Intelligent storage networking designed to help simplify SAN management and reduce TCO

Cisco® MDS 9120 and 9140 Multilayer Fabric Switches

MDS 9120 Fabric Switch: Twenty-port, 1RU

MDS 9140 Fabric Switch: Forty-port, 1RU

Highlights

- ***MDS 9000 inter-family compatibility supports scalability and consistent service as the SAN grows***
- ***Up to 2Gbps per port throughput and PortChannel support high performance core-edge SAN deployments***
- ***Host-optimized and target-optimized Fibre Channel ports designed to help reduce TCO***
- ***Compact 20 and 40 port design with high availability capabilities***
- ***Built-in intelligent network services can help simplify SAN management and reduce total cost of ownership***
- ***Comprehensive security features support SAN consolidation***
- ***Virtual SAN (VSAN) capability is designed to create virtual SAN islands on a single physical fabric***
- ***Offers interoperability with a broad range of IBM servers as well as disk and tape storage devices***

High performance and MDS 9000 family compatibility

The Cisco MDS 9120 and 9140 Multilayer Fabric Switches are designed with 1Gbps and 2Gbps Fibre Channel switch connectivity and intelligent network services to help improve the security, performance and manageability required to consolidate geographically dispersed storage devices into a large enterprise SAN. Administrators can use the Cisco MDS 9120 and 9140 switches to help address the needs for high performance and reliability in SAN applications ranging from midrange to large enterprise SAN environments. Full functional compatibility with other members of the Cisco MDS 9000 family supports end-to-end service delivery in large data center core-edge deployments.

Flexible Fibre Channel connectivity options

Fibre Channel ports to support an autosensing 1Gbps and 2Gbps interface for high-performance connectivity and compatibility with legacy devices. These ports use small form-factor pluggable (SFP) optic transceivers and support LC interfaces. Individual ports can be configured with shortwave SFPs for connectivity up to 300 meters at 2Gbps (500 meters at 1Gbps), longwave SFPs for connectivity up to 10 km (at either 1Gbps or 2Gbps). Tri-rate 1.25 Gbps Ethernet, 1 and 2 Gbps Fibre Channel shortwave and longwave SPFs; and Coarse Wavelength Division Multiplexing, CWDM SFPs, with connectivity up to 100 km, are also supported. Ports can be configured to operate in standard expansion port (E_Port), fabric port (F_Port) and fabric loop port (FL_Port) modes as well as in unique Cisco port modes.

Target-optimized and host-optimized ports designed for reduced TCO

Target-optimized ports can help support the most demanding storage networking applications. These ports are designed to attach high-performance servers and storage subsystems as well as connect to other switches using Inter Switch Link (ISL) connections. Host-optimized ports provide optimal bandwidth for workgroup and midrange servers. These ports are designed to provide high port density and lower cost attachment of lower performance devices.

The twenty port MDS 9120 is configured with four target-optimized ports and sixteen host-optimized ports. The forty port MDS 9140 is configured with eight target-optimized and thirty-two host-optimized ports. Target-optimized ports support up to 255 buffer credits per port which can provide high performance across extended distances. Host-optimized ports support twelve buffer credits per port which provides high performance with shortwave SFPs.

When deployed for midrange SAN applications, the 9120 and 9140 provide high performance and low cost attachment with a four-to-one fanout for high performance storage, such as IBM TotalStorage® Enterprise Storage Server® (ESS), and lower performance servers. When used for edge switch applications in a large enterprise SAN, large numbers of lower performance devices, maybe concentrated, four-to-one onto MDS 9000 family ports. Unlike traditional switches, 9100 switches can provide switch fanout without the use of ISLs which can reduce the number of usable ports and increase management complexity.

Designed for high availability

The Cisco MDS 9120 and 9140 Multilayer Fabric Switches are designed for high availability applications. Hot-swappable, redundant power supplies and fans and the ability to restart automatically failed supervisor processes combine to support high switch availability.

At the fabric level, Fabric Shortest Path First (FSPF) multipathing provides intelligent load balancing and, in the event of a switch failure, dynamic rerouting of traffic. Cisco MDS 9000 PortChannel capability allows aggregation of multiple physical links into one logical connection. The connection is able to sustain the failure of physical links without a fabric reset. The 9120 and 9140 can support up to seven and fifteen physical links respectively.

Simplified storage network management

The Cisco MDS 9120 and 9140 provides three principal modes of management: the management using the Cisco MDS 9000 Family command-line interface (CLI), management with Cisco Fabric Manager and integration with third-party storage management tools.

The Cisco MDS 9120 and 9140 are designed to present the user with a consistent, logical CLI. Adhering to the syntax of the widely known

Cisco IOS, Cisco, Fabric Manager is a Java™ interface which allows remote management from across the network.

Cisco Fabric Manager may be used independently or in conjunction with third-party management applications. Cisco provides an extensive application programming interface (API) for integration with third-party and user-developed management tools.

Multiple connectivity options help improve affordability

The unique architecture of the Cisco MDS 9000 family allows integration of new transport protocols for greater flexibility. For example, the Cisco MDS 9120 and 9140 are designed to be part of a Cisco MDS 9000 fabric which can support Fibre Channel, Internet SCSI, iSCSI and Fibre Channel over IP, FCIP.

MDS 9100 target-optimized ports provide 2Gbps Fibre Channel connectivity for high-performance applications. MDS 9100 host-optimized ports provide improved affordability with four-to-one fanout for lower performance servers. The MDS 9000 family offers even more affordable 1Gbps Ethernet connectivity for iSCSI servers.

Security for large enterprise SANs

Cisco MDS 9120 and 9140 Multilayer Fabric Switches employ a comprehensive security framework which can help address the most demanding customer storage networking requirements: They are designed to provide security measures at possible points of attack to help prevent unauthorized management access and snooping. These measures include Secure Shell (SSHv2), Simple Network Management Protocol (SNMPv3), RADIUS (Remote Authentication Dial-In User Service) authentication and Role-Based Access Control (RBAC).

Additionally, fabric traffic is secured through VSANs, which are designed to segregate traffic between multiple virtual fabrics within the single physical fabric infrastructure, and through hardware-enforced zoning, which further segregates traffic within each VSAN.

Advanced security and management

The Cisco MDS 9000 Enterprise Package is designed to provide advanced security and management capabilities. The package includes LUN Zoning, Read-only zones and Port lockdown.

Capabilities to help reduce TCO

VSAN capability allows more efficient SAN utilization by creating multiple isolated environments within a single SAN fabric. Each VSAN can be zoned as a typical SAN and maintains its own fabric services for added scalability and resilience. VSANs allow the cost of the SAN infrastructure to be shared among more users, while helping to segregate and secure traffic and retain independent control of configurations on a VSAN-by-VSAN basis.

Another example of the cost-effectiveness of the Cisco MDS 9120 and 9140 is their compatibility with other Cisco MDS 9000 switches. This compatibility enables customers to initially deploy separate MDS 9100 SAN islands and then to later consolidate these islands into a large enterprise SAN as their requirements change.

The 9120 and 9140 provide high port density which can help reduce the storage rack space and cost. Up to forty-two Cisco MDS 9100 Multilayer Fabric Switches may be installed in a single 42U rack, with up to 1680 ports in a single footprint.

Cisco MDS 9120 and 9140 Multilayer Fabric Switch at a glance[1]

Physical characteristics	
Dimensions	4.45 cm H x 43.7 cm W x 58.7 cm D (1.75 in x 17.2 in x 23.1 in)
Rack height	1RU
Weight (fully configured chassis)	11.4 kg (25 lb)
	Switches are rack-mountable in a standard 19-inch EIA rack, meeting Cisco requirements defined in the recommended installation procedures[2]. Front-to-rear airflow enables installation in industry standard 19-inch storage racks.
Operating environment	
Temperature	0° to 40° C (32° to 104° F)
Relative humidity	10% to 90%
Power supplies	300 W AC, two per chassis
Input	100 to 240 V AC; 50-60 Hz nominal
IBM product numbers	2061-020—Cisco MDS 9120 Multilayer Fabric Switch provides twenty ports (no SFP transceivers), dual AC power supplies, Manager, VSAN and PortChannel capabilities and one year, 8x5, next business day, parts only warranty 2061-040—Cisco MDS 9140 Multilayer Fabric Switch provides forty ports (no SFP transceivers), dual AC power supplies and dual fan trays with firmware for Cisco Fabric Manager, VSAN and PortChannel capabilities FC 4010—MDS 9000 Enterprise Package FC 5210—Tri-Rate shortwave SFP transceiver FC 5220—Tri-Rate longwave SFP transceiver FC 5230—Fibre Channel shortwave SFP FC 5240—Fibre Channel longwave SFP transceiver
Fiber optic cables:	Multimode, 50u fiber optical cables with SC and/or LC connectors are available
Supported systems[2]	IBM @server pSeries™ and selected IBM RS/6000® servers; IBM @server xSeries™ and selected IBM Netfinity® servers; other Intel® processor-based servers running the Linux®, Microsoft® Windows NT® or Microsoft Windows® 2000 operating systems; selected Sun™ and HP servers; IBM TotalStorage; Enterprise Storage Server (ESS); IBM TotalStorage FAStT storage servers; IBM TotalStorage Enterprise Tape System 3590 and 3592; Enterprise Tape Library 3494; IBM 3532, 3583 Ultrium® Tape Libraries and IBM 3584 UltraScalable Tape Library; and other selected

For more information

For more information, contact your IBM representative or IBM Business Partner.
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[1] For complete and current Cisco specifications, please visit www.cisco.com/go/ibm/storage.

[2] For the most current list of supported servers and storage, please visit **ibm.com**/storage/cisco.

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