



CISCO MDS 9000 SERIES SAN-OS RELEASE 2.1(1)

This publication discusses the Cisco® MDS 9000 Series multilayer switches that run Cisco MDS 9000 Series SAN-OS Release 2.1(1). Descriptions provided are for hardware features supported (Table 1), software features available (Table 2), and software ordering information (Table 3).

SUPPORTED HARDWARE

Table 1. Software Release 2.1(1) Hardware Features

Product (Part Number)	Description
Cisco MDS 9509 Multilayer Director Switch (DS-C9509)	A 9-slot multilayer director; the modular chassis requires 2 slots for supervisor-engine modules with 7 slots available for switching modules; the supervisor-engine module consists of a control engine and an integrated crossbar
Cisco MDS 9506 Multilayer Director Switch (DS-C9506)	A 6-slot multilayer director; the modular chassis requires 2 slots for supervisor-engine modules with 4 slots available for switching modules; the supervisor-engine module consists of a control engine and an integrated crossbar
Cisco MDS 9216A Multilayer Fabric Switch (DS-C9216A-K9)	A 3-rack unit (RU) semimodular fabric switch with sixteen 2-Gbps Fibre Channel ports and an optional switching module or services module
Cisco MDS 9216i Multilayer Fabric Switch (DS-C9216i-K9)	A 3-RU semimodular fabric switch with fourteen 2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, and an optional switching module or services module
Cisco MDS 9140 40-Port Multilayer Fabric Switch (DS-C9140-K9)	A 1-RU fixed-configuration fabric switch with forty 2-Gbps Fibre Channel ports
Cisco MDS 9120 20-Port Multilayer Fabric Switch (DS-C9120-K9)	A 1-RU fixed-configuration fabric switch with twenty 2-Gbps Fibre Channel ports
Cisco MDS 9500 Series Supervisor Module (DS-X9530-SF1-K9)	Supervisor-engine module for the Cisco MDS 9500 Series multilayer directors
Cisco MDS 9000 16-Port Fibre Channel Switching Module, Single Form-Factor Pluggable (SFP)/LC (DS-X9016)	16-port 2-Gbps Fibre Channel switching module with SFP/LC connectors for the Cisco MDS 9200 Series multilayer fabric switches and Cisco MDS 9500 Series
Cisco MDS 9000 32-port Fibre Channel Switching Module, SFP/LC (DS-X9032)	32-port 2-Gbps Fibre Channel switching module with SFP/LC connectors for the Cisco MDS 9200 and MDS 9500 series
Cisco MDS 9000 14/2-Port Multiprotocol Services Module (DS-X9302-14K9)	14-port 2-Gbps Fibre Channel plus 2-port Gigabit Ethernet IP services and switching module with SFP/LC connectors for the Cisco MDS 9200 and MDS 9500

Product (Part Number)	Description
	series
Cisco MDS 9000 8-Port IP Storage Services Module (DS-X9308-SMIP)	8-port Gigabit Ethernet IP SSM for the Cisco MDS 9200 and MDS 9500 series
Cisco MDS 9000 4-Port IP Storage Services Module (DS-X9304-SMIP)	4-port Gigabit Ethernet IP SSM for the Cisco MDS 9200 and MDS 9500 series
Cisco MDS 9000 Advanced Services Module (ASM) (DS-X9032-SMV)	Module for VERITAS with 32-port 2-Gbps SFP/LC connectors for the Cisco MDS 9200 and MDS 9500 series
Cisco MDS 9000 Caching Services Module (DS-X9560-SMC)	Caching services module for the Cisco MDS 9200 and MDS 9500 series
Cisco MDS 9000 Storage Services Module (DS-X9032-SSM)	Storage services module with 32-port 2-Gbps SFP/LC connectors for the Cisco MDS 9200 and MDS 9500 series
1- or 2-Gbps autosensing SFP/LC interface, shortwave (DS-SFP-FC-2G-SW)	SFP (LC type) for 1- or 2-Gbps Fibre Channel for shortwave mode for the Cisco MDS 9000 Series
1- or 2-Gbps autosensing SFP/LC interface, longwave (DS-SFP-FC-2G-LW)	SFP (LC type) for 1- or 2-Gbps Fibre Channel for longwave mode for the Cisco MDS 9000 Series
1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel shortwave SFP/LC interface (DS-SFP-FCGE-SW)	SFP (LC type) for 1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel for shortwave mode for the Cisco MDS 9000 Series
1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel longwave SFP/LC interface (DS-SFP-FCGE-LW)	SFP (LC type) for 1-Gbps Ethernet and 1- or 2-Gbps Fibre Channel for longwave mode for the Cisco MDS 9000 Series
Coarse wavelength-division multiplexing (CWDM) Gigabit Ethernet and 1- or 2-Gbps Fibre Channel SFP/LC interface (CWDM-SFP-xxxx-2G)	CWDM Gigabit Ethernet and 1- or 2-Gbps Fibre Channel SFP/LC for the Cisco MDS 9000 Series, wherein the product number xxxx = 1470, 1490, 1510, 1530, 1550 , 1570, 1590, or 1610 nm
Four-wavelength add/drop multiplexer (ADM) (CWDM-MUX-4)	ADM for four CWDM wavelengths
Eight-wavelength ADM (CWDM-MUX-8)	ADM for eight CWDM wavelengths
CWDM multiplexer chassis (CWDM-CHASSIS-2)	Two-slot chassis for CWDM ADMs
300-WAC power supply (DS-CAC-300W)	AC power supply for Cisco MDS 9100 Series multilayer fabric switches
845-WAC power supply (DS-CAC-845W)	AC power supply for Cisco MDS 9200 Series
2500-WAC power supply (DS-CAC-2500W)	AC power supply for Cisco MDS 9509
2500-WDC power supply (DS-CDC-2500W)	DC power supply for Cisco MDS 9509

Product (Part Number)	Description
4000-WAC power supply (DS-CAC-4000W-US)	AC power supply for Cisco MDS 9509, for use in the United States (cable attached)
4000-WAC power supply (DS-CAC-4000W-INT)	AC power supply for Cisco MDS 9509, for international use (cable attached)
1900-WAC power supply (DS-CAC-1900W)	AC power supply for Cisco MDS 9506
1900-WDC power supply (DS-CDC-1900W)	DC power supply for Cisco MDS 9506
512-MB compact Flash memory (MEM-MDS-FLD512M)	Cisco MDS 9500 Series external 512-MB compact Flash memory for supervisor-engine module
Cisco MDS 9000 Port Analyzer Adapter (DS-PAA-2, DS-PAA)	Cisco MDS 9000 Port Analyzer Adapter for troubleshooting and analysis of Fibre Channel traffic

SOFTWARE FEATURES

Table 2. Software Version 2.1(1) Features

Software Feature	Description
Network-Accelerated Serverless Backup	Network-Accelerated Serverless Backup provides data movement in the storage network using the industry-standard Extended Copy capability. This feature is available only on the SSM and ASM.
Fabric Application Interface Standard (FAIS)-Based Application Programming Interface (API)	The FAIS-based API helps enable partner application software to run on a control processor, while the data path is handled by purpose-built application-specific integrated circuits (ASICs) on the SSM and ASM.
SANTap Protocol	SANTap allows appliance-based intelligent storage applications to be enabled without impacting the performance, integrity, and availability of their existing storage area network (SAN). This feature is available only on the SSM and ASM.
Inter-VSAN Routing (IVR) with Network Address Translation (NAT)	NAT eliminates the need for unique domain identifiers with IVR, and it allows routing between virtual SANs (VSANs) with the same VSAN identifier.
Auto-Compression	Auto-compression for Fibre Channel over IP (FCIP) automatically picks the appropriate compression scheme based on the bandwidth of the link.
Small Computer System Interface over IP (iSCSI) Cut-Through	The iSCSI cut-through mode forwards data immediately, except it generates only one iSCSI protocol data unit (PDU) for each Fibre Channel exchange or each maximum data segment length (MDSL) if a Fibre Channel exchange is bigger than MDSL. This improves data copy efficiency and reduces latency.
iSCSI Immediate Data	iSCSI immediate data improves performance of short writes by sending data in the same PDU as the SCSI write command. This helps eliminate the delay from the command until the initial ready-to-transfer.
Cisco Fabric Manager Server (FMS) Proxy Services	The Cisco FMS proxy services help isolate private IP networks used for Cisco MDS management from the LANs or WANs used for remote connectivity, and enhance resiliency by transporting management traffic between the Cisco Fabric Manager client and server over TCP/IP.
User-Interface Modes	Cisco Fabric Manager offers a standard user-interface mode that provides access to all capabilities, and a

Software Feature	Description
	basic mode that simplifies the interface to streamline access to the most frequently used features.
License Packages	<p>The Cisco MDS 9000 Series FMS package now includes:</p> <ul style="list-style-type: none"> • FMS proxy services <p>The Cisco MDS 9000 Series Storage Services Enabler (SSE) package now includes the following additional features:</p> <ul style="list-style-type: none"> • Network-Accelerated Serverless Backup • FAIS-based API for virtualization • SANTap Protocol
MIBs	<p>This release supports the following additional MIBs:</p> <ul style="list-style-type: none"> • CISCO-SAN-TAP-MIB • CISCO-TPC-MIB

ORDERABLE SOFTWARE IMAGES

Table 3 lists the software images and applicable ordering information for the Cisco MDS 9500 Series.

Table 3. Software Ordering Information

Part Number	Description
M95S1K9-2.1.1	Cisco MDS 9500 Supervisor Engine with fabric-I, SAN-OS Software Release 2.1.1
M92S1K9-2.1.1	Cisco MDS 9216 Supervisor Engine with fabric-I, SAN-OS Software Release 2.1.1
M91S1K9-2.1.1	Cisco MDS 9100 Supervisor Engine with fabric-I, SAN-OS Software Release 2.1.1

For more detailed information about this Cisco Systems® software release, refer to the Cisco MDS 9000 Series release notes at:

http://www.cisco.com/en/US/products/hw/ps4159/ps4358/prod_release_notes_list.html

For more information about the Cisco MDS 9000 Series, refer to the product literature at:

http://www.cisco.com/en/US/products/hw/ps4159/ps4358/prod_literature.html

Note: For more details about licensed packages, refer to the fact sheets listed with the product literature.

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