Cisco MDS 9200 Series Multiservice Switches and 9100 Series Multilayer Switches

Overview
Cisco® MDS 9200 Series Multiservice Switches and 9100 Series Multilayer Switches are fabric switches designed for deployment in small to medium-sized enterprise SANs. The Cisco MDS 9200 Series switches deliver state-of-the-art multiprotocol and distributed multiservice convergence, offering high-performance SAN extension and disaster-recovery solutions, intelligent fabric services, and cost-effective multiprotocol connectivity for both open systems and mainframe environments. With a compact form factor and advanced capabilities normally available only on director-class switches, the Cisco MDS 9200 Series switches provide an ideal solution for departmental and remote branch-office SANs. The Cisco MDS 9100 Series switches are cost-effective, scalable, easy-to-install, and highly configurable Fibre Channel switches that are ideal for small to medium-sized businesses. With high port densities, the Cisco MDS 9100 Series switches easily scale from an entry-level departmental switch to a top-of-the-rack switch, providing edge-switch connectivity to enterprise core SANs.

Cisco MDS NX-OS Software
The Cisco MDS NX-OS Software, included at no charge with every Cisco SAN switch, is the underlying system software that powers the Cisco MDS 9200 and 9100 Series switches. Cisco MDS NX-OS provides many unique features that help the Cisco MDS 9200 and 9100 Series switches deliver low TCO and a quick return on investment (ROI). It supports remote SAN extension capabilities on the Cisco MDS 9200 Series switches that simplify data-protection and business-continuance strategies. By providing an open, standards-based platform, Cisco MDS 9000 NX-OS enables intelligent fabric applications such as Cisco I/O Accelerator (IOA) for increased performance and reduced latency over long-distance SAN extension links and Cisco Data Mobility Manager (DMM) for heterogeneous data migration between storage arrays.

Cisco MDS NX-OS provides services optimized for virtual machines and blade servers that let IT managers dynamically respond to changing business needs in virtual environments. It supports IPv6 as mandated by the U.S. Department of Defense (DoD), Japan, and China. The Cisco MDS 9200 and 9100 Series switches are FIPS compliant as mandated by the U.S. federal government.

Cisco Prime Data Center Network Manager Software
Cisco Prime Data Center Network Manager (DCNM) is the network industry's first converged SAN and LAN management solution. The Cisco DCNM solution is an integral part of the Cisco MDS and Cisco Nexus® platforms for the provisioning and monitoring of intelligence services and multiprotocol traffic across Fibre Channel and Ethernet. The solution is designed to scale to large enterprise deployments through scale-out server architecture with automated failover capability. These capabilities provide a resilient management system that centralizes infrastructure and path monitoring across geographically dispersed data centers.

The Cisco DCNM essential management functions are available at no charge with the Cisco MDS switches; advanced features are unlocked with a license.

To learn more about Cisco DCNM, go to http://www.cisco.com/go/dcnm.
## Cisco MDS 9200 and 9100 Series Switch Models

Table 1 summarizes the Cisco MDS 9200 and 9100 Series switches.

**Table 1. Cisco MDS 9200 and 9100 Series Switches**

<table>
<thead>
<tr>
<th>Switch Type</th>
<th>Cisco MDS 9250i Multiservice Fabric Switch</th>
<th>Cisco MDS 9222i Multiservice Modular (MSM) Switch</th>
<th>Cisco MDS 9148 Multilayer Fabric Switch</th>
<th>Cisco MDS 9148S 16G Multilayer Fabric Switch</th>
</tr>
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</table>
| Part Number | Original storage manufacturer (OSM) part number:  
- DS-C9250i-K9  
Cisco Direct part numbers:  
- DS-C9250iD16GSFPK9  
- DS-C9250iD8GSFPK9  
- M9250ID20-16GSFP=  
- M9250ID20-8GSFP= | OSM and Cisco Direct part number:  
- DS-C9222i-K9 | OSM part numbers:  
- DS-C9148-16P-K9  
- DS-C9148-32P-K9  
- DS-C9148-48P-K9  
Cisco Direct part numbers:  
- DS-C9148D-8G16P-K9  
- DS-C9148D-8G32P-K9  
- DS-C9148D-8G48P-K9  
- DS-C9148D-4G16P-K9  
- DS-C9148D-4G32P-K9  
- DS-C9148D-4G48P-K9 | OSM and Cisco Direct part numbers:  
- DS-C9148S-12PK9  
- DS-C9148S-48PK9  
- DS-C9148S-D12PSK9  
- DS-C9148S-D48PSK9  
- DS-C9148S-D12P8K9  
- DS-C9148S-D48P8K9 |
| Description | Fixed, multiprotocol fabric switch (2 rack units [2RU]) capable of running intelligent storage services | Semimodular, multiprotocol fabric switch (3RU) capable of running intelligent storage services | Fixed, multilayer Fibre Channel fabric switch (1RU) | Fixed, multilayer Fibre Channel fabric switch (1RU) |
| Ports and Slots per Chassis | Up to 50 fixed ports including 40 x 16-Gbps Fibre Channel, 2 x 10-Gbps FCIP, and 8 x 10-Gbps FCoE | Base (fixed slot): 18 fixed 4-Gbps Fibre Channel ports and 4 fixed 1-Gbps Ethernet ports  
Expansion slot: 1 empty expansion slot with support for the following:  
- Cisco MDS 9000 Family 18/4-Port Multiservice Module (MSM)  
- Cisco MDS 9000 16-Port Storage Services Node (SSN) | Up to 48 fixed 8-Gbps Fibre Channel ports | Up to 48 fixed 16-Gbps Fibre Channel ports |
| Target Customer | Medium-sized and large enterprises and service providers | Small, medium-sized, and large enterprises | Small to medium-sized enterprises | Small to medium-sized enterprises |
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#### Optics Supported

- 16-Gbps Fibre Channel SW and LW Enhanced Small Form-Factor Pluggable (SFP+)
- 8-Gbps Fibre Channel SW and LW SFP+
- 10-Gbps Fibre Channel SW and LW SFP+
- 10 Gigabit Ethernet SR and LR SFP+
- 8-Gbps Fibre Channel SW and LW SFP+
- 10-Gbps Fibre Channel SR, LR, and ER transceivers
- 2-Gbps CWDM and dense wavelength-division multiplexing (DWDM) SFP
- 1 Gigabit Ethernet SX and LX SFP
- 16-Gbps Fibre Channel SW and LW SFP+
- 4-Gbps Fibre Channel SW, CWDM, and DWDM SFP
- 8-Gbps Fibre Channel SW, LW, ER and CWDM SFP

#### Supported Software Packages

- Cisco Enterprise
- Cisco DNM
- Cisco SAN Extension over IP (built in)
- Cisco IOA
- Cisco DMM
- Cisco Mainframe and Extended Remote Copy (XRC) Acceleration

- Cisco Enterprise
- Cisco DNM
- Cisco SAN Extension over IP
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#### Recommended Solutions

- High-performance SAN extension solutions
- Distributed intelligent fabric services
- Data mobility and migration
- Cost-effective multiprotocol connectivity for both open systems and mainframe environments

- Edge connectivity to enterprise core SANs
- Business continuance

- Standalone departmental SAN
- Top-of-the-rack in a redundant fabric
- Edge connectivity to enterprise core SANs
Cisco MDS 9200 and 9100 Family Software License Packages

In addition to the unique software features included in the base switch configuration such as integrated VSANs, an advanced security suite, advanced diagnostics and troubleshooting tools, and the comprehensive Cisco DCNM, Cisco offers an advanced set of software features logically grouped in software license packages (Table 2).

Table 2. Cisco MDS 9200 Family Licenses

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<tr>
<th>License Type</th>
<th>Cisco Enterprise</th>
<th>Cisco DCNM</th>
<th>Cisco SAN Extension over IP</th>
<th>Cisco IOA</th>
<th>Cisco DMM</th>
<th>Cisco Mainframe</th>
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<td>Description</td>
<td>The Cisco MDS 9000 Enterprise package includes advanced traffic engineering and advanced security features for enterprise SANs.</td>
<td>Cisco Prime DCNM is the network industry’s first converged SAN and LAN management solution. Cisco DCNM can manage all Cisco NX-OS software-based devices including the Cisco MDS and Nexus products. The intuitive GUI simplifies day-to-day operations of Cisco Unified Fabrics in today’s highly virtualized data center environments.</td>
<td>The Cisco MDS 9000 SAN Extension over IP package provides an integrated, cost-effective, and reliable business-continuance solution that uses the existing IP infrastructure.</td>
<td>Cisco MDS 9000 IOA provides a fabric-based service to accelerate SCSI disk write and tape read and write I/O operations across metropolitan area network (MAN) and WAN links. The IOA feature is delivered as a highly available service with clustering capability, increasing reliability, performance, scalability, and application stability.</td>
<td>The Cisco DMM license is required to enable the Cisco MDS 9000 Family data migration feature. Two versions of the license are available. A permanent license that does not have any expiration period is available only to end-user customers who want to use this feature for their own data mobility needs and do not plan to sell services using this product. Service provider customers expecting to sell services based on Cisco DMM must purchase the 180-day license.</td>
<td>The Cisco Mainframe package includes features required in mainframe environments. IBM Fibre Connection (FICON) is an architecture for high-speed connectivity between mainframe and I/O devices.</td>
<td>Cisco MDS 9000 XRC Acceleration accelerates dynamic updates for IBM z/OS Global Mirror (formerly called XRC) over WAN links when used in conjunction with the Cisco MDS 9000 SAN Extension over IP and Mainframe packages.</td>
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<td>Features</td>
<td>Advanced traffic management, Inter-VSAN Routing (IVR), quality of service (QoS), and extended credits) and security features (switch-to-switch and host-to-switch authentication, port security, VSAN-based access control, IP Security (IPsec) for iSCSI, and FCIP), Internet Key Exchange (IKE) digital certificates, and fabric binding for Fibre Channel</td>
<td>Monitoring of events and performance historically and at scale</td>
<td>FCIP support including FCIP compression, write acceleration, and read and write tape acceleration; SAN extension tuner, and IVR for FCIP</td>
<td>Acceleration of disk write and tape read and write operations over both WAN FCIP and MAN Fibre Channel links, transparent insertion of fabric service, clustering of IOA service engines with load balancing and failover, PortChannels across line cards for Fibre Channel and FCIP, and compression for Fibre Channel links</td>
<td>Transparent insertion of service (Cisco MDS 9000 Family customers can turn on this service and move data from one array to another without any disruption of host applications), capability to schedule cutover to the new array (the point at which the old array is phased out), rate control of administrative traffic, and synchronous and asynchronous migration both within and across geographically dispersed data centers</td>
<td>VSAN for FICON and FCP intermixing, FICON Control Unit Protocol (CUP), fabric binding, switch cascading, IBM TotalStorage Virtual Tape Server, IBM TotalStorage XRC, FICON native mode and native mode channel-to-channel operation, persistent FICON FCID assignment, port swapping for host channel cable connectors, and FICON tape acceleration</td>
<td>Elimination of the need for a separate FICON acceleration appliance by running on the Cisco MDS 9222i or MDS 9000 18/4-Port Multiservice Module (MSM) used for FCIP, support for multiple IBM Service Delivery Manager (SDM) appliances, readers, Parallel Access Volumes (PAVs), and HyperPAVs; and simple management from the command-line interface (CLI), Cisco DCNM GUI, or IBM z/OS tools</td>
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For More Information

For more information, please visit [http://www.cisco.com/go/mds](http://www.cisco.com/go/mds).