

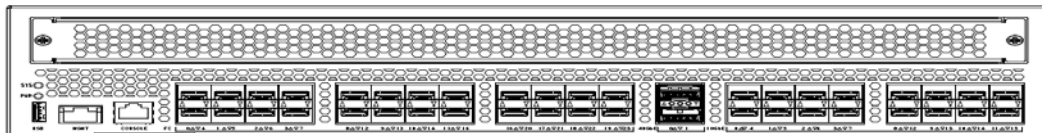
### Overview

### HPE SN4000B SAN Extension Switch

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

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

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



### What's New

### Key Features

#### Maximize the Value of SANs

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

## Overview

statistics graphing in Webtools).

### Superior Performance

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

### Outstanding Scalability and operational flexibility

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

---

## Product Highlights

- SN4000B SAN Extension Switch**
- 24 Fibre Channel ports with link speeds of 4, 8, and 16 Gbps, compatible with short wavelength (SWL), long wavelength (LWL) and extended long wavelength (ELWL) SFP+ transceivers
  - Sixteen 1 GbE/10 GbE ports, compatible with copper, ultra short reach (USR), short reach (SR) and long reach (LR) SFP/SFP+ transceivers
  - Two 40 GbE ports, compatible with short reach (SR) and long reach (LR) QSFP transceivers
  - Rack-mountable 2U chassis
  - One RJ-45 Ethernet management port with 10/100/1000 Mbps auto negotiating capability
  - One USB port that provides storage for firmware updates, switch support data, and storage for configuration uploads and downloads
- 

**Configuration Support** The HPE SN4000B SAN Extension Switch is fully compatible with the B-series FC switches and directors. For complete interoperability information please check:

- <http://www.hp.com/go/SANdesign>
  - <http://www.hp.com/go/SANdesignguide>
- 

**Simplified Management** Brocade Fabric Vision technology provides a breakthrough hardware and software solution that helps simplify monitoring, maximize network availability, and dramatically reduce costs. Featuring innovative monitoring, management, and diagnostic capabilities, Fabric Vision technology enables administrators to avoid problems before they impact operations, helping their organizations meet SLAs. The HPE SN4000B Extension Switch supports the following Fabric Vision technology features for storage extension management:

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

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

---

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

---

## Product Highlights

**Scalability** Refer to the guidelines described in the Heterogeneous Open SAN Design Reference Guide available at: <http://www.hp.com/go/SANdesignguide>

---

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

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

---

## Software Components, Standard

**Fabric Vision** Fabric Vision offers innovative diagnostic, monitoring and management capabilities to help accelerate new application deployments, address SAN problems before they impact operations and reduce operational costs. It includes

- Monitoring and Alerting Policy Suite: A policy-based monitoring tool with pre-built rules and automation that simplifies fabric-wide threshold configuration and monitoring.
- Flow Vision: A comprehensive tool that enables administrators to identify, monitor, and analyze specific application data flows without using taps to ensure optimized performance
- Health and performance dashboard: A single customizable screen displayed in HPE SAN Network Advisor that contains all critical SAN information for convenient review and analysis

Fabric Vision will be included by default in all HPE StoreFabric B-series Fibre Channel switches and Directors bundled with Power Pack+ (with FOS 7.2.0a and later). In all other cases, Fabric Vision can be enabled on HPE StoreFabric B-series Fibre Channel switches and Directors in any one of the following ways

- Application of the Fabric Vision LTU (FOS 7.2.0a and later)
  - Application of the Power Pack+ LTU (FOS 7.2.0a and later)
  - Upgrading existing Switch/Director loaded with Power Pack+ to FOS 7.2.0a or later
  - Upgrading existing Switch/Director loaded with both Advanced Performance Monitor (APM) and Fabric Watch (FW) licenses to FOS 7.2.0a or later
- 

**Fabric Watch** Fabric Watch is an optional license which comes bundled with the SN4000B and enables each switch to monitor the SAN for potential faults and automatically alert network managers to problems before they become failures. Fabric Watch tracks a variety of SAN fabric elements, events, and counters. Monitoring fabric-wide events, ports, SFPs, and environmental parameters permits early fault detection and isolation as well as performance measurement. Each switch in the SAN needs its own Fabric Watch license.

**NOTE:** Fabric Watch has been obsoleted in FOS 7.4.0 and later. Users can migrate their Fabric Watch settings to the Fabric Vision licensed Monitoring and Performance Suite (MAPS) prior to upgrading.

---

**Advanced Performance Monitoring** This optional enabling technology comes bundled with the SN4000B and helps administrators monitor and watch specific fabric metrics -- from a SID (Source ID) to a DID (Destination ID) -- so they can fine-tune and scale the fabric more efficiently. Plus, Advanced Performance Monitoring includes the ability for early warning detection of hot spots within the fabric, a powerful tool for maintaining overall balanced performance.

Top Talkers is a component of Advanced Performance Monitoring and tracks the top traffic flows for hosts and targets for a switch port or a switch. Top Talkers can help identify the ports that need certain Quality of Service (QoS) attributes or it can help determine portions of the physical topology that need

## Product Highlights

reconfiguration.

**NOTE: Advanced Performance Monitoring has been obsoleted in FOS 7.4.0 and later. Users can utilize the Fabric Vision licensed Flow Vision features for performance monitoring.**

<b>Extended Fabric</b>	Optional license which comes bundled with the SN4000B and extends all of the scalability, reliability, and performance benefits of Fibre Channel Storage Area Networks (SANs) beyond the native 10 km distance specified by the Fibre Channel standard.
<b>ISL Trunking</b>	For high performance enhanced Trunking this optional license, which comes bundled with the SN4000B, logically aggregates E-ports to provide a high bandwidth trunk between two switches. Each 16Gb switch needs its own license. The switch operating system views the trunk as a single, high bandwidth resource (up to 128Gb) when routing connections between 16G switches.
<b>SAN Network Advisor Professional</b>	<p>HPE SAN Network Advisor Professional is a management application available at no-charge and comes with B-series SAN Switches and:</p> <ul style="list-style-type: none"> <li>• Allows management of 2 Fabric OS (FOS) fabrics (up to a 300 switch ports and 1000 devices)</li> <li>• Performs group switch management beyond the scope of Web Tools</li> <li>• Does not offer management of the SN8000B 8-Slot or DC SAN Backbone Directors</li> </ul> <p>It is targeted for SMB customers that use FOS based SAN fabrics and require a management solution for smaller SAN based fabrics.</p> <p>SMB customers that initially start off with SAN Network Advisor Professional and have a small SAN environment may over time feel the need for an enterprise-class product (SAN Network Advisor Professional+ or SAN Network Advisor Enterprise) as their environments start to grow in size and complexity, and as they start to uptake more enterprise-class functionality (such as Fibre Channel Routing, FCIP, etc.). A non-disruptive upgrade path is available from SAN Network Advisor Professional to SAN Network Advisor Professional+ or SAN Network Advisor Enterprise.</p>
<b>SAN Network Advisor Enterprise and Professional+</b>	<p>HPE SAN Network Advisor Enterprise and Professional+ are the enterprise-class products that support FOS products. SAN Network Advisor Enterprise provides complete SN8000B 8-Slot Director management including enterprise-class features/environments such as FICON, Fibre Channel Routing, FCIP, adaptive networking, etc while HPE SAN Network Advisor Professional+ provides the same feature set except for support for the SN8000B 8-Slot Director, DC SAN Backbone Director, and FICON.</p> <p>HPE SAN Network Advisor Enterprise delivers unprecedented scalability, up to 100 fabrics and 15,000 switch ports, while HPE SAN Network Advisor Professional+ scales to 36 SAN Fabrics and 2560 switch ports. To accommodate growth, there is an upgrade available to SAN Network Advisor Enterprise from SAN Network Advisor Professional Plus.</p>
<b>WebTools</b>	Web Tools is an intuitive and easy-to-use graphical interface that enables organizations to monitor and manage SAN fabrics. Tasks can be performed through a Java-capable Web browser from a standard laptop, desktop PC or workstation from any location within the enterprise.

## Software Components, Optional

**Integrated Routing** Integrated Routing is an optional license which provides native Fibre Channel Routing (FCR) on a per port basis, rather than limiting routing ports to those on a dedicated routing blade or switch. Just like traditional FCR, Integrated Routing uses EX\_Ports to import/export devices between fabrics, enabling

## Product Highlights

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 StoreFabric SN4000B 10Gb WAN Rate Upgrade and HPE StoreFabric SN4000B 40Gb WAN Rate Upgrade Licenses

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

---

### FICON

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

---

### HPE Smart SAN for 3PAR

HPE Smart SAN, optional software for HP 3PAR, makes end-to-end SAN configuration and management simple and reduces the probability of errors through automation. It is an application embedded in SAN components (array, hosts and switches) that enables 3PAR arrays to orchestrate configuration, settings and policies across the SAN. Smart SAN is only supported with B-series Switches, HPE StoreFabric 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: <http://www8.hp.com/us/en/products/storage-software/product-detail.html?oid=8295863#!tab=features>

**NOTE:** Supports B-series Brocade 16/8Gb FC switches with FOS 7.4.0a or later.

**NOTE:** A list of supported HPE FC Adapters can be found at <https://h20272.www2.hp.com/spock/>

**NOTE:** Supports 3PAR StoreServ storage with 3.2.2 or later with only 16Gb target ports on HPE 3PAR StoreServ storage.

## HPE Support Services and Warranty Information

### Warranty

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

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

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

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

### For bundled Software Support

Your HPE storage product includes comprehensive support and software updates to enhance the performance and availability of your software. Experienced Response Center engineers provide trustworthy advice on issues such as software features and use, problem diagnosis and resolution, and software defect identification.

Software support benefits include:

- Improved productivity of system managers and operators
- Improved system performance and reduced downtime due to software defects
- Expedited problem resolution through expert-level technical resources
- Software and documentation updates
- Electronic access to essential product and support information

### Protect your business beyond warranty with HPE Support Services

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new storage solution, giving you full entitlement for the support for need for your IT and business.

### Connect your devices

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%<sup>1</sup> reduction in down time, near 100%<sup>2</sup> diagnostic accuracy and 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 Hewlett Packard Enterprise support.

**1- IDC**

**2 - HP CSC reports 2014 - 2015**

### 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 preventing 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

## HPE Support Services and Warranty Information

manufacturer who makes this level of coverage available as a standard service offering for your most valuable storage systems.

<http://h20195.www2.hp.com/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. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

**NOTE: \*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.

<http://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

### Related Services

#### **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.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

#### **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/5981-8527EN.pdf>

### For more information

[www.hp.com/services/storage](http://www.hp.com/services/storage)

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized

Channel Partner

HPE Care Pack Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

□□□ Services for customers purchasing from Hewlett Packard Enterprise or an enterprise reseller are quoted using Hewlett Packard Enterprise order configuration tools.

□□□ Customers purchasing from a commercial reseller can find HPE Support Services at

[www.hp.com/go/lookuptool](http://www.hp.com/go/lookuptool)



## Family Information

Features	8/8 SAN Switch Base and 8/8 SAN Switch	8/24 SAN Switch Base	SN6000B 16Gb FC Switch and SN6000B 16Gb FC Power Pack+
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
Fibre Channel Port Bandwidth	8Gbit/sec	8Gbit/sec	16Gbit/sec
Aggregate device bandwidth	64 -192 Gbit/sec	128 - 192 Gbit/sec	384-768 Gbit/sec
OS Support	<b>NOTE: Please Refer to SAN Design Guide</b> <a href="http://www.hp.com/go/sandesign">http://www.hp.com/go/sandesign</a> or <a href="http://www.hp.com/go/sandesignguide">http://www.hp.com/go/sandesignguide</a>		
Storage system support	<b>3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA</b>		
FC Ports	8 Enabled 24 Max	16 Enabled 24 Max	24 or 48 Enabled 48 Max
SFP	B-series	B-series	B-series
Advanced Trunking	Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
Adaptive Networking	Included	Included	Included
Form factor	1U	1U	1U
Zoning Software	Yes (Included)	Yes (Included)	Yes (Included)
Hot plug, redundant power supplies	No	No	Yes
Hot plug fans	No	No	Yes (integrated with power supply)

Features	1606 SAN Extension Switch	SN4000B SAN Extension Switch
Targeted Environment	Data Centers	Data Centers
Fibre Channel Port Bandwidth	8Gbit/sec	16Gbit/sec
Ethernet	1Gbit/sec Ethernet	1/10/40Gbit/sec Ethernet
OS Support	<b>NOTE: Please Refer to SAN Design Guide</b> <a href="http://www.hp.com/go/sandesign">http://www.hp.com/go/sandesign</a> or <a href="http://www.hp.com/go/sandesignguide">http://www.hp.com/go/sandesignguide</a>	
Storage system support	<b>3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA</b>	
FC Ports	4 or 16 Enabled 16 Max	24 FC Ports Enabled 24 Max
Ethernet Ports	2 or 6 Enabled 6 Max	16 Enabled
SFP	B-series	B-Series
Advanced Trunking	Included with Power Pack+ or Optional Upgrade	Included
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

Features	SN8000B 8-Slot SAN Director	SN8000B 4-Slot SAN Director and 4-Slot SAN Director
----------	-----------------------------	---

## Family Information

	<b>Power Pack+</b>		<b>Power Pack+</b>	
<b>Targeted Environment</b>	Cloud Optimized Data Centers		Cloud Optimized Data Centers	
<b>Port Bandwidth</b>	Up to 16Gbit/sec		Up to 16Gbit/sec	
<b>Aggregate device bandwidth</b>	10.2 Tbit/sec		5.1 Tbit/sec	
<b>OS Support</b>	<b>NOTE: Please Refer to SAN Design Guide</b> <a href="http://www.hp.com/go/sandesign">http://www.hp.com/go/sandesign</a> or <a href="http://www.hp.com/go/sandesignguide">http://www.hp.com/go/sandesignguide</a>			
<b>Storage system support</b>	<b>3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA</b>			
<b>Ports</b>	Up to 512 SFP		Up to 256 SFP	
<b>SFP</b>	B-series		B-series	
<b>Advanced Trunking</b>	Included with Power Pack		Included with Power Pack or Optional Upgrade	
<b>Adaptive Networking</b>	Included		Included	
<b>Form factor</b>	14U		9U	
<b>Zoning Software</b>	Yes (included)		Yes (included)	
<b>Hot plug, redundant power supplies</b>	Yes		Yes	
<b>Hot plug fans</b>	Yes		Yes	
<b>Features</b>	<b>Brocade 16Gb SAN Switch for HPE c-Class BladeSystem</b>	<b>Brocade 8Gb SAN Switch for HPE c-Class BladeSystem</b>	<b>Brocade 16Gb Fibre Channel SAN Switch Module for HPE Synergy</b>	
<b>Targeted Environment</b>	Enterprise, Datacenters, Workgroups, Departments	Workgroups, Departments	Enterprise, Datacenters, Workgroups, Departments	
<b>Port Bandwidth</b>	16 Gbit/sec	8 Gbit/sec	16 Gbit/sec	
<b>Aggregate device bandwidth</b>	448 Gbit/sec	192 Gbit/sec	576 Gb/s (36 ports x 16 Gb/s)	
<b>OS Support</b>	<b>NOTE: Please Refer to SAN Design Guide</b> <a href="http://www.hp.com/go/sandesign">http://www.hp.com/go/sandesign</a> or <a href="http://www.hp.com/go/sandesignguide">http://www.hp.com/go/sandesignguide</a>			
<b>Storage system Support</b>	<b>3PAR StoreServ, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA</b>			
<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)	
<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	

## Configuration Information

### Step 1 – Base Configuration + Power Pack

Select one:

Model	Model Description	Part Number
<b>HPE SN4000B Power Pack+ SAN Extension Switch</b>	HPE StoreFabric SN4000B Power Pack+ SAN Extension Switch 42 ports (24 16Gb Fibre Channel , 16 1/10 GbE and 2 40 Gigabit Ethernet) Extension switch for Fibre Channel over Internet Protocol (FCIP) traffic forwarding over IP wide area networks (WAN). Includes Power Pack. <b>NOTE: Fibre Channel ports require optical transceivers listed below. Ethernet ports require optical or copper transceivers listed below.</b>	E7Y73B

**NOTE: 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

	Model Description	Part Number
<b>16 Gb Transceivers</b>	HPE B-series 16Gb SFP+ Short Wave Transceiver	QK724A
	HP B-series 16Gb SFP+ Long Wave 10km Transceiver	QK725A
	HP B-series 16Gb LW 25km FC SFP 1-pack Transceiver	H6Z29A
<b>8 Gb Transceivers</b>	<b>Model Description</b>	<b>Part Number</b>
	HPE 8Gb Shortwave B-series FC SFP+ 1 Pack	AJ716B
	HP 8Gb Long Wave B-series 10km Fibre Channel 1 Pack SFP+ Transceiver	AJ717A
<b>4 Gb Transceivers</b>	HP B-series 8Gb Extended Long Wave 25km Fibre Channel SFP+ Transceiver 1 Pack	AW538A
	HP 4Gb Short Wave B-series Fibre Channel 1 Pack SFP Transceiver	AJ715A
<b>1 GbE Transceivers</b>	HP 4Gb Long Wave B-series 30km Fibre Channel SFP Transceiver 1 Pack	AN211A
	HP StoreFabric B-series 1GbE LX SFP Transceiver	E7Y74A
<b>10 GbE Transceivers</b>	HP B-series 1Gb Ethernet Copper SFP Transceiver 1 Pack	AW537A
	HP B-series 10GbE Short Wave SFP+ Transceiver	AP823A
<b>40 GbE Transceivers</b>	HP B-series 10GbE Long Wave SFP+ Transceiver	AP824A
	HP StoreFabric B-series 40GbE Long Range QSFP+ Transceiver	E7Y75A
<b>Optical Cables</b>	HP StoreFabric B-series 40GbE Short Range QSFP+ Transceiver	E7Y76A
	<b>HPE PremierFlex OM4+ Fiber Optic Cables</b>	
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A	
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A	

## Configuration Information

### MPO/MPO Multi-mode Cables

HP Premier Flex MPO/MPO Multi-mode OM4 8 fiber 10m Cable	QK729A
HP Premier Flex MPO/MPO Multi-mode OM4 8 fiber 50m Cable	QK731A
HP Premier Flex MPO/MPO OM4 100m (12ft) Cable	H6Z30A

### OM3 LC-LC type cables

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

## Step 3 - Optional Software\*

**NOTE:** \* For Fabric OS (FOS) minimum requirements, please refer to: <http://spock.corp.hp.com/>

### Optional Software

HPE SAN Network Advisor Enterprise Software E-LTU	TC352BAE (Physical License – TC352B)
HPE SAN Network Advisor Professional Plus Software E-LTU	TC353BAE (Physical License – TC353B)
HPE SAN Network Advisor Professional Plus Upgrade E-LTU	TC354BAE (Physical License – TC354B)
HPE StoreFabric SN4000B FICON Accelerator E-LTU	D4U29AAE (Physical License - D4U29A)
HPE B-series Integrated Routing E-LTU	T5528AAE (Physical License - T5528A)
HPE SAN Switches FICON CUP E-LTU	TA748AAE (Physical License – TA748A)

**NOTE:** The FICON CUP and the FICON CUP accelerator support is contingent upon IBM certification. Please refer to The HPE B-Series FICON connectivity stream at HPE "Single Point of Connectivity Knowledge" (SPOCK) for the latest information.

HPE StoreFabric SN4000B 10Gb WAN Rate Upgrade E-LTU	D4U27AAE (Physical License – D4U27A)
---	--

---

**Configuration Information**

HPE StoreFabric SN4000B 40Gb WAN Rate Upgrade E-LTU

D4U28AAE  
(Physical License  
– D4U28A)

**NOTE:** 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.

**NOTE:** HPE SAN Network Advisor software will no longer be shipped as a DVD to customers. Instead, customers will be able to access and download the software from The HPE Product Download web site.

---

## Technical Specifications

<b>System Architecture</b>	<b>Ports</b>	42 ports: 24 Fibre Channel (E, F, M, FL, EX) , sixteen 1/10 and two 40 Gigabit Ethernet (VE) ports
	<b>B-series switch interoperability</b>	<ul style="list-style-type: none"> <li>• 8/8 SAN Switch</li> <li>• 8/24 SAN Switch</li> <li>• 1606 SAN Extension Switch</li> <li>• SN4000B SAN Extension 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>• SN8000B Director Switches</li> <li>• SN6000B Fibre Channel Switch</li> <li>• SN6500B Fibre Channel Switch</li> <li>• SN3000B Fibre Channel Switch</li> </ul>
	<b>Performance</b>	auto-sensing of 4, 8, and 16 Gbps port speeds. FCIP Performance: 1/10/40Gbps line speed
	<b>ISL Trunking</b>	Up to eight 16 Gbps ports per Brocade Trunk; up to 128 Gbps per trunk.
	<b>Fibre Channel aggregate bandwidth</b>	384 Gbps Full Duplex
	<b>FCIP aggregate bandwidth</b>	40 Gbps: 2 ports at 20 Gbps (data rate)
	<b>Fabric latency</b>	700 ns with no contention, cut-through routing at 16 Gbps
	<b>Maximum frame size</b>	2112-byte payload
	<b>Maximum MTU size</b>	Ethernet Jumbo Frames at 9,000-bytes
	<b>Classes of service</b>	Class 2, Class 3, Class F (inter-switch frames)
	<b>Port types</b>	F_Port, E_Port, EX_Port, (FCR E_Port), D_Port (Diagnostic), M_Port (Mirror), and self-discovery based on switch type (U_Port). VE_Port (FCIP and virtual E_Port)
	<b>Data traffic types</b>	Fabric switches supporting unicast, multicast (255 groups), and broadcast
	<b>USB</b>	One USB port for system log file downloads or firmware upgrades
	<b>Media types</b>	<p>Fibre Channel: Brocade hot-pluggable Small Form Factor (SFP) and SFP+, short wavelength (SWL), long wavelength (LWL), and extended long wavelength (ELWL) transceivers (available wavelength options vary for 8 Gbps and 16 Gbps SFPs)</p> <p>Ethernet: Brocade hot-pluggable Small Form Factor (SFP) and SFP+, short reach wavelength (SRWL), long reach wavelength (LRWL), extended long wavelength (ELWL), and copper SFP/SFP+ transceivers (available reach options vary from 1 GbE, 10 GbE, and 40 GbE)</p>
	<b>Fabric services</b>	Simple Name Server (SNS); Registered State Change Notification (RSCN), NTP, RADIUS, RCS (Reliable Commit Service), Dynamic Path Selection (DPS), Exchange-based routing, device-based routing, port-based routing, lossless), Brocade Advanced Zoning, Web Tools, Adaptive Networking with QoS, Extended Fabric, ISL Trunking, Fabric Vision technology, and

## Technical Specifications

Advanced Extension. Optional Fabric Services include: Integrated Routing, (FCR), FICON CUP, FICON Management Server (FMS), and Advanced Accelerator for FICON.

### Licensing options

HPE StoreFabric SN4000B 10Gb WAN Rate Upgrade license

- This upgrade license will increase the maximum available aggregate bandwidth for all tunnels to 10Gbps.

HPE StoreFabric SN4000B 40Gb WAN Rate Upgrade license

- This upgrade license will increase the maximum available aggregate bandwidth for all tunnels to 40Gbps. This license can only be installed when the 10Gb WAN Rate Upgrade license is already installed. If removing a WAN Rate Upgrade license, users will need to adjust the aggregate bandwidth capacity for all tunnels to lower limits before removing one or both upgrade license(s). If both the 10 Gb WAN Rate Upgrade and 40Gb WAN Rate Upgrade licenses are installed on a switch, users cannot remove the 10Gb WAN Rate Upgrade license before removing the 40Gb WAN Upgrade license.

**NOTE:** The base configuration without either upgrade license will support a maximum aggregate bandwidth for all tunnels at 5Gbps. The 10Gb WAN Rate Upgrade and 40Gb WAN Rate Upgrade licenses apply to all FCIP ports on the switch. Without these licenses the switch will only allow 5Gb of FCIP traffic and the 40GbE ports will be disabled. By Adding the 10Gb WAN Upgrade license the throughput limitation is increased to 10Gbps. If the 40Gb WAN Upgrade license is added the 40GbE ports are enabled and all FCIP throughput restrictions are removed.

HPE B-series Integrated Routing license:

Integrated Routing is an optional license which provides native Fibre Channel Routing (FCR) on a per port basis.

HPE SAN Switches FICON CUP license:

Control Unit Port (CUP) enables host control of switches in mainframe environments

HPE StoreFabric SN4000B FICON Accelerator license:

- Accelerates IBM zGM (XRC), FICON tape read/writes, and z/OS host connection to Teradata systems

## Technical Specifications

<b>Management</b>	<b>Supported management software</b>	SSH v2, HTTP/HTTPS, SNMP v1/v3, Telnet; SNMP (FE MIB, FC Management MIB); Brocade Web Tools; Brocade Network Advisor SAN Enterprise or Brocade Network Advisor Professional/Professional Plus (optional); Command Line Interface (CLI); SMI-S RADIUS, LDAP
	<b>Security</b>	AES-GCM-256 encryption on ISLs, AES-GCM-256 IPsec encryption on virtual ISLs (VE_Port), DH-CHAP (between switches and end devices), FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch
	<b>Management access</b>	10/100/1000 Ethernet (RJ-45), in-band over Fibre Channel ports; serial port (RJ-45) and one USB port
	<b>Diagnostics</b>	POST and embedded online/offline diagnostics, including FCping, Pathinfo (FCtraceroute), etc.
<b>Mechanical</b>	<b>Enclosure</b>	Back-to-front airflow; 2U, 19-inch EIA-compliant, power from back
	<b>Size</b>	Width: 44 cm (17.3 in.) Height: 8.6 cm (3.2 in.) Depth: 60.9 cm (24.01 in.)
	<b>System weight</b>	19 kg (42.0 lb) with two power supplies, without SFP/SFP+
<b>Environmental</b>	<b>Temperature</b>	Operating: 0°C to 40°C (32°F to 104°F) Non-operating: -25°C to 70°C (-13°F to 158°F)
	<b>Humidity</b>	Operating: 10% to 85% (non-condensing) Non-operating: 10% to 90% (non-condensing)
	<b>Altitude</b>	Operating: Up to 3000 m (9842 ft) Storage: Up to 12 km (39,370 ft)
	<b>Shock</b>	Operating: 20 g, 6 ms, half-sine Non-operating: 33 g, 11 ms, half-sine, 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>	Maximum 22 ports: 590 BTU/hr
	<b>Airflow</b>	Maximum 60 CFM; nominal 44 CFM
<b>Power</b>	<b>Power supply</b>	Dual hot-swappable redundant power supplies
	<b>Power inlet</b>	C14; requires C13 plug
	<b>Input voltage</b>	85 to 264 VAC nominal
	<b>Input line frequency</b>	47 to 63 Hz
	<b>Inrush current</b>	Maximum of 60 amps for period of 10 to 150 ms
	<b>Power</b>	Short-range optics: Nominal 388 watts/1,324



## Technical Specifications

BTU/hr; maximum 454 watts/1,550 BTU/hr  
Long-range optics: Nominal 426 watts/1,454  
BTU/hr; maximum 492 watts/1,679 BTU/hr

---

## Summary of Changes

Date	Version History	Action	Description of Change
07-Jun-2016	From Version 4 to 5	Changed	Updated SAN network advisor SKU/E-LTU and added Smart SAN details
08-April-2016	From Version 3 to 4	Changed	Changes made to the Services Sections
16-Feb-2016	From Version 2 to 3	Changed	Changed made to the entire document
05-Jun-2015	From Version 1 to 2	Changed	SKUs description updated, Obsolete SKUs removed (AK870A), Changed made throughout the entire document
30-Feb-2015	Version 1	Created	Document Created



**Sign up for updates**



**Hewlett Packard  
Enterprise**

© Copyright 2016 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

c04499584 - 15121 - Worldwide - V5 - 07-june-2016