

Overview

HPE C-series SN6640C Multiservice Switch

HPE C-series SN6640C Multiservice Switch (MDS 9220i)

The HPE SN6640C Multiservice Fabric Switch is the next generation of highly flexible, industry-leading, proven multiservice switches from HPE C-series Family. It is an optimized platform for deploying high-performance SAN-extension solutions, distributed intelligent fabric services, and cost-effective multiprotocol connectivity for all the open systems environments. With a compact form factor and advanced capabilities, the HPE SN6640C switch is an ideal solution for departmental and remote branch-office SANs as well as in large-scale SANs in conjunction with HPE SN8700C Series Multilayer Directors.

The HPE SN6640C Multiservice Switch offers up to twelve 32-Gbps Fibre Channel ports, four 1/10-, two 25*-, and one 40- Gigabit Ethernet IP storage services ports, in a fixed One-Rack-Unit (1RU) form factor. The SN6640C Switch connects to existing native Fibre Channel networks, protecting current investments in storage networks. The SAN Extension over IP application package license is enabled as standard on the two fixed 1/10 Gigabit Ethernet IP storage services ports, enabling features such as Fibre Channel over IP (FCIP) and compression on the switch without the need for additional licenses.



HPE C-series SN6640C Multiservice Switch

Notes:

- 25Gbe Support will be available in the future release.
- Only one combination of 4 x 1/10GbE or 2x 25GbE (future release) or 1x 40GbE FCIP can be used at any time.

Standard Features

Key Features and Benefits

The HPE SN6640C Multiservice Switch provides unique multiservice and multiprotocol functions in a compact 1RU form factor:

- **SAN consolidation with integrated multiprotocol support**
 - Available in a base configuration of four ports of 32-Gbps Fibre Channel for high-performance SAN connectivity and two ports of 1/10-Gigabit Ethernet for FCIP storage services, running at a max speed of 1-Gbps.
- **SAN switch with 32-Gbps connectivity in 1RU form factor**
 - Scales up to 12 ports with speeds up to 32-Gbps Fibre Channel in a fixed configuration switch. The base configuration comes with four ports of 32 Gbps Fibre Channel enabled for high-performance SAN connectivity, and it can be upgraded on site and online to enable an additional eight ports of 32-Gbps Fibre Channel by adding the Cisco MDS 9220i on-demand upgrade license. The upgrade license also enables 10 Gigabit speed on the initial two Ethernet ports, two additional 1/10 Gigabit ports, two 25 Gigabit ports (future release), and one 40 Gigabit port.
- **Flexible FCIP port speed**
 - Provides flexible connectivity options toward datacenter switches, routers or DWDM systems, including 25G (future release) speed. Both the 25G (future release) and 40G options can be very valuable for data with a lower level of compressibility, while the 1 and 10G options can well satisfy the needs of small-medium organizations.
- **Intelligent application services engine**
 - The HPE SN6640C Switch includes, as standard, a single application-services engine that enables the included SAN Extension over IP software solution package to run on the two or more 1/10, or 25 (future release) or 40 Gigabit Ethernet storage-services ports. The SAN Extension over IP package provides an integrated, cost-effective, and reliable business-continuation solution that uses IP infrastructure by offering FCIP for remote SAN extension, along with a variety of advanced features to optimize the performance and manageability of FCIP links.

Network-based Intelligent Storage Applications

- Integrated hardware-based VSANs and Inter-VSAN Routing (IVR) (with optional SN6500C/SN6640C Enterprise Package license activated)
- Data replication and backup
- Smart Zoning

Security

Supports role-based access control, VSANs, hardware-enforced Zoning, FC-SP, ACLs, RADIUS authentication and TACACS+, SNMPv3, SSH, SFTP, and IPsec. Please note that the SN6500C/SN6640C Enterprise Package license may be required.

Remote SAN extension with high-performance FCIP

- Simplifies data protection and business-continuation strategies by enabling backup, remote replication, and other disaster-recovery services over WAN distances using open-standards FCIP tunneling.
- Optimizes utilization of WAN resources for backup and replication by enabling hardware-based compression, hardware-based encryption, FCIP write acceleration, and FCIP tape read-and-write acceleration; up to 12 virtual Inter-Switch Link (ISL) connections are provided on the Ethernet ports through tunneling (3 tunnels for 1/10G or 4 tunnels for 40G IPS ports).
- Leverages a powerful service engine chipset coupled with optimized software stack to push up to 40Gbps of traffic on the WAN link

Traffic management

The following advanced traffic-management capabilities are integrated as standard on the SN6640C switch:

- Virtual Output Queue (VOQ): Helps ensure line-rate performance on each port, independent of traffic pattern, by eliminating head-of-line blocking
- PortChannels: Allow users to aggregate up to 12 physical ISLs into a single logical bundle, providing optimized bandwidth utilization across all links. The bundle can consist of any speed-matched ports from any module in the chassis, helping ensure that the bundle can remain active even in the event of a module failure.



Standard Features

- Fabric Shortest Path First (FSPF)–based multipathing: Provides the intelligence to load balance across up to 12 equal-cost paths and, in the event of a switch failure, dynamically reroute traffic
- Up to 8191 buffer-to-buffer extended credits (500 default)
- Can be assigned to an individual port for optimal bandwidth utilization across long distances

The following additional advanced traffic-management capabilities are available on the SN6640C Switch with the optional SN6500C/SN6640C Enterprise Package License to simplify deployment and optimization of large-scale fabrics:

- QoS: Can be used to manage bandwidth and control latency, to prioritize critical traffic for specific applications
- IVR: Eliminates the need for external routing appliances, greatly increasing routing scalability while delivering line-rate routing performance, simplifying management, and eliminating the challenges associated with maintaining separate systems
- SCSI flow statistics: Collects Logical Unit Number (LUN)–level SCSI flow statistics, including read, write, and error statistics, for any combination of initiators and targets

Management modes

- Cisco MDS 9000 Family Command Line Interface (CLI)
- Cisco Device Manager
- Integration with third-party management tools
- Cisco Data Center Network Manager

IP Version 6 (IPv6) capable

The HPE SN6640C Switch supports IPv6 as mandated by the U.S. Department of Defense (DoD), Japan, and China. IPv6 support is provided for FCIP, and management traffic routed in band and out of band.

FIPS compliance

The HPE SN6640C Switch will be FIPS 140-2 compliant as mandated by the U.S. federal government.

Interoperability

Offers compatibility with a broad range of Hewlett Packard Enterprise servers and operating systems, as well as disk and tape storage devices.

Product Family Models

- **HPE SN8700C 16-slot 16/32/64Gb FC Director (MDS 9718)**
 - Intelligent, multi-protocol 16-slot Director with up to 768 64/32/16/8/4 Gb Fibre Channel ports in a single chassis. Also, the HPE SN8700C 48-port 16Gb or 32Gb FC Module or 64G FC Module (when available) provide up to 768 ports of full 16/32/64Gbps line-rate performance across all ports in a single chassis. The appropriate number of Fabric 3 modules must be configured to support full line rate across all ports.
- **HPE SN8700C 8-slot 16/32/64Gb FC Director (MDS 9710)**
 - Intelligent, multi-protocol 8-slot Director with up to 384 64/32/16/8/4 Gb Fibre Channel ports in a single chassis. Also, the HPE SN8700C 48-port 16Gb or 32Gb FC Module or 64G FC Module (when available) provide up to 384 ports of full 16/32/64Gbps line-rate performance across all ports in a single chassis. The appropriate number of Fabric 3 modules must be configured to support full line rate across all ports.
- **HPE 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 StoreFabric SN8500C 48-port 16Gb or 32Gb FC Module or 64Gb FC Module (when available) provide up to 192 ports of full 16/32/64 Gbps line-rate performance across all ports. The appropriate number of Fabric 3 modules must be configured to support full line rate across all ports.
- **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



Standard Features

- **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 32/16/8/4 Gb Fibre Channel ports
 - "Pay as you grow" scalability starting at 48 ports
- **HPE SN6640C 32Gb Fabric Switch (MDS 9220i)**
 - Intelligent multi-protocol Fabric Switch with twelve 32-Gbps Fibre Channel ports, four 1/10-, two 25-, and one 40- Ethernet IP storage services ports, in a fixed One-Rack Unit (1RU) form factor.

Software Components, Standard

NX-OS

New MDS 9000 NX-OS provides deterministic hardware performance and a comprehensive feature set that allows virtual machines to have the same SAN attributes as a physical server. The SN6640C supports NX-OS 8.5(1) or later and the SN6640C DCNM supports NX-OS 11.5.1 or later.

Cisco Data Center Network Manager

Cisco Data Center Network Manager (Essentials Edition) is the network management platform for all NX-OS-enabled deployments, spanning new fabric architectures and storage networking deployments. 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/SN6640C license mentioned below.

Notes: Starting NX-OS 9.2(1), DCNM is renamed as Nexus Dashboard Fabric Controller (NDFC). Read more at, <https://www.cisco.com/c/en/us/products/collateral/cloud-systems-management/prime-data-center-network-manager/san-innovation-ndfc-so.html>

Cisco Smart Licensing and Subscription Licenses

Starting from Cisco NX-OS 9.2(2), Smart Licensing Using Policy is available for HPE C-Series switches. This enables the customer to purchase subscription-based licenses for a period of time.

For more information, refer to Cisco MDS Licensing Guide, Smart Licensing Using Policy:

<https://www.cisco.com/c/en/us/td/docs/dcn/mds9000/sw/9x/configuration/licensing/cisco-mds-9000-nx-os-licensing-guide-9x/smart-licensing-using-policy.html?dtid=osscdc000283>

Standard Features

Software Components, Optional

HPE C-series Enterprise Package E-LTU

Cisco 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/SN6640C Enterprise Package 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 C-series 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/SN6640C Switch provides basic switch configuration and troubleshooting capabilities. HPE's C-series StoreFabric 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. From Cisco DCNM, Release 11.5(1), the trial period is extended to 120 days and the number of licenses is 50. However, the trial period remains 60 days and the number of licenses remains 500 for inline upgrades. Customers must purchase the HPE SN6500C/SN6640C DCNM Switch E-LTU to continue to utilize the advanced DCNM features.

Notes: Starting NX-OS 9.2(1), DCNM is renamed as Nexus Dashboard Fabric Controller (NDFC). Read more at, <https://www.cisco.com/c/en/us/products/collateral/cloud-systems-management/prime-data-center-network-manager/san-innovation-ndfc-so.html>

HPE SN6640C FC/FCIP Upgrade E-LTU

This License is required to enable any additional ports (8x FC, 2x 1/10GbE, 2 x 25GbE, 1x 40GbE) on the SN6640C Multi-service Switch.

HPE C-series Advantage License (Subscription License: 1/3/5 yrs)

The HPE C-series Advantage License is a combination of Cisco Data Center Network Manager and Enterprise Package licenses. It comes with 1, 3, or 5 year terms and provisioned through Cisco Smart Licensing.

Notes: NX-OS 9.2(2) is the minimum required version for C-series Advantage Licenses.



Service and Support

Warranty

The HPE SN6640C Multiservice Switch offers (1-1-1) Hardware Warranty; 1-year parts; 1-year on-site (8x5, next business day response) and 1-year labor.

Notes: The hardware warranty covers firmware and embedded non-saleable software. Hardware or Software product installation is not included in the warranty, but is available and highly recommended.

HPE Pointnext - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services** 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.

Consume IT on your terms

HPE GreenLake brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world.

- Get Faster time to market.
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

Managed services to run your IT operations

HPE GreenLake Management Services provides services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

Free up resources with Operational Services from HPE Pointnext

HPE delivers services for IT by using proven best practices as well as automation and methodologies that have been tested and refined by HPE experts and artificial intelligence through thousands of deployments globally. Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller. Services are quoted using Hewlett Packard Enterprise order configuration tools.

HPE Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:

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

Learn more: <https://www.hpe.com/services/complecare>



Service and Support

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care is available in three response levels. Basic, which provides 9x5 business hour availability and a 2 hour response time. Essential which provides a 15 minute response time 24x7 for most enterprise level customers, and Critical which includes a 6 hour repair commitment where available and outage management response for severity 1 incidents.

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

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.

Learn more: https://www.hpe.com/psnow/doc/5981-8527enw?jumpid=in_lit-psnow-red

HPE Installation Service

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

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

HPE 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

Provides comprehensive training designed to expand the skills of your IT staff and keep them up to speed with the latest technologies.

HPE Integration and Performance Services

Predefine and custom services delivering technology outcomes and helping you get the most from your IT at every stage of its lifecycle.

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



Service and Support

Parts and Materials

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

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

Defective Media Retention

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

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a brand-new digital and data driven customer experience.

Sign into the customer engagement platform, featuring modern self-serve case creation and management capabilities with inline knowledge recommendations. You will find powerful troubleshooting support through a new intelligent virtual agent with seamless transition when needed to a live support agent. <https://support.hpe.com/hpesc/public/home/signin>

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 Hewlett Packard Enterprise experts, access support resources or collaborate with peers.

Learn more: <http://www.hpe.com/support/hpesc>

Hewlett Packard Enterprise 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

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 Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

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

Step 1 - Base Configurations (Select one)

Description	SKU
HPE SN6640C 32Gb 6-port FC/FCIP Multiservice Switch	R8M66A
Notes: Base Switch comes with 4 x 32G FC ports, 2 x 1/10GbE FCIP Ports. By default, the 2 1/10GbE ports operate at 1Gb speed on R8M66A. If a port upgrade license is installed, then these ports may operate at 10Gb speed after issuing the command (“interface IPStorage1/1-6”, “10g-speed-mode”).	
HPE SN6640C 32Gb 18-port FC/FCIP Multiservice Switch	R8M67A
Notes: 18-ports Switch with 12x 32G FC ports, 4x 1/10GbE FCIP, 2x25GbE FCIP (future release), 1x40GbE FCIP Ports. Only One combination of 4 x 1/10GbE or 2x 25GbE (future release) or 1x 40GbE FCIP can be used at any time.	

Step 2 – Options

Select each type of required options with quantities specified:

32Gb FC Transceivers

HPE C-series 32 Gb Fibre Channel Short Wave SFP+ Transceiver	Q9D30A
HPE C-series 32 Gb Fibre Channel Long Wave SFP+ Transceiver	Q9D31A

Notes: Compatible with SFP28 MSA spec

16Gb FC Transceivers

HPE C-series 16 Gb Fibre Channel SW SFP+ Transceiver	C8S72A
HPE C-series 16 Gb Fibre Channel LW SFP+ Transceiver	C8S73A

8Gb FC Transceivers

HPE MDS 9000 8Gb FC SFP+ Short Range Transceiver	AJ906A
HPE MDS 9000 8Gb FC SFP+ Long Range Transceiver	AJ907A

1000BASE Transceiver

HPE C-series 1000BASE-SX SFP Transceiver	R8M68A
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10GbE Transceivers

HPE C-series 10GbE Short Range SFP+ Transceiver	AP783A
HPE C-series 10GbE Long Range SFP+ Transceiver	E7Y65A

40GbE Transceivers

HPE C-series 40GbE QSFP Short Range 300m Transceiver	R8M71A
HPE C-series 40GbE QSFP Long Range 10km Transceiver	R8M72A

Notes: Each port on the SN6640C may be configured to accept Short or Long Wave SFP optical transceivers. Please use only the above Cisco SFP optical transceivers; no substitutions allowed. Using other transceivers may void product warranty.



Configuration Information

Step 3 - Optional Software Licenses

Description	SKU
HPE SN6640C FC/FCIP Upgrade E-LTU	R8J40AAE
Notes: One Upgrade license to activate all FC, FCIP Ports	
HPE SN6640C Advantage 1-year E-LTU	R9N33AAE
HPE SN6640C Advantage 3-year E-LTU	R9N37AAE
HPE SN6640C Advantage 5-year E-LTU	R9N41AAE
Notes: Advantage license is a combination of Nexus Dashboard Fabric Controller (Data center Network Manager) and Enterprise Package	
HPE SN6500C/SN6640C Enterprise Package E-LTU	A7516AAE
Notes: Set of advanced traffic-engineering and advanced security features.	
HPE SN6500C/SN6640C DCNM Switch E-LTU	R4F90AAE

Step 4 - Additional Options

Recommended Cables

HPE PremierFlex OM4+ Fiber Optic Cables

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 SN8700C 4-slot/8-slot/16-slot 16/32/64Gb FC Director	Switch Type	Maximum ports	Number of slots per chassis
	Multilayer Director	4-slot: 192 16/32/64 Gbps Fibre Channel ports 8-slot: 384 16/32/64 Gbps Fibre Channel ports 16-slot: 768 16/32/64 Gbps Fibre Channel ports	Four/Eight/Sixteen
HPE SN6640C 32Gb Multi-service Switch	Multilayer Fabric Switch	Up to 12 32 Gbps FC ports, 4 fixed 1/10GbE FCIP ports, 2 fixed 25GbE (future release), 1 40GbE FCIP ports	One fixed
HPE SN6630C 32Gb Fabric Switch	Multilayer Fabric Switch	Up to 96 32 Gbps Fibre Channel ports	One fixed
HPE SN6620C 32Gb Fabric Switch	Multilayer Fabric Switch	Up to 48 32 Gbps Fibre Channel ports	One fixed
HPE SN6610C 32Gb Fabric Switch	Multilayer Fabric Switch	Up to 32 32 Gbps Fibre Channel ports	One fixed and one expansion slot
HPE SN6010C 16Gb Fabric Switch	Multilayer Fabric Switch	Up to 48 16 Gbps Fibre Channel ports	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.

Fibre Channel Protocols

- 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-LS-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)

Technical Specifications

- 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)
- 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-SB-5
- 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)
- FC-BB-6
- 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)
- 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)
- Fibre Channel classes of service: Class 2, Class 3, and Class F
- Fibre Channel standard port types: E, F, FL, and B
- Fibre Channel enhanced port types: SD, ST, and TE
- IP over Fibre Channel (RFC 2625)
- IPv6, IPv4, and Address Resolution Protocol (ARP) over Fibre Channel (RFC 4338)
- Extensive IETF-standards based TCP/IP, SNMPv3, and remote monitoring (RMON) MIBs
- IP standards
 - RFC 791 IPv4
 - RFC 793 and 1323 TCP
 - RFC 894 IP/Ethernet
 - RFC 1041 IP/802
 - RFC 792, 950, and 1256 ICMP
 - RFC 1323 TCP performance enhancements
 - RFC 2338 VRRP
 - RFC 2460 and 4291 IPv6
 - RFC 2463 and 4443 ICMPv6
 - RFC 2461 and 2462 IPv6 neighbor discovery and stateless autoconfiguration
 - RFC 2464 IPv6/Ethernet

Technical Specifications

- RFC 3643 and 3821 FCIP
 - Ethernet standards
 - IEEE Std 802.3-2005 Ethernet
 - IEEE Std 802.1Q-2005 VLAN
 - IPsec
 - RFC 2401 and 4301 security architecture for IP
 - RFC 2403 and 2404 HMAC
 - RFC 2405, 2406, 2451, and 4303 IP ESP
 - RFC 2407 and 2408 ISAKMP
 - RFC 2412 OAKLEY Key Determination Protocol
 - RFC 3566, 3602, and 3686 AES
 - Internet Key Exchange (IKE)
 - RFC 2409 IKEv1
 - RFC 4306 IKEv2
-

Environmental

- Temperature, ambient operating: 32 to 104°F (0 to 40°C)
 - Temperature, ambient nonoperating and storage: 40 to 158°F (-40 to 70°C)
 - Relative humidity, ambient (noncondensing) operating: 10 to 90%
 - Relative humidity, ambient (noncondensing) nonoperating and storage: 10 to 95%
 - Altitude, operating: -197 to 6500 ft (-60 to 2000m)
-

Physical dimensions

- Width: 17.30 inches; Length: 20.12 inches; Height: 1.72 in
-

Power and cooling

- Power supply: 500W (Exhaust), 80Plus Platinum certified
 - Power cord: Notched C15 socket connector connecting to C16 plug on power supply
 - Typical power consumption: 240W
 - AC input characteristics
 - 100 to 240V AC (10% range)
 - 50 to 60 Hz (nominal)
 - Airflow (front to back)
 - 200 linear feet per minute (LFM) through system fan assembly
-

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



Technical Specifications

- FCC Part 15 (CFR 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
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Summary of Changes

Date	Version History	Action	Description of Change
04-Apr-2022	Version 2	Changed	Added NDFC and Subscription licenses
01-Nov-2021	Version 1	New	New QuickSpecs



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