



## Cisco MDS 9000 SAN-OS Software Release 3.0(1)

This product bulletin discusses the Cisco® MDS 9000 Family multilayer switches that run Cisco MDS 9000 SAN-OS Software Release 3.0(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 3.0(1) Supported Hardware Features

| Product (Part Number)  | Description  |
|--|--|
| Cisco MDS 9513 Multilayer Director (DS-C9513)  | 13-slot multilayer director; modular chassis requires 2 slots for Supervisor-2 modules, with 11 slots available for switching modules. Supervisor-2 module provides control engine for MDS 9513. Two crossbar modules provide 2.2 Tbps of chassis switching bandwidth. |
| Cisco MDS 9509 Multilayer Director (DS-C9509)  | 9-slot multilayer director; modular chassis requires 2 slots for supervisor modules, with 7 slots available for switching modules; supervisor module consists of control engine and integrated crossbar.   |
| Cisco MDS 9506 Multilayer Director (DS-C9506)  | 6-slot multilayer director; modular chassis requires 2 slots for supervisor modules, with 4 slots available for switching modules; supervisor module consists of control engine and integrated crossbar.   |
| Cisco MDS 9216A Multilayer Fabric Switch (DS-C9216A-K9)  | 3-rack unit (RU) semimodular fabric switch with 16 2-Gbps Fibre Channel ports and optional switching module or services module.  |
| Cisco MDS 9216i Multilayer Fabric Switch (DS-C9216i-K9)  | 3-RU semimodular multilayer fabric switch with 14 2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, and optional switching module or services module.  |
| Cisco MDS 9140 40-Port Multilayer Fabric Switch (DS-C9140-K9)  | 1-RU fixed-configuration multilayer fabric switch with 40 2-Gbps Fibre Channel ports.  |
| Cisco MDS 9120 20-Port Multilayer Fabric Switch (DS-C9120-K9)  | 1-RU fixed-configuration multilayer fabric switch with 20 2-Gbps Fibre Channel ports.  |
| Cisco MDS 9500 Series Supervisor-2 Module (DS-X9530-SF2-K9)  | Supervisor-2 module for Cisco MDS 9500 Series multilayer directors.  |
| Cisco MDS 9500 Series Supervisor-1 Module (DS-X9530-SF1-K9)  | Supervisor-1 module for Cisco MDS 9509 and MDS 9506 multilayer directors.  |
| Cisco MDS 9000 16-Port Fibre Channel Switching Module, Small Form-Factor Pluggable (SFP)/LC (DS-X9016) | 16-port, 2-Gbps Fibre Channel switching module with SFP/LC connectors for Cisco MDS 9200 Series multilayer fabric switches and Cisco MDS 9500 Series.  |
| Cisco MDS 9000 32-Port 2-Gbps Fibre Channel Switching Module, SFP/LC (DS-X9032)                        | 32-port, 2-Gbps Fibre Channel switching module with SFP/LC connectors for Cisco MDS 9200 and MDS 9500 series.  |
| Cisco MDS 9000 12-Port 4-Gbps Fibre Channel Switching Module, SFP/LC (DS-X9112)                        | 12-port, 4-Gbps Fibre Channel switching module with SFP/LC connectors for Cisco MDS 9200 and MDS 9500 Series.  |

| Product (Part Number)  | Description  |
|--|--|
| Cisco MDS 9000 24-Port 4-Gbps Fibre Channel Switching Module, SFP/LC (DS-X9124)  | 24-port, 4-Gbps Fibre Channel switching module with SFP/LC connectors for Cisco MDS 9200 and MDS 9500 Series.  |
| Cisco MDS 9000 48-Port 4-Gbps Fibre Channel Switching Module, SFP/LC (DS-X9148)  | 48-port, 4-Gbps Fibre Channel switching module with SFP/LC connectors for Cisco MDS 9200 and MDS 9500 Series.  |
| Cisco MDS 9000 4-Port 10-Gbps Fibre Channel Switching Module, SFP/LC (DS-X9704)  | 4-port, 10-Gbps Fibre Channel switching module with X2/SCconnectors for 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 Cisco MDS 9200 and MDS 9500 series.   |
| Cisco MDS 9000 8-Port IP Storage Services Module (DS-X9308-SMIP)   | 8-port Gigabit Ethernet IP storage services module for Cisco MDS 9200 and MDS 9500 series.   |
| Cisco MDS 9000 4-Port IP Storage Services Module (DS-X9304-SMIP)   | 4-port Gigabit Ethernet IP storage services module for Cisco MDS 9200 and MDS 9500 series.   |
| Cisco MDS 9000 Storage Services Module (DS-X9032-SSM)  | 32-port, 2-Gbps storage services module with SFP/LC connectors for Cisco MDS 9200 and MDS 9500 series.   |
| 10-Gbps X2 interface, shortwave (DS-X2-FC10G-SR)   | X2/SC optics for 10-Gbps Fibre Channel for shortwave mode for Cisco MDS 9500 and MDS 9200 series.  |
| 10-Gbps X2 interface, shortwave (DS-X2-FC10G-LR)   | X2/SC optics for 10-Gbps Fibre Channel for longwave mode for Cisco MDS 9500 and MDS 9200 series.   |
| 1-Gpbs, 2-Gpbs, or 4-Gbps autosensing SFP/LC interface, shortwave (DS-SFP-FC4G-SW)   | SFP optics (LC type) for 1-Gpbs, 2-Gpbs, or 4-Gbps Fibre Channel for shortwave mode for Cisco MDS 9020 and DS-X91xx switching modules.   |
| 1-Gpbs, 2-Gpbs, or 4-Gbps autosensing SFP/LC interface, longwave (4-km reach) (DS-SFP-FC4G-MR)   | SFP optics (LC type) for 1-Gpbs, 2-Gpbs, or 4-Gbps Fibre Channel for longwave mode for Cisco MDS 9020 and DS-X91xx switching modules. Supports distances up to 4 km.                                   |
| 1-Gpbs, 2-Gpbs, or 4-Gbps autosensing SFP/LC interface, longwave (DS-SFP-FC4G-LW)  | SFP optics (LC type) for 1-Gpbs, 2-Gpbs, or 4-Gbps Fibre Channel for longwave mode for Cisco MDS 9020 and DS-91xx switching modules. Supports distances up to 10 km.                                   |
| 1-Gpbs or 2-Gbps autosensing SFP/LC interface, shortwave (DS-SFP-FC-2G-SW)   | SFP optics (LC type) for 1-Gpbs or 2-Gbps Fibre Channel for shortwave mode for Cisco MDS 9500, MDS 9200, and MDS 9100 series. Not supported for use in 4-Gbps-capable ports.                           |
| 1-Gpbs or 2-Gbps autosensing SFP/LC interface, longwave (DS-SFP-FC-2G-LW)  | SFP optics (LC type) for 1-Gpbs or 2-Gbps Fibre Channel for longwave mode for Cisco MDS 9500, MDS 9200, and MDS 9100 series. Not supported for use in 4-Gbps-capable ports.                            |
| 1-Gbps Ethernet and 1-Gbps or 2-Gbps Fibre Channel shortwave SFP/LC interface (DS-SFP-FCGE-SW)   | SFP optics (LC type) for 1-Gbps Ethernet and 1-Gpbs or 2-Gbps Fibre Channel for shortwave mode for Cisco MDS 9500, MDS 9200, and MDS 9100 series. Not supported for use in 4-Gbps-capable ports.       |
| 1-Gbps Ethernet and 1-Gpbs or 2-Gbps Fibre Channel longwave SFP/LC interface (DS-SFP-FCGE-LW)  | SFP optics (LC type) for 1-Gbps Ethernet and 1-Gpbs or 2-Gbps Fibre Channel for longwave mode for Cisco MDS 9500, MDS 9200, and MDS 9100 series. Not supported for use in 4-Gbps-capable ports.        |
| 1-Gbps Ethernet SFP/HSSDC-2 interface (DS-SFP-T)   | SFP (HSSDC-2 type) for Gigabit Ethernet over copper for Cisco MDS 9500, MDS 9200, and MDS 9100 series.   |
| Coarse wavelength-division multiplexing (CWDM) Gigabit Ethernet and 1-Gpbs or 2-Gbps Fibre Channel SFP/LC interface (CWDM-SFP-xxxx-2G) | CWDM Gigabit Ethernet and 1-Gpbs or 2-Gbps Fibre Channel SFP/LC for Cisco MDS 9500, MDS 9200, and MDS 9100 series, wherein product number xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm. |
| 4-wavelength add/drop multiplexer (ADM) (CWDM-MUX-4)   | ADM for 4 CWDM wavelengths.  |

| Product (Part Number)                                   | Description   |
|---|---|
| 8-wavelength ADM (CWDM-MUX-8)                           | ADM for 8 CWDM wavelengths.   |
| CWDM multiplexer chassis (CWDM-CHASSIS-2)               | 2-slot chassis for CWDM ADMs.   |
| 300WAC power supply (DS-CAC-300W)                       | 300W AC power supply for Cisco MDS 9100 Series multilayer fabric switches.                      |
| 845WAC power supply (DS-CAC-845W)                       | 845W AC power supply for Cisco MDS 9200 Series.   |
| 2500WAC power supply (DS-CAC-2500W)                     | 2500W AC power supply for Cisco MDS 9509.   |
| 2500WDC power supply (DS-CDC-2500W)                     | 2500W DC power supply for Cisco MDS 9509.   |
| 3000WAC power supply (DS-CAC-3000W)                     | 3000W AC power supply for Cisco MDS 9509.   |
| 4000WAC power supply (DS-CAC-4000W-US)                  | 4000W AC power supply for Cisco MDS 9509, for use in United States (cable attached).            |
| 4000WAC power supply (DS-CAC-4000W-INT)                 | 4000W AC power supply for Cisco MDS 9509, for international use (cable attached).               |
| 6000WAC power supply (DS-CAC-6000W)                     | 6000W AC power supply for Cisco MDS 9513.   |
| 1900WAC power supply (DS-CAC-1900W)                     | 1900W AC power supply for Cisco MDS 9506.   |
| 1900WDC power supply (DS-CDC-1900W)                     | 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 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 Release 3.0(1) Features Available

| Software Feature   | Description   |
|--|---|
| <b>Cisco MDS 9513 Multilayer Director and New Switching Module Support</b> | Support has been added for Cisco MDS 9513; 12-port, 24-port, and 48-port 4-Gbps; and 4-port 10-Gbps Fibre Channel switching modules.  |
| <b>iSCSI Server Load Balancing</b>   | Internet Small Computer System Interface (iSCSI) server load balancing (iSLB) automatically redirects servers to Gigabit Ethernet port that currently has lowest number of servers assigned.                                |
| <b>iSNS Cloud Discovery</b>  | Internet Storage Name Service (iSNS) cloud discovery determines which portals are reachable outside switch. This information is used to filter query request responses, so only accessible portals are listed.              |
| <b>FCIP Tape Read Acceleration</b>   | Fibre Channel over IP (FCIP) tape read acceleration improves restore operation performance by reading ahead and buffering tape data on Cisco MDS closest to host requesting data.   |
| <b>IPv6 Support</b>  | IPv6 support is provided for FCIP, iSCSI, and management traffic routed in band and out of band. Complete dual stack has been implemented for IPv4 and IPv6 for device compatibility.                                       |
| <b>Digital Certificates</b>  | Digital certificates using public key infrastructure (PKI) enhance scalability and provide management authorization for IP Security (IPSec) and Secure Shell (SSH).   |
| <b>MS-CHAP</b>   | Microsoft Challenge Handshake Authentication Protocol (MS-CHAP) helps prevent offline dictionary attacks on management interface between MDS switches and RADIUS server.  |
| <b>Fabric Binding (for open systems)</b>                                   | Fabric binding helps ensure ISLs are only enabled between specified switches in fabric binding configuration. Feature is enhanced to support Fibre Channel in addition to IBM Fibre Connection (FICON).                     |
| <b>CFS Enhancements</b>  | Additional Cisco MDS 9000 Series features that support CFS include: <ul style="list-style-type: none"> <li>• CFS over Ethernet (across multiple physical fabrics)</li> <li>• Allowed domain identifier (ID) list</li> </ul> |

| Software Feature                                      | Description  |
|---|--|
|   | <ul style="list-style-type: none"> <li>iSLB configuration</li> </ul>   |
| <b>IOD Enhancements</b>                               | In-order-delivery (IOD) enhancements help minimize effect of PortChannel link changes for fabrics with IOD enabled.  |
| <b>Call Home Enhancements</b>                         | Users can specify up to five commands, which are associated with alert group to run when Call Home alert message is generated. Output from commands is attached to alert message.  |
| <b>SMI-S 1.1.0 Support</b>                            | <p>Embedded Common Information Model (CIM) agent is SNIA storage management initiative specification (SMI-S) version 1.1.0 compliant. New features and capabilities added include:</p> <ul style="list-style-type: none"> <li>Enhanced Zoning subprofile and Access Points profile</li> <li>Additional methods and attributes for server, switch, and fabric profiles</li> <li>More indications</li> </ul> |
| <b>SNMP over TCP</b>                                  | Simple Network Management Protocol (SNMP) messages can be transported over TCP for management traffic on out-of-band Ethernet management port (mgmt0). SNMP traffic over User Datagram Protocol (UDP) is also allowed concurrently to support mix of management applications.  |
| <b>McDATA Native Interoperability</b>                 | McDATA native interoperability allows Cisco MDS 9000 Series to interoperate without enabling McDATA Open Fabric interoperability mode, preventing reduction of McDATA functionality.   |
| <b>Cisco Fabric Manager Enhancements</b>              | <p>Cisco Fabric Manager now supports:</p> <ul style="list-style-type: none"> <li>Cisco MDS 9513</li> <li>Filtering by user-defined groups</li> <li>User interface customization</li> </ul>   |
| <b>Cisco Fabric Manager Server (FMS) Enhancements</b> | <p>Cisco FMS has been enhanced to provide:</p> <ul style="list-style-type: none"> <li>Filtering by user-defined groups</li> <li>Performance prediction report</li> <li>Data collection autoupdates</li> <li>Server performance summary report</li> <li>Custom report performance charts</li> </ul>   |
| <b>New MIBs</b>                                       | <p>Following new MIB is available:</p> <ul style="list-style-type: none"> <li>CISCO-COMMON-MGMT-MIB</li> </ul>   |

## ORDERABLE SOFTWARE IMAGES

Table 3 lists the software images and applicable software ordering information for the Cisco MDS 9000 Series.

**Table 3.** Software Ordering Information

| Part Number          | Description  |
|----------------------|--|
| <b>M95S2K9-3.0.1</b> | Cisco MDS 9500 Supervisor/Fabric-2, SAN-OS Software Release 3.0(1) |
| <b>M95S1K9-3.0.1</b> | Cisco MDS 9500 Supervisor/Fabric-I, SAN-OS Software Release 3.0(1) |
| <b>M92S1K9-3.0.1</b> | Cisco MDS 9216 Supervisor/Fabric-I, SAN-OS Software Release 3.0(1) |
| <b>M91S1K9-3.0.1</b> | Cisco MDS 9100 Supervisor/Fabric-I, SAN-OS Software Release 3.0(1) |

For more detailed information about this Cisco Systems® software release, refer to the Cisco MDS 9000 Family release notes at [http://www.cisco.com/en/US/products/hw/ps4159/ps4358/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/hw/ps4159/ps4358/prod_release_notes_list.html).

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

[http://www.cisco.com/en/US/products/hw/ps4159/ps4358/prod\\_literature.html](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.



**Corporate Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
[www.cisco.com](http://www.cisco.com)  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-4100

**European Headquarters**

Cisco Systems International BV  
Haarlerbergpark  
Haarlerbergweg 13-19  
1101 CH Amsterdam  
The Netherlands  
[www-europe.cisco.com](http://www-europe.cisco.com)  
Tel: 31 0 20 357 1000  
Fax: 31 0 20 357 1100

**Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
[www.cisco.com](http://www.cisco.com)  
Tel: 408 526-7660  
Fax: 408 527-0883

**Asia Pacific Headquarters**

Cisco Systems, Inc.  
168 Robinson Road  
#28-01 Capital Tower  
Singapore 068912  
[www.cisco.com](http://www.cisco.com)  
Tel: +65 6317 7777  
Fax: +65 6317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Cyprus  
Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel  
Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal  
Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan  
Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Copyright 2006 Cisco Systems, Inc. All rights reserved. CCSP, CCVP, the Cisco Square Bridge logo, Follow Me Browsing, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MeetingPlace, MGX, the Networkers logo, Networking Academy, Network Registrar, Packet, PIX, Post-Routing, Pre-Routing, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0601R)

