

Cisco® MDS 9509 Multilayer Director



The Cisco MDS 9509 Multilayer Director offers dual Supervisor Modules with up to 224 Fibre Channel ports in a 14U enclosure

High performance and manageability for SANs

The Cisco MDS 9509 Multilayer Director provides 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 9509 to help address the needs for high performance and reliability in SAN environments ranging from small workgroups to very large, integrated enterprise SANs.

Highlights

- **Supports throughput of up to 2Gbps per port and up to 32Gbps with each PortChannel Inter-Switch Link (ISL) connection**
- **Offers scalability from 32 to 224 Fibre Channel ports**
- **Offers 8 to 40 Gigabit Ethernet ports for iSCSI or FCIP connectivity**
- **High-availability design with support for nondisruptive firmware upgrades**
- **Includes Virtual SAN (VSAN) capability for SAN consolidation into virtual SAN islands on a single physical fabric**

Routing and load balancing capabilities

The Cisco MDS 9509 Multilayer Director includes two Supervisor Modules to support high availability and performance. The Supervisor Module combines an intelligent control module and a high-performance crossbar switch fabric in a single unit. It uses Fabric Shortest Path First (FSPF) multipath routing, which supports load balancing across a maximum of 16 equal-cost paths to dynamically reroute traffic if a switch fails.

A single Supervisor Module has 720Gbps of internal nonblocking switching capacity; a dual Supervisor Module configuration provides a total bandwidth of 1.44Tbps. Because this bandwidth capability is more than twice that required for current 2Gbps modules, the Cisco MDS 9509 has built-in capacity to support future 10Gbps modules.

Connectivity, compatibility and traffic management

Switching modules are designed to optimize performance, flexibility and density. The Cisco MDS 9509 Multilayer Director requires a minimum of two and allows a maximum of seven switching modules. These modules are available in either a 16- or 32-port configuration, allowing the Cisco MDS 9509 to support 32 to 224 Fibre Channel ports per chassis.

16- and 32-port switching modules: configuring the switch for the application environment

The 16-port switching module is designed to deliver high performance for demanding storage networking applications. Autosensing 1Gbps and 2Gbps ports deliver up to 64Gbps of continuous aggregate bandwidth, which provides up to 200MB/sec and 255 buffer credits per port. The 16-port switching module is well suited for attaching high-performance

servers and storage subsystems as well as to connect to other switches using ISL connections.

The 32-port switching module is designed to deliver an optimal balance of performance and port density. It provides high line-card port density along with 32Gbps of total bandwidth. Bandwidth is allocated across eight 4-port groups, providing 4Gbps (200MB/sec) of sustained bandwidth per port-group. This module is designed to provide a low-cost means of attaching lower performance servers and storage subsystems to the high-performance crossbar switch fabric without requiring ISLs.

A switch designed for high availability

The Cisco MDS 9509 Multilayer Director combines support for nondisruptive software upgrades, stateful process restart/failover and redundancy of active hardware components to support director-class availability.

The Supervisor Module has the ability to automatically restart failed processes. If a Supervisor Module is reset, synchronization between the active and standby Supervisor Modules helps support stateful failover without disruption to traffic.

Simplified storage network management

The Cisco MDS 9509 provides three principal modes of management: the Cisco MDS 9000 Family command-line interface (CLI), Cisco Fabric Manager and integration with third-party storage management tools.

The Cisco MDS 9509 presents the user with a consistent, logical CLI. Adhering to the syntax of the widely known Cisco IOS multiprotocol support and traffic management features. The unique architecture of the CISCO MDS 9509 Multilayer Director allows integration of new transport protocols for greater flexibility. For example, the CISCO MDS 9509 is designed to support Fibre Channel, Internet SCSI (iSCSI) and Fibre Channel over IP (FCIP).

IP Storage Service Module features offer eight to forty Gigabit Ethernet ports for iSCSI or FCIP connectivity, software configurable on a port-by-port basis. The IP Storage Service Module feature provides eight iSCSI ports. The Tri-Rate Longwave SPF Transceiver feature is required for each port to be used. The FCIP Activation for 8 Port IP Services Module feature adds Fibre Channel over IP support.

Users may now use iSCSI for cost-effective connectivity to shared storage pools and FCIP for connectivity between data centers.

Cisco MDS 9509 Multilayer Director at a glance¹

Physical characteristics

Dimensions	62.3 cm H x 43.9 cm W x 46.8 cm D (24.5 in x 17.25 in x 18.4 in)
Rack height	14U
Depth including cable guide	55.0 cm (21.6 in)
Weight (fully configured chassis)	78 kg (170 lb)

Director switches are rack mountable in a standard 19-inch EIA rack, meeting Cisco requirements defined in the recommended installation procedures².

Operating environment

Temperature	0° to 40° C (32° to 104° F)
Relative humidity	10% to 90%
Power supplies	D07 Model: 2500 W AC T07 Model: 2500 W DC
Input	D07 Model: 100 to 240 V AC 50-60 Hz nominal T07 Model: -48 V DC
Output	D07 Model: 1300 W at 110 to 120 V AC 2500 W at 200 to 240 V AC

IBM product numbers

	2062-D07 ³ —Cisco MDS 9509 Multilayer Director designed for IT data centers, includes dual AC power supplies and one year, 24x7, same day, on-site warranty
	2062-T07 ³ —Cisco MDS 9509 Multilayer Director designed for telco environments, includes dual AC power supplies and one year, 24x7, same day, on-site warranty
	FC 2116—16-port 1Gbps and 2Gbps Fibre Channel Switching Module (no optics)
	FC 2132—32-port 1Gbps and 2Gbps Fibre Channel Switching Module (no optics)
	FC 2208—8 Port IP Services Module
	FC 2300 and 2301—Caching Services Modules (both required)
	FC 2210—FCIP Activation for 8 Port IP Services Module
	FC 5220—Tri-Rate LW SPF Transceiver (1 & 2 Gbps FC and Gig Ethernet)
	FC 5230—Fibre Channel port shortwave SFP transceiver
	FC 5240—Fibre Channel port longwave SFP transceiver
	FC 5810—Cisco Flash Memory Card
	FC 5811—Cisco Spare Flash Memory Card
	FC 7020—MDS 9000 Enterprise Package
	One and two year warranty extensions are available
Fiber optic cables	Multimode, 50u fiber optical cables with SC and/or LC connectors are available

Supported systems⁴

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 storage systems.

Security for large enterprise SANs

The Cisco MDS 9509 Director is designed to provide extensive security measures at possible points of attack to help prevent unauthorized access. 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, data plane 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.

IBM TotalStorage Virtualization Family

Cisco MDS 9000 Caching Service Modules are designed to provide advanced virtualization technology for use with IBM TotalStorage SAN Volume Controller software for Cisco MDS 9000. The modules provide scalable, in-band storage virtualization services within the network. This solution combines two modules into a high availability cluster with 16 GB of mirrored cache memory.

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 provide segregation and security of traffic and retaining independent control of configurations on a VSAN-by-VSAN basis.

The Cisco MDS 9509 shares common switching modules across Cisco MDS 9000 Directors and Switches. This enables customers to relocate switching modules as their requirements change.

For more information

For more information, contact your IBM representative or IBM Business Partner. Or visit

ibm.com/storage/cisco



© Copyright IBM Corporation 2003

IBM Corporation
9000 Rita Road
Tucson, AZ 85744

Produced in the United States of America
10-03

All Rights Reserved

IBM, the IBM logo, the e-business logo, Enterprise Storage Server, Netfinity, pSeries, RS/6000, TotalStorage and xSeries are trademarks of International Business Machines Corporation in the United States, other countries, or both.

Ultrium is a trademark of International Business Machines Corporation, Hewlett-Packard and Seagate.

Cisco and IOS are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

Intel is a trademark of Intel Corporation in the United States, other countries, or both.

Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

Java and Sun are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product and service names may be trademarks or service marks of others.

References in this publication to IBM products, programs or services do not imply that IBM intends to make them available in all countries in which IBM operates. IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may not be new and may have been previously installed.

Printed on an IBM Infoprint® Color System Full-Color Digital Printer.

¹ For complete and current Cisco specifications, please visit www.cisco.com/go/ibm/storage.

² Because this switch is designed with side-to-side airflow, Cisco recommends a minimum air space of 16 cm (6 in) between walls and the chassis air vents, and a minimum separation of 30 cm (12 in) between two chassis to prevent overheating.

³ Each model includes seven slots for 16- or 32-port switching modules, IP service modules, or both. The base configuration requires selection of a minimum of two switching modules and includes two Supervisor Modules, each with one Compact Flash Memory Drive, two power supplies, a fan tray and firmware support for Cisco Fabric Manager, VSAN and PortChannel.

⁴ For the most current list of supported servers and storage, please visit **ibm.com/storage/cisco**.