

### Overview

The HP 8/40 SAN Switch is ideal for organizations requiring a flexible solution that is forward and backward compatible and will meet rapidly evolving storage requirements, either as a small "building-block" switch for a departmental fabric or as a high-performance edge switch in larger core-to-edge SAN configurations.

The 8/40 SAN Switch is designed for rapidly growing storage requirements in mission-critical environments—combining 1, 2, 4, and 8 Gbit/sec Fibre Channel technology in configurations of 24, 32, or 40 ports in an efficiently designed 1U package. A fully populated 8/40 SAN Switch with 40 ports enabled features a non-blocking architecture at 8 Gbit/sec full duplex to provide an aggregate bandwidth of 680 Gbit/sec. Inter-Switch Link (ISL) trunking can supply up to 64 Gbit/sec of balanced data throughput to reduce congestion and increase bandwidth. The 8/40 SAN Switch also enables organizations to use 4 Gbit/sec SFPs today and upgrade to 8 Gbit/sec SFPs when required.

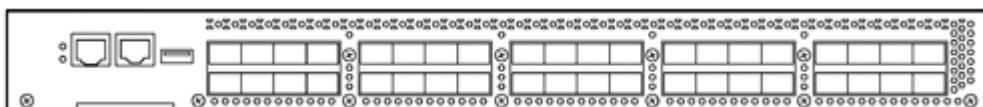
The 8/40 SAN Switch is available in two models with an 8 port upgrade license to add ports non-disruptively:

- HP 8/40 SAN Switch Power Pack+ with 24 enabled ports and value added software
- HP 8/40 SAN Switch with 24 enabled ports (Base)

The 8/40 SAN Switch provides a reliable foundation for disaster recovery and business continuance by employing enterprise-class availability features such as hot-swappable, redundant, and integrated fan and power supply assemblies. Moreover, hot code load and activation help maximize application uptime with faster system upgrades and maintenance to reduce the dependency on scheduled outages. Combined with a wide range of diagnostic and monitoring functions, these capabilities help provide a highly available SAN environment.

As an option for connecting switches in a fabric, the 8/40 SAN Switch provides Fibre Channel Integrated Routing capabilities. Integrated Routing provides native Fibre Channel Routing on a per-port basis rather than limiting routing to special-purpose routing switches or blades. Integrated Routing uses EX\_Ports to import/export devices between fabrics, enabling selective device sharing while maintaining remote fabric isolation for higher levels of scalability and fault isolation.

The 8/40 SAN Switch Power Pack+ includes the 8/40 SAN Switch (Base) with additional software: Adaptive Networking, Fabric Watch, ISL Trunking, Extended Fabric, Performance Monitor, and Server Application Optimization. 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. Enhanced Power Pack+ capabilities are based on the new Adaptive Networking software, a suite of tools for optimizing fabric behavior and ensuring ample bandwidth for mission-critical applications. Power Pack+ software enables infrastructure management through a single-pane-of-glass.



### What's New

- New RoHS compliant HP SAN switches

**NOTE:** Restriction of Hazardous Substances Directive or RoHS is a directive adopted by the European Union that restricts the use of certain hazardous materials in the manufacture of various types of electronic and electrical equipment. The RoHS compliant products with new part numbers listed in this document are functionally equivalent to the corresponding products with old part numbers and are fully interchangeable.

### Features and Benefits

#### Key Features and Benefits

- Offers best-in-class port density and scalability for midrange enterprise SAN switches
- Delivers full 8 Gbit/sec 1:1 performance for up to 40 ports in an energy-efficient, optimized 1U form factor with an aggregate bandwidth of 680 Gbit/sec
- Increases network performance with enhanced Inter-Switch Link (ISL) Trunking, which enables a high-speed data path up to 64 Gbit/sec
- Features Ports on Demand capabilities for fast, easy, and cost-effective scalability from 24 to 40 ports in 8-port increments
- Meets high-availability requirements with redundant, hot-pluggable components, non-disruptive software upgrades, and hot code activation for a wide range of SAN configurations
- Provides Adaptive Networking services, such as Quality of Service (QoS), to help optimize application performance in consolidated, virtual environments
- Leverages intelligent B-series SAN management and monitoring tools to increase operational efficiency and maximize SAN investments

### Models

#### **HP 8/40 SAN Switch Models**

HP 8/40 Power Pack+ (24) Full Fabric Ports Enabled SAN Switch  
HP 8/40 Base (24) Full Fabric Ports Enabled SAN Switch  
HP 8/40 SAN Switch 8Gb 8-port Upgrade LTU

AM870B  
AM869B  
T5519A

### Product Highlights

#### 8/40 SAN Switch

- Simplifies enterprise SAN deployment by combining higher edge switch port density with exceptional scalability, performance and reliability
- Delivers 24, 32, or 40-ports in a 1U enclosure
- Meets enterprise level availability requirements with redundant, hot pluggable components, no-single-points-of-failure within the switch
- Provides 1 Gb, 2 Gb, 4Gb, 8Gb/s\* performance
- Employs optional Inter-Switch Link (ISL) Trunking to provide a high-speed data path between switches which enables a high speed data path between 4Gb/s switches up to 64 Gbit/sec

\* Full 8Gb/s end to end storage performance requires 8 Gb/s HBAs, 8Gb/s controllers, and 8Gb/s switches. 8Gb/s ISL performance can be obtained between two 8Gb/s switches.

#### Configuration Support

<http://h18000.www1.hp.com/products/storageworks/san/documentation.html>

#### High-availability features

- Integrated redundant, hot swappable cooling fans and power supplies
- Enhanced Fault Detection Logic
- Parity protection on all data paths and system memory

#### Advanced Fabric Services

- Hardware and Software Enforced Zoning
- Frame Filtering
- Built-in Web browser management tools
- Enhanced Group Management (EGM)
- SAN Network Advisor (optional)

#### Cabinet Support

- HP (22U, 36U and 42U) 9000 and 10000 G1 Series, (25U, 33U and 41U) HP System/e, and the new 42U HP 10000 G2 Series and Intelligent Series racks.

**NOTE:** To order factory integration, add OD1 after the part number on your sales order.

### Software Components, Standard, Base Models

#### Frame Filtering

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

#### Advanced Zoning

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

#### Web Tools

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

### Product Highlights

#### EGM

Enhanced Group Management (EGM) is a FOS license that is included with all B-Series switches and enables multi-switch operations. It helps automate operations across multiple switches to save time and streamline repetitive operations, which are typically prone to error. EGM drives consistency across fabrics, while minimizing the risk associated with potential downtime due to configuration mismatches. EGM provides streamlined troubleshooting for more effective fabric monitoring and diagnosis.

SAN Network Advisor Professional, Professional Plus, and Enterprise enable EGM functionality. Customers have EGM functionality enabled within the hardware product and need only to make the decision around which management application is right for them - SAN Network Advisor Professional, Professional Plus, or Enterprise.

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### Software Components, Optional

#### 8/40 SAN Switch Power Pack+ Software Bundle

The Power Pack+ Software Bundle comes with the 8/80 SAN Switch Power Pack+ or as an optional software bundle for the 8/40 SAN Switch. It includes the following:

- Adaptive Networking
  - Fabric Watch
  - Advanced Performance Monitor
  - Extended Fabric
  - ISL Trunking
  - Server Application Optimization
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#### Adaptive Networking

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

Ingress Rate Limiting:

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

Quality of Service (QoS):

Enables zones with high, medium, and low priorities within a fabric on a zone by zone basis. This can be very useful for prioritizing array replication over MANs and WANs over less critical traffic.

Traffic Isolation Zones:

Defines paths through a fabric for some or all nodes. Failover allows a non-preferred path to be used if the preferred fails. TIZs use failover by default but it can be disabled if traffic should stop if a preferred path fails. TIZ can be used to manually map out traffic flows within a fabric based on application, priority, and topology.

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#### Fabric Watch

Fabric Watch is an optional license which 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.

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### Product Highlights

#### **Advanced Performance Monitor**

This optional enabling technology 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 reconfiguration.

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#### **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.

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#### **FICON Support**

Optional license which enable host control of switches in mainframe environments

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#### **ISL Trunking**

For high performance enhanced Trunking, this optional license logically groups up to eight E-ports to provide a high bandwidth trunk between two switches. Each 8Gb switch needs its own license. The switch operating system views the trunk as a single, high bandwidth resource (up to 64Gb) when routing connections between 8G switches. Connections are load-balanced across the individual links, which comprise the logical trunk group.

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#### **Server Application Optimization**

Server Application Optimization (SAO) license improves overall application performance for physical servers and virtual machines. SAO, when deployed with B-Series Fibre Channel HBAs, extends B-Series Adaptive Networking from the B-series SAN fabric to the server infrastructure. This delivers application-level, fine-grain Quality of Service (QoS) management to the HBAs and related server applications.

Solution Requirements:

- SAO license must be installed on the edge (server connected) switch
- Adaptive Networking (AN) license must be installed on the edge (server connected) switch
- SAO requires B-series HBA installed in the server

### Product Highlights

#### **SAN Network Advisor Professional**

HP SAN Network Advisor Professional is a management application available at no-charge and comes with B-series SAN Switches and:

- Allows management of a single Fabric OS (FOS) fabric (up to a 1,000 switch ports) at a time
- Performs group switch management beyond the scope of Web Tools
- Does not offer management of the SN8000B 8-Slot or DC SAN Backbone Directors

It is targeted for SMB customers that use FOS based SAN fabrics and require a management solution for smaller SANs based on a single fabric.

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 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 Enterprise.

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#### **SAN Network Advisor Enterprise and Professional+**

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

HP SAN Network Advisor Enterprise delivers unprecedented scalability, up to 24 fabrics and 9,000 switch ports, while HP SAN Network Advisor Professional+ scales to 4 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.

Both offerings provide brand-new features including Adaptive Networking features for quality of service, ingress rate limiting and traffic isolation zones.

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#### **Integrated Routing**

Integrated Routing is an optional license which provides native Fibre Channel Routing (FRC) on a per-port basis, rather than limiting routing ports to those on a dedicated routing 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.

### Service and Support, HP Care Pack, and Warranty Information

#### Warranty

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

**NOTE:** The hardware warranty covers firmware and embedded non-saleable software. For extended hardware installation and maintenance information, click the link below:

<http://www.hp.com/hps/carepack/services/>.

**NOTE:** 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.

#### For bundled Software Support

Your HP 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

#### For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

#### Protect your business beyond the warranty

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

#### Extending warranties with HP Care Pack Services

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available



### Service and Support, HP Care Pack, and Warranty Information

when your original warranty has expired.

#### **HP Storage Services: Offering reliability, flexibility and value—just like your storage**

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. <http://www.hp.com/services/storage>

**NOTE:** Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at [http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf\\_nonlkup\\_ctrylang.asp?code=ELNL](http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_ctrylang.asp?code=ELNL)

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### **Recommended HP Care Pack Services for optimal satisfaction with your HP product.**

**Recommended Support** 3-Year HP Support Plus 24

For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Cost-effectively obtain expert multivendor support
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Increase revenue—with access to world-class expertise without headcount implications
- Increase customer satisfaction—with no interoperability gaps

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf>

HP Enhanced Implementation Service for SANs

#### **Recommended Deployment**

For customers who are building a new SAN or expanding their existing one, we offer the HP Enhanced Implementation Service for SANs. This provides complete design and implementation services for Fibre Channel, FCOE, FCIP, SAS and iSCSI SAN connectivity components. Covering all major SAN connectivity technologies including virtual as well as physical hosts, no competitor offers a more complete end to end SAN design and implementation service, ensuring comprehensive optimal SAN connectivity tailored to your specific environment.

- Ensures optimal SAN connectivity tailored to your specific environment.

### Service and Support, HP Care Pack, and Warranty Information

- Allows your IT resources to stay focused on their core tasks and priorities
- Reduces implementation time, impact and risk to your storage environment
- Helps ensure a successful implementation for complex deployments by providing HP project management

<http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-8527EN.pdf>

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## Related HP Care Pack Services that will enhance your HP product experience.

### Related Services

#### 3-Year HP Proactive 24 for SANs

As an alternative to our recommended support level, for customers who want improved SAN availability and access to a wide range of proactive and reactive services:

HP Proactive 24 Service for SANs is an integrated hardware and software support service that combines proactive problem prevention with responsive 24x7 assistance for rapid problem resolution.

A collaborative relationship with HP Services strengthens your IT team and gives you direct access to our technical expertise as issues arise.

Improve IT staff skills, increase SAN productivity.

Proactive 24 Service for SANs can help you:

- Enhance the skills and efficiency of your IT staff through knowledge transfer, shared best practices in storage management, and hands-on assistance
- Improve SAN availability through access to a wide range of proactive and reactive services
- Boost productivity through effective change management, configuration assistance, and performance optimization
- Increase the return on your SAN investment
- Enhance your overall operational effectiveness

Expert single-point-of-contact assistance 24x7

An assigned HP Services account manager is your primary contact for proactive services and access to HP's diverse technical resources. Your account manager works closely with your IT staff to understand your goals, document the components of your infrastructure, recommend changes to improve performance and stability, and monitor ongoing operations through HP's industry-leading remote monitoring and support tools.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6887EN.pdf>

#### HP Assessment Service for SANs

For customers interested in improving availability of their SAN and decreasing potential for unplanned downtime:

The HP Assessment Service for SANs offers customized technical and operational guidance to customers employing HP storage subsystems and the interconnecting storage area network (SAN) infrastructure. In a typical engagement, HP or one of our authorized business partners will perform a detailed discovery using HP's proprietary toolset to gain an understanding of the configuration of your storage devices and SAN topology.

### Service and Support, HP Care Pack, and Warranty Information

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The findings from this process will be compared to HP best practices and industry standards as defined by IT Service Management (ITSM) disciplines. The results of the evaluation will be quickly and efficiently processed into information you can leverage. This information, in the form of a comprehensive HP SAN Assessment report, will be summarized by HP or one of our authorized business partners with recommendations that are intended to improve availability levels and ongoing management of your storage and SAN environment.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-2941ENW.pdf>

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#### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

##### Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

##### Remote Support Technology (RST)-HP Remote Support Pack

Taking a more proactive approach to IT support, the HP Remote Support pack plug-in module easily integrates with HP Systems Insight Manager to provide a powerful, unified "single pane of glass" solution for onsite and remote management.

HP Remote Support Pack enhances HP Systems Insight Manager with intelligent event diagnosis plus the automatic submission of hardware event notifications securely to HP support, including acknowledgment and status returns. It adds remote configuration collections to allow the delivery of assessment and proactive services for your SAN storage and HP-UX environments.

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#### Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. [www.hp.com/learn/storage](http://www.hp.com/learn/storage)

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### Service and Support, HP Care Pack, and Warranty Information

#### HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit

<http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm>

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#### Additional Services Information

For more information about HP Care Pack Services for Storage, please visit:

<http://www.hp.com/services/storage>

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" <http://www.hp.com>

### Family Information

Features	8/8 SAN Switch Base and 8/8 SAN Switch	8/24 SAN Switch Base	8/40 SAN Switch and 8/40 SAN Switch Power Pack+	8/80 SAN Switch and 8/80 SAN Switch Power Pack+	SN6000B 16Gb FC Switch and SN6000B 16Gb FC Power Pack+
<b>Targeted Environment</b>	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments
<b>Fibre Channel Port Bandwidth</b>	8Gbit/sec	8Gbit/sec	8Gbit/sec	8Gbit/sec	16Gbit/sec
<b>Aggregate device bandwidth</b>	128 - 384 Gbit/sec full duplex	256 - 384 Gbit/sec full duplex	384 - 640 Gbit/sec full duplex	768 - 1280 Gbit/sec full duplex	384 - 768 Gbit/sec full duplex
<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>P9000/XP, 3PAR, P6000/EVA, P2000/MSA</b>				
<b>FC Ports</b>	8 Enabled 24 Max	16 Enabled 24 Max	24 Enabled 40 Max	48 Enabled 80 Max	24 or 48 Enabled 48 Max
<b>SFP</b>	B-series	B-series	B-series	B-series	B-series
<b>Advanced Trunking</b>	Optional Upgrade	Included with Power Pack+ or Optional Upgrade	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>	Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade
<b>Form factor</b>	1U	1U	1U	2U	1U
<b>Zoning Software</b>	Yes (Included)	Yes (Included)	Yes (Included)	Yes (Included)	Yes (Included)
<b>Hot plug, redundant power supplies</b>	No	No	Yes	Yes	Yes
<b>Hot plug fans</b>	No	No	Yes	Yes	Yes (integrated with power supply)

Features	2408 FCoE CN Switch and 2408 FCoE CN Switch Power Pack+	1606 Extension SAN Switch	Encryption SAN Switch
<b>Targeted Environment</b>	Workgroups, Departments	Data Centers	Data Centers
<b>Fibre Channel Port Bandwidth</b>	8Gbit/sec	8Gbit/sec	8Gbit/sec
<b>Ethernet</b>	10Gbit/sec Converged Enhanced Ethernet	1Gbit/sec Ethernet	N/A
<b>Aggregate device bandwidth</b>			512 Gbit/sec full duplex
<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>P9000/XP, 3PAR, P6000/EVA, P2000/MSA</b>		
<b>FC Ports</b>	8 Enabled 8 Max	4 or 16 Enabled 16 Max	32 Enabled 32 Max

### Family Information

<b>Ethernet Ports</b>	24 Enabled 24 Max	2 or 6 Enabled 6 Max	N/A
<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	Optional Upgrade
<b>Adaptive Networking</b>	No	Included with Power Pack+ or Optional Upgrade	Optional Upgrade
<b>Form factor</b>	1U	1U	2U
<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	

Features	SN8000B 8-Slot SAN Director Power Pack+	SN8000B 4-Slot SAN Director and 4-Slot SAN Director Power Pack+	DC SAN Backbone Director Power Pack+	DC04 SAN Director and DC04 SAN Director Power Pack+
<b>Targeted Environment</b>	Cloud Optimized Data Centers	Cloud Optimized Data Centers	Traditional Data Centers	Traditional Data Centers
<b>Port Bandwidth</b>	Up to 16Gbit/sec	Up to 16Gbit/sec	8Gbit/sec	8Gbit/sec
<b>Aggregate device bandwidth</b>	16.4 Tbit/sec full duplex	8.2 Tbit/sec full duplex	4.1 Tbit/sec full duplex	2 Tbit/sec full duplex
<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 StoreServe, StoreVirtual 4000, P9000/XP, P6000/EVA, P2000/MSA</b>			
<b>Ports</b>	Up to 512 SFP	Up to 256 SFP	Up to 512	Up to 256
<b>SFP</b>	B-series	B-series	B-series	B-series
<b>Advanced Trunking</b>	Included with Power Pack	Included with Power Pack or Optional Upgrade	Included with Power Pack+	Included with Power Pack+ or Optional
<b>Adaptive Networking</b>	Included with Power Pack	Included with Power Pack or Optional Upgrade	Included with Power Pack+	Included with Power Pack+ or Optional
<b>Form factor</b>	14U	9U	14U	9U
<b>Zoning Software</b>	Yes (included)	Yes (included)	Yes (Included)	Yes (Included)
<b>Hot plug, redundant power supplies</b>	Yes	Yes	Yes	Yes
<b>Hot plug fans</b>	Yes	Yes	Yes	Yes

### Family Information

Features	Embedded SAN Switch for EVA4400	Brocade 8Gb SAN Switch for HP c-Class BladeSystem	B-Series Multi-protocol Router Blade	B-Series Multi-protocol Extension Blade
<b>Targeted Environment</b>	Workgroups, Departments	Workgroups, Departments	Data Centers	Data Centers
<b>Port Bandwidth</b>	8Gbit/sec	8Gbit/sec	4 Gbit/sec FC Ethernet: 1 Gbit/sec	8 Gbit/sec FC Ethernet: 1 or 10 Gbit/sec
<b>Aggregate device bandwidth</b>	320 Gbit/sec full duplex	384 Gbit/sec full duplex	N/A	N/A
<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>P9000/XP, 3PAR, P6000/EVA, P2000/MSA</b>			
<b>Ports</b>	20 external per EVA Controller Pair	4 or 8 external / 8 or 16 internal	18 ports: 16 FC and 2 Gigabit Ethernet	16 8Gb FC and 10 1GbE or 2 10GbE
<b>SFP</b>	B-series	B-series	HP	B-series
<b>Advanced Trunking</b>	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Optional Upgrade to chassis	Optional Upgrade to chassis
<b>Adaptive Networking</b>	Included with Power Pack+ or Optional Upgrade	Included with Power Pack+ or Optional Upgrade	Optional Upgrade to chassis	Optional Upgrade to chassis
<b>Form factor</b>	Embedded	Embedded	Blade in 4/256, DC SAN Back, or DC04 SAN Dir	Blade in SN8000B and DC SAN Directors
<b>Zoning Software</b>	Embedded	Yes (Included)	Yes (Included)	Yes (Included)
<b>Hot plug, redundant power supplies</b>	Yes (Included)	Yes, in BladeSystem Enclosure	Yes, in director chassis	Yes, in director chassis
<b>Hot plug fans</b>	Yes, in EVA 4400 Enclosure	Yes, in BladeSystem Enclosure	Yes, in director chassis	Yes, in director chassis

### Configuration Information

#### Step 1 - Base Configuration

Select one:

Model	Model Description	Part Number
<b>8/40 Power Pack+ (24) Full Fabric Ports Enabled SAN Switch</b>	8/40 SAN Switch with 24 active ports; rackmount kit; accessory kit (enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, serial cable, base software of Advanced Fabric OS, Advanced Web Tools, Advanced Zoning, and Power Pack+ software of Adaptive Networking, ISL Trunking, Extended Fabric, Advanced Performance Monitoring, Server Application Optimization, and Fabric Watch. <b>NOTE:</b> Requires optical transceivers listed below.	AM870B
<b>8/40 Base (24) Full Fabric Ports Enabled SAN Switch</b>	8/40 SAN Switch with 24 active ports; rackmount kit; accessory kit (enterprise safety and regulatory information, installation guide, rack-mounting instructions), power cords, serial cable, and base software of Advanced Fabric OS, Advanced Web Tools and Advanced Zoning. <b>NOTE:</b> Requires optical transceivers listed below.	AM869B
<b>8/40 SAN Switch 8Gb 8-port Upgrade LTU</b>	8 port upgrade license for 8/40 Power Pack+ SAN Switch (AM870B) and 8/40 Base SAN Switch (AM869B)	T5519A

#### Step 2 - Options

	Model Description	Part Number																
<b>8 Gb Transceivers</b>	HP 8Gb Short Wave B-Series FC SFP+ 1 Pack	AJ716A																
	HP 8Gb Short Wave B-series FC SFP+ 1 Pack	AJ716B																
<b>4 Gb Transceivers</b>	<table border="1"> <thead> <tr> <th>Distance- Maximum</th> <th>OM2 Cable</th> <th>OM3 Cable</th> <th>PremierFlex Cable</th> </tr> </thead> <tbody> <tr> <td>8Gb performance:</td> <td>50 meters</td> <td>150 meters</td> <td>150 meters</td> </tr> <tr> <td>4Gb performance:</td> <td>150 meters</td> <td>380 meters</td> <td>380 meters</td> </tr> <tr> <td>2Gb performance:</td> <td>300 meters</td> <td>500 meters</td> <td>500 meters</td> </tr> </tbody> </table>	Distance- Maximum	OM2 Cable	OM3 Cable	PremierFlex Cable	8Gb performance:	50 meters	150 meters	150 meters	4Gb performance:	150 meters	380 meters	380 meters	2Gb performance:	300 meters	500 meters	500 meters	
	Distance- Maximum	OM2 Cable	OM3 Cable	PremierFlex Cable														
	8Gb performance:	50 meters	150 meters	150 meters														
	4Gb performance:	150 meters	380 meters	380 meters														
	2Gb performance:	300 meters	500 meters	500 meters														
	HP 8Gb Long Wave B-series 10km FC SFP+ 1 Pack	AJ717A																
	HP 8Gb Long Wave B-Series 25km FC SFP+ 1 Pack	AW538A																
HP 4Gb Short Wave B-Series FC SFP 1 Pack	AJ715A																	
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2Gb performance:	300 meters	500 meters	500 meters															
1Gb performance:	500 meters	860 meters	860 meters															
HP 4Gb Long Wave B-Series FC SFP 1 Pack - 10km	AK870A																	
HP 4Gb Long Wave B-Series FC SFP 1 Pack - 30km	AN211A																	
<b>USB</b>	2Gb USB Device	AK864B																
<b>Optical Cables</b>	<b>PremierFlex OM3+ type cables</b>																	
	0.5m PremierFlex LC/LC Multi-Mode Optical Cable	BK837A																
	1m PremierFlex LC/LC Multi-Mode Optical Cable	BK838A																
	2m PremierFlex LC/LC Multi-Mode Optical Cable	BK839A																
	5m PremierFlex LC/LC Multi-Mode Optical Cable	BK840A																



### Configuration Information

15m PremierFlex LC/LC Multi-Mode Optical Cable	BK841A
30m PremierFlex LC/LC Multi-Mode Optical Cable	BK842A
50m PremierFlex LC/LC Multi-Mode Optical Cable	BK843A
<b>OM3 LC-LC type cables</b>	
.5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ833A
1 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ834A
2 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ835A
5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ836A
15 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ837A
30 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ838A
50 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ839A
<b>LC-SC for between a 1 Gb and a 2 Gb device</b>	
2 m LC-SC Multi-Mode Fibre Channel Cable	221691-B21
5 m LC-SC Multi-Mode Fibre Channel Cable	221691-B22
15 m LC-SC Multi-Mode Fibre Channel Cable	221691-B23
30 m LC-SC Multi-Mode Fibre Channel Cable	221691-B26

### Step 3 - Optional Software\*

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

<b>Software for 8/40 SAN Switch</b>	HP B-series SAN Network Advisor Enterprise Software	TC352A
	HP B-series SAN Network Advisor Professional Plus Software	TC353A
	HP B-series SAN Network Advisor Professional Plus Upgrade Software	TC353A
	Power Pack+ Upgrade	T5522A
	<b>NOTE: The Power Pack+ Software Bundle kit includes Adaptive Networking, Fabric Watch, ISL Trunking, Extended Fabric, Server Application Optimization, and Advanced Performance Monitor.</b>	
	Extended Fabric	313458-B21
	Fabric Watch	313454-B21
	Advanced Performance Monitor	313450-B21
	ISL Trunking	313452-B21
	Integrated Routing	T5528A
<b>HP 40 SAN Switch FICON CUP LTU</b>	HP Intelligent Infrastructure Analyzer Software LTU	TC400A
	HP Intelligent Infrastructure Analyzer Software E-LTU	TC400AAE
	FICON Management Server: Control Unit Port (CUP) enables host control of switches in mainframe environments	TA748A
	<b>NOTE: The HP 40 SAN Switch FICON CUP LTU also enables the host control in a mainframe environment for the HP 1606 Extension SAN Switch</b>	

### Configuration Information

**Fibre Channel Standards And Revisions** For Fabric OS 5.2.0 and later, running on associated hardware, Brocade conforms to the following Fibre Channel Standards:

- FC-AL-2 INCITS 332: 1999
- FC-GS-5 ANSI INCITS 427:2006 (Final stages of approval, includes the following.)
  - FC-GS-4 ANSI INCITS 387: 2004
- FC-IFR revision 1
- FC-SW-4 INCITS 418:2006 (includes the following)
  - FC-SW-3 INCITS 384: 2004
- FC-VI INCITS 357: 2002
- FC-TAPE INCITS TR-24: 1999
- FC-DA INCITS TR-36: 2004 (includes the following)
  - FC-FLA INCITS TR-20: 1998
  - FC-PLDA INCITS TR-19: 1998
- FC-MI-2 ANSI/INCITS TR-39-2005
- FC-PI INCITS 352: 2002
- FC-PI-2 INCITS 404: 2005
- FC-FS-2 ANSI/INCITS 424:2006 (includes the following)
  - FC-FS INCITS 373: 2003
- FC-LS revision 1.51 (under development)
- FC-BB-3 INCITS 414: 2006 (includes the following)
  - FC-BB-2 INCITS 372: 2003
- FC-SB-3 INCITS 374: 2003 (replaces FC-SB ANSI X3.271: 1996; FC-SB-2 INCITS 374: 2001)

### Technical Specifications

<b>System Architecture</b>	<b>Fibre Channel ports</b>	40 ports, universal (E, F, and FL)
	<b>Scalability</b>	Full fabric architecture: <a href="http://h18006.www1.hp.com/products/storageworks/san/documentation.html">http://h18006.www1.hp.com/products/storageworks/san/documentation.html</a>
	<b>Certified maximum</b>	Refer to SAN Design Guide for current configuration information: <a href="http://h18006.www1.hp.com/products/storageworks/san/documentation.html">http://h18006.www1.hp.com/products/storageworks/san/documentation.html</a>
	<b>Interoperability</b>	<ul style="list-style-type: none"><li>• 4/256 SAN Director</li><li>• 4/64 SAN Switch</li><li>• 4/32 SAN Switch</li><li>• 4/8 SAN Switch</li><li>• 4/16 SAN Switch</li><li>• 8/8 SAN Switch</li><li>• 8/24 SAN Switch</li><li>• 8/80 SAN Switch</li><li>• Encryption SAN Switch</li><li>• 2408 FCoE Converged Network Switch</li><li>• 1606 Extension SAN Switch</li><li>• DC04 SAN Director</li><li>• DC SAN Backbone Director</li><li>• Brocade 8Gb SAN Switch for HP BladeSystem c-Class</li><li>• Brocade 4Gb SAN Switch for HP c-Class BladeSystem</li><li>• MSA SAN Switch 2/8</li><li>• HP 400 MP-Router</li><li>• HP MP-Router</li><li>• SN8000B Director</li><li>• SN6000B Fibre Channel Switch</li></ul>
	<b>Performance</b>	1.063 Gbit/sec line speed, full duplex; 2.125 Gbit/sec line speed, full duplex; 4.25 Gbit/sec line speed, full duplex; 8.5 Gbit/sec line speed, full duplex. Auto-sensing of 1 Gbit/sec, 2 Gbit/sec, 4 Gbit/sec, and 8 Gbit/sec port speeds; optionally programmable to fixed port speed. Speed-matching between 1, 2, 4, and 8 Gbit/sec ports.
	<b>ISL Trunking</b>	Up to eight 8 Gbit/sec ports per ISL trunk; up to 64 Gbit/sec per ISL trunk. There is no limit to how many trunk groups can be configured in the switch.
	<b>Aggregate bandwidth</b>	680 Gbit/sec full duplex (40 ports x 8.5 Gbit/sec x 2)
	<b>Fabric latency</b>	700 nanoseconds with no contention, cut-through routing at 8 Gbit/sec
	<b>Maximum frame size</b>	2112-byte payload
	<b>Classes of service</b>	Class 2, Class 3, Class F (inter-switch frames)
	<b>Port types</b>	FL_Port, F_Port, E_Port, EX_Port, M_Port (Mirror Port), and self-discovery based on switch type (U_Port).
	<b>Data traffic types</b>	Fabric switches supporting unicast, multicast (255 groups), and broadcast
	<b>Media types</b>	Hot-pluggable, B-Series Branded Small Form Factor Pluggable (SFP), LC connector; Short-Wave Laser (SWL), Long-Wave Laser (LWL); Extended Long-Wave Laser (ELWL); distance depends on fiber-optic cable and port speed. Supports SFP (4/2/1 Gbit/sec) and/or SFP+ (8/4/2 Gbit/sec) optical transceivers.
	<b>USB</b>	One USB port for system log file downloads or firmware upgrades

### Technical Specifications

	<b>Fabric services</b>	Simple Name Server (SNS); Registered State Change Notification (RSCN), NTP v3, Reliable Commit Service (RCS), Dynamic Path Selection (DPS), Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning), NPIV, FDMI, Management Server, FSPF, Fabric Watch; Extended Fabrics; Enhanced group Management, ; ISL Trunking; Advanced Performance Monitoring, Adaptive Networking (per-data flow QoS, Ingress Rate Limiting, Traffic Isolation, fabric dynamics profiling, application "Top Talkers" report), Server Application Optimization, Integrated Routing, IPFC
<b>Management</b>	<b>Options</b>	SFP media, USB Device
	<b>Management software supported</b>	Telnet; RADIUS,SNMP (FE MIB, FC Management MIB); Advanced WEB TOOLS (optional); Enhanced group Management,; SAN Network Advisor
	<b>Management access</b>	10/100 Ethernet port (RJ-45); Serial port (RS-232); in-band through Management Server
<b>Mechanicals</b>	<b>Diagnostics</b>	POST and embedded online/offline diagnostics
	<b>Enclosure</b>	Back-to-front airflow; power from back; 1U
	<b>Size</b>	Width: 42.88 cm (16.88 inches) Height: 4.30 cm (1.70 inches) Depth: 61.05 cm (24.00 inches)
<b>Environment</b>	<b>System Weight</b>	20.6 lbs with two power supplies, without SFP/SFP+
	<b>Temperature</b>	Operating: 0° to 40° C (32° to 104° F) Non-operating: -25° to 70° C (-13° to 158° F)
	<b>Humidity</b>	Operating: 10 to 85 percent non-condensing
	<b>Altitude</b>	Operating: Up to 3000 meters (9842 feet) Storage: Up to 12 kilometers (39,370 feet)
	<b>Shock</b>	Operating: 20 g, 6 ms half-sine Non-operating: Half sine, 33G 11ms. 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>Airflow</b>	<b>Maximum</b> <b>Nominal</b>
<b>Power</b>	<b>Maximum output</b>	91 Watts
	<b>System power consumption</b>	91 Watts max, 84 Watts Nominal
	<b>Nominal input voltage</b>	85- 264 VAC, Universal
	<b>Input line frequency</b>	47 - 63 Hz
	<b>Minimum input voltage</b> <b>Maximum input voltage</b>	85 VAC 264 VAC

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