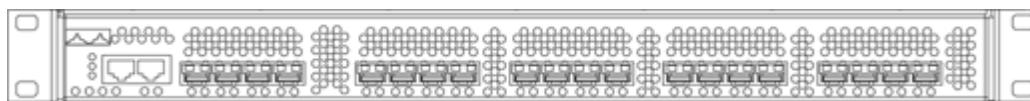


Overview

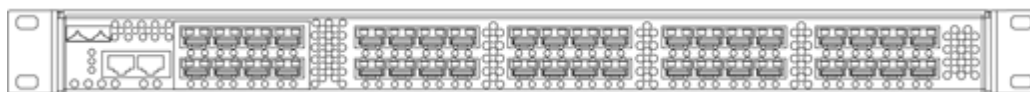
The Cisco MDS 9100 Series Multilayer Fabric Switches elevates the standard for Fibre Channel fabric switches, bringing Cisco Multilayer Intelligent Networking to small and medium scale SANs and Data Center edge applications. Available in 20-port and 40-port configurations, they provide the ideal balance of cost-performance and enterprise class features in a compact 1 Rack Unit form factor, and deliver full feature compatibility with other Cisco MDS 9000 family products.

The Cisco MDS 9100 Series run Cisco SAN-OS software, providing the same advanced features found on MDS 9500 Series Directors and MDS 9216 Series Fabric Switches. This includes built-in storage network management, with all features available via CLI or Cisco Fabric Manager. The Cisco MDS 9000 Family CLI is an extremely efficient and direct interface designed to provide optimal functionality to administrators in enterprise environments. Fabric Manager enables administrators to perform vital tasks such as topology discovery, fabric configuration and verification, provisioning, monitoring, and fault resolution. All functions are available through a secure interface, which enables remote management from any location.

The Series layered, intelligent features also include integration with HP OpenView Storage Area Manager (SAM) and CiscoWorks RME, delivering ease of administration, improved customer productivity, and infrastructure management through a single pane-of-glass. This common software platform also ensures that the user's SAN environment will scale seamlessly as business grows.



Cisco MDS 9120



Cisco MDS 9140

Key Features and Benefits

The Cisco MDS 9100 Series Multilayer Fabric Switches

- **Reduced Total Cost of Ownership (TCO) for SAN Infrastructure**
 - Enables storage consolidation, simplified management of SAN environment
- **High Port Density**
 - 20 (MDS 9120) or 40 (MDS 9140) Fibre Channel ports (auto-sensing 2/1 Gb) in a 1U switch
- **Scalable**
 - Port count choice matches current and future storage environment interconnect needs
 - Compatibility with Cisco SAN Switch installed base
- **Highly Available**
 - Redundant power supplies and fans for high availability - Hot-swappable SFP optical interface modules, fan modules, and power modules
- **Interoperable**
 - Broad range of HP servers and operating systems
 - Disk and tape storage devices
- **Integrated Management**
 - Embedded Fabric Manager
 - Integrated with Cisco Fabric Manager Server
 - Integration with HP Storage Essentials
 - Integration with CiscoWorks Resource Manager Essentials (RME)

Overview

Models

Cisco MDS 9120 & 9140 Multilayer Fabric Switches	HP MDS 9120 2Gb Fabric Switch	A7426A
	NOTE: Includes 4 dedicated bandwidth ports, 16 shared bandwidth ports.	
	HP MDS 9140 2Gb Fabric Switch	A7427A
	NOTE: Includes 8 dedicated bandwidth ports, 32 shared bandwidth ports.	

Product Highlights

Configuration support Please see the following Web site for configuration support at:
<http://h18000.www1.hp.com/products/storageworks/san/documentation.html>

Intelligent network services

- Virtual SANs (VSANs)
- PortChannels
- Quality of Service (QoS)
- Security
- Embedded Diagnostics

High Availability

- Fully hot-swappable components
- Redundancy of all major components
- Call-Home capabilities

Embedded Diagnostics Supports Fibre Channel Ping and Trace route, Embedded Fibre Channel protocol analyzer, SPAN, zone and VSAN merge analysis, system health monitoring, Call Home

Port configuration MDS 9100 series switches are configured with two different types of ports, dedicated bandwidth ports and shared bandwidth ports. Dedicated bandwidth ports are optimized for ISL links and high performance storage subsystem interconnect. Shared bandwidth ports are optimized for host connect.

This port configuration is designed to provide the highest possible port density while delivering the performance needed in today's SAN environments. By taking advantage of the fact that most SAN applications are only capable of generating a fraction of the bandwidth available on a 2 Gbps Fibre Channel link, Cisco is able to squeeze more host optimized ports into a smaller form factor, delivering industry leading port density while satisfying the bandwidth demand of today's application servers.

Port Channels Allows users to aggregate up to 16 physical links into one logical bundle. The bundle can consist of any port in the chassis, ensuring that the bundle remains active in the event of a port, ASIC, or module failure. The bundle can sustain the failure of any physical link without causing a reset. Additionally, Fabric Shortest Path First (FSPF) multipathing provides the intelligence to load balance across up to 16 equal cost paths and, in the event of a switch failure, to dynamically reroute traffic.

Traffic management

- Fibre Channel Congestion Control (FCC)
- Fabric-wide QoS

Security Comprehensive security features include SSH, RADIUS, SNMPv3, and Role Based Access Control (BAC). Data plane traffic is secured with VSANs, guaranteeing segregation of traffic across shared fabrics, and with zoning to satisfy traffic segregation requirements within a VSAN. Hardware-based ACLs provide further granularity for advanced security options. There is no additional charge for these features.

Product Highlights

- Scalable infrastructure**
- 20-port and 40-port configurations
 - Long distance support up to 100 km
 - Three different types of optical transceivers to accommodate specific distance requirements

- Management modes**
- Cisco MDS 9000 Family Command Line Interface (CLI)
 - Cisco Fabric Manager
 - Integration with third-party storage management tools

Interoperability Offers compatibility with a broad range of HP servers and operating systems, as well as disk and tape storage devices; see current compatibility matrix.

- Diagnostics**
- Industry-first embedded diagnostics (Fibre Channel ping, traceroute and protocol analyzer)
 - Protocol decoding
 - Network analysis tools
 - Call-home capabilities

Software Components, Included

SAN-OS 1.3 Cisco MDS 9000 SAN-OS 1.3 delivers numerous advanced storage networking capabilities for the Cisco MDS 9000 Family of Multilayer Intelligent Directors and Fabric Switches.

Optional Software

Cisco Fabric Manager Package The Cisco Fabric Manager Server (FMS) package extends Cisco Fabric Manager by providing historical performance monitoring for network traffic hot-spot analysis, centralized management services, and advanced application integration. All standard Cisco Fabric Manager features and functions are fully integrated with the Cisco FMS capabilities.

Cisco MDS Enterprise Package Cisco MDS switch also has a set of additional advanced traffic engineering and advanced security features recommended for all Enterprise SANs. The additional features listed below are bundled together in the Cisco MDS 9000 Enterprise package.

- Inter VSAN Routing
- Quality of Service (QoS) levels
- Switch-Switch and Host-Switch Authentication
- Host to LUN Zoning
- Read-Only Zoning
- Individual Port Security
- VSAN Based Access Control

Service and Support, HP Care Pack and Warranty Information

Warranty	<p>(1-1-1) Hardware Warranty; 1-year parts; 1-year on-site (8x5, next business day response) and 1-year labor.</p> <p>NOTE: The hardware warranty covers firmware and embedded non-saleable software. For extended hardware installation and maintenance information, click the link below: http://h18005.www1.hp.com/services/carepaq/us/install/ http://h18005.www1.hp.com/services/carepaq/us/hardware/.</p> <p>NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details.</p> <p>Hardware or Software product installation is not included in the warranty, but is available and highly recommended.</p>
Software Product Services	<p>Software Warranty - HP warrants only that the software media will be free of physical defects for a period of ninety (90) days from delivery.</p> <p>EXCLUSIVE REMEDY -The entire liability of HP and its suppliers and your exclusive remedy for software that does not conform to this Limited Warranty shall be the repair or replacement of the defective media. This warranty and remedy are subject to your returning the defective media during the warranty period to HP in the country in which you obtained the software.</p> <p>NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details.</p> <p>Hardware or Software product installation is not included in the warranty, but is available and highly recommended.</p>
Additional Services	<p>Installation service, SAN Architecture service. For more information on service options, please visit our Web site at: http://www.hp.com/hps/support</p>
HP Service Warranty and Support Options	<p>HP Service & Warranty Support Additional Warranty protection and/or HP Installation packages can be purchased.</p> <p>NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center for details. HP provides a one-year, hardware limited warranty, fully supported by a worldwide network of resellers and service providers.</p> <p>The basic hardware warranty service can be enhanced and/or HP Installation services can be purchased. Support options with various response time and durations are available, including:</p> <ul style="list-style-type: none">• Warranty upgrade to 3-3-3• Various support response times (same/next day, 24x7)• Various support coverage periods (M - F, 24x7, 1 yr, 3 yr)• 6-hr Call-To-Repair <p>To ensure you receive assistance on your software, support options include:</p> <ul style="list-style-type: none">• Software support coverage periods (13x5, 24x7, 1 yr, 3 yr)• License to Use and SW Updates (1 yr, 3 yr) <p>For more information on warranty and support options, please visit our Web site at: http://www.hp.com/hps/tech/storage/supp/</p>

Service and Support, HP Care Pack and Warranty Information

HP Care Pack Services Service offerings include a full range of Customer HP Care Pack services for both hardware and software services:

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a period of 1, 3, or 5 years

Additional Warranty protection and/or HP Installation packages can be purchased.

NOTE: Certain restrictions and exclusions apply. Consult the [HP Customer Support Center](#) for details

HP Care Pack Information

HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.

- HP Care Pack is not available for less than the product's warranty duration.
- HP Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required.
- HP Care Pack services are prepaid.

For additional HP Care Pack (hardware & software) information, as well as orderable part numbers, please refer to the URL listed below:

<http://h18005.www1.hp.com/services/carepaq/index.html>

Configuration Information

The MDS 91xx Fabric Switch Series come in a 20 port or 40 port configuration. The port slots are empty and optical transceivers are required to utilize the ports. Both Short Wave and Long Wave optical transceiver options (SFP) are available and must be ordered separately.

Step 1 – Base Configuration

Select one:

Model Number	Model Description	Part Number
HP MDS 9120	Base 20-port chassis, dual 300W power supplies, two power cords (configurable) dual fan trays Rackmount Kit, documentation CDs, ESD, wrist strap (disposable), console cable kit and packaged documents.	A7426A
HP MDS 9140	Base 40-port chassis, dual 300W power supplies, two power cords (configurable) dual fan trays Rackmount Kit, documentation CDs, ESD, wrist strap (disposable), console cable kit and packaged documents.	A7427A

Step 2 – Required Options

Select each required option with quantities specified:

	Description with Parts Shipped		Part Number
HP MDS 9000 2Gb FC SFP SW XCVR	Optical Transceivers, Small Form Factor Pluggable, Short Wave	1 - 40	A7428A
HP MDS 9000 2Gb FC SFP LW XCVR	Optical Transceivers, Small Form Factor Pluggable, Long Wave	1 - 40	A7429A

NOTE: Optional - Must be ordered separately.

NOTE: Fibre Channel ports on the MDS 9100 series switches may be configured to accept either Short Wave® SFP or Long Wave SFP optic transceivers. However, when ordering the MDS 9100 series, ports must be populated with above SFP optical transceivers only. (No substitutes allowed) Using other transceivers may void product warranty.

Step 3 – Additional Options

	Description with Parts Shipped		Part Number
	HP MDS 9000 Port Analyzer Adapter		A7430A
Software	HP MDS Fabric Manager Server Package	Licensed per switch	A7512A
Software	HP MDS 9100 Enterprise Package-1 MDS 9100 Swt LTU	Licensed per switch	A7515A

Configuration Information

Recommended Cables *LC-LC for between two 2 Gb devices*

2 m LC-LC Multi-Mode Fibre Channel Cable	221692-B21
5 m LC-LC Multi-Mode Fibre Channel Cable	221692-B22
15 m LC-LC Multi-Mode Fibre Channel Cable	221692-B23
30 m LC-LC Multi-Mode Fibre Channel Cable	221692-B26
50 m LC-LC Multi-Mode Fibre Channel Cable	221692-B27

LC-SC for between a 1 Gb and a 2 Gb device

2 m LC-LC Multi-Mode Fibre Channel Cable	221691-B21
5 m LC-LC Multi-Mode Fibre Channel Cable	221691-B22
15 m LC-LC Multi-Mode Fibre Channel Cable	221691-B23
30 m LC-LC Multi-Mode Fibre Channel Cable	221691-B26
50 m LC-LC Multi-Mode Fibre Channel Cable	221691-B27

Step 4 – Installation Service Option

<http://www.hp.com/hps/support>

For more information on HP SAN switches, contact any of our worldwide sales offices or visit our Web site at:

<http://www.hp.com/go/san>.

Technical Specifications

Diagnostics	<ul style="list-style-type: none"> • Power-On Self Testing POST • Error detection, fault isolation, parity checking, illegal address checkRemote diagnostic through Call Home troubleshooting features • Displayed LEDs • Redundant Power Supply
Compatibility	<p>Fibre Channel protocols FC-PH, Revision 4.3, FC-PH-2, Revision 7.4 FC-PH-3, Revision 9.4, FC-GS-2, Revision 5.3, FC-GS-3, Revision 7.01, FC-FLA, Revision 2.7, FC-FG, Revision 3.5, FC-SW-2, Revision 5.3, FC-AL, Revision 4.5, FC-AL-2, Revision 7.0, FC-PLDA, Revision 2.1, FC-VI, Revision 1.61, FCP, Revision 12, FCP-2, Revision 7a, FC-SB-2, Revision 2.1, FC-BB, Revision 4.7, FC-FS, Revision 1.7, FC-PI, Revision 13 , FC-MI, Revision 1.99, FC-Tape, Revision 1.17</p> <p>Fibre Channel element MIB <ul style="list-style-type: none"> • Extensive IETF-standards based TCP/IP, SNMPv3, and RMON MIBs • IP over Fibre Channel (RFC 2625) </p> <p>Classes of service Class 2, Class 3, Class F</p> <p>Port types <ul style="list-style-type: none"> • Fibre Channel standard port types: E, F, FL • Fibre Channel enhanced port types: SD, TE, TL </p> <p>Internet 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</p> <p>O/S Support MDS SAN-OS Release 1.3</p>
Performance	<p>Transfer Rate 2 Gb/FC port</p> <p>Devices/Ports <ul style="list-style-type: none"> • MDS 9120: 20 FC ports • MDS 9140: 40 FC ports • 1 10/100 Mb Ethernet ports </p> <p>Interface <ul style="list-style-type: none"> • 1/2 Gb FC ports • 10/100 Mb Ethernet port (management) • RS-232 RJ-45 console port • DB-9 COM port </p>
Dimensions	<p>Height (Tower) 1.75 in (4.45 cm)</p> <p>Width (Tower) 17.20 in (43.60 cm)</p> <p>Depth (Tower) 23.10 in (58.70 cm)</p> <p>Shipping (Tower) 11.00 x 23.00 x 29.50 in (27.94 x 58.42 x 74.93 cm)</p> <p>Weight 25 lb (11 kg) fully configured</p> <p>Rack Field Replaceable Unit</p>
Connectors/Cables	<p>Connectors <ul style="list-style-type: none"> • RJ-45 Interface Cable Connector • LC-type-fiber optic SFP </p> <p>Cables <ul style="list-style-type: none"> • RJ-45 to RJ-45 rollover cable • RJ-45 to DB-25 female DTE adapter (labeled "Terminal ") • RJ-45 to DB-9 female DTE adapter (labeled "Terminal ") • RJ-45 to DB-25 male DCE adapter (labeled "Modem") • LC-type cable </p> <p>Cable Lengths 2 meters, 5 meters, 15 meters, 30 meters, 50 meters</p> <p>Optical Transceivers <ul style="list-style-type: none"> • Small Form Factor Pluggable, Short Wave • Small Form Factor Pluggable, Long Wave </p>
Electrical	<p>Nominal Line Voltage 100 to 240 VAC</p> <p>Range Line Voltage 100 to 240 VAC (±10% for full range)</p>

Technical Specifications

Line Frequency	50 to 60 Hz (nominal) ($\pm 3\%$ for full range)
Typical Input Current	12A @ 100VAC, 6A @ 240 VAC
Power	300W AC; plug types: Argentina IRAM 2073 (10A), North America (300W power supply) NEMA 5-15P (12A), Australia, New Zealand SAA/3 AS/NZZS 3112-1993 (12A), Europe VIIG CEE (7)VII (12A), Italy 1/3/16 CEI 23-16 (12A), United Kingdom BS89/12 BS 1363/A (12A; replaceable fuse)
LED Indicators (On front panel)	Generic <ul style="list-style-type: none">• System• Ethernet (management) Switching Module <ul style="list-style-type: none">• Status• Speed• Link Power Supply <ul style="list-style-type: none">• Input OK• Output OK• Output Fail
Environmental	Fan Fan Status
Operating temp	32° to 104° F (0° to 40° C), ambient operating
Non-operating temp	-40° to 158° F (-40° to 70° C)
Operating humidity	10 to 90%, ambient (non-condensing)
Non-operating humidity	5 to 95%, ambient (non-condensing)

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