

QuickSpecs

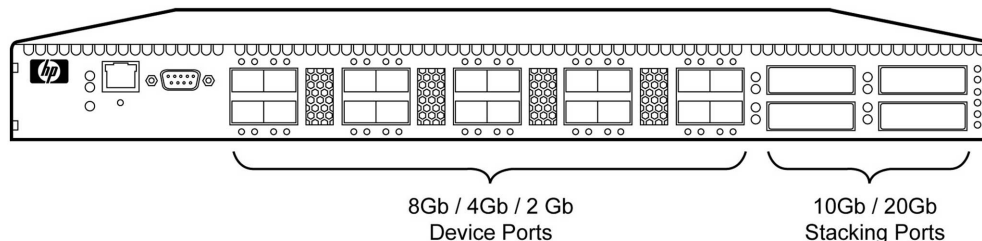
HP SN6000 Stackable Fibre Channel Switch

Overview

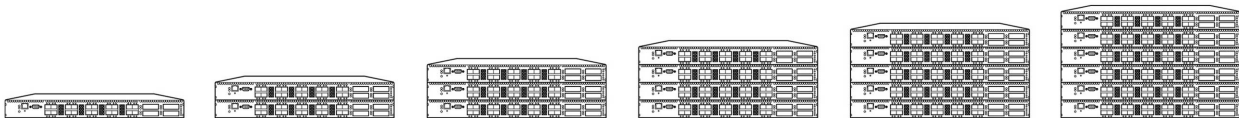
The HP SN6000 Stackable 8Gb Fibre Channel switch simplifies SAN deployment in SMB to Enterprise environments with an affordable and easy to manage SAN solution, while delivering scaling efficiency that keeps up with fibre channel port growth as the network expands. Built with low-cost, high-performance scalability in mind, each SN6000 features up to 20 FC device ports enabled supporting 8/4/2 Gbps speeds, plus 4 dedicated high-speed 10/20 Gbps stacking ports for linking/stacking SN6000 switches. Heterogeneous fabric connection is simplified too with Transparent Router (TR) functionality, standard in H-series switches (SN6000 and 8/20q), by providing seamless, non-disruptive interoperability and access to servers and storage on HP B-series and HP C-series SANs. The economical H-series SAN solution includes SAN Connection Manager (SCM) software for complete end-to-end fabric management. With SSCM software it's easy to provision storage as well as manage HBAs and switches from a single screen that offers a comprehensive topology view of the SAN. SCM software simplicity does not end with H-series switches. The software integrates with HP Virtual Connect Enterprise Manager (VCEM) environments by providing an end-to-end integrated solution to manage HP Bladesystem c-class via, HP Virtual Connect Enterprise Manager (VCEM), and P2000 MSA storage array/EVA storage with SN6000 switches via one management interface.

No other 8Gb FC switch, available in the industry, offers the scaling efficiencies as the SN6000 stackable fibre channel switch. IT Storage growth is escalating, while demand for more SAN access is increasing. Adding more usable FC ports in the data center is full of challenges, but with the SN6000 switch it's as simple as stacking SN6000 switches. Begin with 20 device ports for an affordable solution and add new stacking switches and save more money for up to 120 usable device ports per stack (single manageable unit), or >500 ports in multi-stack topologies. To achieve higher performance 10 Gbps stacking ports may be upgraded to 20 Gbps speed at any time, non-disruptively, extending the solution lifespan while preserving current investments. Best of all no matter how large a stacking SAN becomes; it's managed as one logical end-to-end fabric with plenty of availability features to prevent downtime.

HP SN6000 Stackable Fibre Channel Switch



Scaling efficiencies: SN6000 easily accommodates IT budgets with dual stacks, multiple stacks or large enterprise multi-stack deployments



Dedicated 10 Gbps/20 Gbps stacking ports give IT managers all the headroom they need to deploy new applications and technologies with confidence. Need more ports? Simply add another switch to the stack for easy non-disruptive expansion to 120 ports and up to five 120 device port stacks supporting greater than 500 device ports. Need more bandwidth? Simply apply the 20 Gbps Stacking (ISL) port upgrade for growth and performance.

Overview

New RoHS compliant HP Multifunction Router

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.

Key Features and Benefits

- Build a scalable SAN with less hardware and less complexity
 - The SN6000 single-power supply model can be ordered with 8 - 8 Gbps device ports enabled (BK780B) or 20 - 8 Gbps device ports enabled (AW575B)
 - Enable additional ports, on the BK780B , in 4-port increments with a license, for a maximum of 20 FC device ports per switch
 - The SN6000 dual-power supply model (AW576B) can be ordered with 20 - 8 Gbps device ports enabled
 - Four (4) 10 Gbps/20 Gbps Stacking (ISL)Ports
 - 120 ports per stack, more in a multi-stack SAN configuration (>500 FC ports)
 - Hot-swappable dual power supply/FAN model, non-disruptive code load - high-availability stacking configurations (AW576B)
 - Fewer cables and less switches to manage compared to non-stacking switches
- Affordable High Performance
 - Industry leading ASIC technology: < 200ns latency
 - 20 Gbps ISL stacking port upgrade option
 - Adaptive Trunking included with no added charges- Optimal and affordable ISL performance
 - 544 Gbps aggregate bandwidth per switch
 - Low-cost HP standard SFP/SFP+ optics (4 Gbps/8 Gbps)
- Gain operationally efficiencies with unique SAN management software
 - Integrated end-to-end fabric management-server to storage
 - Integration with HP Virtual Connect Enterprise Manager (VCEM) for end-to-end management of HP BladeSystem c-Class to HP EVA or MSA arrays, switches and HBA in one easy to use interface.
 - Microsoft Exchange wizard eliminates user error
 - Drag-and-drop zoning
 - Adaptive Trunking
 - Includes IO StreamGuard
 - Enterprise Fabric Management Suite software (EFMS) for managing and monitoring larger SANs (optional)
- Interoperability
 - Transparent Router functionality- Seamless operation: HP B and C-series SANs
 - SN6000 and 8/20q via device port -> ISL

What's new

New RoHS compliant HP SN6000 Stackable Fibre Channel Switch

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.

QuickSpecs

HP SN6000 Stackable Fibre Channel Switch

Models

HP SN6000 Fibre Channel Switch	HP SN6000 Stackable 8Gb 24-port Single Power Fibre Channel Switch ¹	AW575B*
	HP SN6000 Stackable 8 Gb 24-port Dual Power Fibre Channel Switch	AW576B*
	HP SN6000 Stackable 8 Gb 12-port Single Power Fibre Channel Switch ¹	BK780B*

*#0D1 may appear after this part number on your sales order when factory integration is indicated.

¹The AW575B and BK780B single power supply model is not field upgradeable to a dual power supply model.

QuickSpecs

HP SN6000 Stackable Fibre Channel Switch

Product Highlights

Configuration and interoperability support

The HP SN6000 Fibre Channel Switch will interoperate with other H-series switches, HP SN6000 and HP 8/20q Fibre Channel Switches, running the firmware version defined in the SAN Design Guide: <http://www.hp.com/go/sandesignguide>

The HP SN6000 Fibre Channel Switch will also interoperate with HP B-series and C-series fabrics using Transparent Router (TR) technology. For details and supported firmware versions, refer to the SAN Design Guide: <http://www.hp.com/go/sandesignguide>

High-availability features

- Hot-swappable power supply and fan module (Dual power supply model)
- Hot-swappable 8 Gbps SFP+ and 4 Gbps SFP optical transceivers
- Non-Disruptive Code Load and Activation (NDCLA)
- Non-Disruptive 20 Gbps ISL Upgrade License Activation
- I/O StreamGuard
- Configure switches in redundant stacking configurations

Security features

- User Security
 - User Accounts
 - RADIUS Authentication
- Connection security
 - SSH (CLI)
 - SSL (EFS and SMI-S)
- Device security
 - FC-SP DH-CHAP
 - FC-GS-6 CT Authentication

Easy manageability

- SAN Connection Manager (SCM)
- Enterprise Fabric Management Suite (Optional)
- QuickTools with stack management enabled
- Command Line Interface
- SMI-S v1.1 provider
- GS-4 Management Server (including FDMI)
- SNMP
- FTP
- TFTP
- RADIUS

QuickSpecs

HP SN6000 Stackable Fibre Channel Switch

Product Highlights

H-series solutions

The following HP products combine with HP H-series switches to provide unique, and comprehensive end-to-end solutions that are powerfully simple to manage.

- HP BladeSystem c-Class chassis
- HP Virtual Connect Fibre Channel module for the HP BladeSystem c-Class enclosure
- HP Virtual Connect Enterprise Manager (VCEM)
- HP SAN Connection Manager (SCM)
- HP Enterprise Virtual Array (P6000/EVA), or Modular Storage Array (P2000/MSA)
- HP Command View EVA Software & HP P6000 Command View Software
- HP Continuous Access EVA Software
- HP P6000 Continuous Access Software
- HP FC HBAs for the HP BladeSystem c-Class Enclosure
- HP H-series Fibre Channel switches (SN6000 and 8/20q)
- HP MPX200 Multifunction Router (H-series switches and FCIP gateway for remote replication)

Scaling efficiency

- All topologies supported: cascade, ring, and mesh
- Available models
 - 8 device ports enabled + 4 stacking (ISL) ports (single-power supply model - BK780A)
 - Expand BK780B model to 20 ports in 4 port increments with a license
 - 20 device ports enabled + 4 stacking (ISL) ports: single-power supply model (AW575B) and dual-power supply model (AW576B)
- Supports stacks of two to six switches linked via 10 Gbps or 20 Gbps high-speed stacking ports
- Supports up to a 30 switch fabric and over 500 device ports
- 7 Hops
- Adaptive Trunking, intelligent ISL path selection
- The HP SN6000 Fibre Channel Switch scales to the maximum limits defined in the SAN Design Guide: <http://www.hp.com/go/sandesignguide>

Cabinet Support

- 22U, 36U, and 42U; 5000, 9000, 10,000 series Cabinets and the Intelligent Series racks.

Disk Array Support**

- HP P2000 G3 MSA
- HP MSA2000fc and MSA2000fc G2
- HP MSA1000 and MSA1500 (active/active failover only)
- HP StoreVirtual 4000 Series with Fibre Channel connectivity HP P6000/EVA (P6300, P6500; EVA4400, EVA6400, EVA8400; EVA4100, EVA6100, EVA8100; EVA4000, EVA6000, EVA8000)
- HP P9500, XP10000, XP20000, XP12000, XP24000
- HP 3PAR 7000 Series, 10000 Series, F-Class, T-Class

SAN Connection Manager software only supports configuration, management and/or provisioning of P6000/EVA and P2000/MSA.

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HP SN6000 Stackable Fibre Channel Switch

Product Highlights

- Operating System Support**
- Microsoft Windows Server 2012 x64
 - Microsoft Windows Server 2012 x64 Hyper-V
 - Microsoft Windows Server 2008
 - Microsoft Windows Server 2003
 - Microsoft Windows Storage Server 2003
 - VMware
 - Red Hat Enterprise Linux (RHEL)
 - SUSE Linux Enterprise Server (SLES)
 - HP-UX
 - Citrix Xen Enterprise
 - Integrated Citrix XenServer HP Enterprise
 - Apple OS

For specific support details, see the SAN Design Guide: <http://www.hp.com/go/sandesignguide>

- Enterprise Backup Support (EBS)**
- MSL6000 with LTO4 drives
 - MSL2024, MSL4048, and MSL8096 with LTO4 drives
 - EML-e Series with LTO4 drives
 - HP 6000 Virtual Library System
 - HP 9000 Virtual Library System
 - HP 12000 Virtual Library System EVA Gateway

Software Components

HP SAN Connection Manager (included with H-series) Powerful and comprehensive end-to-end SAN infrastructure lifecycle management software that includes configuration, management, and maintenance for HP BladeSystem c-Class enclosure, HP switches, HBAs, and HP P2000/MSA/P6000/EVA storage in a single management interface.

Features include:

- Integration with HP Virtual Connect Enterprise Manager (VCEM)/HP BladeSystem c-Class
- Topology views (server, switch, HBA and storage)
- P6000/EVA and P2000/MSA storage configuration and provisioning
- Drill-down device management
- Switch configuration
- HBA and storage zoning administration
- Application-based MSA/EVA setup and provisioning wizard for Microsoft Exchange deployments and template for custom applications
- Microsoft volume management
- Automatic switch/HBA software/firmware update notifications and downloads for convenient upgrades
- Automatic P6000/EVA/P2000/MSA firmware notifications
- HBA failover configuration
- Event logs for switch & HBAs
- Change tracking
- Easy to follow software documentation

SAN Connection Manager is supported on a management station running Microsoft Windows Server 2008 SP2, Microsoft Windows Server 2008 R2, Microsoft Windows Server 2003 R2 SP2 or Microsoft Windows Storage Server 2003 R2 SP2.



Product Highlights

System requirements:

- 2 GB memory
- 200 MB disk space
- 2.0 GHz processor
- CD ROM drive, Ethernet port
- JAVA Runtime Environment (JRE)
- Internet browser: Microsoft Internet Explorer, Netscape Navigator, or Mozilla Firefox

SCM software upgrades are available at URL: <http://www11.itrc.hp.com/service/sum/home.do>

QuickTools (included)

On-board graphical user interface allows administrators to access advanced switch management functionality using the switch's IP address.

Optional Software

HP Enterprise Fabric

Management Suite (EFMS)

HP Enterprise Fabric Management Suite (EFMS) software is a set of simple, affordable and powerful fabric management tools for HP H-series fabrics. A management interface provides performance and fabric monitoring as well as configuration tools for H-series fabrics. Users are licensed, per site, geographic location, or campus, to manage an unlimited number of switches and fabrics from a single, fully integrated application.

Enterprise Fabric Management Suite also provides maintenance, isolation and troubleshooting capabilities for SAN administrators who require advanced tools. Included with EFMS is a comprehensive set of real-time diagnostic tools for monitoring and troubleshooting Fibre Channel Fabrics. Determine if a device is responding, trace the path in the fabric, as well as monitor the health of SFP and XPAK transceivers.

Reference URL: www.hp.com/go/EFMS

EFMS features include:

- **Performance Monitoring** provides easy-to-configure/easy-to-use graphs for monitoring the performance of your Fibre Channel SAN. Troubleshoot fabric problems and identify performance bottlenecks before they become an issue. Historical performance data can be exported to spreadsheets or databases for analysis.
- **Extended Credit Wizard** steps the user through a simple and easy to use interface, allowing the user to quickly configure ports to support situations when long distance communication is required.
- **Fabric Tracker** allows the user to view two saved configurations and compare the differences. Periodically take a snap-shot of the fabric configuration to see what has changed from yesterday, a week ago, a month ago, or from the day of installation.
- **Fabric Monitoring** enables the user to configure thresholds and alarms per switch port to alert operations when unexpected error rates, traffic levels, or anomalies occur in the fabric. Enterprise Fabric Management Suite can be configured to send alerts, through SNMP for full integration into existing enterprise monitoring applications.
- **Auto Filtering** takes the time and labor out of finding useful switch and port statistics- health, operation, and environmental statistics are a mouse click away. Filter switch data using buttons that group data into logical sets. Quickly find critical switch information such as power, cooling, health and the associated IP network status.
- **Fabric Zoning** provides simple drag and drop zoning with fast and easy activation. Unmatched

Product Highlights

flexibility with support of multiple zoning types: Port WWN Zoning, Node WWN Zoning, FCID Zoning, Hard Zoning, Soft Zoning.

- **Device Management** is a mouse click away through the topology view. Configure IP network properties, upgrade firmware, view and modify switch properties easily. Setup and configuration of devices in the fabric is made simple and fast.
- **Configuration and Zoning Wizards** makes a switch that is already easy to configure and zone even easier. Prompts guide the user through screens to quickly configure and zone a switch.
- **Switch and Fabric Event Monitoring along with Alerting** provide the user with views of monitored events and alerts that can also be configured and sent to management applications through SNMP.
- **mPort Technology** provides users with the flexibility to decide which licensed ports are enabled (SN6000 or 8/20q with less than 20 enabled device ports) . De-activate one to four of the high-speed stacking ports of the SN6000 and enable the equivalent number of device ports. The administrator decides which ports are enabled based on their fabric needs.
- **Robust On-Line Help** features provide step by step instructions through an embedded Help function.
- **Fibre Channel Fabric Ping** is an essential tool for troubleshooting fabric problems. FC Ping verifies that a functional path exists between two ports and provides round trip information. Administrators can determine which ports and devices are responding - allowing the administrator to quickly identify issues.
- **Fibre Channel Trace Route** provides insight about the fabric and assists with troubleshooting congestion. FC Trace Route traces the route through the Fibre Channel network and displays path information between a source and destination device in order to determine the path of communication between the two devices. Knowing this aids the administrator in making decisions about fabric performance and problem resolution. FC Ping used in conjunction with FC Trace Route gives the administrator a powerful tool to pinpoint fabric connectivity problems and diagnose performance issues.
- **Digital Diagnostics Monitoring** provides SFP and XPAK transceiver data and health status that SAN administrators depend on. Increase uptime of the SAN by proactively monitoring the vitals of transceivers. Set policies and trigger alarms based on power, temperature, voltage and current of the transceiver. Predict potential failures or isolate existing problems in the fabric with this simple, yet powerful, tool.

Service and Support, HP Care Pack, and Warranty Information

Warranty

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

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

NOTE: During the warranty period HP will provide standard business hours, standard business days telephone support for firmware and embedded non-saleable software.

HP Care Pack Services

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 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.

Service and Support, HP Care Pack, and Warranty Information

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://www.hp.com/go/lookuptool>

Recommended Support	HP Care Pack Services recommended for optimal satisfaction of all deployments of your product.
	HP Foundation Care 24x7 Service HP Foundation Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues - hardware onsite response within four hours and software call back within two hours after opening your case. Three years' coverage recommended with HP Care Pack Service.
Recommended Deployment	HP Enhanced Implementation Service for SANs 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.
	<ul style="list-style-type: none"> • Ensures optimal SAN connectivity tailored to your specific environment. • 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

Related Services	Services that will enhance the user experience in many product deployments.
	3-Year HP Proactive 24 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.
	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:
	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:
	<ul style="list-style-type: none"> • Enhance the skills and efficiency of your IT staff through knowledge

Service and Support, HP Care Pack, and Warranty Information

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://h20219.www2.hp.com/services/cache/11157-0-0-225-121.html>

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. 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/5981-9510EN.pdf>

HP Proactive Select Service

For customers who need to improve IT performance and manageability through the use of cost effective flexible proactive services:

Proactive Select - increased flexibility, minimal complexity -- Select what works for you - your package

Delivery planning + Proactive Service Credits

- Credits are used to redeem proactive services
- Three 'predefined' service credit levels - 30, 60, 180 credits
- Additional credits available
- Available in 1, 3, 4 & 5 year packages
- Reactive
- Utilize existing reactive services products - ranging from Next Day, through 24x7, to 6 Hour Call to Repair

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf>

Service and Support, HP Care Pack, and Warranty Information

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>

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

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>

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>

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HP SN6000 Stackable Fibre Channel Switch

H-series Family Information

HP H-series 8Gb Fibre Channel Switches	8/20q 8 port active Fibre Channel Switch AQ233B	8/20q 16 port active Fibre Channel Switch AK242B	8Gb SAN Connection Kit AK241B	SN6000 Stackable 8Gb 12-port Fibre Channel Switch BK780B	SN6000 Stackable 8Gb 24-port Single Power Fibre Channel Switch AW575B	SN6000 Stackable 8Gb 24-port Dual Power Fibre Channel Switch AW576B
Targeted Environment	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments	Workgroups, Departments, Data Centers	Workgroups, Departments, Data Centers
Physical FC Ports per switch	8 device ports enabled 20 device ports Max	16 device ports enabled 20 device ports Max	8 device ports enabled 20 device ports Max	8 device ports plus 4 ISL stacking ports enabled, maximum of 20 device ports	20 device ports plus 4 ISL stacking ports enabled, maximum of 20 device ports	20 device ports plus 4 ISL stacking ports enabled, maximum of 20 device ports
Fibre Channel Stacking switch	No	No	No	Yes, 120 FC device ports enabled per stack, up to a 30 switch fabric, 500+ device ports in multi-stack configs.	Yes, 120 FC device ports enabled per stack, up to a 30 switch fabric, 500+ device ports in multi-stack configs.	Yes, 120 FC device ports enabled per stack, up to a 30 switch fabric, 500+ device ports in multi-stack configs.
Fibre Channel Port Bandwidth	8Gbit/sec	8Gbit/sec	8Gbit/sec	8Gbit/sec	8Gbit/sec	8Gbit/sec
Hot plug, redundant power supplies/ FANs	No, single power/Fan	No, single power/Fan	No, single power/Fan	No, single power/Fan	No, single power/Fan	Yes, dual power/Fan
Ethernet	N/A	N/A	N/A	N/A	N/A	N/A
Aggregate bandwidth	340 Gbps Max.	340 Gbps Max.	340 Gbps Max.	544 Gbps Max.	544 Gbps Max.	544 Gbps Max.
OS Support	NOTE: Please Refer to SAN Design Guide http://www.hp.com/go/sandesign or http://www.hp.com/go/sandesignguide					
Storage system support	HP P2000 G3 MSA; HP MSA2000fc and MSA2000fc G2; HP MSA1000 and MSA1500 (active/active failover only); HP P6000/EVA (P6300, P6500; EVA4400, EVA6400, EVA8400; EVA4100, EVA6100, EVA8100; EVA4000, EVA6000, EVA8000); HP P9500, XP10000, XP20000, XP12000, XP24000; HP 3PAR F-Class, T-Class.					
Dedicated InterSwitch Link (ISL) ports for stacking	N/A	N/A	N/A	4 ISL 10Gbs standard upgradable to 20Gbs	4 ISL 10Gbs standard upgradable to 20Gbs	4 ISL 10Gbs standard upgradable to 20Gbs
Adaptive Trunking	Included	Included	Included	Included	Included	Included
I/O StreamGuard	Included	Included	Included	Included	Included	Included
Drag-and-drop zoning	Included with SCM	Included with SCM	Included with SCM	Included with SCM	Included with SCM	Included with SCM



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HP SN6000 Stackable Fibre Channel Switch

H-series Family Information

Transparent Router (TR)	Included	Included	Included	Included	Included	Included
SAN Connection Manager Enterprise Software	Included	Included	Included	Included	Included	Included
Enterprise Fabric Mgmt. Suite Software	Optional	Optional	Optional	Optional	Optional	Optional
Form factor	1U	1U	1U	1U	1U	1U

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HP SN6000 Stackable Fibre Channel Switch

Configuration Information

Step 1 - Base Configuration

Select one:

Model Name	Model Description	Part Number
HP SN6000 Stackable 8Gb 24-port Single Power Fibre Channel Switch	24 ports, single power supply Fibre Channel Switch with 20 - 8Gbps FC device ports enabled and 4-10 Gbps stacking (ISL) ports enabled, SAN Connection Manager software, country-specific power cord, serial cable, licenses, rack mount kit, and docs. NOTE: Requires optical transceivers listed below.	AW575B
HP SN6000 Stackable 8Gb 24-port Dual Power Fibre Channel Switch	24 ports, dual hot-swappable power supply Fibre Channel Switch with 20 -8Gbps FC device ports enabled and 4-10 Gbps stacking (ISL) ports enabled SAN Connection Manager software, country-specific power cord, serial cable, licenses, rack mount kit, and docs. NOTE: Requires optical transceivers listed below.	AW576B
HP SN6000 Stackable 8Gb 12-port Single Power Fibre Channel Switch	24 ports, single power supply Fibre Channel Switch with 8 - 8Gbps FC device ports enabled, upgradeable to 20 device ports enabled, and 4-10 Gbps stacking (ISL) ports enabled, SAN Connection Manager software, country-specific power cord, serial cable, licenses, rack mount kit, and docs. NOTE: Requires optical transceivers listed below.	BK780B

Step 2 - Additional Options

Stacking (ISL) Upgrades	HP SN6000 Stackable 20Gb ISL Upgrade LTU (paper)	TA822A
	HP SN6000 Stackable 20Gb ISL Upgrade E-LTU (electronic)	TA822AAE
Device Port Upgrades	HP SN6000 Stackable 8Gb 4-port FC Switch Upgrade LTU (paper)	TA821A
	HP SN6000 Stackable 8Gb 4-port FC Switch Upgrade E-LTU (electronic)	TA821AAE
Online monitoring and diagnosis of optical links	HP Intelligent Infrastructure Analyzer Software LTU	TC400A
	HP Intelligent Infrastructure Analyzer Software E-LTU	TC400AAE
8 Gbps Optical Transceivers (SFP+)	HP 8 Gbps Short Wave FC SFP+	AJ718A
	HP 8 Gbps LW 10km FC SFP+ 1 Pk Transceiver	AW584A

Optical cables	HP PremierFlex OM4 Fibre Optic cables	
	1m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK732A
	2m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK733A
	5m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK734A
	15m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK735A
	30m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK736A
	50m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK737A
	10m PremierFlex OM4 MPO/MPO 8 fiber Multi-Mode Optical Cable	QK729A
	50m PremierFlex OM4 MPO/MPO 8 fiber Multi-Mode Optical Cable	QK731A
	HP PremierFlex OM3 cables	
.5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ833A	



QuickSpecs

HP SN6000 Stackable Fibre Channel Switch

Configuration Information

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

Stacking Cables

XPAK Cables*

HP 3in 10/20 Gbps XPAK Copper Cable	AW581A
HP 9in 10/20 Gbps XPAK Copper Cable	AW582A
HP 2m 10/20 Gbps XPAK Copper Cable	AW583A

XPAK Optics

HP 10 Gbps SW FC optical XPAK 1 Pack Transceiver	AW573A
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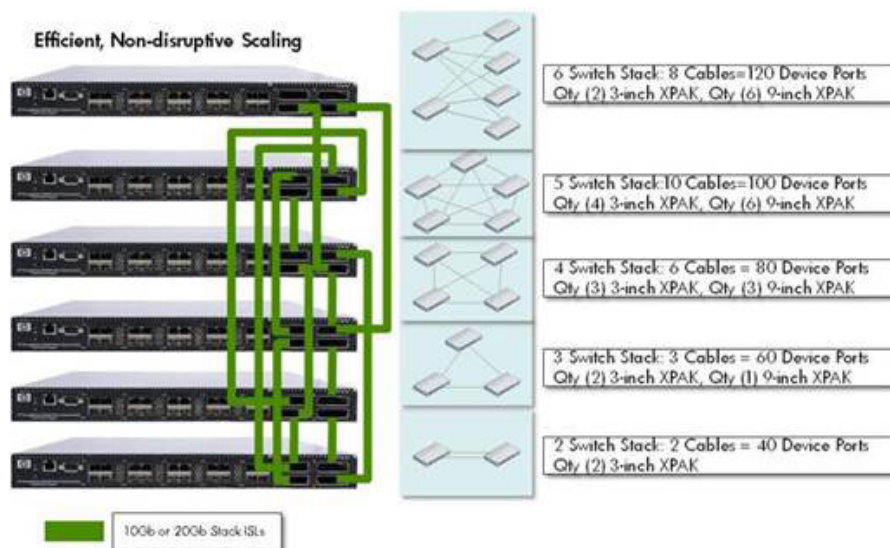
These optics are used for stacking ports when distances greater than 2m are required. OM4 or OM3 Fibre Channel cables are used with these optics.

* XPAK copper cables used with the factory shipped transceiver/connectors are required to interconnect SN6000 switches through the 10 Gbps/20 Gbps Stacking Ports (ISLs). These are available in 3 in, 9 in, or 2m (78 in) lengths.

Minimum # of cables and recommended lengths:

Qty SN6000	2	3	4	5	6
Qty(s) - Cable Length	2 - 3"	2 - 3", 1 - 9"	3 - 3", 3 - 9"	4 - 3", 6 - 9"	2 - 3", 6 - 9"

Customers requiring longer distances to connect SN6000s through the Stacking Ports need to order XPAK optical transceivers and standard OM4 or OM3 FC cables.



Example of a high availability cable configuration in a single logic FC SAN supporting up

QuickSpecs

HP SN6000 Stackable Fibre Channel Switch

Configuration Information

to 120 FC device ports

Optional Software

HP H-series Enterprise Fabric Management (EFMS) Suite LTU paper

TC321A

H-series Enterprise Fabric Management Suite (EMFS) E-LTU electronic

TC321AAE

Technical Specifications

Fibre Channel Standards And Revisions	Physical Interface (FC-PI-3, FC-PI-4, FC-PH-2, FC-PH-3) Line Services (FC-LS) Framing & Signaling (FC-FS-3) Generic Services (FC-GS-6) Switch Fabric (FC-SW-5), except for enhanced zoning Arbitrated Loop-2 Rev. 7.0 (FC-AL-2) Fibre Channel Device Attach (FC-DA) Fibre Channel Methodologies for Interconnects (FC-MI-2) Tape Technical Report (FC-Tape) Virtual Interface Architecture Mapping (FC-VI) Fabric Element MIB Specification (RFC 2837) Fibre Alliance MIB Specification (Version 4.0) Security Protocols (FC-SP)
Fibre Channel ports	Up to 20 universal FC device ports enabled 4 stacking (ISL) ports enabled (10 Gbps Fibre Channel, upgradeable to 20 Gbps)
Scalability	Full fabric architecture: http://www.hp.com/go/SANDesignGuide
Certified maximum	Refer to SAN Design Guide: http://www.hp.com/go/SANDesignGuide
Interoperability	H-series fabric HP 8/20q Fibre Channel Switch HP SN6000 Stackable 8Gb Fibre Channel Switch B-series fabric ¹ using Transparent Router feature HP C-series fabric ¹ using Transparent Router feature ¹ Refer to the SPOCK data base for supported B-series and C-series switches: http://www.hp.com/storage/spock
Performance	8 Gbps line speed, full duplex 10 Gbps and 20 Gbps stacking (ISL) port line speed, full duplex
Switch core	Non-blocking
Form Factor	1U
Fabric latency	<0.2µ sec., cut-through routing
Maximum frame size	2148 bytes (2112 byte payload)
Classes of service	Class 2, Class 3, Class F (inter-switch frames) connectionless Fibre Channel protocol support
Port types	8 Gbps: FL_Port, F_Port, and E_Port; G_Port, GL_port (auto-configuring), Transparent Router (TR) 10/20 Gbps: E_Port and F_Port; G_Port (auto-configuring)
Data traffic types	Fabric switches support unicast and broadcast
Media types	8 Gbps Small Form-Factor Pluggable Plus (SFP+) optical transceivers
Laser	Distance using short-wave 8 Gbps optical transceivers at 2 Gbps, 4 Gbps, and 8 Gbps connection speed: 8 Gbps: OM4 fiber: 190m OM3 fiber: 150 m OM2 fiber: 50 m 4 Gbps: OM4 fiber: 400m OM3 fiber: 270 m OM2 fiber: 150 m

QuickSpecs

HP SN6000 Stackable Fibre Channel Switch

Technical Specifications

2 Gbps:	OM3 fiber: 500 m
	OM2 fiber: 300 m
Distance using short-wave 4 Gbps optical transceivers at 2 Gbps and 4 Gbps connection speed:	
4 Gbps:	OM3 fiber: 270 m
	OM2 fiber: 150 m
2 Gbps:	OM3 fiber: 500 m
	OM2 fiber: 300 m

Fabric services

Simple name server
 Hardware based zoning
 Registered State Change Notification (RSCN)
 I/O StreamGuard™
 Multi-chassis in-order delivery
 Automatic path selection
 FDMI support

Options

8 Gbps SFP+ and 4 Gbps SFP optical transceivers, 20 Gbps ISL upgrade license, device port upgrade license (4-port increments), Enterprise Fabric Management Suite software

Supported software

SAN Connection Manager, QuickTools, Enterprise Fabric Management Suite software (optional)

Management access

10/100 Ethernet Base T (RJ-45), serial port (RS-232 with DB9), in-band (Fibre Channel)

Diagnostics

Power-on self test POST

Front-to-back airflow

RoHS compliant

Dimensions

Width	17 in (43.2 cm)
Height	1.7 in (4.32 cm)
Depth	18.75 in (47.6 cm)
Weight	Dual Power Supply: 18 lb (8.16 kg) Single Power Supply: 15 lb (6.8 kg)

Environment

Temperature	Operating	41° to 104° F (5° to 40° C)
	Non-operating	4° to 158° F (20° to 70° C)
Humidity	Operating	10% to 90% non-condensing
	Non-operating	10% to 95% , non condensing
Altitude	Operating	0 to 10,000 ft.
	Non-Operating	0 to 50,000 ft.
Shock	Operating	4 G, 11 ms, 20 repetitions
	Non-Operating	30 G, 13 ms, trapezoidal
Vibration	Operating	5-500 Hz, random, 0.2 G
	Non-operating	2-200 Hz, random, 0.5 G

Power consumption

Supported power range	Operational	100 to 240 VAC
Frequency		50 to 60 Hz
Heat output		Dual Power: 80 watts nominal; 90 watts typical maximum Single Power: 73 watts nominal; 83 watts typical maximum

Emissions

FCC subpart B section 15 - Class A (United States)
 ICES-003, Issue 4:2004 - Class A (Canada)
 AS/NZS CISPR22 - Class A (Australia/New Zealand)



Technical Specifications

VCCI V-3/2006.04 - Class A (Japan)
CISPR/EN 55022:1998 + A1:2000 and A2:2003 - Class A (EU)
EN 61000-3-2: 2000 + A2: 2005
EN 61000-3-3: 1995 + A1: 2001
KN22 with RRL notice No. 2005-85 - Class A (Korea)

Safety

US: UL Listed, UL 60950-1
CANADA, CSA C22.2 No. 60950-1 - cUL Listed
Europe: EN60950-1
CB Scheme-IEC 60950-1
European Union CE
German GS Mark through UL/DEMKO
DEMKO
VCCI-A
Russia: GOST R

Additional information: <http://www.hp.com/go/sn6000>

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