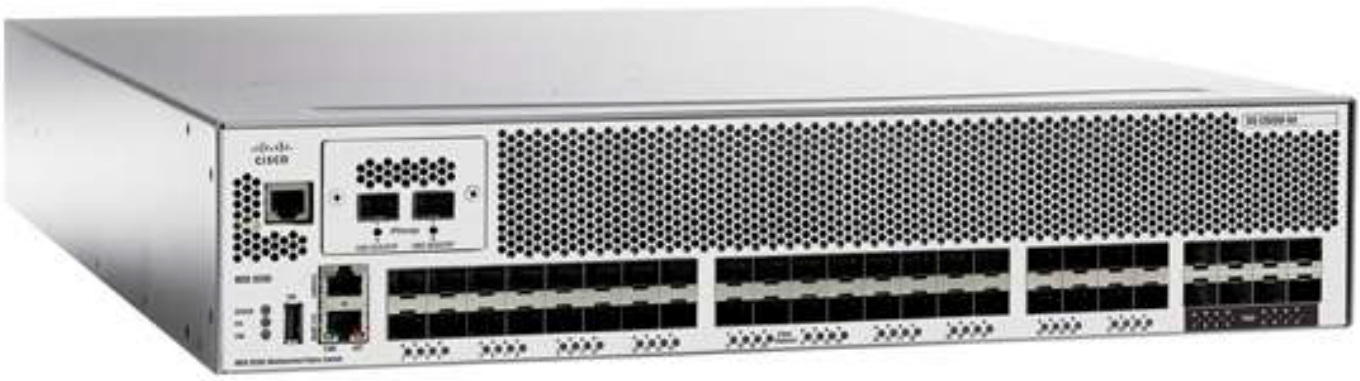
Overview

HPE C-series SN6500C Multiservice Switch

HPE SN6500C 16Gb FC/FCIP/FCoE Multi-service Switch (MDS9250i)

The HPE SN6500C 16Gb Multi-service Switch (MDS 9250i) brings the most flexible storage networking capability available in the fabric switch market today. Sharing a consistent architecture with the MDS 9700 (SN8500C) Directors, The HPE SN6500C 16Gb Multi-service Switch integrates both Fibre Channel and IP Storage Services in a single system to allow maximum flexibility in user configurations. With 20 16-Gbps Fibre Channel ports active by default, two 10 Gigabit Ethernet IP Storage Services ports, and 8 10 Gigabit Ethernet FCoE ports, the SN6500C 16Gb Multi-service switch is a comprehensive package, ideally suited for enterprise storage networks that require high performance SAN extension or cost-effective IP Storage connectivity for applications such as Business Continuity using Fibre Channel over IP or iSCSI host attachment to Fibre Channel storage devices. Also, using the eight 10 Gigabit Ethernet FCoE ports, the SN6500C 16Gb Multi-service Switch attaches to directly connected FCoE and Fibre Channel storage devices and supports multi-tiered unified network fabric connectivity directly over FCoE.



HPE SN6500C 16Gb Multi-service Switch

Standard Features

Key Features and Benefits

Please note that some features require the optional HPE SN6500C Enterprise Package license to be activated

- Integrated Fibre Channel and IP Storage Services in a single optimized form factor:
  - Supports up to forty 16-Gbps Fibre Channel interfaces for high performance storage area network (SAN) connectivity plus two 10 Gigabit Ethernet ports for Fibre Channel over IP (FCIP) and Small Computer System Interface over IP (iSCSI) storage services plus eight 10 Gigabit Ethernet FCoE ports.
  - The SN6500C 16Gb Multi-service Switch comes with 20 ports of 16Gb FC enabled by default and scales up to 40 ports of 16Gb FC with a port upgrade license shown below.
- Industry's highest-performance Inter-Switch Links (ISLs):
  - High-performance ISLs: SN6500C supports up to 16 Fibre Channel ISLs in a single PortChannel. Links can span any port on any module in a chassis for added scalability and resilience. Up to 256 buffer to-buffer credits can be assigned to a single Fibre Channel port to extend storage networks over long distances.
- Hardware Assisted Encryption Security:
  - On-board crypto processing engine supports secure IEEE standard Advanced Encryption Standard (AES) 256-bit algorithms
  - IPsec for Data in Transit over IP networks
- Intelligent network services:
  - Uses virtual SAN (VSAN) technology for hardware-enforced, isolated environments within a single physical fabric.
  - Access control lists (ACLs) for hardware-based intelligent frame processing.
  - Advanced traffic-management features such as Fibre Channel Congestion Control (FCC) and fabric-wide quality of service (QoS) to facilitate migration from SAN islands to enterprise-wide storage networks.
- Comprehensive network security framework:
- Supports RADIUS and TACACS+, Fibre Channel Security Protocol (FC-SP), Secure File Transfer Protocol (SFTP), Secure Shell (SSH) protocol, Simple Network Management Protocol Version 3 (SNMPv3) implementing Advanced Encryption Standard (AES), VSANs, hardware-enforced zoning, ACLs, and per-VSAN Role-Based Access Control (RBAC). Additionally Gigabit Ethernet ports support IPsec authentication, data integrity, and hardware-assisted data encryption and key management.

Sophisticated diagnostics

- Provides intelligent diagnostics, protocol decoding, and network-analysis tools as well as integrated Call Home capability for added reliability, faster problem resolution, and reduced service costs.
- Open platform for network-hosted storage applications:
- The HPE SN6500C 16Gb Multi-service Switch provides an open platform for hosting intelligent storage services such as network-based virtualization and replication.
- FCIP for remote SAN extension:
- Simplifies data-protection and business continuance strategies by enabling backup, remote replication and other disaster recovery services over WAN distances using open-standard FCIP tunneling.
- Optimizes utilization of WAN resources for backup and replication by tunneling up to three virtual ISLs on a single Gigabit Ethernet port, and enabling hardware-based compression, and hardware-based encryption.
- Enhanced hardware-based FCIP compression performance for both high-bandwidth and low-bandwidth links. The HPE SN6500C 16Gb Multi-service Switch achieves a compression ratio of up to 43:1, with typical ratios of 4:1 to 5:1 over a wide variety of data sources.
- Cisco SAN Extension over IP application package license is enabled by default for the 2 fixed 10 Gigabit Ethernet IP ports enabling features such as FCIP and compression on the switch without the need for additional licenses.
- iSCSI for extension of SAN to Ethernet attached servers:
- Extends the benefits of Fibre Channel SAN-based storage to Ethernet attached servers at a lower cost than possible using Fibre Channel interconnect alone.
- Through transparent operation, preserves the capability of existing storage management applications.

Standard Features

FCIP for remote SAN Extensions

Data distribution, data protection, and business continuance services are significant components of today's information-centric businesses. The ability to efficiently replicate critical data on a global scale not only ensures a higher level of data protection for valuable corporate information, but also increases utilization of backup resources and lowers total cost of storage ownership. The HPE SN6500C 16Gb Multi-service Switch uses the open-standard FCIP protocol to break the distance barrier of current Fibre Channel solutions and enable interconnection of SAN islands over extended distances.

Advanced FCIP Features to Facilitate Business Continuance and Disaster Recovery

The HPE SN6500C 16Gb Multi-service Switch is designed to support robust business continuance services using FCIP for remote connectivity in conjunction with a suite of advanced features, such as VSANs and hardware-assisted FCIP compression and encryption.

VSANs and IVR Enhance SAN Security and Stability

VSANs allow more efficient storage network utilization by creating hardware-based isolated environments within a single physical SAN fabric or switch. Each VSAN can be zoned as a typical SAN and maintains its own fabric services for added scalability and resilience. With the optional HPE SN6500C Enterprise Package license enabled, The HPE SN6500C 16Gb Multi-service Switch supports Inter-VSAN Routing (IVR), the industry's first routing functionality for Fibre Channel. IVR allows selective transfer of data traffic between specific initiators and targets on different VSANs while maintaining isolation of control traffic within each VSAN.

High Performance SAN Extension with Compression

The HPE SN6500C 16Gb Multi-service Switch supports hardware-based FCIP compression to maximize the effective WAN bandwidth of SAN extension solutions. The SN6500C 16Gb Multi-service Switch achieves up to a 43:1 compression ratio, with typical ratios of 4:1 over a wide variety of data sources.

Advanced Traffic Management for High-Performance, Resilient Fabrics

- Virtual Output Queuing ensures line rate performance on each port, independent of traffic pattern, by eliminating head-of-line blocking.
- Up to 4095 buffer-to-buffer credits can be assigned to an individual port for optimal bandwidth utilization across long distances.
- Port Channels allow users to aggregate up to 16 physical ISLs into a single logical bundle, providing optimized bandwidth utilization across all links. The bundle can consist of any port from any module in the chassis, ensuring that the bundle remains active even in the event of a module failure.
- Fabric Shortest Path First (FSPF)-based multipathing provides the intelligence to load balance across up to 16 equal cost paths and, in the event of a switch failure, dynamically reroute traffic.
- Quality of service can be used to manage bandwidth and control latency in order to prioritize critical traffic.
- Fibre Channel Congestion Control (FCC), an end-to-end, feedback-based congestion control mechanism, augments the Fibre Channel buffer-to-buffer credit mechanism to provide enhanced traffic management.

Industry's Most Advanced Diagnostics and Troubleshooting Tools

The HPE Cisco MDS 9000 Family integrates the industry's most advanced analysis and diagnostic tools. Power-on self-test (POST) and online diagnostics provide proactive health monitoring. The HPE SN6500C 16Gb Multi-service Switch implements diagnostic capabilities such as Fibre Channel Traceroute for detailing the exact path and timing of flows and Switched Port Analyzer (SPAN) to intelligently capture network traffic. Once traffic has been captured, it can then be analyzed with the Cisco Fabric Analyzer, an embedded Fibre Channel analyzer. Comprehensive port- and flow-based statistics facilitate sophisticated performance analysis and service-level agreement (SLA) accounting.

Standard Features

Comprehensive Solution for Robust Network Security

Please note that some features require The HPE SN6500C Enterprise Package software license to be activated.
The HPE SN6500C 16Gb Multi-service Switch offers an extensive security framework to protect highly sensitive data crossing today's enterprise networks. The SN6500C 16Gb Multi-service Switch employs intelligent packet inspection at the port level, including the application of ACLs for hardware enforcement of zones, VSANs, and advanced Port Security features.
Extended zoning capabilities are enabled to ensure that LUNs are accessible only by specific hosts (LUN zoning), to limit SCSI read command for a certain zone (read-only zoning), and to restrict broadcasts to only the selected zones (broadcast zones). VSANs are used to achieve higher security and greater stability by providing complete isolation among devices that are connected to the same physical SAN. In addition, Fibre Channel Security Protocol (FC-SP) provides switch-switch and host switch Diffie-Hellman Challenge Handshake Authentication Protocol (DH-CHAP) authentication supporting RADIUS or TACACS+, to ensure that only authorized devices access protected storage networks. Finally, for both FCIP and iSCSI deployment, the comprehensive IPsec protocol suite delivers secure authentication, data integrity, and hardware-based encryption.

Ease of Management

The HPE SN6500C 16Gb Multi-service Switch comes standard with three principal modes of management: the C-series MDS 9000 Family CLI, the Quick Configuration Wizard, and the Cisco Data Center Network Manager.

Command Line Interface (CLI)

The C-series MDS 9000 Family CLI is easy to learn and delivers broad management capabilities. The C-series MDS 9000 Family CLI is an extremely efficient and direct interface designed to provide optimal capabilities to administrators in enterprise environments.

Quick Configuration Wizard

The Quick Configuration Wizard helps eliminate management complexity and creates a readily available SAN environment for small- and midsized-business (SMB) applications. The wizard allows server access to storage to be set up quickly and easily in a single step using an intuitive GUI.

iSCSI for Cost Effective Extension of SAN Storage to Ethernet Attached Servers

Many IT managers have been hesitant to extend SAN access beyond their mission-critical applications to midrange data center applications because of the complexity and cost involved in upgrading large numbers of midrange servers to Fibre Channel. The HPE SN6500C 16Gb Multi-service Switch addresses these limitations by enabling IT organizations to extend their storage networks using cost-effective Ethernet infrastructure. All the benefits of SANs, including increased storage utilization, centralized backups, easier addition of incremental storage capacity, management simplification, and reduced overall total cost of ownership (TCO), can be extended to a new range of applications. Because the HPE SN6500C 16Gb Multi-service Switch is an integral component of the HPE C-series MDS 9000 Family, Ethernet attached servers will enjoy the same SAN scalability, availability, manageability, and intelligent services as those servers connected directly to a Fibre Channel SAN, while maintaining the cost and ease-of-use benefits of Ethernet and IP.

Standard Features

Product Family Models

- HPE SN8500C/SN8700C 8-slot 16/32/64Gb FC Director
  - Intelligent, multi-protocol 8-slot Director with up to 384 64/32/16/8 Gb Fibre Channel ports in a single chassis. Also, the HPE SN8500C 48-port 32Gb FC Module and the included Fabric 1 modules provide up to 384 ports of full 32Gbps line-rate performance across all ports.
- HPE SN8500C/SN8700C 4-slot 16/32/64Gb FC Director (MDS 9706)
  - Intelligent, multi-protocol 4-slot Director with up to 192 64/32/16/8/4 Gb Fibre Channel ports in a single chassis. Also, the HPE SN8500C 48-port 32Gb FC Module and the included Fabric 1 modules provide up to 192 ports of full 32Gbps line-rate performance across all ports or 192 10GbE FCoE ports in a single chassis.
- HPE SN6500C 16Gb Multi-service Switch
  - Intelligent multi-protocol Fabric Switch with twenty fixed 16/8 Gb Fibre Channel ports, two fixed 10 Gigabit Ethernet FCIP ports, and eight fixed 10 Gigabit Ethernet FCoE ports. Provides up to forty active 16/8 Gb Fibre Channel ports through a port upgrade license.
- HPE SN6010C 16Gb Fabric Switch (MDS 9148S)
  - With up to 48 Auto-Sensing 16/8/4 Gb Fibre Channel ports
  - "Pay as you grow" scalability starting at 12 ports
- HPE SN6610C 32Gb Fabric Switch (MDS 9132T)
  - With up to 32 Auto-Sensing 32/16/8 Gb Fibre Channel ports
  - "Pay as you grow" scalability starting at 8 ports
- HPE SN6620C 32Gb Fabric Switch (MDS 9148T)
  - With up to 48 Auto-Sensing 32/16/8 Gb Fibre Channel ports
  - "Pay as you grow" scalability starting at 24 ports
- HPE SN6630C 32Gb Fabric Switch (MDS 9396T)
  - With up to 96 Auto-Sensing 32/16/8 Gb Fibre Channel ports
  - "Pay as you grow" scalability starting at 48 ports

Software Components, Standard

NX-OS

The HPE SN6500C 16Gb Multi-service Switch includes the HPE MDS 9000 NX-OS Software operating system version 6.2(7) or higher, Cisco Data Center Network Manager (Essentials Edition), and a suite of configuration, maintenance and diagnostics tools. It also includes VSAN support, PortChannels, extended fabrics, hardware-enforced zoning, and non-disruptive firmware upgrade capability.

Cisco Data Center Network Manager

Cisco Data Center Network Manager (Essentials Edition) is a responsive, easy-to-use Java application that simplifies management across multiple switches and fabrics. Cisco Data Center Network Manager enables administrators to perform vital tasks such as topology discovery, fabric configuration and verification, LUN security, monitoring, and fault resolution. All functions are available through a secure interface, which enables remote management from any location. Cisco Data Center Network Manager may be used independently or in conjunction with third-party management applications. Cisco provides an extensive API for integration with third-party and user developed management tools. Additional advanced features are available with HPE's DCNM SN6500C license mentioned below.

Standard Features

Software Components, Optional

HPE Data Center Network Manager E-LTU

The "Standard" Cisco Data Center Network Manager (Essentials Edition) software that is included at no charge with the SN6500C Switch provides basic switch configuration and troubleshooting capabilities. HPE's C-series Data Center Network Manager (DCNM) License extends Cisco Data Center Network Manager by advanced features such as historical performance data collection for network traffic hot-spot analysis, centralized management services and advanced application integration. By default, a 30-day trial license (with advanced features) is enabled on the switch. Customers must purchase the HPE SN6500C DCNM E-LTU license (server-based or switch-based license) to continue to utilize the advanced DCNM features.

HPE SN6500C Enterprise Package E-LTU

The HPE C-series MDS switches have a set of advanced traffic engineering and advanced security features that are recommended for all Enterprise SANs. These features are bundled together in a management application called the HPE SN6500C Enterprise Package License to Use (E-LTU). Please refer to Cisco's MDS Enterprise Package Data Sheet for more information: **http://www.cisco.com/c/en/us/products/collateral/storage-networking/mds-9000-software-licensing/product_data_sheet09186a00801ca6ac.html**

HPE SN6500C Mainframe FICON E-LTU

The Cisco MDS 9000 Family Mainframe Package is a comprehensive collection of features required for using SN6500C 16Gb Multi-service Fabric Switches in mainframe storage networks, including FICON protocol and CUP management, switch cascading, fabric binding, and intermixing. These features are available through the HPE SN6500C Mainframe FICON License To Use (E-LTU) with NX-OS version 6.2(11c) firmware for the SN6500C.

HPE SN6500C 20-port Fibre Channel Upgrade E-LTU

This License is required to enable an additional 20 FC ports on the SN6500C 16Gb Multi-service Switch.

Service and Support

Warranty

(1-1-1)Hardware Warranty; 1-year parts; 1-year on-site (8x5, next business day response) and 1-year labor.
(1-1-2)The hardware warranty covers firmware and embedded non-saleable software.

Service and Support

Achieve maximum return from your IT investment

Get the expertise you need at every step of your IT journey with **HPE Pointnext services and support**. We help you lower your risks and costs using proven best practices, automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. With **Advisory Services**, we focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Connect your devices

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time, increase diagnostic accuracy and have a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support. Learn more about getting connected at **http://www.hpe.com/services/getconnected**

Consume IT on your terms

HPE GreenLake Flex Capacity combines the simplicity, agility, and economics of public cloud with the security and performance benefits of on-premises IT. You determine your own "Right Mix" of Hybrid IT and workload placement without having to use.

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

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

Free up resources with Operational Services from HPE Pointnext

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

HPE Datacenter Care

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

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

Service and Support

HPE Proactive Care

Gives customers an enhanced call experience. When your products are connected to HPE, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice.

HPE Proactive Care is available in 3, 4 and 5 year terms with a choice of response levels: Next Business day (NBD), 24x7 with a 4 hour response, and 24x7 with 6 hour call to repair (CTR). This Service combines both reactive support when there is a problem with an enhanced call experience and start to finish case management with proactive reporting and advice.
https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf

HPE Proactive Care Advanced

Incorporates all the deliverables of HPE Proactive Care plus includes personalized support from a local, assigned Account Support Manager who will share best practice advice and personalized recommendations designed to help improve availability and performance to help increase stability and reduce unplanned downtime. Leverage your system's ability to connect to HPE for pre-failure alerts, automatic call logging and parts dispatch. For business critical incidents, Proactive Care Advanced offers critical event management to help reduce mean time to resolution. HPE Service Credits are included to redeem for technical and operational services. HPE Proactive Care Advanced is offered in 3, 4, and 5 year terms with a choice of response levels: Next Business day (NBD), 24x7 with a 4 hour response, and 24x7 with 6 hour call to repair (CTR).
https://www.hpe.com/h20195/v2/getdocument.aspx?docname=4AA5-3259ENW

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

HPE Foundation Care – (choose the response level that meets your needs)
HPE Foundation Care helps when there is a problem and is available in 3, 4, and 5 year terms with a choice of response levels: Next Business day (NBD), 24x7 with a 4 hour response, and 24x7 with 6 hour call to repair (CTR). Note that Call-To-Repair Service connects you to HPE 24 hours a day, seven days a week for assistance on resolving issues -this includes our highest level commitment to repair hardware within six hours after opening your case and respond to software questions within two hours. In addition, Simplify your support experience and make HPE your first call to help resolve hardware or software problems.
https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en

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Other related services from HPE Pointnext

HPE SAN Deployment Service

Hewlett Packard Enterprise delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components.
http://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-8527ENW.pdf

HPE Service Credits

Offers flexible services and technical skills to meet your IT demands as your business evolves. With a menu of services, you can access additional resources and specialist skills to help you maintain peak performance of your IT. HPE Service Credits help you proactively respond to your dynamic IT and business needs

HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment. **http://www.hpe.com/ww/learn**

Service and Support

Parts and Materials

HPE will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

Defective Media Retention is an option available with HPE Datacenter Care, HPE Proactive Care, Proactive Care Advanced, and HPE Foundation Care and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with HPE experts, access support resources or collaborate with peers.

Learn more **https://support.hpe.com/hpesc/public/home**

HPE's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.
Notes:*HPE Support Center Mobile App is subject to local availability

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For more information

http://www.hpe.com/services
https://www.hpe.com/us/en/services/operational.html

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html

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

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Support Services at **https://ssc.hpe.com/portal/site/ssc/**

Configuration Information

Step 1 – Base Configuration

Select one:

Description	SKU
Model SN6500C 16Gb Multi-service Switch	
HPE SN6500C 16Gb FC/FCIP/FCoE Multi-service Switch	E7Y64A
Fibre Channel Port Expansion Modules	
HPE C-series 16 Gb Fibre Channel SW SFP+ Transceiver	C8S72A
HPE C-series 16 Gb Fibre Channel LW SFP+ Transceiver	C8S73A
HPE C-series 10GbE Short Range SFP+ Transceiver	AP783A
HPE C-series 10GbE Long Range SFP+ Transceiver	E7Y65A
HPE MDS 9000 8Gb FC SFP+ Short Range Transceiver	AJ906A
HPE MDS 9000 8Gb FC SFP+ Long Range Transceiver	AJ907A
Optional Software	
HPE SN6500C 20-port 16Gb Fibre Channel Upgrade E-LTU	D4U17AAE
HPE SN6500C Data Center Network Manager E-LTU	TC365AAE
HPE C-series SN6500C DCNM Switch E-LTU	R4F90AAE
HPE SN6500C Enterprise Package E-LTU	A7516AAE
HPE SN6500C Mainframe FICON E-LTU	T4409AAE
Cables	
HPE PremierFlex OM4+ Fiber Optic Cables	
HPE Premier Flex MPO/MPO Multi-mode OM4 12 fiber 10m Cable	QK729A
HPE Premier Flex MPO/MPO Multi-mode OM4 8 fiber 50m Cable	QK731A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A
HPE OM3 LC-LC Optical Cables	
HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A

Technical Specifications

Family Information

	HPE SN8500C/SN8700C 4-slot/8-slot 16/32Gb FC Director	HPE SN6620C 32Gb Fabric Switch	HPE SN6610C 32Gb Fabric Switch	HPE SN6010C 16Gb Fabric Switch	HPE SN6630C 32Gb Fabric Switch
Switch Type	Multilayer Director	Multilayer Fabric Switch	Multilayer Fabric Switch	Multilayer Fabric Switch	Multilayer Fabric Switch
Maximum ports	4-slot: 192 16/32/64 Gbps Fibre Channel ports, 192 FCoE ports 8-slot: 384 16/32/64 Gbps Fibre Channel ports, 384 FCoE ports	Up to 48 32 Gbps Fibre Channel ports	Up to 32 32 Gbps Fibre Channel ports	Up to 48 16 Gbps Fibre Channel ports	Up to 96 32 Gbps Fibre Channel ports
Number of slots per chassis	Four/Eight	One fixed	One fixed and one expansion slot	One fixed	One fixed

Notes: For additional switch support information, refer to the C-series FC Switch Connectivity Stream on the Single Point of Connectivity Knowledge (SPOCK) website at: **https://h20272.www2.hpe.com/spock/**. You must sign up for a Hewlett Packard Enterprise Passport to enable access. Once logged in, click switches under Other Hardware in the last navigation panel of the window to access the Fibre Channel Switch Streams. Click on the C-Series FC Switch Connectivity Stream to open the document.

Minimum software requirements

NX-OS 6.2(5a) or later

Technical Specifications

Fibre Channel protocols (Fibre Channel standards)

- FC-PH, Revision 4.3 (ANSI INCITS 230-1994)
- FC-PH, Amendment 1 (ANSI INCITS 230-1994/AM1-1996)
- FC-PH, Amendment 2 (ANSI INCITS 230-1994/AM2-1999)
- FC-PH-2, Revision 7.4 (ANSI INCITS 297-1997)
- FC-PH-3, Revision 9.4 (ANSI INCITS 303-1998)
- FC-PI, Revision 13 (ANSI INCITS 352-2002)
- FC-PI-2, Revision 10 (ANSI INCITS 404-2006)
- FC-PI-3, Revision 4 (ANSI INCITS 460-2011)
- FC-PI-4, Revision 8 (ANSI INCITS 450-2008)
- FC-PI-5, Revision 6 (ANSI INCITS 479-2011)
- FC-FS, Revision 1.9 (ANSI INCITS 373-2003)
- FC-FS-2, Revision 1.01 (ANSI INCITS 424-2007)
- FC-FS-2, Amendment 1 (ANSI INCITS 424-2007/AM1-2007)
- FC-FS-3, Revision 1.11 (ANSI INCITS 470-2011)
- FC-LS, Revision 1.62 (ANSI INCITS 433-2007)
- FC-L2-2, Revision 2.21 (ANSI INCITS 477-2011)
- FC-SW-2, Revision 5.3 (ANSI INCITS 355-2001)
- FC-SW-3, Revision 6.6 (ANSI INCITS 384-2004)
- FC-SW-4, Revision 7.5 (ANSI INCITS 418-2006)
- FC-SW-5, Revision 8.5 (ANSI INCITS 461-2010)
- FC-GS-3, Revision 7.01 (ANSI INCITS 348-2001)
- FC-GS-4, Revision 7.91 (ANSI INCITS 387-2004)
- FC-GS-5, Revision 8.51 (ANSI INCITS 427-2007)
- FC-GS-6, Revision 9.4 (ANSI INCITS 463-2010)
- FC-BB-2, Revision 6.0 (ANSI INCITS 372-2003)
- FC-BB-3, Revision 6.8 (ANSI INCITS 414-2006)
- FC-BB-4, Revision 2.7 (ANSI INCITS 419-2008)
- FC-BB-5, Revision 2.0 (ANSI INCITS 462-2010)
- FCP, Revision 12 (ANSI INCITS 269-1996)
- FCP-2, Revision 8 (ANSI INCITS 350-2003)
- FCP-3, Revision 4 (ANSI INCITS 416-2006)
- FCP-4, Revision 2b (ANSI INCITS 481-2011)
- FC-SB-2, Revision 2.1 (ANSI INCITS 349-2001)
- FC-SB-3, Revision 1.6 (ANSI INCITS 374-2003)
- FC-SB-3, Amendment 1 (ANSI INCITS 374-2003/AM1-2007)
- FC-SB-4, Revision 3.0 (ANSI INCITS 466-2011)
- FC-VI, Revision 1.84 (ANSI INCITS 357-2002)
- FC-SP, Revision 1.8 (ANSI INCITS 426-2007)
- FC-SP-2, Revision 2.71 (ANSI INCITS 496-2012)
- FAIS, Revision 1.03 (ANSI INCITS 432-2007)
- FAIS-2, Revision 2.23 (ANSI INCITS 449-2008)
- FC-IFR, Revision 1.06 (ANSI INCITS 475-2011)
- FC-FLA, Revision 2.7 (INCITS TR-20-1998)
- FC-PLDA, Revision 2.1 (INCITS TR-19-1998)
- FC-Tape, Revision 1.17 (INCITS TR-24-1999)
- FC-MI, Revision 1.92 (INCITS TR-30-2002)
- FC-MI-2, Revision 2.6 (INCITS TR-39-2005)

Technical Specifications

- FC-MI-3, Revision 1.03 (INCITS TR-48-2012)
- FC-DA, Revision 3.1 (INCITS TR-36-2004)
- FC-DA-2, Revision 1.06 (INCITS TR-49-2012)
- FC-MSQS, Revision 3.2 (INCITS TR-46-2011)
- IP over Fibre Channel (RFC 2625)
- IPv6, IPv4 and ARP over Fibre Channel (RFC 4338)
- Extensive IETF-standards based TCP/IP, SNMPv3, and Remote Monitoring (RMON) MIBs
- Class of Service:
  - Class 2
  - Class 3
  - Class F
- Fibre Channel standard port types:
  - E
  - F
  - FL
  - B
- Fibre Channel enhanced port types:
  - SD
  - ST
  - TE

Protocols

- IP standards
  - RFC 791 IPv4
  - RFC 793, 1323 TCP
  - RFC 894 IP/Ethernet
  - RFC 1041 IP/802
  - RFC 792, 950, 1256 ICMP
  - RFC 1323 TCP performance enhancements
  - RFC 2338 VRRP
  - RFC 2460, 4291 IPv6
  - RFC 2463, 4443 ICMPv6
  - RFC 2461, 2462 IPv6 neighbor discovery and stateless auto-configuration
  - RFC 2464 IPv6/Ethernet
  - RFC 3270, 3980 iSCSI
  - RFC 3643, 3821 FCIP
- Ethernet standards
  - IEEE Std 802.3-2005 Ethernet
  - IEEE Std 802.1Q-2005 VLAN
  - IPSec
  - RFC 2401, 4301 security architecture for IP
  - RFC 2403, 2404 HMAC
  - RFC 2405, 2406, 2451, 4303 IP ESP
  - RFC 2407, 2408 ISAKMP
  - RFC 2412 OAKLEY Key Determination Protocol
  - RFC 3566, 3602, 3686 AES
- Internet Key Exchange (IKE)
  - RFC 2409 IKEv1
  - RFC 4306 IKEv2

Technical Specifications

Features and functions

- Fabric services
  - Name server
  - Internet Storage Name Server (iSNS)
  - Registered State Change Notification (RSCN)
  - Login services
  - Fabric Configuration Server (FCS)
  - Public loop
  - Broadcast
  - In-order delivery
- Advanced Functionality (please note that some features require the optional HPE SN6500C Enterprise Package license to be activated)
  - VSANs
  - Inter-VSAN Routing (IVR)
  - PortChannel with Multipath Load Balancing
  - QoS - flow-based, zone-based
  - FICON XRC (z/OS Global Mirror)
- Diagnostics and troubleshooting tools
  - Power-on-self-test (POST) diagnostics
  - Cisco Generic Online Diagnostics (GOLD)
  - Internal port loopbacks
  - SPAN and Remote SPAN
  - Fibre Channel Traceroute
  - Fibre Channel Ping
  - Fibre Channel Debug
  - Cisco Fabric Analyzer
  - Syslog
  - Online system health
  - Port-level statistics
  - Real Time Protocol Debug
- Network security (please note that some features require the optional HPE SN6500C Enterprise Package license to be activated)
  - VSANs
  - Access Control Lists
  - Per-VSAN role-based access control
  - Fibre Channel Zoning
    - N_Port WWN
    - N_Port FC-ID
    - Fx_Port WWN
    - Fx_Port WWN and interface index
    - Fx_Port domain ID and interface index
    - Fx_Port domain ID and port number
  - iSCSI zoning
    - iSCSI name
    - IP address

Technical Specifications

- Fibre Channel Security Protocol (FC-SP)
  - DH-CHAP switch-switch authentication
  - DH-CHAP host-switch authentication
- Port Security and Fabric Binding
- IPSec for FCIP and iSCSI
- IKEv1 and IKEv2
- Management access
  - SSH v2 implementing AES
  - SNMPv3 implementing AES
- SFTP

- Serviceability
  - Configuration file management
  - No disruptive software upgrades for Fibre Channel interfaces
  - Cisco Call Home
  - Power-management LEDs
  - Port beaconing
  - System LED
  - SNMP traps for alerts
  - Network boot

Performance

- Port speed: 16/8-Gbps auto-sensing, optionally configurable
- Buffer credits:
  - 64 per port (shared-mode ports)
  - Up to 256 per port (dedicated-mode ports with optional HPE SN6500C Enterprise Package license activated)
- Ports per chassis:
  - 20 to 40 16/8-Gbps Fibre Channel ports and 10 ports of 10-Gbps Ethernet
- Ports per rack:
  - Up to 1050
- Port Channel:
  - Up to sixteen physical links
- FCIP tunnels:
  - Up to 6 per port

Technical Specifications

Cards, ports, slots	**Base:**	Fixed configuration with 40 auto-sensing 16/8-Gbps Fibre Channel ports, 10 10-Gb Ethernet ports
	Expansion:	n/a
Network Management	Please note that some services require the optional HPE SN6500C Enterprise Package license • Access methods - Out-of-band 10/100 Gigabit Ethernet port - RS-232 serial console port - In-band IP-over-Fibre Channel - In-band FICON CUP over Fibre Channel • Access protocols - CLI-via console and Ethernet ports - SNMPv3-via Ethernet port and in-band IP-over-Fibre Channel access - Storage Networking Industry Association (SNIA) Storage Management Initiative Specification (SMI-S) - FICON CUP • Distributed Device Alias service • Network security - Per-VSAN role-based access control using RADIUS and TACACS+ based authentication, authorization, and accounting (AAA) functions - SFTP - SSH v2 implementing AES - SNMPv3 implementing AES • Management applications - Cisco MDS 9000 Family CLI - Cisco Prime DCNM - Cisco Device Manager • CiscoWorks Resource Manager Essentials (RME) and Device Fault Manager (DFM)	
Reliability and Availability	• Hot-swappable, 1+1 redundant power supplies • Hot-swappable fan tray with integrated temperature and power management • Hot-swappable SFP optics • Hot-swappable switching module • Stateful process restart • Any module, any port configuration for PortChannels • Fabric-based multipathing • Per-VSAN fabric services • Port tracking • Passive backplane • Virtual Router Redundancy Protocol (VRRP) for management and FCIP or iSCSI connections • Online diagnostics	
Programming Interfaces	• Scriptable CLI • Cisco Prime DCNM • Cisco Device Manager GUI	

Technical Specifications

Approvals and Compliance	• Safety compliance: - CE Marking - UL 60950 - CAN/CSA-C22.2 No. 60950 - EN 60950 - IEC 60950 - TS 001 - AS/NZS 3260 - IEC60825 - EN60825 - 21 CFR 1040 • EMC compliance - FCC Part 15 (FR 47) Class A - ICES-003 Class A - EN 55022 Class A - CISPR 22 Class A - AS/NZS 3548 Class A - VCCI Class A - EN 55024 - EN 50082-1 - EN 61000-6-1 - EN 61000-3-2 - EN 61000-3-3 • FIPS - 140-2 Level 3 (for Multiservice FIPS Module - DS-X9304-18FK	
Power and Cooling	• Power supply (300W AC) - AC input characteristics ▪ 100 to 240 VAC (10% range) ▪ 50-60Hz (nominal) • Airflow: - 200 linear feet per minute (lfm) through system fan assembly - Cisco recommends that you maintain a minimum air space of 2.5 inches (6.4 cm) between walls and the chassis air vents and a minimum separation of 6 inches (15.2 cm) between two chassis to prevent overheating.	
Environmental	**Temperature, ambient operating**	32° to 104° F (0° to 40° C)
	Temperature, ambient non-operating and storage	40°F to 158° F (-40°C to 75° C)
	Relative humidity, ambient (non-condensing) operating	10% to 90%
	Relative humidity, ambient (non-condensing) non-operating and storage	10% to 95%
	Altitude, operating	-197 to 6500 feet (-60 to 2000 meter)
Dimensions (HxWxD)	3.84 x 17.22 x 21.4 in (9.75 x 43.74 x 54.36 cm) 2 Rack Units (RU) All units rack mountable in standard 19 inch EIA rack Weight of Fully configured chassis: 22.4 lb (10.2 kg)	

Summary of Changes

Date	Version History	Action	Description of Change
17-Aug-2020	Version 14	Changed	Added SN8700C product family information
03-Aug-2020	Version 13	Changed	QuickSpecs layout was updated and Branding Refresh was applied.
03-Feb-2020	Version 12	Changed	Added DCNM Switch based license
15-Jul-2019	Version 11	Changed	Configuration Information section was updated.
03-Dec-2018	Version 10	Changed	DCNM information was updated Product Highlights, and Service and Support, sections were revised.
02-Jul-2018	Version 9	Changed	Added SN6610C switch details.
06-Nov-2017	Version 8	Changed	Added new electronic licenses. Product Highlights, Configuration Information, Service and Support, and Technical Specifications were revised.
18-Nov-2016	Version 7	Changed	Removed references to SN8000C 8Gb Directors as products are, now, obsolete. Updated some urls and content where software licenses are required.
08-Apr-2016	Version 6	Changed	Removed references to MDS 8Gb Fabric Switch for HP BladeSystem as products are, now, obsolete. Also, updated Spock url.
21-Aug-2015	Version 5	Changed	Added FICON support for SN6500C (MDS 9250i) switch with NX-OS 6.2(11c) firmware. Removed SN6000C switches due to be obsolete Sep'15.
20-Feb-2015	Version 4	Changed	Removed MDS9222i as obsolete, included Spock info, fixed typo.
05-Dec-2014	Version 3	Changed	Changes made to the Configuration Info and Products Highlights Sections.
26-Sep-2014	Version 2	Changed	Changes made thought all QuickSpecs
18-Aug-2014	Version 1	New	New QuickSpecs

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