



Product Overview

The Cisco® MDS 9000 18/4-Port Multiservice Module (MSM) is optimized for deployment of high-performance SAN extension solutions, distributed intelligent fabric services, and cost-effective IP storage and mainframe connectivity in mission-critical enterprise storage networks.

The Cisco MDS 9000 18/4-Port Multiservice Module is supported in the Cisco MDS 9200 Series Multilayer Switches and MDS 9500 Series Multilayer Directors and offers 18 1-, 2-, and 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports. It provides multiprotocol capabilities, integrating, in a single form-factor, Fibre Channel, Fibre Channel over IP (FCIP), Cisco Storage Media Encryption (SME), Cisco MDS 9000 I/O Accelerator (IOA), Small Computer System Interface over IP (iSCSI), IBM Fiber Connectivity (FICON), FICON Control Unit Port (CUP) management, Cisco MDS 9000 Extended Remote Copy (XRC) Acceleration, and switch cascading.

The Cisco MDS 9000 18/4-Port Multiservice Module is ideal for mission-critical enterprise storage networks that require secure, robust, cost-effective disaster recovery and business continuance services. The module uses Cisco expertise and knowledge of IP networks to deliver outstanding SAN extension performance, reducing latency for disk and tape with FCIP acceleration features, including FCIP write acceleration and FCIP tape write and read acceleration. Hardware-based encryption secures sensitive traffic with IP Security (IPsec), and hardware-based compression dramatically enhances performance for both high- and low-speed links, enabling immediate cost savings in expensive WAN infrastructure.

Natively integrating the support for intelligent fabric applications, the Cisco MDS 9000 18/4-Port Multiservice Module provides a platform for distributed fabric services such as:

- Cisco SME, which encrypts data at rest on heterogeneous tape drives and virtual tape libraries (VTLs)
- Cisco Data Mobility Manager (DMM), which enables data migration between heterogeneous targets
- Cisco IOA feature, which provides SCSI acceleration to dramatically increase the number of SCSI I/O operations per second over long distances spanned by Fibre Channel and FCIP links by reducing the effect of transport latency on the processing of each operation

The module can transparently offer such advanced functions to any device connected to the fabric, facilitating ease of deployment, scalability, and high availability through clustering.

Figure 1 shows the Cisco MDS 9000 18/4-Port Multiservice Module, and Table 1 summarizes its main functions.

Figure 1. Cisco MDS 9000 18/4-Port Multiservice Module

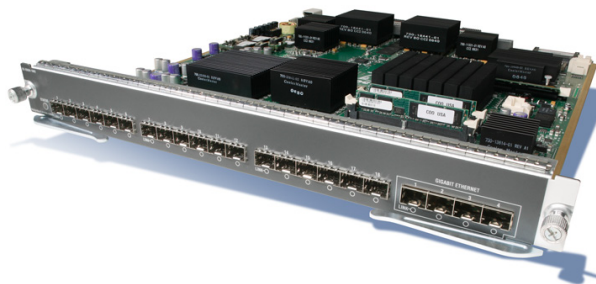


Table 1. Cisco MDS 9000 18/4-Port Multiservice Module Main Functions

Description	Integrated services multiprotocol module with 18 1-, 2-, and 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet ports
Main SAN services	<ul style="list-style-type: none">• FCIP high-performance SAN extension, reducing latency for both disk and tape with FCIP acceleration features, including FCIP write acceleration and FCIP tape write and read acceleration, and securing sensitive traffic with IPsec hardware-based encryption• Cisco IOA feature as a distributed fabric service• Flexible, cost-effective multiprotocol storage connectivity through Fibre Channel, iSCSI, and FICON• Cisco XRC Acceleration feature• Cisco SME as a distributed fabric service• Cisco DMM• Cisco Storage Services Enabler (SSE), enabling network-hosted and networked-assisted storage applications
Target group	Mission-critical enterprise storage networks

Main Features and Benefits

Integrated Fibre Channel and IP storage services in an optimized form factor: The module supports 18 4-Gbps Fibre Channel interfaces for high-performance SAN and mainframe connectivity and 4 Gigabit Ethernet ports for FCIP and iSCSI storage services. Individual ports can be configured with hot-swappable shortwave, longwave, extended-reach, coarse wavelength-division multiplexing (CWDM), or dense wavelength-division multiplexing (DWDM) Small Form-Factor Pluggables (SFPs) for connectivity of up to 125 miles (200 kilometers).

Integrated hardware-based virtual SANs (VSANs) and Inter-VSAN Routing (IVR): The module enables deployment of large-scale multisite and heterogeneous SAN topologies. Integration into port-level hardware allows any port within a system or fabric to be partitioned into any VSAN. Integrated hardware-based IVR provides line-



rate routing between any ports within a system or fabric without the need for external routing appliances.

FCIP for remote SAN extension:

- Simplifies data protection and business continuance 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 and encryption, FCIP write acceleration, and FCIP tape read and write acceleration; up to 16 virtual Inter-Switch Link (ISL) connections are provided on the 4 Gigabit Ethernet ports through tunneling
- Preserves Cisco MDS 9000 Family enhanced capabilities, including VSANs, advanced traffic management, and security, across remote connections

I/O acceleration:

- Provides SCSI acceleration to dramatically increase the number of SCSI I/O operations per second over long distances in a Fibre Channel or FCIP SAN by reducing the effect of transport latency on the processing of each operation
- Through transport- and speed-independent implementation, provides a unified solution for 1-, 2-, 4-, 8-, and 10-Gbps links over metropolitan area networks (MANs) and WANs
- Optimizes the utilization of MAN resources for backup and replication by enabling hardware-based compression
- With transparent insertion of the Cisco IOA service, requires no fabric reconfiguration or rewiring
- Provides a high availability, resilient, and scalable environment with PortChannels, service clustering, and Lightweight Resilient Transport Protocol (LRTP).

iSCSI for extension of SAN to Ethernet attached servers:

- Extends the benefits of Fibre Channel SAN-based storage to Ethernet attached servers at a lower cost than is possible using Fibre Channel interconnect alone
- Increases storage utilization and availability through consolidation of IP and Fibre Channel block storage
- Through transparent operation, preserves the capability of existing management storage applications

Advanced FICON services: The module supports FICON environments, including cascaded FICON fabrics, VSAN-enabled intermix of mainframe and open systems environments, N-port ID virtualization for mainframe Linux partitions, and the Cisco XRC Acceleration feature for improved performance and bandwidth utilization over WAN links for IBM z/OS Global Mirror dynamic updates.

Integrated Cisco SME: The module protects data at rest on heterogeneous tape drives and VTLs in a SAN environment using secure IEEE-standard Advanced Encryption Standard (AES) algorithms. Supported natively on the Cisco MDS 9000 18/4-Port Multiservice Module, Cisco SME capabilities are provided as a fabric service so that traffic between any host and storage device on the fabric can use the Cisco SME services. Furthermore, these encryption and compression capabilities are transparent to the hosts and storage devices and are available for devices in all VSANs in the fabric without the need for reconfiguration or rewiring, eliminating downtime for deployment. Cisco SME provisioning and key management are both integrated into Cisco Fabric Manager; no additional software is required.

Integrated Cisco DMM: The Cisco DMM is a SAN fabric-based software application that enables movement of blocks of data from a source device to a destination device. This data center-class solution helps address

the challenges of data migration, such as downtime, the need to add data migration software to servers, and the potential for data loss and corruption. By simply enabling the Cisco DMM feature on the Cisco MDS 9000 18/4-Port Multiservice Module located anywhere in the SAN, IT administrators can configure data migration without host agents, without rewiring, with little effect on performance, and without downtime.

Intelligent network services: The module uses VSAN technology for hardware-enforced, isolated environments within a single physical fabric, access control lists (ACLs) for hardware-based intelligent frame processing, and advanced traffic management features such as Fibre Channel congestion control and fabricwide quality of service (QoS) to facilitate migration from SAN islands to enterprisewide storage networks.

Network-hosted storage applications: The Cisco MDS 9222i Multiservice Modular Switch (MMS), MDS 9000 18/4-Port Multiservice Module, and MDS 9000 Storage Service Module (SSM) enables network-hosted storage applications on Cisco MDS 9500 Series Multilayer Directors and Cisco MDS 9200 Series Multilayer Switches. The Cisco MDS 9000 SSE Package enables these devices to host network-hosted storage applications by enabling the Intelligent Storage API (ISAPI).

Network-assisted storage applications (SANTap): The Cisco MDS 9000 SSE Package enables the Cisco MDS 9000 18/4-Port Multiservice Module to run storage applications through the SANTap interface. The Cisco MDS 9000 SANTap service enables customers to deploy EMC RecoverPoint using SANTap services to replicate heterogeneous storage without compromising the integrity, availability, and performance of the I/O operations between the host and primary storage target. Cisco SANTap provides a reliable copy of storage write operations, which enables continuous data protection (CDP) and continuous remote replication (CRR) for mission-critical



applications without the drawbacks associated with deployment of in-band data-path-based or out-of-band host-based devices. SANTap integrates with EMC RecoverPoint, requiring the corresponding Cisco MDS 9000 SSE Package to be installed on the Cisco MDS 9000 18/4-Port Multiservice Module.

High-performance ISLs: The module supports up to 16 Fibre Channel links in a single PortChannel. Links can span any port on any module within the chassis for added scalability and resilience. Up to 4095 buffer-to-buffer credits can be assigned to a single Fibre Channel port to extend storage networks over long distances.

Sophisticated diagnostics: The module provides intelligent diagnostics, protocol decoding, and network analysis tools as well as integrated Call Home capability for added reliability, faster problem resolution, and reduced service costs.

Comprehensive network security framework: The module supports RADIUS and TACACS+, Fibre Channel Security Protocol (FC-SP), Secure File Transfer Protocol (SFTP), Secure Shell (SSH) Protocol, and Simple Network Management Protocol Version 3 (SNMPv3) implementing AES, VSANs, hardware-enforced zoning, ACLs, and per-VSAN role-based access control (RBAC). RBAC provides separate control over management functions and access on a per-VSAN basis, enabling separation of duties between administrators on the same physical switch. Gigabit Ethernet ports support IPsec authentication, data integrity, and hardware-assisted data encryption.

IP Version 6 (IPv6) support: The module supports IPv6 as mandated by the U.S. Department of Defense (DoD), Japan, and China. IPv6 support is provided for FCIP, iSCSI, and management traffic routed in-band and out-of-band.

Software License Packages

Table 2 summarizes the software license packages for the Cisco MDS 9000 18/4-Port Multiservice Module.

Table 2. Cisco MDS 9000 18/4-Port Multiservice Module Software License Packages

	Description	Features
Cisco SAN Extension over IP Package	The Cisco SAN Extension over IP Package provides an integrated, cost-effective, and reliable business continuance 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.	FCIP support, FCIP compression, IVR for FCIP, FCIP write acceleration, FCIP read and write tape acceleration, and SAN extension tuner are provided.
Cisco MDS 9000 SME Package	The Cisco MDS 9000 SME Package enables encryption of storage media (data at rest).	Strong, IEEE-standard AES encryption for heterogeneous tape drives and VTRs and tape data compression are provided as a distributed fabric service.
Cisco MDS 9000 IOA Package	The Cisco IOA feature provides SCSI acceleration to dramatically increase the number of SCSI I/O operations per second over long distances spanned by Fibre Channel and FCIP links by reducing the effect of transport latency on the processing of each operation.	I/O Acceleration for Fibre Channel and FCIP write acceleration and tape acceleration.

	Description	Features
Cisco MDS 9000 XRC Acceleration Package	The Cisco XRC Acceleration feature provides acceleration of z/OS Global Mirror (often referred to by its former name of XRC) dynamic updates across WAN links between primary FICON disk storage (direct-access storage device [DASD]) and the remote IBM System Data Mover (SDM) System z	Improve performance and bandwidth utilization over WAN links for IBM z/OS Global Mirror dynamic updates.
Cisco MDS 9000 Storage Services Enabler (SSE) package	Cisco SSE provides the underlying infrastructure and programmatic interface to enable intelligent fabric applications. The Cisco MDS 9000 SSE Package enables network-hosted storage applications and network-assisted storage applications such as SANTap for EMC RecoverPoint on the Cisco MDS 9000 18/4-Port Multiservice Module.	Network-hosted storage applications and network-assisted storage applications such as SANTap for EMC Recoverpoint

For More Information

For more information about the Cisco MDS 9000 18/4-Port Multiservice Module, visit <http://www.cisco.com/go/storage> or contact your local account representative.