IBM System Storage offers Cisco MDS 9148S 16G Multilayer Fabric Switch for high performance and exceptional flexibility in a cost-effective, compact switch

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At a glance

The Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM$^{(R)}$ System Storage$^{(R)}$ is the next generation of highly reliable, flexible, and low-cost Cisco MDS 9100 Series switches. It combines high performance with exceptional flexibility and cost effectiveness. This powerful, compact one rack-unit (1RU) switch scales from 12 to 48 line-rate 16 Gbps Fibre Channel ports.

Overview

The Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage combines high performance with exceptional flexibility and cost effectiveness. This powerful switch scales from 12 to 48 line-rate 16 Gbps Fibre Channel ports.

MDS 9148S is an excellent choice for:

- A standalone SAN in small departmental storage environments
- A top-of-the-rack switch in medium-sized redundant fabrics
- An edge switch in enterprise data center core-edge topologies

The MDS 9148S is powered by Cisco NX-OS Software and Cisco Data Center Network Manager (DCNM) software. It delivers advanced storage networking features and functions with ease of management, and is compatible with the entire Cisco MDS 9000 Family portfolio for reliable end-to-end connectivity.

The MDS 9148S has been designed to deliver:

- High performance and flexibility at a low cost
- A high-availability platform for mission-critical deployments

- Simplified storage management with sophisticated diagnostics
- Intelligent network services and advanced traffic management
- Comprehensive network security framework

Key prerequisites

The Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage supports Fibre Channel connectivity. The 9711-S48 model supports all features and functions listed, and requires Cisco MDS 9000 NX-OS Software Release 6.2(9), or later.

For a list of supported servers and storage systems, refer to the Hardware requirements section.

Planned availability date

March 6, 2015, except for Korea, which has a planned availability of April 10, 2015.

Description

The Cisco MDS 9148S has been designed to deliver:

- **High performance and flexibility at low cost:** Up to 48 autosensing Fibre Channel ports are capable of speeds of 2, 4, 8, and 16 Gbps, with 16 Gbps of dedicated bandwidth for each port. The switch comes with 12 enabled ports and it can be scaled up by adding one or more 12-port MDS 9148S On-Demand Port Activation licenses. The MDS 9148S scales from 12 to 48 high-performance Fibre Channel ports in a single 1RU form factor.
- **High-availability platform for mission-critical deployments:** In environments where downtime is intolerable, the MDS 9148S offers In-Service Software Upgrades (ISSU). This means that Cisco NX-OS Software can be upgraded while the Fibre Channel ports carry traffic. The MDS 9148S includes dual redundant, hot-swappable power supplies and fan trays, PortChannels for Inter-Switch Link (ISL) resiliency, and F-port channeling for resiliency on uplinks from a MDS 9148S operating in NPV mode. New hardware-based slow port detection and mitigation provide enhanced performance and monitoring capability.
- **Simplified storage management with sophisticated diagnostics:** The MDS 9148S offers built-in storage network management and SAN plug-and-play capabilities. All features are available through a command-line interface or Cisco DCNM for SAN Essentials Edition, a centralized management tool. DCNM task-based wizards simplify management of single or multiple switches and fabrics. In virtual infrastructures, it manages the entire path from the virtual machine and switch to the physical storage. The MDS 9148S also supports PowerOn Auto Provisioning (POAP) to automate software image upgrades and configuration file installation on newly deployed switches. Additionally, it provides intelligent diagnostics, protocol decoding, network analysis tools, and Cisco Call Home for added reliability, faster problem resolution, and reduced service costs.
- **Intelligent network services and advanced traffic management:** The MDS 9148S uses virtual SAN (VSAN) technology for hardware-enforced, isolated environments within a physical fabric. It offers access control lists (ACLs) for hardware-based, intelligent frame processing. Advanced traffic management features, such as fabric-wide quality of service (QoS) and Inter-VSAN Routing (IVR), are included in the optional MDS 9100 Enterprise Package. QoS prioritizes application data traffic for better and more predictable network service. Zone-based QoS simplifies configuration and administration by using the familiar zoning concept. IVR facilitates resource sharing across VSANs without compromising scalability, reliability, availability, and network security.

- **Comprehensive network security framework:** An extensive set of innovative and powerful security features and functions is available with the optional MDS 9100 Enterprise Package. It offers fabric-wide, per-VSAN role-based authentication, authorization, and accounting services using RADIUS, Lightweight Directory Access Protocol (LDAP), Microsoft™ Active Directory (AD), and TACACS +. It also deploys VSAN fabric isolation, intelligent, port-level packet inspection, Fibre Channel Security Protocol (FC-SP) host-to-switch and switch-to-switch authentication, Secure File Transfer Protocol (SFTP), Secure Shell Version 2 (SSHv2), and Simple Network Management Protocol Version 3 (SNMPv3) implementing Advanced Encryption Standard (AES). Other security features include control-plane security, hardware-enforced zoning, broadcast zones, and management access. The MDS 9148S is FIPS 140-2 compliant as mandated by the US federal government.

The following optional licensed activation features are available for the Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage:

- **MDS 9100 Enterprise Package (#7210) :** The MDS 9100 Enterprise Package includes advanced traffic-engineering and network security features such as IVR, QoS and zone-based QoS, FC-SP, port security, VSAN-based access control, and fabric binding for open systems. This feature is licensed per switch for all the ports on the switch.
- **MDS 9100 DCNM SAN Advanced Edition (#7211) :** The MDS 9100 DCNM for SAN Advanced Edition includes advanced management capabilities such as vCenter integration, performance trending, advanced provisioning, backup, and dashboards. Licensed per switch for all the ports on the switch. License is hosted on a server.
- **MDS 9148S 12-port FC Port-On-Demand (#7212):** The MDS 9148S scales up to 48 ports of 16-Gbps Fibre Channel in a fixed configuration switch. The base configuration comes with 12 ports of 16-Gbps Fibre Channel activated and can be upgraded onsite to enable additional 36 ports of 16-Gbps Fibre Channel by adding the on-demand port activation license by ordering the MDS 9148S 12-port FC Port-On-Demand feature.

Product number

Description	Machine type	Model	Feature
Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage	9711	S48	
FC 16Gb SW SFP+	9711	S48	5602
FC 16Gb SW SFP+ - 4 Pack	9711	S48	5604
FC 16Gb 10km LW SFP+	9711	S48	5611
FC 16Gb 10km LW SFP+ - 4 Pack	9711	S48	5614
FC 8Gb SW SFP+	9711	S48	5830
FC 8Gb SW SFP+ - 4 Pack	9711	S48	5834
FC 8Gb 10km LW SFP+	9711	S48	5850
FC 8Gb 10km LW SFP+ - 4 Pack	9711	S48	5854
FC 8 Gb LC 40 Km SFP+	9711	S48	5855
MDS 9100 Enterprise Pkg-eDelivery	9711	S48	7210
MDS 9100 DCNM Advanced Edition-eDelivery	9711	S48	7211

Description	Machine type	Model	Feature
MDS 9148S 12-port On-Demand, eDelivery	9711	S48	7212
Power Cord, 125VAC 15A NEMA 5-15 Plug, North America	9711	S48	9110
Power Cord, 250VAC 10A 3112 Plug, Australia	9711	S48	9111
Power Cord, 250VAC 10A CEE 7/7 Plug, EU	9711	S48	9112
Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	9711	S48	9113
Power Cord, 250VAC 13A BS1363 Plug (13 A fuse), UK	9711	S48	9114
Power Cord, 250VAC 10A IRAM 2073 Plug, Argentina	9711	S48	9115
Power Cord, 250VAC 10A SABS 164/1 Plug, South Africa	9711	S48	9116
Power Cord, 250VAC 10A, Straight C15, MP232 Plug, SWITZ	9711	S48	9117
Power Cord, 250VAC 10A GB1002 Plug, China	9711	S48	9118
Power Cord, 250VAC 10A SI16S3 Plug, Israel	9711	S48	9119
Cabinet Jumper Power Cord, 250 VAC16A, C14-C15 Connector	9711	S48	9120
Power Cord, 125VAC 13A KSC8305 Plug, Korea	9711	S48	9121
Power Cord, 125VAC 15A CNS10917-2, Taiwan	9711	S48	9122
Bulk Order MES Feature	9711	S48	9555
5m 50u LC/LC Fiber Cable	9711	S48	5605
25m 50u LC/LC Fiber Cable	9711	S48	5625
Shipping No Charge	9711	S48	AG00
Shipping Charge	9711	S48	AGE8

Publications

Technical documentation for Cisco products is provided by Cisco Systems.

The following materials are available for IBM System storage and are available on the IBM website listed below.

Title	Order number
Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage	TSD03192-USEN-00

For additional information, including details on supported host systems, SAN components, and storage systems, visit

http://www.ibm.com/systems/storage/san/ctype/

For additional technical information on the Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage, refer to the IBM Redbooks[R] product guide at

http://www.redbooks.ibm.com/abstracts/tips1255.html

For a list of available documentation and instructions for ordering a set of manuals on CD-ROM, visit

http://www.cisco.com/go/ibm/storage

The IBM Publications Center Portal is located at

http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. A large number of publications are available online in various file formats, which can currently be downloaded.

Documentation for Cisco products is available only in English.

Services

Global Technology Services

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For details on available services, contact your IBM representative or visit

http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit

http://www.ibm.com/services/learning/ites.wss/zz/en?pageType=tp_search_new

Technical information

Specified operating environment

Physical specifications

- Width: 435.9 mm (17.16 in)
- Depth: 415 mm (16.34 in)
- Height: 43.7 mm (1.72 in)
- Weight (fully configured): 9 kg (19.84 lb)

Unit is rack mountable in a standard 19-inch (482.6 mm) EIA rack.

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

Operating environment

- Temperature, ambient operating: 0°C to 40°C (32°F to 104°F)
- Temperature, ambient nonoperating and storage: -40°C to 70°C (-40°F to 158°F)
- Relative humidity, ambient (noncondensing) operating: 10% - 90%
- Relative humidity, ambient (noncondensing) nonoperating and storage: 10% - 95%
- Altitude, operating: -60 to 2000 m (-197 to 6500 ft)
- Airflow: back to front (toward ports)
- Power: 100 to 240 V ac (10% range), 50 to 60 Hz (nominal)
- 300 W ac power supplies

EMC conformance

- 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

Product Safety, country testing, and certification

- CE Marking
- UL 60950
- CAN/CSA-C22.2 No. 60950
- EN 60950
- IEC 60950
- TS 001 AS/NZS 3260
- IEC60825
- EN60825

- 21 CFR 1040

Homologation

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

Hardware requirements

Supported servers and storage systems

The Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage is designed to support Fibre Channel and FCIP connectivity for the following:

Servers

- IBM Power Systems™
- Other Intel™ processor-based servers with Linux™, Microsoft™ Windows™ 2008, and Windows 2012

Storage software

- IBM TotalStorage SAN Volume Controller

Storage systems

- IBM XIV(R) Storage System
- IBM System Storage DS8000(R)
- IBM Storwize(R) V7000
- IBM FlashSystem(R) 840

For the most current and complete description of the Cisco Systems MDS 9000 family of storage networking products, visit

   http://www.cisco.com/go/ibm/storage

For specific configuration support dates and other details on availability, server models, operating system levels, storage attachment capabilities, and throughput connectivity speeds, visit

   http://www.ibm.com/storage/cisco

Support for some configurations may not be available on the initial planned availability date.

Software requirements

For a complete list of software requirements, cross product requirements prerequisites, and product dependencies, visit

   http://www.cisco.com/go/ibm/storage

Compatibility

For the most current and complete description of the Cisco Systems MDS 9000 family of storage networking products, visit

   http://www.cisco.com/go/ibm/storage

For specific configuration support dates and other details on availability, server models, operating system levels, storage attachment capabilities, and throughput connectivity speeds, visit

http://www.ibm.com/storage/cisco

Support for some configurations may not be available on the initial planned availability date.

Planning information

Customer responsibilities

Planning information, including customer responsibilities, physical planning, and installability is available in the specific product planning manuals on the following website

http://www.cisco.com/go/ibm/storage

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet website or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

Fiber optic cables

A fiber optic cable is required for attaching the Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage to host system adapters or other FC storage area components. The cable can be customer supplied or ordered with the 9711-S48 systems in the lengths available. The attaching fiber cable must be:

- 62.5/125 micrometers (OM1) for distances up to 150 meters at 2 Gbps speed, 70 meters at 4 Gbps, 21 meters at 8 Gbps, 33 meters at 10 Gbps, or 15 meters at 16 Gbps
- 50.0/125 micron (OM2) for distances up to 300 meters at 2 Gbps speed, 150 meters at 4 Gbps, 50 meters at 8 Gbps, 82 meters at 10 Gbps, or 35 meters at 16 Gbps
- 50.0 micron (OM3) for distances up to 150 meters at 8 Gbps, 300 meters at 10 Gbps, or 100 meters at 16 Gbps

Longwave transceivers require 9 micron single-mode fibre optic cables. The connection is an LC connector type.

In many situations, the required lengths and installation of fiber optic cables will be unique to each customer's configuration and facility specifications. Product support services, offered by IBM Global Services' Site and Connectivity Solutions, can provide assistance for these unique cabling and installation requirements.

For fiber optic cable description and requirements, refer to Cisco technical documentation at

http://www.cisco.com/c/en/us/products/collateral/storage-networking/mds-9000-series-multilayer-switches/product_data_sheet09186a00801bc698.html

Security, auditability, and control

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and conditions

Volume orders

Contact your IBM representative.

Products - terms and conditions

Warranty period

One year

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

Warranty service

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information.

CRU Service

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 (mandatory) CRU

Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

Tier 2 (optional) CRU

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next business day (NBD) delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU. You may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRUs:

- Power supply
- Fan assembly
- SFPs
- Cables

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Service level is:

- 9 hours per day, Monday through Friday, excluding holidays, next business day response. Calls must be received by 5:00 p.m. local time in order to qualify for next business day response.

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

Maintenance service options

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM website. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response-time objectives and are not guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information. The following service selections are available as maintenance options for your machine type.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Service levels are:

- 9 hours per day, Monday through Friday, excluding holidays, next business day response. Calls must be received by 5:00 p.m. local time in order to qualify for next business day
- 24 hours per day, 7 days a week, 4 hour average response

Non-IBM parts service

Under certain conditions, IBM provides services for selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

This service includes hardware problem determination (PD) on the non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

At IBM's discretion you will receive CRU service or IBM will initiate shipment of a replacement machine to your location. You are responsible for its installation and verification of operation. You must pack the failed machine into the shipping container that contained the replacement machine and return the failed machine to IBM. Transportation charges, both ways, are paid by IBM. You may be charged for the replacement machine if IBM does not receive the failed machine within 15 days of your receipt of the replacement.

Usage plan machine

No

IBM hourly service rate classification

Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

General terms and conditions

Field-installable features

Yes

Model conversions

No

Machine installation

Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Graduated program license charges apply

No

Licensed Machine Code

The Cisco MDS 9700 series of products is licensed for use by a customer on the IBM machine for which it was provided by Cisco under the terms and conditions of the Cisco End User License Agreement, to enable a specific machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain a copy of the agreement at

   http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN_.html

Machine using LMC Type Model 9711-S48

Cisco may release changes to the licensed machine code. IBM plans to make the licensed machine code changes available for download from Cisco technical support at

   http://www.cisco.com/go/ibm/storage

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for

downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

Educational allowance

A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

The educational allowance is 15% for the products in this announcement.

Prices

For all local charges, contact your IBM representative.

Annual minimum maintenance charges

IBM Maintenance is available for the new Cisco MDS 9148S 16G Multilayer Fabric Switch for IBM System Storage (9711-S48). For pricing information, contact your IBM representative or IBM Business Partner.

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Financing solutions from IBM Global Financing can help you stretch your budget and affordably acquire the new product. But beyond the initial acquisition, our end-to-end approach to IT management can also help keep your technologies current, reduce costs, minimize risk, and preserve your ability to make flexible equipment decisions throughout the entire technology lifecycle.

For more financing information, visit

www.ibm.com/financing

AP distribution

Country/Region	Announced
AP IOT	
ASEAN *	Yes
India/South Asia **	Yes
Australia	Yes
Hong Kong	Yes
Macao	Yes
New Zealand	Yes
People's Republic of China	Yes

Country/Region	Announced
South Korea	Yes
Taiwan	Yes
Japan IOT	
Japan	Yes

* Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam

** Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka

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