

### Overview

## HPE Storage Fibre Channel Switch B-series SN6600B

Today's mission-critical storage environments require greater consistency, predictability, and performance to keep pace with business demands. Faced with explosive data growth, IT environments need more IO capacity than ever before to accommodate massive amounts of data, business critical applications, data intensive workloads, and deliver on the promise of uninterrupted availability and accessibility from anywhere, at any time, on any device.

To meet these dynamic and growing business demands, organizations need the ability to deploy and scale up applications quickly. As a result, many organizations are moving to higher Virtual Machine (VM) densities to enable rapid deployment of new applications and investing in flash storage to help those applications scale to support thousands of users. Organizations are realizing the full benefits of flash and transitioning their high-performance, latency-sensitive workloads to flash-based storage with NVMe. To increase agility, reduce expenses, and realize the full benefits of these architectures, organizations need the network to deliver the performance required by today's server and storage environments. In addition, storage networks are becoming increasingly important to application performance and are looked at as a strategic footprint within highly-virtualized environments since they can deliver efficiency and optimization as they scale.

The HPE Storage Fibre Channel Switch B-series SN6600B meets the demands of hyper-scale virtualization, larger cloud infrastructures, and growing flash-based storage environments by delivering market-leading 32 Gb Fibre Channel capabilities. The HPE Storage Fibre Channel Switch B-series SN6600B is NVMe-ready, allowing organizations to seamlessly integrate fibre channel networks with the next generation of flash storage, without a disruptive rip and replace. It provides a high-density building block for increased scalability, designed to support growth, demanding workloads, and data center consolidation in small to large-scale enterprise infrastructures. It is built for maximum flexibility, scalability, and ease of use. Organizations can scale from 24 to 64 ports with 48 SFP+ and 4 QSFP ports, all in an efficient 1U package. It also provides a simplified deployment process and a point-and-click user interface—making it both powerful and easy to use. With the SN6600B Switch organizations gain the best of both worlds: high-performance access to industry-leading storage technology and "pay-as-you-grow" scalability to support an evolving storage environment.

**The HPE Storage Fibre Channel Switch B-series SN6600B is currently available in two models, One configured with 16Gb optics and one with 32Gb optics:**

- Switch
- HPE SN6600B 32Gb 48/24 24-port 16Gb Short Wave SFP+ Integrated FC Switch
- HPE SN6600B 32Gb 48/24 24-port 32Gb Short Wave SFP+ Integrated FC Switch

### Overview



### HPE Storage Fibre Channel Switch B-series SN6600B

Q0U58C & R6V47A have a mini-USB console/serial port instead of an RJ-45

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### Models

#### HPE Storage Fibre Channel Switch B-series SN6600B 32Gb FC Switch

##### Description

##### SKU

HPE SN6600B 32Gb 48/24 16Gb Short Wave SFP+ Fibre Channel Switch

R6V47A

HPE SN6600B 32Gb 48-port/24-port 24-port 32Gb Short Wave SFP+ Integrated Fibre Channel Switch

Q0U58C

**Notes:** The references to SFP+ in the description is intended to identify switches bundled with optics. The 32Gb optics are also referred to as SFP28 optics, referencing the industry standard for 32Gb optics.

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### Standard Features

### Key Features and Benefits

- Delivers 32 Gbps performance with up to 64 ports in an energy-efficient, 1U form factor, providing maximum flexibility for diverse deployment and cooling strategies
- Features Ports on Demand (PoD) capabilities for fast, easy, and cost-effective scaling from 24 to 48 ports in 12-port increments along with a 16-port QSFP PoD or PoD kit for full 64 port support. PoD upgrades are available in 12-port upgrade kits, including both the license and 12 optics under one part number or the PoD licenses and optics can be purchased separately.
- HPE Storage Fibre Channel Switch B-series SN6600B is available in both bundled (16Gb or 32Gb SFP+ included) and un-bundled variants providing flexibility to customers.
- Support high-density server virtualization, cloud architectures and flash-based storage environments
- Provides proactive, non-intrusive, real-time monitoring and alerting of storage IO health and performance with IO Insight, the industry's first integrated network sensors
- Increases resiliency by automatically discovering and recovering from device or network errors
- Simplifies troubleshooting with real-time and historical visibility in a single dashboard
- Provides a flexible, simple, and easy-to-use SAN solution with industry-leading technology
- Supports highly virtualized, flash storage with multi-tenancy and non-stop operations
- Offers best-in-class port density and scalability for midrange enterprise SAN switches, along with redundant, hot-pluggable components and non-disruptive software upgrades
- In-flight encryption (FOS 8.2.0 onwards) and compression included providing efficient link utilization.
- Yields exceptional price/performance value, exceeding comparable Ethernet storage-based alternatives

### SN6600B 32Gb FC Switch

- Simplifies enterprise SAN deployment by combining higher edge switch port density with exceptional scalability, performance and reliability
- Delivers 24, 36, 48 or 64-ports in a 1U enclosure
- Provides 4, 8, 10, 16 and 32 Gbps\* 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 32 Gbps switches up to 256 Gbps

**Notes:** \*32 Gbps performance can be obtained between two 32 Gbps 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 integrated cooling fans
- Enhanced Fault Detection Logic
- Parity protection on all data paths and system memory

### Advanced Fabric Services

- Hardware Enforced Zoning
- Frame Filtering
- Built-in Web browser management tools

### Standard Features

- In-flight Compression/ Encryption
- Access Gateway
- Dynamic and System Monitoring Capabilities for High Reliability
- Virtual Fabrics

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### Cabinet Support

HPE (22U, 36U, and 42U) 10000 G2 Series, the Intelligent Series racks, and HPE (14U, 22U, 36U, 42U, and 47U) 11000 G2 Series racks.

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

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### 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.

#### 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, or HTML5 (FOS 9.x and later), Web browser from a standard laptop, desktop PC or workstation from any location within the enterprise.

#### In-flight Encryption

In-flight encryption provides security for frames while they are in flight between two switches. This allows frames to be encrypted at the egress point of an ISL between two B-series switches, and then to be decrypted at the ingress point of the ISL. This can be enabled (FOS 8.2.0 and above) for both E\_Ports and EX\_Ports on a per-port basis and no additional license is required.

#### In-flight Compression

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.

#### Adaptive Networking

Adaptive Networking (AN) is a family of technologies which allow flexible control of traffic movement within the fabric which deliver application aware management of fabric resources. Applications may be used with multiple protocols and multiple classes of service. It includes the following features:

- **Ingress Rate Limiting:**

Allows the ingress bandwidth of a port to be throttled to a rate lower than negotiated with the SAN node. This could be very useful for enterprises offering stepped levels of service and enforcing SLAs.

### Standard Features

- **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.

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### Software Components, Optional

#### **SN6600B 32Gb Switch Power Pack+ Software Bundle**

The Power Pack+ Software Bundle comes with the SN6600B 32Gb 48/24 Power Pack+ Switch and SN6600B 32Gb 48/48 Power Pack+ Switch (for both standalone and 32Gb SFP+ integrated switch models). The customers can purchase it separately as an optional software bundle for the SN6600B 32Gb 48/24 FC Switch and the SN6600B 48/48 FC Switch (both standalone and 32Gb SFP+ bundles switch). It includes the following:

- Fabric Vision
- Extended Fabric
- ISL Trunking

#### **Fabric Vision**

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. It Includes

- IO Insight: Proactively and non-intrusively monitors storage device IO performance and behavior through integrated network sensors at the storage tier, providing deep insight into problems and ensuring service levels
- Monitoring and Alerting Policy Suite (MAPS): A policy-based monitoring tool with pre-built rules and automation that simplifies fabric-wide threshold configuration and monitoring. 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 to seamlessly deploy a configuration across the fabric.
- 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: A comprehensive tool that enables administrators to identify, monitor, and analyze specific application data flows in order to simplify troubleshooting, maximize performance and avoid congestion 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**

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**

### Standard Features

For high performance enhanced Trunking, this optional license logically groups up to eight 32 Gbps SFP+ ports per ISL trunk or up to two 128 Gbps QSFP ports per ISL trunk to provide a high bandwidth trunk between two switches. Each 32Gb switch needs its own license. The switch operating system views the trunk as a single, high bandwidth resource (up to 256Gb) when routing connections between 32Gb switches. Connections are load-balanced across the individual links, which comprise the logical trunk group.

### 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 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.

### HPE Smart SAN for 3PAR

HPE Smart SAN, optional software for HPE 3PAR, makes end-to-end SAN configuration and management simple and reduces the probability of errors through automation. It is an application embedded in SAN components (array, hosts and switches) that enables 3PAR arrays to orchestrate configuration, settings and policies across the SAN. Smart SAN is supported with B-series Switches, HPE Fibre Channel adapters (HBAs) and 3PAR storage. HPE Smart SAN for 3PAR through its Target Driven Peer Zoning (TDPZ) feature enables customers to automate peer zoning, resulting in the creation of fewer zones and enables configuration of zones in minutes and not in hours. Through automation, it reduces the probability of errors and potential downtime.

#### Notes:

- Supports B-series 32Gb, 16Gb and 8Gb FC switches with FOS 7.4.0a or later.

### Standard Features

- 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.

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### Service and Support

#### Warranty

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

#### Notes:

- The hardware warranty covers firmware and embedded non-saleable software. For extended hardware installation and maintenance information, click the link below: <https://ssc.hpe.com>
- 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.

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### HPE Services

No matter where you are in your transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.

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

#### Consulting services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

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

#### SAN Fabric Integration and Migration service

HPE Data Storage Services - SAN Fabric Integration and Migration simplifies the introduction of and migration to new HPE B-series SAN fabric devices. It helps maximize the value of your investment in your new HPE B-series SAN fabric devices by leveraging HPE Services expertise and best practices.

<https://www.hpe.com/psnow/doc/a50011015enw>

#### HPE Managed Services

HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

[HPE Managed Services | HPE](#)

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#### 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>

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### 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.

### Service and Support

HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

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

### HPE Complete Care Service

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

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

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

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### 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](https://www.hpe.com/psnow/doc/5981-8527enw?jumpid=in_lit-psnow-red)

#### HPE Installation Service

### Service and Support

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

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

### HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.

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

### Defective Media Retention

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

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

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### 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/>

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### 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

### Service and Support

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>

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### Configuration Information

#### Step 1 - Base Configuration (Select one)

Description	SKU
HPE SN6600B 32Gb 48/24 16Gb Short Wave SFP+ Fibre Channel Switch	R6V47A

#### Notes:

- 32Gb 48-port FC Switch with 24 active ports bundled with 24 16Gb SFP+; accessory kit (Rackmount kit, enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, mini USB serial cable, base software of Advanced Fabric OS, Advanced Web Tools and Advanced Zoning.
- The console/serial port on this version has a mini-USB instead of the RJ45 connector. The switch comes with a mini-USB to RJ45 serial cable and a RJ45 to RS-232 adapter to connect to the host.
- HPE B-series software licenses are available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses are functionally equivalent to the corresponding physical licenses. The E-Delivery version (ending with AE) is listed first and the physical version is second.
- Requires the use of Secure optics

HPE SN6600B 32Gb 48-port/24-port 24-port 32Gb Short Wave SFP+ Integrated Fibre Channel Switch	
	Q0U58C

#### Notes:

- 32Gb 48-port FC Switch with 24 active ports bundled with 24 32Gb SFP+; accessory kit (Rackmount kit, enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, mini USB serial cable, base software of Advanced Fabric OS, Advanced Web Tools and Advanced Zoning.
- The console/serial port on this version has a mini-USB instead of the RJ45 connector. The switch comes with a mini-USB to RJ45 serial cable and a RJ45 to RS-232 adapter to connect to the host.
- HPE B-series software licenses are available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses are functionally equivalent to the corresponding physical licenses. The E-Delivery version (ending with AE) is listed first and the physical version is second.
- Requires the use of Secure optics

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#### Step 2 - Options

With the release of FOS 9.0 the HPE Storage Fibre Channel Switch B-series SN6600B will have mixed optic support dependent on the model as outlined below:

- Support Secure optics ONLY:
  - Models: Q0U58C & R6V47A
- Support Secure and Standard optics:

### Configuration Information

- Models: Q0U54A/B, Q0U55A/B, Q0U56A/B, Q0U56A/B, Q0U57A/B, Q0U58A/B, Q0U59A/B & Q0U60A/B

### Fibre Channel Transceivers - Standard

Description	SKU
HPE B-series 4x16 Short Wave QSFP Transceiver	K2Q87A
HPE B-series 4x32Gb 4-pack Short Wave QSFP Transceiver	Q2R28A
<b>Notes:</b> This QSFP requires minimum version of FOS 8.1.0a	
HPE B-series 4x32Gb 8-pack Short Wave QSFP Transceiver	Q2R29A
<b>Notes:</b> This QSFP requires minimum version of FOS 8.1.0a	
HPE B-series 4x32Gb 16-pack Short Wave QSFP Transceiver	Q2R30A
<b>Notes:</b> This QSFP requires minimum version of FOS 8.1.0a	

Description	SKU
HPE B-series 16Gb SFP+ Short Wave Transceiver	QK724A
HPE B-series 4x16Gb SW QSFP+ 100m 16-pack Transceiver	H6Z76A

### Fibre Channel Transceivers - Secure

HPE B-series 16Gb SFP+ Short Wave 1-pack Secure Transceiver	R6B10A
HPE B-series 16Gb SFP+ Short Wave 8-pack Secure Transceiver	R6W28A
HPE B-series 16Gb SFP+ Long Wave 10km 1-pack Secure Transceiver	R6B11A
HPE B-series 32Gb SFP28 Short Wave 1-pack Secure Transceiver	R6B12A
HPE B-series 32Gb SFP28 Short Wave 8-pack Secure Transceiver	R6W26A
HPE B-series 32Gb SFP Extended Long Wave 25km 1-pack Secure Transceiver	R7M17A
HPE B-series 32Gb SFP28 Long Wave 10km 1-pack Secure Transceiver	R6B13A
HPE B-series 32Gb SFP28 Extended Long Wave 25km 1-pack Secure Transceiver	R9S31A

**Notes:** The R9S31A is only supported on the Q0U58C and R6V47A with a Minimum FOS version of 9.1.1.

R9S31A must be used on both ends of the cable.

HPE B-series 10Gb SFP+ Short Wave 1-pack Secure Transceiver	R6B14A
HPE B-series 10Gb SFP+ Long Wave 10km 1-pack Secure Transceiver	R6B15A
HPE B-series 4x50Gb QSFP56 Short Wave Inter Chassis Link 1-pack Secure Transceiver	R6B19A
HPE B-series 4x32Gb QSFP28 Short Wave 100m 1-pack Secure Transceiver	R6B20A
HPE B-series 16Gb SFP+ Extended Long Wave 25km 1-pack Secure Transceiver	R6B21A

### Fibre Channel Transceivers - Other

HPE Storage Fibre Channel Switch B-series SN6600B supports HPE Complete SmartOptics For more information regarding Smartoptics SKUs/Accessories/Cables and ordering rules please refer HPE Complete Smartoptics QuickSpecs. <https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=c05205226> and Brocade Fabric OS Open Systems Compatibility Matrix

### Accessories

HPE B-series 4G USB Drive	N9Y63A
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### Configuration Information

#### Optical Cables

Performance			
Distance - Maximum	HPE Standard OM3 Cable	HPE PremierFlex OM3+ Cable	HPE PremierFlex OM4 Cable
32Gb Performance:	70 meters	70 meters	100 meters
16Gb performance:	100 meters	100 meters	125 meters

#### HPE PremierFlex OM4 Fiber Optic Cables

Description	SKU
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

Description	SKU
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 Premier Flex OM4 QSFP Fiber Optic Cables

HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 1m Cable	Q1H63A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 2m Cable	Q1H64A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 5m Cable	Q1H65A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 10m Cable	QK729A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 15m Cable	Q1H66A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 30m Cable	Q1H67A
HPE Premier Flex MPO/MPO Multi-mode OM4 8 Fiber 50m Cable	QK731A
HPE Premier Flex MPO/MPO OM4 100m Cable	H6Z30A

#### HPE QSFP to 4xLC Breakout Cables

HPE Multi Fiber Push On to 4 x Lucent Connector 5m Cable	K2Q46A
HPE Multi Fiber Push On to 4 x Lucent Connector 15m Cable	K2Q47A
HPE Premier Flex MPO to 4xLC 30m Cbl	Q1H68A
HPE Premier Flex MPO to 4 x Lucent Connector 50m Cable	Q1H69A

#### HPE OM3 LC-LC Optical Cables

HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A

### Configuration Information

#### Port on Demand (Pod) Kits

With the release of FOS 9.0, the HPE Storage Fibre Channel Switch B-series SN6600B will have mixed PoD upgrade support dependent on the model as outlined below

- Models: Q0U58C & R6V47A
  - Support PoD Kits ONLY
- Models: Q0U54A/B, Q0U55A/B, Q0U56A/B, Q0U56A/B, Q0U57A/B, Q0U58A/B, Q0U59A/B & Q0U60A/B :
  - Support PoD Upgrades listed in Software Options as well as the PoD Kits

HPE SN6600B 16Gb 12-port Short Wave SFP+ Fibre Channel Upgrade License with Transceiver Kit R6V48A

HPE SN6600B 32Gb 12-port Short Wave SFP28 Fibre Channel Upgrade License with Transceiver Kit R6V49A

HPE SN6600B 4x32Gb 16-port Short Wave QSFP28 Fibre Channel Upgrade License with Transceiver Kit R9S32A

**Notes:** The above PoD Kits are available as a physical upgrade package only, these are not available as an e-license because they include the optics. PoD Kits include Secure optics.

### Step 3 - Optional Software

#### Notes:

- For Fabric OS (FOS) minimum requirements, please refer to: <https://h20272.www2.hpe.com/spock/>
- HPE B-series software licenses are available through the Electronic Delivery (E-Delivery) mechanism. The E-Delivery software licenses are functionally equivalent to the corresponding physical licenses. The E-Delivery version (ending with AE) is listed first and the physical version is second.

Description	SKU
HPE SN6600B PowerPack+ Upgrade E-LTU	Q0T78BAE
Power Pack+ software 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.	

**Notes:** The Power Pack+ Software Bundle kit includes Fabric Vision, ISL Trunking, and Extended Fabric.

HPE B-series Integrated Routing E-LTU T5528BAE

#### 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.

### Configuration Information

#### **SANnav Software Licenses:**

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 or later.

#### **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.

### Configuration Information

- 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 or later

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### Technical Specifications

#### Family Information

Features	SN3000B 16 Gb FC Switch	SN3600B 32 Gb FC Switch	SN6000B 16Gb FC Switch and SN6000B 16Gb FC Power Pack+
<b>Targeted Environment</b>	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
<b>Fibre Channel Port Bandwidth</b>	16 Gbps	32 Gbps	16Gbps
<b>Aggregate device bandwidth</b>	384 - 768 Gb full duplex	768 Gb end-to-end full duplex	384- 768 Gb
<b>OS Support</b>	<b>Notes:</b> Please Refer to SPOCK <a href="https://h20272.www2.hpe.com/spock/">https://h20272.www2.hpe.com/spock/</a>		
<b>Storage system support</b>	Primera, Nimble, 3PAR StoreServ, StoreVirtual ,P9500/XP7,MSA		
<b>FC Ports</b>	12 or 24 enabled 24 Max	8 or 24 Enabled 24 Max	24 or 48 Enabled 48 Max
<b>SFP</b>	B-series	B-series	B-series
<b>Advanced Trunking</b>	Included with Power Pack+ Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
<b>Adaptive Networking</b>	Included	Included	Included
<b>Form factor</b>	1U	1U	1U
<b>Zoning Software</b>	Yes (Included)	Yes (Included)	Yes (Included)
<b>Hot plug, redundant power supplies</b>	Optional	No	Yes
<b>Hot plug fans</b>	Yes (integrated with power supply)	Yes (integrated with power supply)	Yes (integrated with power supply)

Features	SN6600B 32Gb FC Switch and SN6600B 32Gb Power Pack+ Switch	SN6700B 64Gb FC Switch
<b>Targeted Environment</b>	Workgroups, Departments	Workgroups, Departments
<b>Fibre Channel Port Bandwidth</b>	32 Gbps	64Gb
<b>Aggregate device bandwidth</b>	2 Tbps	3.5 Tbps
<b>OS Support</b>	<b>Notes:</b> Please Refer to SPOCK <a href="https://h20272.www2.hpe.com/spock/">https://h20272.www2.hpe.com/spock/</a>	
<b>Storage system support</b>	Primera, Nimble, 3PAR StoreServ, StoreVirtual , P9500/XP, MSA	
<b>FC Ports</b>	24 or 48 enabled 64 Max	24 Enabled 56 Max
<b>SFP</b>	B-series Optics (16Gb or 32Gb) B-series Secure 24 32Gb SFP28 or 64Gb SFP56 included	
<b>Advanced Trunking</b>	Included with Power Pack+ or Optional Upgrade Included in Power Pack+ on all switches	

### Technical Specifications

<b>Adaptive Networking</b>	Included	Included
<b>Form factor</b>	1U	1U
<b>Zoning Software</b>	Yes (Included)	Yes (Included)
<b>Hot plug, redundant power supplies</b>	Yes	Yes
<b>Hot plug fans</b>	Yes (integrated with power supply)	Yes (integrated with power supply)

Features	1606 Extension SAN Switch	SN4000B SAN Extension Switch
<b>Targeted Environment</b>	Data Centers	Data Centers
<b>Fibre Channel Port Bandwidth</b>	8Gbps	16Gbps
<b>Ethernet</b>	1Gbps Ethernet	1/10/40Gbps Ethernet
<b>OS Support</b>	<b>Notes:</b> Please Refer to SPOCK <a href="https://h20272.www2.hpe.com/spock/">https://h20272.www2.hpe.com/spock/</a>	
<b>Storage system support</b>	Primera, Nimble, 3PAR StoreServ, StoreVirtual , P95000/XP, MSA	
<b>FC Ports</b>	4 or 16 Enabled 16 Max	24 Enabled 24 Max
<b>Ethernet Ports</b>	2 or 6 Enabled 6 Max	16 ports 1/10GbE Enabled 16 Max 2 - 40GbE ports
<b>SFP</b>	B-series	B-series
<b>Advanced Trunking</b>	Included with Power Pack+ or Optional Upgrade	Included
<b>Adaptive Networking</b>	Included	Included
<b>Form factor</b>	1U	2U
<b>Zoning Software</b>	Yes (Included)	Yes (Included)
<b>Hot plug, redundant power supplies</b>	Yes	Yes
<b>Hot plug fans</b>	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+
<b>Targeted Environment</b>	Cloud Optimized Data Centers	Cloud Optimized Data Centers	Cloud Optimized Data Centers
<b>Port Bandwidth</b>	Up to 16Gbps	Up to 32 Gbps	Up to 64Gbps
<b>Aggregate device bandwidth</b>	10.2Tbps	16.2 Tbps	31 Tbps
<b>OS Support</b>	<b>Notes:</b> Please Refer to SPOCK <a href="https://h20272.www2.hpe.com/spock/">https://h20272.www2.hpe.com/spock/</a>		
<b>Storage system support</b>	Primera, Nimble, 3PAR StoreServ, StoreVirtual P9500/XP, MSA		
<b>Ports</b>	Up to 512 SFP	384 32 Gbps ports or a 512- port equivalent with 128 Gbps (32 Gbpsx4 QSFP ports)	512 ports - 384 device ports with a 64Gbps data rate plus 32 4x50Gbps ICLs or 640 ports - 512 device ports with a 32Gbps data rate plus 32 4x50Gbps ICLs
<b>SFP</b>	B-series	B-series	B-series Secure
<b>Advanced Trunking</b>	Included with Power Pack	Included with Power Pack	Included with Power Pack
<b>Adaptive Networking</b>	Included	Included	Yes (included)
<b>Form factor</b>	14U	14U	14U
<b>Zoning Software</b>	Yes (included)	Yes (included)	Yes (included)
<b>Hot plug, redundant power supplies</b>	Yes	Yes	Yes
<b>Hot plug fans</b>	Yes	Yes	Yes

Features	Brocade 16Gb SAN Switch for HPE c-Class BladeSystem	Brocade 8Gb SAN Switch for HPE c-Class BladeSystem	Brocade 16Gb Fibre Channel SAN Switch Module for HPE Synergy
<b>Targeted Environment</b>	Enterprise, Datacenters, Workgroups, Departments	Workgroups, Departments	Enterprise, Datacenters, Workgroups, Departments
<b>Port Bandwidth</b>	16 Gbps	8 Gbps	16 Gbps
<b>Aggregate device bandwidth</b>	448 Gbps	192 Gbps	576 Gbps
<b>OS Support</b>	<b>Notes:</b> Please Refer to SPOCK <a href="https://h20272.www2.hpe.com/spock/">https://h20272.www2.hpe.com/spock/</a>		
<b>Storage system Support</b>	Primera, Nimble, 3PAR StoreServ, StoreVirtual P9500/XP, MSA		
<b>Ports</b>	12 external /16 internal	4 or 8 external / 8 or 16 internal	8 SFP+ external, 4 QSFP external /12 internal
<b>SFP</b>	B-series	B-series	B-series
<b>Advanced Trunking</b>	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
<b>Adaptive Networking</b>	Included	Included	Included
<b>Form factor</b>	Embedded	Embedded	Embedded
<b>Zoning Software</b>	Yes (Included)	Yes (Included)	Yes (Included)

### Technical Specifications

<b>Hot plug, redundant power supplies</b>	Yes, in BladeSystem Enclosure	Yes, in BladeSystem Enclosure	Yes, in Synergy Frame
<b>Hot plug fans</b>	Yes, in BladeSystem Enclosure	Yes, in BladeSystem Enclosure	Yes, in Synergy Frame

### System Architecture

<b>Fibre Channel ports</b>	<b>Switch mode (default):</b> Minimum of 24 ports and maximum of 64 ports configuration. Port numbers above minimum are enabled through 12-port SFP+ increments via Ports on Demand (PoD) licenses and through one 4-port QSFP PoD, providing 16-port increments through a license; E_Ports, F_Ports, D_Ports, EX_Ports.
<b>Scalability</b>	Full fabric architecture with a maximum of 239 switches:
<b>Certified maximum</b>	6,000 active nodes; 56 switches, 19 hops in Fabric OS® fabrics; larger fabrics certified as required
<b>Interoperability</b>	<ul style="list-style-type: none"> <li>• 8/8 SAN Switch</li> <li>• 8/24 SAN Switch</li> <li>• 1606 Extension SAN Switch</li> <li>• SN4000B SAN Extension Switch</li> <li>• SN8000B 8-Slot SAN Backbone Director</li> <li>• SN8000B 4-Slot SAN Director</li> <li>• SN6500B Fibre Channel Switch</li> <li>• SN6000B Fibre Channel Switch</li> <li>• SN3000B Fibre Channel Switch</li> <li>• Brocade 8Gb SAN Switch for HPE BladeSystem c-Class</li> <li>• Brocade 16Gb SAN Switch for HPE BladeSystem c-Class</li> <li>• Brocade 16Gb Fibre Channel SAN Switch Module for HPE Synergy</li> <li>• Brocade 32Gb Fibre Channel SAN Switch Module for HPE Synergy</li> <li>• SN3600B Fibre Channel Switch</li> <li>• SN6600B Fibre Channel Switch</li> <li>• SN6650B Fibre Channel Switch</li> <li>• SN8600B 8-Slot SAN Director</li> <li>• SN8600B 4-Slot SAN Director</li> <li>• SN8700B 8-Slot SAN Director</li> <li>• SN8700B 4-Slot SAN Director</li> <li>• SN6700B Fibre Channel Switch</li> </ul>
<b>Performance</b>	Fibre Channel: 4.25 Gbps line speed, full duplex; 8.5 Gbps line speed, full duplex; 10.53 Gbps line speed, full duplex; 14.025 Gbps line speed, full duplex; 28.05 Gbps, full duplex; 112.2 Gbps, full duplex; auto-sensing of 4, 8, 16, 32 Gbps port speeds and capable of supporting 128 Gbps speeds; 10 Gbps optionally programmable to fixed port speed.
<b>ISL Trunking</b>	Frame-based trunking with up to eight 32 Gbps ports per ISL trunk; up to two 128 Gbps QSFP ports 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.
<b>Aggregate bandwidth</b>	2 Tbps

### Technical Specifications

<b>Maximum Fabric latency</b>	Latency for locally switched ports is 700 ns; compression is 1 $\mu$ s per node
<b>Maximum frame size</b>	2112-byte payload
<b>Frame buffers</b>	15,360 dynamically allocated
<b>Classes of service</b>	Class 2, Class 3, Class F (Inter-switch frames)
<b>Port types</b>	D_Port (ClearLink Diagnostic Port), E_Port, EX_Port, F_Port, AE_Port; optional port-type control  Access Gateway mode: F_Port and NPIV-enabled N_Port
<b>Data traffic types</b>	Fabric switches supporting unicast
<b>Media types</b>	Hot-pluggable, B-Series Branded QSFP, MPO connector, 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 QSFP (128Gbps), SFP+ (32/16/10/8 Gbps) optical transceivers.
<b>USB</b>	One USB port for system log file downloads or firmware upgrades

<b>Fabric services</b>	Monitoring and Alerting Policy Suite (MAPS); Flow Vision; Adaptive Networking (Ingress Rate Limiting, Traffic Isolation, QoS); Fabric Performance Impact (FPI) monitoring; Slow Drain Device Quarantine (SDDQ); Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning, peer zoning, target-driven zoning); 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; Time Server; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server (SNS); Virtual Fabrics (Logical Switch, Logical Fabric); Read Diagnostics Parameter (RDP)
<b>Extension</b>	Fibre Channel, in-flight encryption/compression; integrated optional 10 Gbps Fibre Channel for DWDM MAN connectivity
<b>Options</b>	SFP media, USB Device

### Management

<b>Management software supported</b>	HTTPS/HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog, Advanced Web Tools, HPE SANnav Management Software, SAN Network Advisor Enterprise ;EZ Switch, Command Line Interface (CLI); SMI-S compliant; REST API; Administrative Domains; trial licenses for add-on capabilities
<b>Security</b>	DH-CHAP (between switches and end devices), FCAP switch authentication; HTTPS, IPsec, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, user-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, Secure Syslog, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch, Secure boot, TLS v1.2/v1.3
<b>Management access</b>	10/100/1000 Mbps Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45 or min-USB), and one USB port  The console/serial port may be an RJ-45 or a mini-USB depending on model. The correct cables and adapters are provided to connect to either an RJ-45 or RS-232.
<b>Diagnostics</b>	ClearLink optics and cable diagnostics, including electrical/optical loopback, link traffic/latency/distance; flow mirroring; built-in flow generator; POST and embedded online/offline diagnostics, including environmental monitoring, FCping and Pathinfo (FC traceroute), frame viewer, non-disruptive daemon restart, optics health

### Technical Specifications

monitoring, power monitoring, RAStreace logging, and Rolling Reboot Detection (RRD)

### Mechanicals

<b>Enclosure</b>	Back-to-front airflow (non-port-side intake); power from back, 1U
<b>Size</b>	Width: 440 mm (17.32 in.) Height: 43.9 mm (1.73 in.) Depth: 355.6 mm (14 in.)
<b>System Weight</b>	7.73 kg (17 lb) with two power supply FRUs, without transceivers

### Environment

<b>Operating environment</b>	Temperature : 0° to 40° C (32° to 104° F) Humidity: 10% to 85% (non-condensing)
<b>Non-operating</b>	Temperature: -25° to 70° C (-13° to 158° F) Humidity: 10% to 90% (non-condensing)
<b>Operating Altitude</b>	Up to 3,000 m (9,842 ft)
<b>Storage altitude</b>	Up to 12 km (39,370 ft)
<b>Shock</b>	Operating: Up to 20 G, 6 ms half-sine Non-operating: Half-sine, 33 G 11 ms, 3/eg axis
<b>Vibration</b>	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
<b>Heat dissipation</b>	64 ports at 716 BTU/hr

### Power

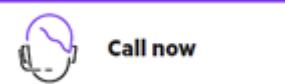
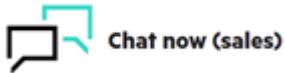
<b>Power Supply</b>	Dual, hot-swappable redundant power supplies with integrated system cooling fans
<b>AC input</b>	90 V to 264 V ~3.5 A
<b>AC Input line frequency</b>	47 Hz to 63 Hz
<b>AC Power Consumption</b>	204 W with all 64 ports populated with 48x32 Gbps SFP+ SWL optics and 4x (4x32 Gbps) QSFP SWL optics 85 W for empty chassis with no optics

### Summary of Changes

Date	Version History	Action	Description of Change
07-Oct-2024	Version 28	Changed	Overview, Standard Features and Configuration Information sections were updated. References to SFM and Storage Fabric Manager removed Note added for R9S31A
03-Sep-2024	Version 27	Changed	Service and Support section was updated
15-Apr-2024	Version 26	Changed	Rebranding Series Name applied
13-Nov-2023	Version 25	Changed	Standard Features, Service and Support and Configuration Information sections were updated. HPE Services Rebranding Added HPE Greenlake for Storage Fabric Management
24-Jul-2023	Version 24	Changed	Configuration Information section was updated. Removed Network Orchestrator
05-Jun-2023	Version 23	Changed	Overview, Configuration Information and Technical Specifications sections were updated. SANnav renewal offering added
01-Aug-2022	Version 22	Changed	Updated PoD Kit and Optic list
13-Dec-2021	Version 21	Changed	Configuration Information section was updated.
01-Nov-2021	Version 20	Changed	Clarified SFP28 32Gb optics references & added back Q0U58/60B
04-Oct-2021	Version 19	Changed	Service and Support section was updated Obso SKU was removed
02-Aug-2021	Version 18	Changed	Service and Support and Configuration Information sections were updated.
07-June-2021	Version 17	Changed	Added 16Gb and 32Gb 8-Pack Secure Transceivers
07-Dec-2020	Version 16	Changed	Overview, Standard Features and Service and Support sections were updated.(FOS 9.0, Secure Optics, PoD Kits and New 16Gb offering)
06-Jul-2020	Version 15	Changed	QuickSpecs layout was updated and Branding Refresh was applied.
06-Apr-2020	Version 14	Changed	Standard Features, Configuration Information and Technical Specifications sections were updated
03-Feb-2020	Version 13	Changed	Overview, Standard Features and Service and Support sections were updated.
03-Sep-2019	Version 12	Changed	SANnav added
02-Apr-2019	Version 11	Changed	Feature and Benefits, Product Highlights, Configuration Information, Technical Specifications sections were updated.
01-Oct-2018	Version 10	Changed	Models section SKU rollover A to B and Service and Support section was updated
14-May-2018	Version 9	Changed	Added airflow in Tech Specifications and updated links.
23-Oct-2017	Version 8	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
02-Oct-2017	Version 7	Changed	Changes made to the Tech Specs Section.
25-Sep-2017	Version 6	Changed	Changes made to the entire document.
27-Mar-2017	Version 5	Changed	Added optics and cables.
27-Jan-2017	Version 4	Changed	Added a MPO/MPO OM4 100m (12ft) Cable, and changed the Warranty Section.
16-Dec-2016	Version 3	Changed	Image was changed.
28-Nov-2016	Version 2	Changed	Version number updated to match PB.
28-Nov-2016	Version 1	New	New QuickSpecs

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