

QK725A

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

AJ717A



Configuration Information

Description

SKU

USB

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: <http://www.hpe.com/storage/spock>

Software for SN6500B 16Gb FC Switch

HPE SANnav Management Portal Base 1yr E-LTU R3P45AAE

Notes: (Physical License – R3P45A)

HPE SANnav Management Portal Enterprise 1yr E-LTU R3P46AAE

Notes: (Physical License – R3P46A)

HPE SANnav Global View 1yr E-LTU R3P47AAE

Notes: (Physical License – R3P47A)

HPE SANnav Management Portal Base 3yr E-LTU R3P48AAE

Notes: (Physical License – R3P48A)

HPE SANnav Management Portal Enterprise 3yr E-LTU R3P49AAE

Notes: (Physical License – R3P49A)

HPE SANnav Global View 3yr E-LTU R3P50AAE

Notes: (Physical License – R3P50A)

HPE SANnav Management Portal Base 5yr E-LTU R4P29AAE

Notes: (Physical License – R4P29A)

HPE SANnav Management Portal Enterprise 5yr E-LTU R4P30AAE

Notes: (Physical License – R4P30A)



Configuration Information

HPE SANnav Global View 5yr E-LTU

R4P31AAE

Notes: (Physical License – R4P31A)

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, customer will need to purchase a new license to continue using the software. Software renewal via HPE PointNext is not allowed/supported.
- A 90-day, full-featured trial license for SANnav Management Portal and SANnav Global View is available.

Description

SKU

HPE SN6500B SAN Switch Power Pack+ E-LTU

TC441BAE

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 Fabric Watch E-LTU

J4V62AAE

Notes: (Physical License - 313454-B21)

HPE B-series Mid/High End SAN Switch Advanced Performance Monitoring E-LTU

J4V60AAE

Notes: (Physical License - 313450-B21)

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://www.hpe.com/storage/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)



Technical Specifications

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://www.hpe.com/storage/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 (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
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



Technical Specifications

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://www.hpe.com/storage/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://www.hpe.com/storage/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



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	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://www.hpe.com/storage/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
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

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	<ul style="list-style-type: none"> • 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 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)

Technical Specifications

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, RAStace 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
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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c04111398 - 14511 - Worldwide - V18 - 05-October-2020