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## **Cisco MDS 9000 Family Hardware and Software Compatibility Matrix and Feature Lists**

Cisco MDS NX-OS Release 5.0(1a) Software  
April 2010

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## Preface

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This preface describes the audience, organization, and conventions of the *Cisco MDS 9000 Family Hardware and Software Compatibility Matrix and Feature Lists*. The preface also provides information on how to obtain related documentation.

## Audience

This guide is for system administrators who are responsible for managing Cisco MDS 9000 Family switches and storage subsystems.

## Organization

This document is organized as follows:

Chapter	Title	Description
Chapter 1	<a href="#">Cisco MDS 9000 Family Hardware and Software Compatibility Matrix</a>	Lists the versions of Cisco MDS SAN-OS software that are supported on Cisco MDS 9000 Family switches and switch components.
Chapter 2	<a href="#">Cisco MDS NX-OS Release 5.x Feature Lists</a>	Describes the new features that are included in the 5.x NX-OS release.
Chapter 3	<a href="#">Cisco MDS NX-OS Release 4.x Feature Lists</a>	Describes the new features that are included in the 4.x NX-OS release.
Chapter 4	<a href="#">Cisco MDS SAN-OS Release 3.x Feature Lists</a>	Describes the new features that are included in the 3.x SAN-OS release.
Chapter 5	<a href="#">Cisco MDS SAN-OS Release 2.x Feature List</a>	Describes the new features that are included in the 2.x SAN-OS release.
Chapter 6	<a href="#">Cisco MDS SAN-OS Release 1.x Feature Lists</a>	Describes the new features that are included in the 1.x SAN-OS release.

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## Document Conventions

Command descriptions use these conventions:

<b>boldface font</b>	Commands and keywords are in boldface.
<i>italic font</i>	Arguments for which you supply values are in italics.
[ ]	Elements in square brackets are optional.
[ x   y   z ]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Screen examples use these conventions:

screen font	Terminal sessions and information the switch displays are in screen font.
<b>boldface screen font</b>	Information you must enter is in boldface screen font.
<i>italic screen font</i>	Arguments for which you supply values are in italic screen font.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:



### Note

Means reader *take note*. Notes contain helpful suggestions or references to material not covered in the manual.



### Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

## Related Documentation

The documentation set for the Cisco MDS 9000 Family includes the following documents. To find a document online, use the Cisco MDS NX-OS Documentation Locator at:

[http://www.cisco.com/en/US/docs/storage/san\\_switches/mds9000/roadmaps/doclocator.htm](http://www.cisco.com/en/US/docs/storage/san_switches/mds9000/roadmaps/doclocator.htm)

## Release Notes

- *Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Releases*
- *Cisco MDS 9000 Family Release Notes for MDS SAN-OS Releases*
- *Cisco MDS 9000 Family Release Notes for Storage Services Interface Images*
- *Cisco MDS 9000 Family Release Notes for Cisco MDS 9000 EPLD Images*



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- *Release Notes for Cisco MDS 9000 Family Fabric Manager*

## Regulatory Compliance and Safety Information

- *Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family*

## Compatibility Information

- *Cisco Data Center Interoperability Support Matrix*
- *Cisco MDS 9000 NX-OS Hardware and Software Compatibility Information and Feature Lists*
- *Cisco MDS NX-OS Release Compatibility Matrix for Storage Service Interface Images*
- *Cisco MDS 9000 Family Switch-to-Switch Interoperability Configuration Guide*
- *Cisco MDS NX-OS Release Compatibility Matrix for IBM SAN Volume Controller Software for Cisco MDS 9000*
- *Cisco MDS SAN-OS Release Compatibility Matrix for VERITAS Storage Foundation for Networks Software*

## Hardware Installation

- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9124 and Cisco MDS 9134 Multilayer Fabric Switch Quick Start Guide*

## Software Installation and Upgrade

- *Cisco MDS 9000 Family Storage Services Interface Image Install and Upgrade Guide*
- *Cisco MDS 9000 Family Storage Services Module Software Installation and Upgrade Guide*
- *Cisco MDS 9000 NX-OS Release 4.1(x) and SAN-OS 3(x) Software Upgrade and Downgrade Guide*

## Cisco NX-OS

- *Cisco NX-OS Fundamentals Configuration Guide*
- *Cisco NX-OS Family Licensing Guide*
- *Cisco MDS 9000 Family NX-OS System Management Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Interfaces Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Fabric Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Quality of Service Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Security Configuration Guide*
- *Cisco MDS 9000 Family NX-OS IP Services Configuration Guide*

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- *Cisco MDS 9000 Family NX-OS Intelligent Storage Services Configuration Guide*
- *Cisco MDS 9000 Family NX-OS High Availability and Redundancy Configuration Guide*
- *Cisco MDS 9000 Family NX-OS Inter-VSAN Routing Configuration Guide*

## **Cisco Fabric Manager**

- *Cisco Fabric Manager Fundamentals Configuration Guide*
- *Cisco Fabric Manager System Management Configuration Guide*
- *Cisco Fabric Manager Interfaces Configuration Guide*
- *Cisco Fabric Manager Fabric Configuration Guide*
- *Cisco Fabric Manager Quality of Service Configuration Guide*
- *Cisco Fabric Manager Security Configuration Guide*
- *Cisco Fabric Manager IP Services Configuration Guide*
- *Cisco Fabric Manager Intelligent Storage Services Configuration Guide*
- *Cisco Fabric Manager High Availability and Redundancy Configuration Guide*
- *Cisco Fabric Manager Inter-VSAN Routing Configuration Guide*
- *Cisco Fabric Manager Online Help*
- *Cisco Fabric Manager Web Services Online Help*

## **Command-Line Interface**

- *Cisco MDS 9000 Family Command Reference*

## **Intelligent Storage Networking Services Configuration Guides**

- *Cisco MDS 9000 I/O Acceleration Configuration Guide*
- *Cisco MDS 9000 Family SANTap Deployment Guide*
- *Cisco MDS 9000 Family Data Mobility Manager Configuration Guide*
- *Cisco MDS 9000 Family Storage Media Encryption Configuration Guide*
- *Cisco MDS 9000 Family Secure Erase Configuration Guide*
- *Cisco MDS 9000 Family Cookbook for Cisco MDS SAN-OS*

## **Troubleshooting and Reference**

- *Cisco NX-OS System Messages Reference*
- *Cisco MDS 9000 Family NX-OS Troubleshooting Guide*
- *Cisco MDS 9000 Family NX-OS MIB Quick Reference*
- *Cisco MDS 9000 Family NX-OS SMI-S Programming Reference*
- *Cisco MDS 9000 Family Fabric Manager Server Database Schema*

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## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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# CHAPTER 1

## Cisco MDS 9000 Family Hardware and Software Compatibility Matrix

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The MDS 9000 Family Hardware and Software Matrix lists the versions of Cisco MDS NX-OS and SAN-OS software that are supported on Cisco MDS 9000 Family switches and switch components.

This document includes the following sections:

- [Introduction, page 1-2](#)
- [Cisco MDS 9000 Family Hardware and NX-OS Release 5.x Supported Software, page 1-2](#)
- [Cisco MDS 9000 Family Hardware and NX-OS Release 4.2x Supported Software, page 1-8](#)
- [Cisco MDS 9000 Family Hardware and NX-OS Release 4.1x Supported Software, page 1-15](#)
- [Cisco MDS 9000 Family Hardware and SAN-OS Release 3.3x Supported Software, page 1-23](#)
- [Cisco MDS 9000 Family Hardware and SAN-OS Release 3.2x Supported Software, page 1-30](#)
- [Cisco MDS 9000 Family Hardware and SAN-OS Release 3.1x Supported Software, page 1-35](#)
- [Cisco MDS 9000 Family Hardware and SAN-OS Release 3.0x Supported Software, page 1-41](#)
- [Cisco Fabric Switch for HP c-Class BladeSystem and SAN-OS Release 3.x Supported Software, page 1-46](#)
- [Cisco Fabric Switch for IBM BladeCenter and SAN-OS Release 3.x Supported Software, page 1-47](#)
- [Cisco MDS 9000 Family Hardware and SAN-OS Release 2.x Supported Software, page 1-48](#)
- [Cisco MDS 9020 Hardware and FabricWare Release 2.1x Supported Software, page 1-52](#)
- [Cisco MDS 9000 Family Hardware and SAN-OS Release 1.x Supported Software, page 1-53](#)

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## Introduction

The Cisco MDS 9000 Family of Multilayer Directors and Fabric Switches provides industry-leading availability, scalability, security, and management, allowing you to deploy high performance storage-area networks with lowest total cost of ownership. Layering a rich set of intelligent features onto a high performance, protocol agnostic switch fabric, the Cisco MDS 9000 Family addresses the stringent requirements of large data center storage environments: uncompromising high availability, security, scalability, ease of management, and seamless integration of new technologies.

Cisco MDS 9000 NX-OS and SAN-OS software powers the award winning Cisco MDS 9000 Series Multilayer Switches. It is designed to create a strategic SAN platform with superior reliability, performance, scalability, and features. Formerly known as Cisco SAN-OS, Cisco MDS 9000 NX Software is fully interoperable with earlier Cisco SAN-OS versions and enhances hardware platform and module support.

The Cisco NX-OS and SAN-OS software provides intelligent networking features, such as multiprotocol and multitransport integration, virtual SANs (VSANs), advanced security, sophisticated debug analysis tools, and unified SAN management.

## Cisco MDS 9000 Family Hardware and NX-OS Release 5.x Supported Software

This section lists the Release 5.x software that is supported on Cisco MDS 9000 Family switches and switch components.



### Tip

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To view the features for Release 5.x software, click the specific NX-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 5.x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 5.x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 5.x Supported Software Matrix](#)

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**Table 1-1 Cisco MDS 9500 Series Hardware and Release 5.x Supported Software Matrix**

MDS 9500 Series Hardware	Supported NX-OS Release 5.x Software
	5.0 (1a) Features
<b>Chassis</b>	
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x
<b>External Crossbar Module</b>	
DS-13SLT-FAB1, MDS 9513 crossbar fabric1 module	x
DS-13SLT-FAB2, MDS 9513 crossbar fabric2 module	x
<b>Supervisor Modules</b>	
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x
<b>Fibre Channel Switching Modules</b>	
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x
DS-X9224-96K9, MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x
DS-X9248-96K9, MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.	x
DS-X9316-SSNK9, MDS 9000 16-port Storage Services Node (SSN-16)—16 fixed 1-Gbps Ethernet ports, 4 service engines that support 4-port Gigabit Ethernet IP storage services ports	x
<b>Optics</b>	
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x
<b>Small form-factor pluggable optics (SFPs)</b>	
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x

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**Table 1-1 Cisco MDS 9500 Series Hardware and Release 5.x Supported Software Matrix**

<b>MDS 9500 Series Hardware</b>	<b>Supported NX-OS Release 5.x Software</b>
	<b>5.0 (1a) Features</b>
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>	
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>	
DWDM-X2-xx.xx, DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure with 15xx.xx nm (xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33)	x
DWDM-SFP-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x
<b>Add/Drop Multiplexer (ADM)</b>	
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x
<b>CWDM Multiplexer Chassis</b>	
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x

**Table 1-2 Cisco MDS 9200 Series Hardware and Release 5.x Supported Software Matrix**

<b>MDS 9200 Series Hardware</b>	<b>Supported NX-OS Release 5.x Software</b>
	<b>5.0 (1a) Features</b>
<b>Chassis</b>	
DS-C9222i-K9 Cisco MDS 9222 Multiservice Modular Switch (includes 18 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Service modules.)	x <sup>1</sup>
<b>Fibre Channel Switching Modules</b>	
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x



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**Table 1-2 Cisco MDS 9200 Series Hardware and Release 5.x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 5.x Software
	5.0 (1a) Features
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x <sup>1</sup>
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.	
DS-X9316-SSNK9, MDS 9000 16-port Storage Services Node (SSN-16)—16 fixed 1-Gbps Ethernet ports, 4 service engines that support 4-port Gigabit Ethernet IP storage services ports	x <sup>1</sup>
<b>Optics</b>	
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x
<b>Small form-factor pluggable optics (SFPs)</b>	
DS-SFP-FC8G-SW, 2-Gbps/4-Gbps/8-Gbps Fibre Channel—short wavelength SFP+ optics (LC type) for DS-X92xx switching modules only	x
DS-SFP-FC8G-LW, 2-Gbps/4-Gbps/8-Gbps Fibre Channel —long wavelength SFP+ optics (LC type) for DS-X92xx switching modules only —supports distances to 10 km	x
DS-SFP-FC4G-SW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—short wavelength SFP	x <sup>1</sup>
DS-SFP-FC4G-MR SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 4 km	x <sup>1</sup>
DS-SFP-FC4G-LW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 10 km	x <sup>1</sup>
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x

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**Table 1-2 Cisco MDS 9200 Series Hardware and Release 5.x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 5.x Software
	5.0 (1a) Features
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>	
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>	
DWDM-X2-xx.xx, DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure with 15xx.xx nm ( xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33)	x
DWDM-SFP-xxxx , Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm ( xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x
<b>Add/Drop Multiplexer (ADM)</b>	
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x
<b>CWDM Multiplexer Chassis</b>	
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x

**Table 1-3 Cisco MDS 9100 Series Hardware and Release 5.x Supported Software Matrix**

MDS 9100 Series Hardware	Supported NX-OS Release 5.x Software
	5.0 (1a) Features
<b>Chassis</b>	
DS-C9124-K9, Cisco MDS 9124 fixed configuration, non-modular, fabric switch	x
DS-C9134-K9, Cisco MDS 9134 fixed configuration, non-modular, multilayer fabric switch	x
DS-C9148-K9, Cisco MDS 9148 fixed configuration, non-modular, multilayer fabric switch	x
<b>Optics</b>	
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x

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**Table 1-3 Cisco MDS 9100 Series Hardware and Release 5.x Supported Software Matrix (continued)**

MDS 9100 Series Hardware	Supported NX-OS Release 5.x Software
	5.0 (1a) Features
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x
<b>Small form-factor pluggable optics (SFPs)</b>	
DS-SFP-FC4G-SW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FC4G-MR SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 4 km	x
DS-SFP-FC4G-LW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 10 km	x
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>	
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x
<b>Add/Drop Multiplexer (ADM)</b>	
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>	
DWDM-SFP-xxxx , Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm ( xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x
<b>CWDM Multiplexer Chassis</b>	
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x

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# Cisco MDS 9000 Family Hardware and NX-OS Release 4.2x Supported Software

This section lists the Release 4.2x software that is supported on Cisco MDS 9000 Family switches and switch components.



**Tip**

To view the features for Release 4.2x software, click the specific NX-OS release.

This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 4.2x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 4.2x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 4.2x Supported Software Matrix](#)

**Table 1-4 Cisco MDS 9500 Series Hardware and Release 4.2x Supported Software Matrix**

	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
<b>MDS 9500 Series Hardware</b>					
<b>Chassis</b>					
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x	x	x	x	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x	x	x	x	x
<b>External Crossbar Module</b>					
DS-13SLT-FAB1, MDS 9513 crossbar fabric1 module	x	x	x	x	x
DS-13SLT-FAB2, MDS 9513 crossbar fabric2 module	x	x	x	x	x
<b>Supervisor Modules</b>					
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>					
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x	x
DS-X9224-96K9, MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x	x	x	x	x
DS-X9248-96K9, MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x	x	x	x	x

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**Table 1-4 Cisco MDS 9500 Series Hardware and Release 4.2x Supported Software Matrix (continued)**

	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
<b>MDS 9500 Series Hardware</b>					
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	x	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module	x	x	x	x	x
DS-X9316-SSNK9, MDS 9000 16-port Storage Services Node (SSN-16)—16 fixed 1-Gbps Ethernet ports, 4 service engines that support 4-port Gigabit Ethernet IP storage services ports	x	x	x	x	
<b>Optics</b>					
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x	x	x	x	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x	x	x	x	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>					
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>					
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>					

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**Table 1-4 Cisco MDS 9500 Series Hardware and Release 4.2x Supported Software Matrix (continued)**

MDS 9500 Series Hardware	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
DWDM-X2-xx.xx, DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure with 15xx.xx nm ( xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33)	x	x	x	x	x
DWDM-SFP-xxxx , Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm ( xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x	x	x	x	x
<b>Add/Drop Multiplexer (ADM)</b>					
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x	x	x	x	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x	x	x	x	x
DS-CWDM-MUX8A,ADM for 8 CWDM wavelengths	x	x	x	x	x
<b>CWDM Multiplexer Chassis</b>					
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x	x	x	x	x

**Table 1-5 Cisco MDS 9200 Series Hardware and Release 4.2x Supported Software Matrix**

MDS 9200 Series Hardware	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
<b>Chassis</b>					
DS-C9222i-K9 Cisco MDS 9222 Multiservice Modular Switch (includes 18 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Service modules.)	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>					
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x

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**Table 1-5 Cisco MDS 9200 Series Hardware and Release 4.2x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x	x
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module	x	x	x	x	x
DS-X9316-SSNK9, MDS 9000 16-port Storage Services Node (SSN-16)—16 fixed 1-Gbps Ethernet ports, 4 service engines that support 4-port Gigabit Ethernet IP storage services ports	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
<b>Optics</b>					
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x	x	x	x	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x	x	x	x	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>					
DS-SFP-FC8G-SW, 2-Gbps/4-Gbps/8-Gbps Fibre Channel—short wavelength SFP+ optics (LC type) for DS-X92xx switching modules only	x	x	x	x	x
DS-SFP-FC8G-LW, 2-Gbps/4-Gbps/8-Gbps Fibre Channel —long wavelength SFP+ optics (LC type) for DS-X92xx switching modules only —supports distances to 10 km	x	x	x	x	x
DS-SFP-FC4G-SW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—short wavelength SFP	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-MR SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 4 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>



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**Table 1-5 Cisco MDS 9200 Series Hardware and Release 4.2x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
DS-SFP-FC4G-LW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 10 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X92xx switching modules	x	x	x	x	x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X92xx switching modules only—supports distances to 4 km	x	x	x	x	x
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X92xx switching modules only—supports distances to 10 km	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>					
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>					
DWDM-X2-xx.xx, DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure with 15xx.xx nm ( xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33)	x	x	x	x	x
DWDM-SFP-xxxx , Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm ( xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x	x	x	x	x



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**Table 1-5 Cisco MDS 9200 Series Hardware and Release 4.2x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
<b>Add/Drop Multiplexer (ADM)</b>					
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x	x	x	x	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x	x	x	x	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x	x	x	x	x
<b>CWDM Multiplexer Chassis</b>					
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x	x	x	x	x

**Table 1-6 Cisco MDS 9100 Series Hardware and Release 4.2x Supported Software Matrix**

MDS 9100 Series Hardware	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
<b>Chassis</b>					
DS-C9124-K9, Cisco MDS 9124 fixed configuration, non-modular, fabric switch	x	x	x	x	x
DS-C9134-K9, Cisco MDS 9134 fixed configuration, non-modular, multilayer fabric switch	x	x	x	x	x
<b>Optics</b>					
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x	x	x	x	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>					
DS-SFP-FC4G-SW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FC4G-MR SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 4 km	x	x	x	x	x
DS-SFP-FC4G-LW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 10 km	x	x	x	x	x
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x

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**Table 1-6 Cisco MDS 9100 Series Hardware and Release 4.2x Supported Software Matrix (continued)**

	Supported NX-OS Release 4.2x Software				
	4.2(1a) Features	4.2(1b) Features	4.2(3) Features	4.2(3a) Features	4.2(5) Features
<b>MDS 9100 Series Hardware</b>					
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>					
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x
<b>Add/Drop Multiplexer (ADM)</b>					
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x	x	x	x	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x	x	x	x	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x	x	x	x	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>					
DWDM-SFP-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x	x	x	x	x
<b>CWDM Multiplexer Chassis</b>					
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x	x	x	x	x

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# Cisco MDS 9000 Family Hardware and NX-OS Release 4.1x Supported Software

This section lists the Release 4.1x software that is supported on Cisco MDS 9000 Family switches and switch components.

**Tip**

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To view the features for Release 4.1x software, click the specific NX-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 4.1x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 4.1x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 4.1x Supported Software Matrix](#)

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**Table 1-7 Cisco MDS 9500 Series Hardware and Release 4.1x Supported Software Matrix**

MDS 9500 Series Hardware	Supported NX-OS Release 4.1x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
<b>Chassis</b>				
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x	x	x	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x	x	x	x
<b>External Crossbar Module</b>				
DS-13SLT-FAB1, MDS 9513 crossbar fabric1 module	x	x	x	x
DS-13SLT-FAB2, MDS 9513 crossbar fabric2 module	x	x	x	x
<b>Supervisor Modules</b>				
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x	x	x	x
<b>Fibre Channel Switching Modules</b>				
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x
DS-X9224-96K9, MDS 9000 24-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x	x	x	x
DS-X9248-96K9, MDS 9000 48-Port 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x	x	x	x
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.	x	x	x	x
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x	x	x	x

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**Table 1-7 Cisco MDS 9500 Series Hardware and Release 4.1x Supported Software Matrix (continued)**

	Supported NX-OS Release 4.1x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
<b>MDS 9500 Series Hardware</b>				
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x	x	x	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x	x	x	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>				
DWDM-X2-xx.xx, DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure with 15xx.xx nm (xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33)	x	x	x	x
DWDM-SFP-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x	x	x	x
<b>Add/Drop Multiplexer (ADM)</b>				
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x	x	x	x

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**Table 1-7 Cisco MDS 9500 Series Hardware and Release 4.1x Supported Software Matrix (continued)**

	Supported NX-OS Release 4.1x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
<b>MDS 9500 Series Hardware</b>				
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x	x	x	x
DS-CWDM-MUX8A,ADM for 8 CWDM wavelengths	x	x	x	x
<b>CWDM Multiplexer Chassis</b>				
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x	x	x	x

**Table 1-8 Cisco MDS 9200 Series Hardware and Release 4.1x Supported Software Matrix**

	Supported NX-OS Release 4.1x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
<b>MDS 9200 Series Hardware</b>				
<b>Chassis</b>				
DS-C9222i-K9 Cisco MDS 9222 Multiservice Modular Switch (includes 18 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Service modules.)	x	x	x	x
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x
<b>Fibre Channel Switching Modules</b>				
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x
DS-X9248-48K9, Cisco MDS 9000 4/44-Port Host-Optimized 8-Gbps Fibre Channel Switching Module with SFP and SFP+ LC connectors	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.	x	x	x	x
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x

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**Table 1-8 Cisco MDS 9200 Series Hardware and Release 4.1x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 4.1x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x	x	x	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x	x	x	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC8G-SW, 2-Gbps/4-Gbps/8-Gbps Fibre Channel—short wavelength SFP+ optics (LC type) for DS-X92xx switching modules only	x	x	x	x
DS-SFP-FC8G-LW, 2-Gbps/4-Gbps/8-Gbps Fibre Channel—long wavelength SFP+ optics (LC type) for DS-X92xx switching modules only —supports distances to 10 km	x	x	x	x
DS-SFP-FC4G-SW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—short wavelength SFP	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-MR SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 4 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-LW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 10 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X92xx switching modules	x	x	x	x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x	x	x	x
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x

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**Table 1-8 Cisco MDS 9200 Series Hardware and Release 4.1x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported NX-OS Release 4.1x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>				
DWDM-X2-xx.xx, DWDM X2 SC optics for 10-Gbps Fibre Channel connectivity to an existing Ethernet DWDM infrastructure with 15xx.xx nm ( xx.xx = 60.61, 59.79, 58.98, 58.17, 56.55, 55.75, 54.94, 54.13, 52.52, 51.72, 50.92, 50.12, 48.51, 47.72, 46.92, 46.12, 44.53, 43.73, 42.94, 42.14, 40.56, 39.77, 38.98, 38.19, 36.61, 35.82, 35.04, 34.25, 32.68, 31.90, 31.12, or 30.33)	x	x	x	x
DWDM-SFP-xxxx , Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm ( xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x	x	x	x
<b>Add/Drop Multiplexer (ADM)</b>				
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x	x	x	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x	x	x	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x	x	x	x
<b>CWDM Multiplexer Chassis</b>				
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x	x	x	x

**Table 1-9 Cisco MDS 9100 Series Hardware and Release 4.1x Supported Software Matrix**

MDS 9100 Series Hardware	Supported NX-OS Release 4.x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
<b>Chassis</b>				
DS-C9124-K9, Cisco MDS 9124 fixed configuration, non-modular, fabric switch	x	x	x	x
DS-C9134-K9, Cisco MDS 9134 fixed configuration, non-modular, multilayer fabric switch	x	x	x	x
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x



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**Table 1-9 Cisco MDS 9100 Series Hardware and Release 4.1x Supported Software Matrix (continued)**

MDS 9100 Series Hardware	Supported NX-OS Release 4.x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach—supports distances to 10 km	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach—supports distances to 40 km	x	x	x	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet—short reach	x	x	x	x
DS-X2-FC10G-CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC4G-SW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC4G-MR SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 4 km	x	x	x	x
DS-SFP-FC4G-LW SFP optics (LC type), 1-Gbps/2-Gbps /4-Gbps Fibre Channel—long wavelength SFP —supports distances up to 10 km	x	x	x	x
DS-SFP-FC-2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC-2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM4Gxxxx, CWDM 4-Gbps Fibre Channel SFP LC type interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
<b>Add/Drop Multiplexer (ADM)</b>				
DS-CWDMOADM4A, 4-channel CWDM optical ADM (OADM) module—Cisco CWDM 1470, 1490, 1510, or 1530 NM add/drop module	x	x	x	x
DS-CWDMOADM4B, 4-channel CWDM OADM module—Cisco CWDM 1550, 1570, 1590, or 1610 NM add/drop module	x	x	x	x
DS-CWDM-MUX8A, ADM for 8 CWDM wavelengths	x	x	x	x
<b>Dense Wavelength- Division Multiplexing (DWDM)</b>				

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**Table 1-9 Cisco MDS 9100 Series Hardware and Release 4.1x Supported Software Matrix (continued)**

	Supported NX-OS Release 4.x Software			
	4.1(1b) Features	4.1(1c) Features	4.1(3) Features	4.1(3a) Features
<b>MDS 9100 Series Hardware</b>				
DWDM-SFP-xxxx , Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm ( xxxx = 3033, 3112, 3190, 3268, 3425, 3504, 3582, 3661, 3819, 3898, 3977, 4056, 4214, 4294, 4373, 4453, 4612, 4692, 4772, 4851, 5012, 5092, 5172, 5252, 5413, 5494, 5575, 5655, 5817, 5898, 5979, or 6061)	x	x	x	x
<b>CWDM Multiplexer Chassis</b>				
DS-CWDMCHASSIS, 2-slot chassis for CWDM ADMs	x	x	x	x

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# Cisco MDS 9000 Family Hardware and SAN-OS Release 3.3x Supported Software

This section lists the Release 3.3x software that is supported on Cisco MDS 9000 Family switches and switch components.



**Tip**

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To view the features for Release 3.3x software, click the specific SAN-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 3.3x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 3.3x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 3.3x Supported Software Matrix](#)

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**Table 1-10 Cisco MDS 9500 Series Hardware and Release 3.3x Supported Software Matrix**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.2x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
<b>Chassis</b>							
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x	x	x	x	x	x	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x	x	x	x	x	x	x
<b>External Crossbar Module</b>							
DS-13SLT-FAB1, MDS 9513 crossbar fabric module	x	x	x	x	x		
<b>Supervisor Modules</b>							
DS-X9530-SF1-K9, MDS 9500 Series/Fabric -1 xSupervisor module	x	x	x	x	x	x	x
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x	x	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>							
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	x	x	x	x	x	x	x

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**Table 1-10 Cisco MDS 9500 Series Hardware and Release 3.3x Supported Software Matrix (continued)**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.2x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.	x	x	x	x	x	x	x
DS-X9304-18FK9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice FIPS (MSFM-18/4) module.	x	x	x	x	x	x	x
<b>Optics</b>							
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x	x	x	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach	x	x	x	x	x	x	x
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet — short reach	x	x	x	x	x	x	x
DS-X2-FC10G_CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x	x	x	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>							
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x	x	x	x	x	x	x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x	x	x	x	x	x	x
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x	x	x	x	x	x	x

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**Table 1-10 Cisco MDS 9500 Series Hardware and Release 3.3x Supported Software Matrix (continued)**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.2x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>							
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x	x	x	x

**Table 1-11 Cisco MDS 9200 Series Hardware and Release 3.3x Supported Software Matrix**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.3x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
<b>Chassis</b>							
DS-C9222i-K9 Cisco MDS 9222 Multiservice Modular Switch (includes 18 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Service modules.)	x	x	x	x	x	x	x
DS-C9216-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x	x
DS-C9216A-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x	x
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>							
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x	x

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**Table 1-11 Cisco MDS 9200 Series Hardware and Release 3.3x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.3x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.	x	x	x	x	x	x	x
DS-X9304-18FK9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice FIPS (MSFM-18/4) module.	x	x	x	x	x	x	x
<b>Optics</b>							
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet — short reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G_CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
<b>Small form-factor pluggable optics (SFPs)</b>							
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x

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**Table 1-11 Cisco MDS 9200 Series Hardware and Release 3.3x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.3x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>							
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x	x	x	x



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**Table 1-12 Cisco MDS 9100 Series Hardware and Release 3.3x Supported Software Matrix**

MDS 9100 Series Hardware	Supported SAN-OS Release 3.3x Software						
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features	3.3(5) Features
<b>Chassis</b>							
DS-C9120-K9, Cisco MDS 9120 fixed configuration, non-modular, fabric switch	x	x	x	x	x	x	x
DS-C9124-K9, Cisco MDS 9124 fixed configuration, non-modular, fabric switch	x	x	x	x	x	x	x
DS-C9134-K9, Cisco MDS 9134 fixed configuration, non-modular, multilayer fabric switch	x	x	x	x	x	x	x
DS-C9140-K9, MDS 9140 fixed configuration, non-modular, fabric switch	x	x	x	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>							
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>							
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x	x	x	x

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# Cisco MDS 9000 Family Hardware and SAN-OS Release 3.2x Supported Software

This section lists the Release 3.2x software that is supported on Cisco MDS 9000 Family switches and switch components.



**Tip**

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To view the features for Release 3.2x software, click the specific SAN-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 3.2x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 3.2x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 3.2x Supported Software Matrix](#)

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**Table 1-13 Cisco MDS 9500 Series Hardware and Release 3.2x Supported Software Matrix**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
<b>Chassis</b>				
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x	x	x	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x	x	x	x
<b>External Crossbar Module</b>				
DS-13SLT-FAB1, MDS 9513 crossbar fabric module	x	x	x	x
DS-X9530-SF1-K9, MDS 9500 Series Supervisor module	x	x	x	x
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x	x	x	x
<b>Fibre Channel Switching Modules</b>				
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.		x	x	x
DS-X9304-18FK9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice FIPS (MSFM-18/4) module.		x	x	x
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x	x	x	
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach	x	x	x	
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet — short reach		x	x	
DS-X2-FC10G_CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper		x	x	
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	

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**Table 1-13 Cisco MDS 9500 Series Hardware and Release 3.2x Supported Software Matrix (continued)**

	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
<b>MDS 9500 Series Hardware</b>				
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x	x	x	
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x	x	x	
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x	x	x	
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x

**Table 1-14 Cisco MDS 9200 Series Hardware and Release 3.2x Supported Software Matrix**

	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
<b>MDS 9200 Series Hardware</b>				
<b>Chassis</b>				
DS-C9222i-K9 Cisco MDS 9222 Multiservice Modular Switch (includes 18 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports, and a modular expansion slot for Cisco MDS 9000 Family Switching and Service modules.)		x	x	
DS-C9216-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	
DS-C9216A-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x
<b>Fibre Channel Switching Modules</b>				
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x

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**Table 1-14 Cisco MDS 9200 Series Hardware and Release 3.2x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x
DS-X9304-18K9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice (MSM-18/4) module.		x	x	x
DS-X9304-18FK9 18-port Fibre Channel/4-port Gigabit Ethernet Multiservice FIPS (MSFM-18/4) module.		x	x	x
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—extended reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-E10G-SR, X2/SC optics, 10-Gbps Ethernet — short reach		x <sup>1</sup>	x <sup>1</sup>	
DS-X2-FC10G_CX4, X2/CX-4 optics, 10-Gbps Fibre Channel, copper		x <sup>1</sup>	x <sup>1</sup>	
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				

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**Table 1-14 Cisco MDS 9200 Series Hardware and Release 3.2x Supported Software Matrix (continued)**

	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
<b>MDS 9200 Series Hardware</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x

**Table 1-15 Cisco MDS 9100 Series Hardware and Release 3.2x Supported Software Matrix**

	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
<b>MDS 9100 Series Hardware</b>				
<b>Chassis</b>				
DS-C9120-K9, Cisco MDS 9120 fixed configuration, non-modular, fabric switch	x	x	x	x
DS-C9124-K9, Cisco MDS 9124 fixed configuration, non-modular, fabric switch	x	x	x	x
DS-C9134-K9, Cisco MDS 9134 fixed configuration, non-modular, multilayer fabric switch		x	x	
DS-C9140-K9, MDS 9140 fixed configuration, non-modular, fabric switch	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x

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# Cisco MDS 9000 Family Hardware and SAN-OS Release 3.1x Supported Software

This section lists the Release 3.1x software that is supported on Cisco MDS 9000 Family switches and switch components.

**Tip**

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To view the features for Release 3.1x software, click the specific SAN-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 3.1x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 3.1x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 3.1x Supported Software Matrix](#)

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**Table 1-16 Cisco MDS 9500 Series Hardware and Release 3.1x Supported Software Matrix**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.1x Software					
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features	3.1(4) Features
<b>Chassis</b>						
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x	x	x	x	x	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x	x	x	x	x	x
<b>External Crossbar Module</b>						
DS-13SLT-FAB1, MDS 9513 crossbar fabric module	x	x	x	x	x	x
<b>Supervisor Modules</b>						
DS-X9530-SF1-K9, MDS 9500 Series Supervisor module	x	x	x	x	x	x
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>						
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	x	x	x	x	x	x
<b>Optics</b>						
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x	x	x	x	x	x
DS-X2-FC10G-ER, X2/SC optics, 10-Gbps Fibre Channel—extended reach	x	x	x	x	x	x



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**Table 1-16 Cisco MDS 9500 Series Hardware and Release 3.1x Supported Software Matrix (continued)**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.1x Software					
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features	3.1(4) Features
<b>Small form-factor pluggable optics (SFPs)</b>						
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x	x	x	x	x	x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x	x	x	x	x	x
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>						
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x	x	x

**Table 1-17 Cisco MDS 9200 Series Hardware and Release 3.1x Supported Software Matrix**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.1x Software					
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features	3.1(4) Features
<b>Chassis</b>						
DS-C9216-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x

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**Table 1-17 Cisco MDS 9200 Series Hardware and Release 3.1x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.1x Software					
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features	3.1(4) Features
DS-C9216A-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>						
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x	x	x
<b>Optics</b>						
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—extended reach	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
<b>Small form-factor pluggable optics (SFPs)</b>						
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x

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**Table 1-17 Cisco MDS 9200 Series Hardware and Release 3.1x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.1x Software					
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features	3.1(4) Features
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>						
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x	x	x

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**Table 1-18 Cisco MDS 9100 Series Hardware and Release 3.1x Supported Software Matrix**

MDS 9100 Series Hardware	Supported SAN-OS Release 3.1x Software					
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features	3.1(4) Features
<b>Chassis</b>						
DS-C9120-K9, Cisco MDS 9120 fixed configuration, non-modular, fabric switch	X	X	X	X	X	X
DS-C9124-K9, Cisco MDS 9124 fixed configuration, non-modular, fabric switch	X	X	X	X	X	X
DS-C9140-K9, MDS 9140 fixed configuration, non-modular, fabric switch	X	X	X	X	X	X
<b>Small form-factor pluggable optics (SFPs)</b>						
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	X	X	X	X	X	X
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	X	X	X	X	X	X
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	X	X	X	X	X	X
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	X	X	X	X	X	X
DS-SFP-GE-T, 1-Gbps Ethernet SFP	X	X	X	X	X	X
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>						
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	X	X	X	X	X	X
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	X	X	X	X	X	X
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	X	X	X	X	X	X
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	X	X	X	X	X	X

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# Cisco MDS 9000 Family Hardware and SAN-OS Release 3.0x Supported Software

This section lists the Release 3.0x software that is supported on Cisco MDS 9000 Family switches and switch components.

**Tip**

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To view the features for Release 3.0x software, click the specific SAN-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 3.0x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 3.0x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 3.0x Supported Software Matrix](#)

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**Table 1-19 Cisco MDS 9500 Series Hardware and Release 3.0x Supported Software Matrix**

	Supported SAN-OS Release 3.0x Software			
	3.0(1) Features	3.0(2) Features	3.0(2a) Features	3.0(3) Features
<b>MDS 9500 Series Hardware</b>				
<b>Chassis</b>				
DS-C9513, Cisco MDS 9513 Multilayer Director Switch	x	x	x	x
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	x	x	x	x
<b>External Crossbar Module</b>				
DS-13SLT-FAB1, MDS 9513 crossbar fabric module	x	x	x	x
<b>Supervisor Modules</b>				
DS-X9530-SF1-K9, MDS 9500 Series Supervisor module	x	x	x	x
DS-X9530-SF2-K9, MDS 9500 Series Supervisor-2 module	x	x	x	x
<b>Fibre Channel Switching Modules</b>				
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x	x	x	x
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x	x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	x	x	x	x

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**Table 1-19 Cisco MDS 9500 Series Hardware and Release 3.0x Supported Software Matrix (continued)**

MDS 9500 Series Hardware	Supported SAN-OS Release 3.0x Software			
	3.0(1) Features	3.0(2) Features	3.0(2a) Features	3.0(3) Features
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x	x	x	x <sup>1</sup>
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x	x	x	x <sup>1</sup>
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x	x	x	x <sup>1</sup>
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x

**Table 1-20 Cisco MDS 9200 Series Hardware and Release 3.0x Supported Software Matrix**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.0x Software			
	3.0(1) Features	3.0(2) Features	3.0(2a) Features	3.0(3) Features
<b>Chassis</b>				
DS-C9216-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x
DS-C9216A-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x

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**Table 1-20 Cisco MDS 9200 Series Hardware and Release 3.0x Supported Software Matrix (continued)**

	Supported SAN-OS Release 3.0x Software			
	3.0(1) Features	3.0(2) Features	3.0(2a) Features	3.0(3) Features
<b>MDS 9200 Series Hardware</b>				
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x
<b>Fibre Channel Switching Modules</b>				
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x
DS-X9112, MDS 9000 12-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9124, MDS 9000 24-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9148, MDS 9000 48-port 4-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9704, MDS 9000 4-port 10-Gbps Fibre Channel module	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module	x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x
<b>Optics</b>				
DS-X2-FC10G-SR, X2/SC optics, 10-Gbps Fibre Channel—short reach	x	x	x	x
DS-X2-FC10G-LR, X2/SC optics, 10-Gbps Fibre Channel—long reach	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
DS-SFP-FC4G-SW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—short wavelength SFP for DS-X91xx switching modules	x	x	x	x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 4 km	x	x	x	x
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP for DS-X91xx switching modules only—supports distances to 10 km	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x



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**Table 1-20 Cisco MDS 9200 Series Hardware and Release 3.0x Supported Software Matrix (continued)**

MDS 9200 Series Hardware	Supported SAN-OS Release 3.0x Software			
	3.0(1) Features	3.0(2) Features	3.0(2a) Features	3.0(3) Features
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x

**Table 1-21 Cisco MDS 9100 Series Hardware and Release 3.0x Supported Software Matrix**

MDS 9100 Series Hardware	Supported SAN-OS Release 3.0x Software			
	3.0(1) Features	3.0(2) Features	3.0(2a) Features	3.0(3) Features
<b>Chassis</b>				
DS-C9120-K9, Cisco MDS 9120 fixed configuration, non-modular, fabric switch	x	x	x	x
DS-C9140-K9, MDS 9140 fixed configuration, non-modular, fabric switch	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-GE-T, 1-Gbps Ethernet SFP	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	x	x	x	x

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# Cisco Fabric Switch for HP c-Class BladeSystem and SAN-OS Release 3.x Supported Software

This section lists the Release 3.1x software that is supported on Cisco Fabric Switch for HP c-Class BladeSystem.



**Tip**

To view the features for Release 3.1x software, click the specific SAN-OS release.

This section includes the following:

- [Cisco Fabric Switch for HP c-Class BladeSystem and Supported Release 3.3x Software Matrix](#)
- [Cisco Fabric Switch for HP c-Class BladeSystem and Supported Release 3.2x Software Matrix](#)
- [Cisco Fabric Switch for HP c-Class BladeSystem and Supported Release 3.1x Software Matrix](#)

**Table 1-22 Cisco Fabric Switch for HP c-Class BladeSystem and Supported Release 3.3x Software Matrix**

Cisco Fabric Switch for HP c-Class BladeSystem Hardware	Supported SAN-OS Release 3.3x Software				
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features
DS-HP-FC-K9, Cisco Fabric Switch for HP c-Class BladeSystem (includes sixteen internal and eight external active ports and four 4-Gb SFPs installed, or eight internal and four external active ports and two 4-Gb SFPs installed).	x	x	x	x	x

**Table 1-23 Cisco Fabric Switch for HP c-Class BladeSystem and Supported Release 3.2x Software Matrix**

Cisco Fabric Switch for HP c-Class BladeSystem Hardware	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
DS-HP-FC-K9, Cisco Fabric Switch for HP c-Class BladeSystem (includes sixteen internal and eight external active ports and four 4-Gb SFPs installed, or eight internal and four external active ports and two 4-Gb SFPs installed).	x	x	x	x

**Table 1-24 Cisco Fabric Switch for HP c-Class BladeSystem and Supported Release 3.1x Software Matrix**

Cisco Fabric Switch for HP c-Class BladeSystem Hardware	Supported SAN-OS Release 3.1x Software				
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features
DS-HP-FC-K9, Cisco Fabric Switch for HP c-Class BladeSystem (includes sixteen internal and eight external active ports and four 4-Gb SFPs installed, or eight internal and four external active ports and two 4-Gb SFPs installed).	x	x	x	x	x

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# Cisco Fabric Switch for IBM BladeCenter and SAN-OS Release 3.x Supported Software

This section lists the Release 3.x software that is supported on Cisco Fabric Switch for IBM BladeCenter.



**Tip**

To view the features for Release 3.x software, click the specific SAN-OS release.

This section includes the following:

- [Cisco Fabric Switch for IBM BladeCenter and Supported Release 3.3x Software Matrix](#)
- [Cisco Fabric Switch for IBM BladeCenter and Supported Release 3.2x Software Matrix](#)
- [Cisco Fabric Switch for IBM BladeCenter and Supported Release 3.1x Software Matrix](#)

**Table 1-25** Cisco Fabric Switch for IBM BladeCenter and Supported Release 3.3x Software Matrix

Cisco Fabric Switch for HP c-Class BladeSystem Hardware	Supported SAN-OS Release 3.1x Software					
	3.3(1a) Features	3.3(1c) Features	3.3(2) Features	3.3(3) Features	3.3(4) Features	3.3(4a) Features
DS-IBM-FC-K9, Cisco Fabric Switch for IBM BladeCenter (includes fourteen internal and six external ports).	x		x	x	x	x

**Table 1-26** Cisco Fabric Switch for IBM BladeCenter and Supported Release 3.2x Software Matrix

Cisco Fabric Switch for IBM BladeCenter Hardware	Supported SAN-OS Release 3.2x Software			
	3.2(1a) Features	3.2(2c) Features	3.2(3) Features	3.2(3a) Features
DS-IBM-FC-K9, Cisco Fabric Switch for IBM BladeCenter (includes fourteen internal and six external ports).	x	x	x	x

**Table 1-27** Cisco Fabric Switch for IBM BladeCenter and Supported Release 3.1x Software Matrix

Cisco Fabric Switch for IBM BladeCenter Hardware	Supported SAN-OS Release 3.1x Software				
	3.1(2) Features	3.1(2a) Features	3.1(2b) Features	3.1(3) Features	3.1(3a) Features
DS-IBM-FC-K9, Cisco Fabric Switch for IBM BladeCenter (includes fourteen internal and six external ports).	x	x	x	x	x

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# Cisco MDS 9000 Family Hardware and SAN-OS Release 2.x Supported Software

This section lists the Release 2.x software that is supported on Cisco MDS 9000 Family switches and switch components.



**Tip**

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To view the features for Release 2.x software, click the specific SAN-OS release.

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This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 2.x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 2.x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 2.x Supported Software Matrix](#)

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**Table 1-28 Cisco MDS 9500 Series Hardware and Release 2.x Supported Software Matrix**

MDS 9500 Series Hardware	Supported SAN-OS Release 2.x Software				
	2.0(1b) Features	2.0(2b) Features	2.1(1a) Features	2.1(2) Features	2.1(3) Features
<b>Chassis</b>					
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	X	X	X	X	X
DS-C9506, Cisco MDS 9506 Multilayer Director Switch	X	X	X	X	X
<b>Supervisor Modules</b>					
DS-X9530-SF1-K9, MDS 9500 Series Supervisor module	X	X	X	X	X
<b>Fibre Channel Switching Modules</b>					
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	X	X	X	X	X
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	X	X	X	X	X
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	X	X	X	X	X
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	X	X	X	X	X
DS-X9032-SMV, 32-port Fibre Channel Advanced Services Module (ASM)	X	X	X		
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module		X	X	X	X
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) module	X	X	X	X	X
DS-X9560-SMC, Caching Services Module (CSM)	X	X	X	X	X
<b>Small form-factor pluggable optics (SFPs)</b>					
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	X	X	X	X	X
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	X	X	X	X	X
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	X	X	X	X	X
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	X	X	X	X	X
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>					
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	X	X	X	X	X
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths	X	X	X	X	X
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths	X	X	X	X	X
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers	X	X	X	X	X

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**Table 1-29 Cisco MDS 9200 Series Hardware and Release 2.x Supported Software Matrix**

MDS 9200 Series Hardware	Supported SAN-OS Release 2.x Software				
	2.0(1b) Features	2.0(2b) Features	2.1(1a) Features	2.1(2) Features	2.1(3) Features
<b>Chassis</b>					
DS-C9216-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x
DS-C9216A-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x
DS-C9216i-K9, Cisco MDS 9216 16-port semi-modular fabric switch (14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>					
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x		x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module	x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module	x	x	x	x	x
DS-X9032-SMV, 32-port Fibre Channel Advanced Services Module (ASM)	x	x	x	x	x
DS-X9032-SSM, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel Storage Services Module		x	x	x	x
DS-X9302-14K9, MDS 9000 2-port GE and 14-port Fibre Channel Multiprotocol Services (MPS-14/2) Module	x	x	x	x	x
DS-X9560-SMC, Caching Services Module (CSM)	x	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>					
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>					
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x	x

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**Table 1-30 Cisco MDS 9100 Series Hardware and Release 2.x Supported Software Matrix**

MDS 9100 Series Hardware	Supported SAN-OS Release 2.x Software			
	2.0(1b) Features	2.1(1a) Features	2.1(2) Features	2.1(3) Features
<b>Chassis</b>				
DS-C9120-K9, Cisco MDS 9120 fixed configuration, non-modular, fabric switch	x	x	x	x
DS-C9140-K9, MDS 9140 fixed configuration, non-modular, fabric switch	x	x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>				
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>				
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)	x	x	x	x

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# Cisco MDS 9020 Hardware and FabricWare Release 2.1x Supported Software

This section lists the FabricWare Release 2.x software that is supported on Cisco MDS 9020 hardware.



**Tip**

To view the features for Release 2.1x software, click the specific FabricWare release.

This section includes the following:

- [Cisco MDS 9020 Hardware and Supported FabricWare Release 2.1x Software Matrix](#)

**Table 1-31 Cisco MDS 9020 Hardware and Supported FabricWare Release 2.1x Software Matrix**

Cisco MDS 9020 Hardware	Supported FabricWare Release 2.1x Software	
	2.1(2)	2.1(3)
<b>Chassis</b>		
DS-C9020-20K9, Cisco MDS 9020 20-Port Fabric Switch (fixed configuration switch with 20 4-Gbps Fibre Channel ports)	x	
<b>Small form-factor pluggable optics (SFPs)</b>		
DS-SFP-FC4G-SW, 4-Gbps Fibre Channel short wavelength SFP, LC	x	
DS-SFP-FC4G-LW, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP		x
DS-SFP-FC4G-MR, 4-Gbps/2-Gbps/1-Gbps Fibre Channel—long wavelength SFP		x



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# Cisco MDS 9000 Family Hardware and SAN-OS Release 1.x Supported Software

This section lists the Release 1.x software that is supported on Cisco MDS 9000 Family switches and switch components.



**Tip**

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To view the features for Release 1.x software, click the specific SAN-OS release.

---

This section includes the following:

- [Cisco MDS 9500 Series Hardware and Release 1.x Supported Software Matrix](#)
- [Cisco MDS 9200 Series Hardware and Release 1.x Supported Software Matrix](#)
- [Cisco MDS 9100 Series Hardware and Release 1.x Supported Software Matrix](#)

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**Table 1-32 Cisco MDS 9500 Series Hardware and Release 1.x Supported Software Matrix**

MDS 9500 Series Hardware	Supported SAN-OS Release 1.x Software					
	1.0(5) Features	1.1(1) Features	1.1(2) Features	1.2(2a) Features	1.3(1) Features	1.3(4a) Features
<b>Chassis</b>						
DS-C9509, Cisco MDS 9509 Multilayer Director Switch	x	x	x	x	x	x
DS-C9506, Cisco MDS 9506 Multilayer Director Switch		x	x	x	x	x
<b>Supervisor Modules</b>						
DS-X9530-SF1-K9, MDS 9500 Series Supervisor module	x	x	x	x	x	x
<b>Fibre Channel Switching Modules</b>						
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module					x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module		x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module						x
DS-X9032-SMV, 32-port Fibre Channel Advanced Services Module (ASM)				x	x	x
DS-X9560-SMC, Caching Services Module (CSM)					x	x
<b>Small form-factor pluggable optics (SFPs)</b>						
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP		x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP		x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>						
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)		x	x	x	x	x
DS-CWDM-MUX- 4, Add/drop multiplexer for four CWDM wavelengths		x	x	x	x	x
DS-CWDM-MUX- 8, Add/drop multiplexer for eight CWDM wavelengths		x	x	x	x	x
DS-CWDMCHASSIS, Two-slot chassis for CWDM add/drop multiplexers		x	x	x	x	x

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**Table 1-33 Cisco MDS 9200 Series Hardware and Release 1.x Supported Software Matrix**

MDS 9200 Series Hardware	Supported SAN-OS Release 1.x Software						
	1.0(5) Features	1.1(1) Features	1.1(2) Features	1.2(2a) Features	1.3(1) Features	1.3(4a) Features	1.3(5) Features
<b>Chassis</b>							
DS-C9216-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)	x	x	x	x	x	x	x
DS-C9216A-K9, Cisco MDS 9216 16-port semi-modular fabric switch (16 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot)							x
<b>Fibre Channel Switching Modules</b>							
DS-X9016, MDS 9000 16-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9032, MDS 9000 32-port 1-Gbps/2-Gbps Fibre Channel module	x	x	x	x	x	x	x
DS-X9308-SMIP, 8-port Gigabit Ethernet IPS services module		x	x	x	x	x	x
DS-X9304-SMIP, 4-port Gigabit Ethernet IPS services module						x	x
DS-X9032-SMV, 32-port Fibre Channel Advanced Services Module (ASM)				x	x	x	x
DS-X9560-SMC, Caching Services Module (CSM)					x	x	x
<b>Small form-factor pluggable optics (SFPs)</b>							
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	x	x	x	x	x	x	x
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP		x	x	x	x	x	x
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP		x	x	x	x	x	x
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>							
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)		x	x	x	x	x	x

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**Table 1-34 Cisco MDS 9100 Series Hardware and Release 1.x Supported Software Matrix**

MDS 9100 Series Hardware	Supported SAN-OS Release 1.x Software				
	1.0(5) Features	1.1(1) Features	1.1(2) Features	1.2(2a) Features	1.3(1) Features
<b>Chassis</b>					
DS-C9120-K9, Cisco MDS 9120 fixed configuration, non-modular, fabric switch			X	X	X
DS-C9140-K9, MDS 9140 fixed configuration, non-modular, fabric switch			X	X	X
<b>Small form-factor pluggable optics (SFPs)</b>					
DS-SFP-FC2G-SW, 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP	X	X	X	X	X
DS-SFP-FC2G-LW, 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP	X	X	X	X	X
DS-SFP-FCGE-SW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—short wavelength SFP		X	X	X	X
DS-SFP-FCGE-LW, 1-Gbps Ethernet and 1-Gbps/2-Gbps Fibre Channel—long wavelength SFP		X	X	X	X
<b>Coarse Wavelength Division Multiplexing (CWDM)</b>					
DS-CWDM-xxxx, Gigabit Ethernet and 1-Gbps/2-Gbps Fibre Channel SFP LC interface xxxx nm (xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm)		X	X	X	X



## CHAPTER 2

# Cisco MDS NX-OS Release 5.x Feature Lists

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This chapter describes the new features that are included in the following 5.x NX-OS release:

- [New Features for NX-OS Release 5.0\(1a\), page 2-1](#)

## New Features for NX-OS Release 5.0(1a)

5.0(1a) Features	Description
Secure Erase on the MSM-18/4 and the MDS-9222i	Cisco Secure Erase for the Cisco MDS 9500 or MDS 9200 family of switches provides significant advantages over traditional data erase mechanisms. These advantages include platform independence, higher speed, lower cost, and easier deployment.
AAA Enhancements	Beginning with Cisco NX-OS Release 5.0(1a), NX-OS supports LDAP and Active Directory for AAA authentication at the command-line interface (CLI) level.
IOA with IVR	Beginning with Cisco NX-OS Release 5.0(1a), IOA supports IVR flows and can operate seamlessly in IVR environments.
SME with IVR	Cisco Storage Media Encryption (SME) supports IVR as of Cisco NX-OS Release 5.0(1a).
SFP Diagnostics	Any error message related to SFP failures or SNMP traps will be written to syslog. Customers can listen to syslog for events related to SFP failures.

[Release Notes for NX-OS Release 5.0\(1a\)](#)

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## CHAPTER 3

# Cisco MDS NX-OS Release 4.x Feature Lists

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This chapter describes the new features that are included in the following 4.x NX-OS release:

- [New Features for NX-OS Release 4.2\(5\)](#), page 3-1
- [New Features for NX-OS Release 4.2\(3a\)](#), page 3-1
- [New Features for NX-OS Release 4.2\(3\)](#), page 3-2
- [New Features for NX-OS Release 4.2\(1b\)](#), page 3-2
- [New Features for NX-OS Release 4.2\(1a\)](#), page 3-2
- [New Features for NX-OS Release 4.1\(3a\)](#), page 3-3
- [New Features for NX-OS Release 4.1\(3\)](#), page 3-3
- [New Features for NX-OS Release 4.1\(1c\)](#), page 3-5
- [New Features for NX-OS Release 4.1\(1b\)](#), page 3-5

## New Features for NX-OS Release 4.2(5)

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### 4.2(5) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.2(3a).

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[Release Notes for NX-OS Release 4.2\(5\)](#)

## New Features for NX-OS Release 4.2(3a)

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### 4.2(3a) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.2(1a).

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[Release Notes for NX-OS Release 4.2\(3a\)](#)

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## New Features for NX-OS Release 4.2(3)

### 4.2(3) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.2(1a).

[Release Notes for NX-OS Release 4.2\(3\)](#)

## New Features for NX-OS Release 4.2(1b)

### 4.2(1b) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.2(1a).

[Release Notes for NX-OS Release 4.2\(1b\)](#)

## New Features for NX-OS Release 4.2(1a)

4.2(1a) Features	Description
Cisco TrustSec Fibre Channel Link Encryption	Beginning with Cisco MDS NX-OS Release 4.2(1a), Fibre Channel data that is passed between E ports of 8-Gbps modules can be encrypted. The encryption algorithm is a 128-bit Advanced Encryption Standard (AES) and enables either AES-Galois Counter Mode (GCM) or AES-Galois Message Authentication Code (GMAC) for an interface.
FICON XRC Acceleration	eXtended Remote Copy (XRC) is a mainframe-based software replication solution in widespread use in financial institutions worldwide. Cisco previously supported XRC over FCIP at distances up to 200 km on the MSM-18/4 module. Beginning with NX-OS Release 4.2(1a), Cisco supports XRC over virtually unlimited distances.
I/O Accelerator (IOA)	Cisco MDS NX-OS 4.2(1a) supports the I/O Accelerator (IOA) on the MDS 900018/4-port Multiservice Module (MSM-18/4) and the 16-port Storage Service Node (SSN-16).
SAN Extension Support on the SSN-16	Beginning with MDS NX-OS Release 4.2(1a), you can deploy Fibre Channel Interface Protocol (FCIP) on the new 16-port Storage Services Node (SSN-16).



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4.2(1a) Features	Description
Port Group Monitoring	The new <b>port-group-monitor</b> command allows you to monitor port groups that go above and below a configurable bandwidth threshold.
X2 Transceiver Support on the MDS 9134 Fabric Switch	Beginning with MDS NX-OS Release 4.2(1a), the MDS 9134 Fabric Switch supports the 10-Gbps Ethernet DWDM Transceiver and the 10-Gbps Ethernet Transceiver X2 pluggable modules.

[Release Notes for NX-OS Release 4.2\(1a\)](#)

## New Features for NX-OS Release 4.1(3a)

4.1(3a) Features
There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.1(3).

[Release Notes for NX-OS Release 4.1\(3a\)](#)

## New Features for NX-OS Release 4.1(3)

4.1(3) Features	Description
Smart Call Home Enhancement	MDS 9000 Family switches previously required an e-mail gateway to send notifications. Beginning with Cisco MDS NX-OS Release 4.1(3), all MDS switches are capable of sending notifications via https.
F port Trunking and F port channelling with NPV	Cisco MDS NX-OS Release 4.1(3) introduces F port trunking and F port channeling. These features are already available for E ports and are now available for F ports connected to NP ports on a switch where N port virtualization (NPV) is enabled.
Port Owner	The port owner feature is intended for environments where there is more than one administrator. Port owner allows an administrator to mark some ports so that they appear as reserved in Device Manager.
Port Guard	Beginning with NX-OS 4.1(3), you can hold a port down after a failure or a series of flaps that are rapid enough to exceed a configured threshold. This capability can help keep the malfunctioning port down to avoid a flood of error reports.
Cisco Data Mobility Manager Enhancements	The Cisco MDS NX-OS Release 4.1(3) includes several enhancements to Cisco Data Mobility Manager (DMM).

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<b>4.1(3) Features</b>	<b>Description</b>
Cisco Data Mobility Manager Method 3	Cisco Data Mobility Manager Method 3 is a new method introduced in Cisco NX-OS Release 4.1(3), that enables DMM to be used in topologies where there is a Dual Fabric SAN for server-to-storage Fibre Channel traffic and a third SAN (or VSAN) for migration traffic.
Support for DMM on the MDS 9222i Switch	Beginning with Cisco NX-OS Release 4.1(3), the MDS 9222i Multiservice Modular Switch supports Cisco DMM without requiring an SSM module in the MDS 9222i switch.
Cisco Storage Media Encryption Enhancements	The Cisco MDS NX-OS Release 4.1(3) includes several enhancements to Cisco Storage Media Encryption (SME).
Media Key Auto-replication	Beginning with NX-OS Release 4.1(3), SME users can set up automatic replication of media keys from a Cisco SME cluster to one or more other clusters. Cisco SME media key auto-replication is configured on a per tape volume group basis.
High availability KMC	Enhancements in Cisco NX-OS Release 4.1(3) enable the KMC to be used in high availability environments where unattended operation is a requirement.
Cisco Fabric Manager Release 4.1(3) New Features	Cisco Fabric Manager Release 4.1(3) includes new features and enhancements.
Web Client Real-time Performance Charts	The Cisco Fabric Manager Server (FMS) web client performance charts have been enhanced to display real-time interface statistics in addition to the historical data.
Zone Database Backup Enhancements	The Cisco Fabric Manager Zone edit tool allows users to backup the zone database information. File Transfer Protocol (FTP), secure FTP (SFTP), and Secure Copy Protocol (SCP) are now supported in addition to Trivial File Transfer Protocol (TFTP) to back up the zone database.
Find in table Command	A find in table command has been added in Cisco NX-OS Release 4.1(3) to locate rows in the Cisco Fabric Manager information table that is currently displayed.
Tools Menu Reorganization	The Cisco Fabric Manager Tools menu has been reorganized to group related tools under the following new submenus: Health, Connectivity, NPV, Data Mobility Manager, IP San, Security, and Install.
Flow Wizard List Filtering	The Fabric Manager Server flow wizard now allows new flow creation to be limited to a specific zone, rather than to an entire VSAN.
Fabric Manager Installer Changes	The following changes have been made to the Cisco Fabric Manager installer in Cisco NX-OS Release 4.1(3):  The Fabric Manager components shared with Cisco DCNM were relocated to a common directory.  The Oracle JDBC component is no longer distributed with Fabric Manager.
Fabric Manager Platform Support	Cisco NX-OS Release 4.1(3) is the last release to support Fabric Manager Solaris 8 and Red Hat Enterprise AS4 Linux.

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[Release Notes for NX-OS Release 4.1\(3\)](#)

## New Features for NX-OS Release 4.1(1c)

### 4.1(1c) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Release 4.1(1b).

[Release Notes for NX-OS Release 4.1\(1c\)](#)

## New Features for NX-OS Release 4.1(1b)

4.1(1b) Features	Description
New 8-Gbps Performance Fibre Channel Module Support	Cisco NX-OS Release 4.1(1b) supports the following new switch hardware platforms and modules: <ul style="list-style-type: none"> <li>• 48-port 8-Gbps Fibre Channel Switching Module</li> <li>• 24-port 8-Gbps Fibre Channel Switching Module</li> <li>• 4/44-port 8-Gbps Host-Optimized Fibre Channel Switching Module</li> </ul>
Call Home Delayed Traps Feature	Cisco NX-OS Release 4.1(1b) provides the ability to generate a delayed trap so that the number of generated email messages is reduced. This method filters server reboots and avoids generating unnecessary Call Home email messages.
Smart Call Home Enhancement	Cisco NX-OS Software offers a Call Home feature for proactive fault management. Beginning with NX-OS Release 4.1(1b), all MDS switches are capable of sending notifications using HTTPS and can be integrated with Cisco Smart Call Home software.
SANTap Enhancements	SANTap is now supported on the MSM-18/4 module and the MDS 9222i switch. Third party applications like Recoverpoint and NetApp ReplicatorX are now able to take advantage of Generation 2 line cards.
IPv6 Support	Beginning with NX-OS Release 4.1(1b), IPv6 is supported on the MSM-18/4 module and the MDS 9222i switch.
NPV Traffic Management	Cisco NX-OS Software supports industry-standard N-port identifier virtualization (NPIV), which allows multiple N-port fabric logins concurrently on a single physical Fibre Channel link. HBAs that support NPIV can help improve SAN security by enabling zoning and port security to be configured independently for each virtual machine (OS partition) on a host. In addition to being useful for server connections, NPIV is beneficial for connectivity between core and edge SAN switches.

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<b>4.1(1b) Features</b>	<b>Description</b>
CFS Distribution Using Static List	Cisco NX-OS Release 4.1(1b), combines the Cisco Fabric Services (CFS) static list feature with the Fabric Manager's NPV device discovery feature and provides a near-seamless user experience of managing NPV devices using CFS.
Cisco Data Mobility Manager Enhancements	Beginning with NX-OS Release 4.1(1b), the Cisco MDS Data Mobility Manager (DMM) application is supported on the Cisco MDS 18/4-Port Multiservice Module. DMM is supported on the following cluster configurations: <ul style="list-style-type: none"> <li>• Sun Cluster</li> <li>• HACMP(IBM)</li> <li>• VCS (Veritas)</li> <li>• MSCS (Microsoft)</li> </ul>
Cisco Storage Media Encryption Enhancements	Beginning in NX-OS Release 4.1(1b), SME key management and provisioning are decoupled, which enables the KMC to be installed on a separate server from Fabric Manager Server (FMS). In addition, new roles are available to allow separate administration privileges. The new roles enable key management to be handled by a security group instead rather than the SAN administrators.
Switch Interoperability with Brocade 5.x and McData 9.07.	Cisco NX-OS software supports interoperability between Brocade 5.x and McData 9.07.

[Release Notes for NX-OS Release 4.1\(1\)](#)



## CHAPTER 4

# Cisco MDS SAN-OS Release 3.x Feature Lists

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This chapter describes the features that are included in the following 3.x SAN-OS release:

- [New Features for SAN-OS Release 3.3\(5\), page 4-2](#)
- [New Features for SAN-OS Release 3.3\(4a\), page 4-2](#)
- [New Features for SAN-OS Release 3.3\(4\), page 4-2](#)
- [New Features for SAN-OS Release 3.3\(3\), page 4-2](#)
- [New Features for SAN-OS Release 3.3\(2\), page 4-3](#)
- [New Features for SAN-OS Release 3.3\(1c\), page 4-3](#)
- [New Features for SAN-OS Release 3.3\(1a\), page 4-3](#)
- [New Features for SAN-OS Release 3.2\(3a\), page 4-4](#)
- [New Features for SAN-OS Release 3.2\(3\), page 4-5](#)
- [New Features for SAN-OS Release 3.2\(2c\), page 4-5](#)
- [New Features for SAN-OS Release 3.2\(1a\), page 4-6](#)
- [New Features for SAN-OS Release 3.1\(4\), page 4-9](#)
- [New Features for SAN-OS Release 3.1\(3a\), page 4-10](#)
- [New Features for SAN-OS Release 3.1\(3\), page 4-10](#)
- [New Features for SAN-OS Release 3.1\(2b\), page 4-11](#)
- [New Features for SAN-OS Release 3.1\(2a\), page 4-11](#)
- [New Features for SAN-OS Release 3.1\(2\), page 4-12](#)
- [New Features for SAN-OS Release 3.0\(3b\), page 4-12](#)
- [New Features for SAN-OS Release 3.0\(3\), page 4-13](#)
- [New Features for SAN-OS Release 3.0\(2b\), page 4-13](#)
- [New Features for SAN-OS Release 3.0\(2a\), page 4-13](#)
- [New Features for SAN-OS Release 3.0\(2\), page 4-14](#)
- [New Features for SAN-OS Release 3.0\(1\), page 4-14](#)

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## New Features for SAN-OS Release 3.3(5)

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### 3.3(5) Features

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There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.3(1a).

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[Release Notes for SAN-OS Release 3.3\(5\)](#)

## New Features for SAN-OS Release 3.3(4a)

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### 3.3(4a) Features

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There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.3(1a).

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[Release Notes for SAN-OS Release 3.3\(4a\)](#)

## New Features for SAN-OS Release 3.3(4)

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### 3.3(4) Features

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There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.3(1a).

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[Release Notes for SAN-OS Release 3.3\(4\)](#)

## New Features for SAN-OS Release 3.3(3)

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### 3.3(3) Features

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There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.3(1a).

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[Release Notes for SAN-OS Release 3.3\(3\)](#)

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## New Features for SAN-OS Release 3.3(2)

### 3.3(2) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.3(1a).

[Release Notes for SAN-OS Release 3.3\(2\)](#)

## New Features for SAN-OS Release 3.3(1c)

### 3.3(1c) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.3(1a).

[Release Notes for SAN-OS Release 3.3\(1c\)](#)

## New Features for SAN-OS Release 3.3(1a)

3.3(1a) Features	Description
Cisco SME Enhancements	<p>Cisco SAN-OS Release 3.3(1a) supports the following features:</p> <ul style="list-style-type: none"> <li>• Rekey Operations</li> <li>• Off-line Data Restore Tool</li> <li>• Media Servers with Drives in Two Fabrics</li> <li>• Expanded Interoperability</li> <li>• Enhanced Performance</li> <li>• Fx-port Zoning Support</li> </ul>
NPV Traffic Management	Starting in Cisco MDS SAN-OS Release 3.3(1a), NPV will be supported on the Cisco Fabric Switch for IBM BladeCenter.
Secure Erase	The secure erase feature erases existing data on a given target in such a way that reconstructing that data is virtually impossible. SAN-based secure erase has numerous advantages over traditional data erase mechanisms such as higher speed, lower cost, ease-of-execution, and platform independence.

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3.3(1a) Features	Description
FlexAttach	FlexAttach is supported on the Cisco Fabric Switch for HP c-Class BladeSystem switch, the Cisco Fabric Switch for IBM BladeCenter switch, the Cisco MDS 9124 switch, and the Cisco MDS 9134 switch, when NPV mode is enabled. The FlexAttach feature reduces the time and coordination effort required by SAN and server administrators when installing and replacing servers. To alleviate interaction between SAN administrators and server administrators, it is important that changes are not made to the SAN configuration when a new server is installed or when an existing server needs replacement. FlexAttach is a new feature included in SAN-OS Release 3.3(1a) that addresses this issue.
SMI-S	Cisco SAN-OS Release 3.3(1a) includes the following SMI-S enhancements: <ul style="list-style-type: none"> <li>• FDMI subprofile supporting management of the HBA on the host and the storage device.</li> <li>• SMIS 1.2 compliance with current SAN-OS support.</li> <li>• Basic logging facility.</li> <li>• SMI-S 1.2 compliance for the server and switch profiles with limited support for Indications.</li> </ul>
FCIP Interop	In Release 3.3(1a), support is included for FCIP interop between the MSM-18/4 module or MDS 9222i switch and the MPS-14/2 module, the MDS 9216i switch, or the IPS-8 module. FCIP is supported on the MPS-14/2 module, MDS 9216i switch, IPS-8 module, IPS-4 module, MDS 9222i switch, and the MSM-18/4 module.
Copper SFP	Beginning with Release 3.3(1a), copper SFPs are supported on the Ethernet ports of the MSM-18/4 module and the MDS 9222i switch.
Cisco Fabric Manager Enhancements	These sections describe Cisco Fabric Manager enhancements found in Release 3.3(1a): <ul style="list-style-type: none"> <li>• New Configuration Wizards</li> <li>• Scalability Improvement</li> <li>• Metro-Optical Link Display</li> </ul> Java Runtime 1.6 Support

[Release Notes for SAN-OS Release 3.3\(1a\).](#)

## New Features for SAN-OS Release 3.2(3a)

### 3.2(3a) Features

There are no new features available for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.2(3).



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[Release Notes for SAN-OS Release 3.2.3a](#)

## New Features for SAN-OS Release 3.2(3)

### 3.2(3) Features

There are no new features available for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.2(2c).

[Release Notes for SAN-OS Release 3.2\(3\)](#)

## New Features for SAN-OS Release 3.2(2c)

3.2(2c) Features	Description
Cisco Storage Media Encryption	<p>Cisco Storage Media Encryption (SME) for the Cisco MDS 9000 family switches offers a highly scalable, reliable, and flexible solution to encrypting sensitive information in the data center. SME is integrated transparently as a fabric service for Fibre Channel SANs. It is a complete solution and offers the following features:</p> <ul style="list-style-type: none"> <li>• Strong AES-256 encryption of data at rest</li> <li>• Heterogeneous device support: tape drives, virtual tape libraries (VTL)</li> <li>• Seamless integration as a transparent fabric service</li> <li>• Nondisruptive installation and provisioning</li> <li>• High availability and scalability</li> <li>• Secure, comprehensive key management</li> <li>• Full role-based access control support for management</li> <li>• Provisioning and key management integrated with Cisco Fabric Manager and CLI</li> </ul>
N-Port Identifier Virtualization Support for Cisco MDS 9124 and 9134 Switches	N-Port Identifier Virtualization (NPIV) support for Cisco MDS 9124 and 9134 fabric switches is included in this release.

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<b>3.2(2c) Features</b>	<b>Description</b>
New MIBS	The following new MIB is included in Cisco MDS 9000 SAN-OS release 3.2(2c): <ul style="list-style-type: none"> <li>• CISCO-SME-MIB</li> </ul>
MDS Authentication Mode	As of SAN-OS Release 3.x, Cisco Fabric Manager required users to log in to the Fabric Manager server and the switches in the fabrics. This resulted in a two-step login process. The MDS authentication mode option has been added to the Cisco Fabric Manager installer to enable users to log in to the Fabric Manager server with switch credentials, restoring the one-step login process. This feature can be used with both the standalone and Fabric Manager Server configurations.

[Release Notes for SAN-OS Release 3.2\(2c\).](#)

## New Features for SAN-OS Release 3.2(1a)

<b>3.2(1a) Features</b>	<b>Description</b>
Cisco MDS 9134 Multilayer Fabric Switch	The Cisco MDS 9134 Multilayer Fabric Switch is a 32-port 1-, 2-, and 4-Gbps autosensing Fibre Channel and 2-port 10-Gbps switch. It features On-Demand Port Activation Licensing. By default, the first 24 ports are licensed. An additional license is required for the remaining 8 ports. The 210-Gbps ports are not licensed by default, but require a separate license.
Cisco MDS 9222i Multiservice Switch	The Cisco MDS 9222i Multiservice Modular Switch offers eighteen 4-Gbps Fibre Channel ports and four Gigabit Ethernet IP storage services ports, and a modular expansion slot to host Cisco MDS 9000 Family Switching and Services Modules.
Cisco MDS 9000 18/4-Port Multiservice Module (MSM-18/4)	The Cisco MDS 9000 18/4-Port Multiservice Module (MSM-18/4) offer eighteen 1-, 2-, and 4-Gbps Fibre Channel ports and four Gigabit Ethernet IP storage services ports. Its multiprotocol capabilities integrate in a single-form-factor Fibre Channel, Fibre Channel over IP (FCIP), Small Computer System Interface over IP (iSCSI), IBM Fiber Connectivity (FICON), FICON Control Unit Port (CUP) management, and switch cascading.
Cisco MDS 9000 18/4-Port Multiservice Module FIPS (MSFM-18/4)	The Cisco MDS 9000 Family 18/4-Port Multiservice Federal Information Processing Standards (FIPS) Module is a FIPS 140-2 Level 3-compliant version of the Cisco MSM-18/4 Module. It provides added security to meet regulatory and industry requirements. FIPS Level 3 certification requires enhanced physical security, including a hard, opaque potting material to deter unauthorized access and tampering.
Cisco Data Mobility Manager	Cisco MDS Data Mobility Manager (DMM) for the Cisco MDS 9000 family of switches provides capabilities and features that simplify data migration and minimize service disruptions. Data migration is the process of copying data from an existing storage device to a new storage device.

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3.2(1a) Features	Description
N-Port Virtualization	<p>The N-Port virtualization (NPV) feature reduces the number of Fibre Channel domain IDs in core-edge SANs. Switches operating in the NPV mode do not join a fabric, they just pass traffic between core switch links and end-devices, which eliminates the domain IDs for these edge switches. This feature is available only for Cisco MDS 9000 blade switches, the Cisco MDS 9124 Multilayer Fabric Switch, and the Cisco MDS 9134 Multilayer Fabric Switch.</p>
Digital Diagnostic Enhancements	<p>The digital diagnostics capabilities for small form-factor pluggable (SFP) and 10 Gbps X2 form factor optics have been enhanced in Cisco SAN-OS release 3.2(1a):</p> <ul style="list-style-type: none"> <li>• Added support for Dense Wave Division Multiplexing (DWDM) SFPs</li> <li>• Traps can be generated when digital diagnostic thresholds are exceeded</li> <li>• Digital diagnostic values are viewable in Cisco Fabric Manager (previously only through CLI)</li> </ul>
Universal Serial Bus Support	<p>The two Universal Serial Bus (USB) 2.0 compatible ports on the Cisco MDS 9500 Series Supervisor-2 modules are available for use with Cisco SAN-OS release 3.2(1a). USB flash drives connected to these ports may be used for the same functions as media in the external compact flash slot.</p>
Intelligent Fabric Application Enhancements	<p>Several intelligent fabric application enhancements are included in Cisco SAN-OS 3.2(1a):</p> <ul style="list-style-type: none"> <li>• SANTap Enhancements</li> <li>• Software Image Compatibility Check - verifies the compatibility of partner software with the SAN-OS storage services interface (SSI) version before loading it.</li> <li>• Partner Software Reset - allows network hosted applications to be reset without reloading a SSM.</li> </ul>
FIPS Support	<p>Federal Information Processing Standards (FIPS) 140-2 level 2 qualification has been completed for the Cisco MDS 9000 family. Customers choosing to implement FIPS level 2 security in the SAN select the FIPS mode for switch security.</p> <p>The FIPS mode has been enhanced to support the Cisco MDS 9000 14/2-Port Multiprotocol Services Module.</p>
TACACS+ Password Expiry Notification	<p>When an end-user authenticates to a Cisco MDS 9000 switch via a TACACS+ account, this feature lets them know when a password has expired or is about to expire. If the password has expired, the end-user is prompted to change the password.</p>

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<b>3.2(1a) Features</b>	<b>Description</b>
SMI-S Enhancements	<p>Indications supported has been expanded to allow meaningful monitoring of Cisco MDS 9000 family switches. The following indications have been added:</p> <ul style="list-style-type: none"> <li>• Switch FC port status change</li> <li>• Switch environmental failure</li> <li>• Zoneset activated</li> <li>• Switch field replaceable unit change</li> </ul>
Common Criteria	<p>Validation of Common Criteria (CC) evaluation assurance level 3 (EAL 3) for the Cisco MDS 9000 Family members running Cisco SAN-OS 3.0(2a) shall be achieved by the release 3.2(1a) time frame.</p>
Server LUN Map Discovery Commands	<p>Server LUN map discovery commands have been added to the CLI to discover all LUNs in a disk array that are masked for access by a particular host. You can specify a VSAN, a specific host interface, and the targets to query. The commands allow you to find LUNs that are zoned, and also LUNs that are not zoned if the disk array allows this. A Cisco MDS 9000 Storage Services Module (SSM) is required to use this feature.</p>
New MIBS	<p>The following new MIB is included in Cisco MDS 9000 SAN-OS release 3.2(1a):</p> <ul style="list-style-type: none"> <li>• CISCO-DMM-MIB</li> </ul>
In-service Software Upgrades for the Cisco MDS 9222i Switch	<p>Cisco SAN-OS 3.2(1a) includes non-disruptive, in service software upgrades (ISSU) for the Cisco MDS 9222i switch. This feature does not apply to the Cisco MDS 9216 and 9216i fabric switches.</p>

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3.2(1a) Features	Description
New CLI Command to Recover the Modflash Partition	<p>The infrastructure of the Storage Services Module (SSM) includes a non-volatile modflash partition to store partner specific images and configuration files. Any detectable partitioning and file system errors are automatically repaired during the module initialization procedures. However, certain types of file system errors cannot be auto-detected or auto-repaired. Manual procedures might be required to recover from these types of errors. This recovery procedure is destructive, since it reformats and recreates the modflash partition. All data in the modflash partition is deleted. SSM initial provisioning procedures need to be followed for completing the recovery procedure. For these situations, a new CLI command is included in Cisco MDS SAN-OS Release 3.2(1a). The following example shows the <b>debug mkfs modflash</b> command.</p> <pre>switch# <b>attach module slot</b> Attaching to module x ... To exit type 'exit', to abort type '\$.' module-slot# <b>debug mkfs modflash</b></pre>
Cisco Fabric Manager Enhancements	<p>Cisco Fabric Manager includes the following enhancements :</p> <ul style="list-style-type: none"> <li>• New Installation Process</li> <li>• Custom Report Enhancements</li> <li>• Analysis Reports</li> <li>• Threshold Configuration Flexibility</li> </ul>

[Release Notes for SAN-OS Release 3.21a](#)

## New Features for SAN-OS Release 3.1(4)

3.1(4) Features	Description
FCIP Tape Acceleration Supports Overlapping LUN IDs	<p>In previous Cisco MDS SAN-OS releases, there was a restriction that LUN IDs could not overlap for LUNs behind the same target port, even for multiple hosts. As of Cisco SAN-OS 3.1(4), this restriction has been removed. Overlapping LUN IDs are now supported.</p>

[Release Notes for SAN-OS Release 3.1\(4\)](#)

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## New Features for SAN-OS Release 3.1(3a)

### 3.1(3a) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.1(3).

[Release Notes for SAN-OS Release 3.1\(3a\)](#)

## New Features for SAN-OS Release 3.1(3)

3.1(3) Features	Description
New CompactFlash Test Capabilities	As of Cisco MDS SAN-OS 3.1(3), the ability to detect a faulty CompactFlash is built into the SAN-OS software. A new CompactFlash cyclic redundancy check (CRC) checksum test can check the state of the CompactFlash firmware on select modules. If the CompactFlash firmware is not corrupted, then the SAN-OS software can automatically update the CompactFlash firmware.
System Default Port Mode F	As of Cisco SAN-OS Release 3.1(3), a new CLI command allows you to globally change the mode of Fibre Channel ports whose default mode is Auto, while avoiding traffic disruption caused by the formation of unwanted inter-switch links (ISLs). The new system default switchport mode F command sets the administrative mode of ports to mode F, while switch operation remains graceful. No ports are flapped.
Changes in SAN Device Virtualization	Cisco SAN-OS Release 3.1(3) supports the following features of SAN Device Virtualization: <ul style="list-style-type: none"> <li>• Virtual initiators</li> <li>• LUN zoning</li> </ul>

[Release Notes for SAN-OS Release 3.1\(3\)](#)

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## New Features for SAN-OS Release 3.1(2b)

3.1(2b) Features	Description
Install Option to Use Oracle Express Database	In Cisco Fabric Manager, you now have the option of using an Oracle Express database or the existing Hypersonic HSQL database. We recommend that you use an Oracle Express database if you are using Performance Manager on a large fabric of 1000 or more end devices.
User Interface Changes	<p>As of Cisco SAN-OS Release 3.1(2b), the following changes can be seen in the user interface of Cisco Fabric Manager:</p> <p>A <b>Create flows on all cards</b> option has been added to the Define Traffic Flows dialog box.</p> <p>The <b>User Encryption</b> option has been removed from the Add Fabric and Edit Fabric dialog boxes that are accessible from the List of Fabrics Monitored by Fabric Manager Server pane.</p> <p>A new column has been added to the Open Fabric Table dialog box that shows license information for a selected fabric, as follows:</p> <p>Licensed: there is a permanent license, or a there is a license checked out with time remaining on it.</p> <p>Eval License: there is an evaluation license with time remaining on it.</p> <p>No License: there is no license, or all evaluation licenses have expired.</p>

[Release Notes for SAN-OS Release 3.1\(2b\)](#)

## New Features for SAN-OS Release 3.1(2a)

### 3.1(2a) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.1(2).

[Release Notes for SAN-OS Release 3.1\(2a\)](#)

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## New Features for SAN-OS Release 3.1(2)

<b>3.1(2) Features</b>	<b>Description</b>
Cisco Fabric Switch for HP c-Class BladeSystem	Supports the new Cisco Fabric Switch for HP c-Class BladeSystem. Through the on-demand port activation license, this switch can be configured with sixteen internal and eight external active ports and four 4-Gb SFPs installed, or with eight internal and four external active ports and two 4-Gb SFPs installed. The Cisco Fabric Switch for HP c-Class BladeSystem also features nondisruptive software upgrades.
Cisco Fabric Switch for IBM BladeCenter	Supports the new Cisco Fabric Switch for IBM BladeCenter. This switch includes fourteen internal and six external ports, and it features an on-demand port activation license and nondisruptive software upgrades.
SAN Device Virtualization	Allows you to create virtual devices that represent physical end-devices when configuring switches with Cisco SAN-OS Release 3.1(2) and later. Virtualization of SAN devices accelerates swap-out or failover to a replacement disk.
Enable/Disable Link Traps	Allows you to control whether SNMP link state traps are enabled or disabled.
Daylight Savings Time Change	Allows you to change the switch configuration to make the daylight saving time adjustment.
FCS Discovery of Virtual Devices	Allows you to discover virtual devices in a particular VSAN or in all VSANs.
Online Health Management System (OHMS) for the MDS 9124 Switch	Provides hardware fault detection and recovery on the Cisco MDS 9124 Switch.
Compact Flash Report in Cisco Fabric Manager	Scans your switch fabric automatically and reports the status of Compact Flash on certain modules.

[Release Notes for SAN-OS Release 3.1\(2\)](#)

## New Features for SAN-OS Release 3.0(3b)

### **3.0(3b) Features**

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.0(3).

[Release Notes for SAN-OS Release 3.0\(3b\)](#)



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## New Features for SAN-OS Release 3.0(3)

<b>3.0(3) Features</b>	<b>Description</b>
Command Scheduler Remote User Passwords	Allows you to specify passwords for remote users to allow them to configure command scheduler jobs.
IVR Zones and Zone Members	Increases the limits for IVR zones to 8,000 and for IVR zone members to 10,000.
Preferred Path	Allows you to specify preferred Fibre Channel route maps for data traffic. A new MIB, CISCO-PREFERRED-PATH-MIB, configures and monitors this Preferred Path feature.
Fabric Manager Enhancements	The Cisco MDS 9000 Family Fabric Manager supports: <ul style="list-style-type: none"> <li>• Load balancing tool enhanced for Generation 2 modules</li> <li>• Preferred path tables</li> <li>• Launching CTC (Cisco Transport Controller) on ISLs from the Topology Map</li> </ul>

[Release Notes for SAN-OS Release 3.0\(3\)](#)

## New Features for SAN-OS Release 3.0(2b)

### **3.0(2b) Features**

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.0(2).

[Release Notes for SAN-OS Release 3.0\(2b\)](#)

## New Features for SAN-OS Release 3.0(2a)

### **3.0(2a) Features**

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 3.0(2).

[Release Notes for SAN-OS Release 3.0\(2a\)](#)

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## New Features for SAN-OS Release 3.0(2)

<b>3.0(2) Features</b>	<b>Description</b>
Domain Manager Fast Restart	Shortens the time it takes for Domain Manager to select a new principal link. Enabling this feature and having an available backup link means Domain Manager takes only a few milliseconds to select a new principal link. The reconfiguration required to select the new principal link only affects the two switches that are directly attached to the failed link, and not the entire VSAN.
FICON Configuration	Provides the following FICON features to the Cisco Fabric Manager and Device Manager: <ul style="list-style-type: none"> <li>• ESCON style port configuration display</li> <li>• FICON configuration locking</li> <li>• FICON port configuration table row title locking</li> <li>• FICON port configuration for multiple VSANs</li> </ul>

[Release Notes for SAN-OS Release 3.0\(2\)](#)

## New Features for SAN-OS Release 3.0(1)

<b>3.0(1) Features</b>	<b>Description</b>
Supervisor-2 Module Support	Includes support for Supervisor-2 module features, including configuring modem parameters on the console port and COM1 port, and allowing 1000-Mbps speed on the management port.
CFS Over IP Distribution	Distributes application data over IP connections. The distribution is transparent to the application, but the application must first register with CFS. The following CFS applications register for the CFS over IP distribution option: NTP, role, RADIUS, TACACS+, syslogd, and Call Home.
N-Port Identifier Virtualization (NPIV)	Provides a means to assign multiple port IDs to a single N port. This feature allows multiple applications on the N port to use different identifiers and allows access control, zoning, and port security to be implemented at the application level. NPIV must be globally enabled for all VSANs on the MDS switch to allow the NPIV-enabled applications to use multiple N port FC IDs.
McDATA Native Interoperability	Includes commands to configure McDATA native mode interoperability.

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Generation 2 Switching Module Support	<p>Includes the following set of switching modules that are supported by the Cisco MDS 9500 Series of switches:</p> <ul style="list-style-type: none"> <li>• DS-X9148 MDS 9000, 48-port 4-Gbps Fibre Channel module</li> <li>• DS-X9124 MDS 9000, 24-port 4-Gbps Fibre Channel module</li> <li>• DS-X9112 MDS 9000, 12-port 4-Gbps Fibre Channel module</li> <li>• DS-X9704 MDS 9000, 4-port 10-Gbps Fibre Channel module</li> </ul>
In-Order-Delivery Enhancement	Ensures that frames are delivered in order within the switch latency drop period.
MS-CHAP	Allows user logins to an MDS switch through a remote authentication server (RADIUS or ACACS+). MS-CHAP must be explicitly enabled to be used.
Certificate Authorities and Digital Certificates	Interoperates with certificate authorities and uses digital certificates for secure communication with peers.
IKE Digital Certificates	Allows IKE to use digital certificates for authentication instead of using preshared keys.
SNMP over TCP/IP	Allows SNMP messages to be transported over TCP rather than UDP for management traffic on the out-of-band Gigabit Ethernet management port (mgmt0).
Fabric Binding for Fibre Channel	Supports fabric binding for Fibre Channel VSANs as well as FICON VSANs.
FCIP Tape Read Acceleration	Supports tape read acceleration over FCIP interfaces as well as tape write acceleration.
iSCSI Server Load Balancing (iSLB)	<p>Provides a means to easily configure large scale iSCSI deployments containing hundreds or even thousands of initiators. iSLB provides the following features:</p> <p>The iSLB initiator configuration is simplified with support for initiator targets and auto-zones.</p> <p>Cisco Fabric Services (CFS) eliminates the need for manual configuration by distributing the iSLB initiator configuration among all MDS switches in the fabric.</p> <p>There is dynamic load balancing of iSLB initiators using iSCSI login redirect and VRRP.</p>
IP version 6 (IPv6)	<p>Provides extended addressing capability beyond those provided in IP version 4 (IPv4) in Cisco MDS SAN-OS. The architecture of IPv6 has been designed to allow existing IPv4 users to transition easily to IPv6 while providing services such as end-to-end security, quality of service (QoS), and globally unique addresses. IPv6 provides the following enhancements over IPv4:</p> <p>Allows networks to scale and provide global reachability.</p> <p>Handles packets more efficiently because the IPv6 packet header format is simplified.</p> <p>Reduces the need for private address and network address translation (NAT).</p> <p>Provides simpler autoconfiguration of addresses.</p>

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SMI-S 1.1.0 Compliant	Supports an embedded CIM agent that is compliant with SMI-S version 1.1.0. The new CIM agent includes a new access point profile.
Call Home Enhancements	Allows customization of alert group messages.

[Release Notes for SAN-OS Release 3.0\(1\)](#)



## CHAPTER 5

# Cisco MDS SAN-OS Release 2.x Feature List

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This chapter describes the new features that are included in the following 2.x SAN-OS release:

- [New Features for SAN-OS Release 2.1\(3\), page 5-1](#)
- [New Features for SAN-OS Release 2.1\(2b\), page 5-2](#)
- [New Features for SAN-OS Release 2.1\(2\), page 5-2](#)
- [New Features for SAN-OS Release 2.1\(1a\), page 5-3](#)
- [New Features for SAN-OS Release 2.0\(2b\), page 5-3](#)
- [New Features for SAN-OS Release 2.0\(1b\), page 5-4](#)

## New Features for SAN-OS Release 2.1(3)

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### 2.1(3) Features

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There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 2.1(2).

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[Release Notes for SAN-OS Release 2.1\(3\)](#)

## New Features for SAN-OS Release 2.1(2d)

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### 2.1(2d) Features

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There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 2.1(2).

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[Release Notes for SAN-OS Release 2.1\(2d\)](#)

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## New Features for SAN-OS Release 2.1(2b)

### 2.1(2b) Features

There are no new features for this release. The new features for this release are the same as those listed in the Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Release 2.1(2).

[Release Notes for SAN-OS Release 2.1\(2b\)](#)

## New Features for SAN-OS Release 2.1(2)

2.1(2) Features	Description
Nondisruptive Storage Services Module (SSM) image upgrade	Allows no disruption of Fibre Channel switching traffic when upgrading the SSI boot image on an SSM using the <b>install ssi</b> command
New default initial state for SSMs	SSMs initially come up in Fibre Channel switching mode by default.
VERITAS Storage Foundation for Networks (VSN) not supported	VSN is not supported.
Persistent FC IDs for IVR	Allows persistent FC IDs in an IVR configuration.
SCSI flow services support for interfaces	Allows the configuration of SCSI flow services on groups of four interfaces as well as the entire module.
Special characters in TACACS+ global secret keys	Allows the use of the dollar sign (\$) and the percent sign (%) in TACACS+ secret global keys.
Control for SNMP notifications for linkUp/linkDown traps	Allows the user to configure which linkUp/linkDown trap notifications to enable for interfaces.
NASB storage array controller support	Allows the user to enable NASB for storage array controller devices.
NASB target rediscovery	Allows NASB to rediscover a target device.
Multiple LUNs for NASB	Allows up to 10 target LUNs for NASB.
iSCSI duplicate WWN check	Allows users to check for potential WWN conflicts in the current configuration

[Release Notes for SAN-OS Release 2.1\(2\)](#)

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## New Features for SAN-OS Release 2.1(1a)

<b>2.1(1a) Features</b>	<b>Description</b>
Inter-VSAN Routing (IVR) Network Address Translation (NAT)	Allows non-unique domain IDs in an IVR topology. This feature simplifies the deployment of IVR in an existing fabric.
IVR VSAN topology auto mode	Uses CFS configuration distribution in auto mode to learn the topology of the IVR-enabled switches in the network.
IVR service groups	Reduces the amount of traffic to non-IVR-enabled switches by restricting IVR-related traffic to the IVR-enabled switches.
Multiple autonomous fabric IDs (AFIDs) for IVR	Allows more than one VSAN in the network with the same VSAN ID.
IVR LUN zoning	Allows IVR to directly support LUN zoning.
IVZ QoS	Allows IVZ QoS to be configured separately from other zone attributes.
SANTap	Allows third-party data storage applications, such as long distance replication and continuous backup, to be integrated into the SAN.
Network-Accelerated Storage Backup (NSAB)	Supports server-free backups in the SAN.
Distributed configuration copy	Instructs the other switches in the fabric to save their configurations to their local NVRAM.
Enhanced IP compression auto mode	Allows auto mode option to use a combination of compression modes to effectively utilize the WAN bandwidth.
Zone, zone set, fcalias, and zone attribute set cloning	Allows cloning of a new zone, zone set, fcalias, or zone attribute set can be cloned from an existing zone, zone set, fcalias, or zone attribute set.
VSFN support on the SSM	Provides support for VSFN on the SSM.
File system support for log:	Allows the file system commands to support a new directory called log: for system message log files.
iSCSI cut-thru routing mode	Provides iSCSI cut-thru routing mode in addition to pass-thru and store-and-forward modes.
Disable interface bit error rate thresholds	Allows the user to disable bit error rate threshold for a Fibre Channel interface.

[Release Notes for SAN-OS Release 2.1\(1a\)](#)

## New Features for SAN-OS Release 2.0(2b)

<b>2.0(2b) Features</b>	<b>Description</b>
Fibre Channel write acceleration	Provides support for Fibre Channel write acceleration on the ASM and SSM, which minimizes application latency or reduces transactions per second over long distances.

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SCSI flow statistics	Collects statistics for SCSI flows.
FICON enhancements	Provides support for FICON on MPS-14/2 modules.
ELP enhancement	ELP is compliant with FC-SW-3.

[Release Notes for SAN-OS Release 2.0\(2b\)](#)

## New Features for SAN-OS Release 2.0(1b)

<b>2.0(1b) Features</b>	<b>Description</b>
Extended ping command	Provides additional options to verify the connectivity of a remote host or server.
Initial setup changes	The questions in the initial set up routine and the order in which they appear is enhanced to reflect the various changes in the Cisco SAN-OS Release 2.0(1b) software
New inventory information	Displays information for the field replaceable units (FRUs) in the switch, including product IDs, serial numbers, and version IDs.
Cisco Fabric Services Infrastructure	Enables efficient database distribution and fosters device flexibility.
Dynamic VSANs	Allows you to dynamically assign VSAN membership to ports based on the device WWN.
Graceful shutdown	Allows the Cisco SAN-OS software to implicitly perform a graceful shutdown if you shut down an interface operating in the E port mode or if a Cisco SAN-OS software application executes a port shutdown as part of its function.
Extended BB_credits	Allows you to configure up to 3,500 receive BB_credits on a Fibre Channel port to facilitate BB_credits for long haul links.
Small form-factor pluggable (SFP)	Replaces the term FCOT (Fibre Channel optical transmitter) with the term SFP in the Cisco SAN-OS software and in the documentation.
PortChannel	Includes a new mode (ACTIVE) and a new protocol (autocreation).
Zone-based QoS	The zoning feature provides an additional segregation mechanism to configure the Quality of Service (QoS) priority as a zone attribute.
Enhanced zoning	Is enhanced to be compliant with FC-GS-4 and FC-SW-3. Both standards support basic zoning and enhanced zoning functionalities.
Distributed Device Alias Services	Allows you to distribute device alias names on a fabric-wide basis.



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Security	<p>Network operator default</p> <p>Administrator password must be configured</p> <p>Multiple roles support</p> <p>Advanced Encryption Standard usage</p> <p>Unified users and passwords</p> <p>Enables an error message to be displayed when a remote AAA server is unavailable</p>
Enable SNMP trap notification	Enables a specific SNMP trap (for example, fcdomain traps) notification.
RMON configuration	Allows you to configure RMON alarms and events through the CLI.
Multicast compliance	To interoperate with other vendor switches, the Cisco SAN-OS software uses the lowest domain switch as the root to compute the multicast tree in interop mode.
IP-ACL changes	As of Cisco SAN-OS Release 2.0(1b), you can also apply IP-ACLs to Gigabit Ethernet interfaces (IPS modules) and Ethernet PortChannel interfaces.
IP storage	<p>Tape acceleration.</p> <p>iSNS server.</p> <p>Mutual CHAP authentication.</p> <p>FCIP compression enhancements.</p> <p>Other changes (defaults).</p>
AAA accounting log	The AAA accounting log size cannot be configured. The default size of the accounting log is increased to 250,000 bytes and cannot be changed.
IP Security (IPsec)	Provides security services at the IP layer, including protecting one or more data flows between a pair of hosts, between a pair of security gateways, or between a security gateway and a host.
Internet Key Exchange (IKE)	IPsec uses the IKE protocol to handle protocol and algorithm negotiation and to generate the encryption and authentication keys to be used by IPsec.
Call Home enhancements	Provides message throttling capabilities, periodic inventory messages, port syslog messages, and RMON alert messages.
Port tracking	Is unique to the Cisco MDS 9000 Family. It uses information about the operational state of the link to initiate a failure in the link that connects edge device.
SAN extension (SET) tuner	Is unique to the Cisco MDS 9000 Family. It helps you optimize FCIP performance by generating SCSI I/O commands and directing such traffic to a specific virtual target.
Command Scheduler	Helps you schedule configuration and maintenance jobs in any switch in the Cisco MDS 9000 Family.
WWN changes	Exchange Link Protocol (ELP) and Exchange Fabric Protocol (EFP) use WWNs during link initialization.

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FC ID changes	To conserve the number of FC IDs used, Cisco MDS 9000 Family switches use a special FC ID allocation scheme. The persistent Fibre Channel ID (FC ID) feature is enabled by default.
Storing the last core to Flash	The last core dump (service core) is automatically saved to the Flash in the /mnt/pss/ partition before the switchover or reboot occurs.

[Release Notes for SAN-OS Release 2.0\(1b\)](#)



# CHAPTER 6

## Cisco MDS SAN-OS Release 1.x Feature Lists

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This chapter describes the new features that are included in the following 1.x SAN-OS release:

- [New Features for SAN-OS Release 1.3\(5\)](#), page 6-1
- [New Features for SAN-OS Release 1.3\(4a\)](#), page 6-1
- [New Features for SAN-OS Release 1.3\(3\)](#), page 6-2
- [New Features for SAN-OS Release 1.3\(2a\)](#), page 6-2
- [New Features for SAN-OS Release 1.3\(1\)](#), page 6-3
- [New Features for SAN-OS Release 1.2\(2a\)](#), page 6-4
- [New Features for SAN-OS Release 1.2\(1a\)](#), page 6-5
- [New Features for SAN-OS Release 1.1\(2\)](#), page 6-5
- [New Features for SAN-OS Release 1.1\(1\)](#), page 6-6
- [New Features for SAN-OS Release 1.0\(5\)](#), page 6-6
- [New Features for SAN-OS Release 1.0\(3a\)](#), page 6-6
- [New Features for SAN-OS Release 1.0\(2a\)](#), page 6-6

### New Features for SAN-OS Release 1.3(5)

1.3(5) Features	Description
TL port ALPA cache	Configures manual entries in the ALPA cache for TL ports.

[Release Notes for SAN-OS Release 1.3\(5\)](#)

### New Features for SAN-OS Release 1.3(4a)

1.3(4a) Features	Description
Banner message	Configures the message of the day (MOTD) for each switch.

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Full zone set distribution	Distributes inactive, unmodified zone sets throughout the fabric.
Inter-VSAN routing (IVR)	Configures IVR interoperability with third-party switches. Adds and withdraws IVR domains to VSANs.
In-order delivery (IOD)	Enables IOD for specific VSANs.
FICON features	Configures FICON port numbering, first-available port numbers, and moves the FICON VSAN offline.
IP storage updates	Addresses the IPS-4 module inclusion, FCIP and iSCSI default changes, burst size change for iSCSI interfaces, and delay jitter estimation.
Switch summary	Provides a brief summary of the switch configuration.
Online health management system	Performs fault detection and recovery using the online health management system (system health) feature.

[Release Notes for SAN-OS Release 1.3\(4a\)](#)

## New Features for SAN-OS Release 1.3(3)

<b>1.3(3) Features</b>	<b>Description</b>
iSCSI SACK default	Enables the TCP SACK parameter (default) for iSCSI configurations.
Essential upgrade prerequisites	Contacts customer service for recommendations before attempting an upgrade.
iSCSI name restriction	Restricts the iSCSI qualified name to a maximum name length of 223 alphanumeric characters and a minimum length of 16 characters.

[Release Notes for SAN-OS Release 1.3\(3\)](#)

## New Features for SAN-OS Release 1.3(2a)

<b>1.3(2a) Features</b>	<b>Description</b>
Zone set import/export	Imports or exports the zone set to or from an adjacent switch connected through a VSAN.
Rolling upgrades	Uses a rolling upgrade install mechanism for the Caching Services Module (CSM) and the IP Storage Services (IPS) module.

[Release Notes for SAN-OS Release 1.3\(2a\)](#)

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## New Features for SAN-OS Release 1.3(1)

<b>1.3(1) Features</b>	<b>Description</b>
Running configuration information	Displays configurations based on a specified feature, interface, module, or VSAN.
Licensing	Accesses specified premium features on the switch.
Initial setup additions	Configures the full zone set distribution and FC ID persistence features for the entire fabric during initial setup.
Automatic image synchronization	Automatic synchronization of the running image in the standby supervisor module by the active supervisor module.
Standby state	Displays standby or HA standby when the redundancy state or the supervisor state indicate a switchover is possible.
Terminal connection options	Connects to a console terminal, a Telnet terminal, or an SSH terminal from the active supervisor module.
Standby supervisor module boot variables	Forces the standby supervisor module to run the same version as the active supervisor module.
Replacing modules	Ensures that the new module is running the same software version as the rest of the switch.
Transceiver and calibration information	Displays real-time diagnostics information.
Buffer-to-buffer credit (BB_credit) display	Displays the receive and transmit BB_credit along with other pertinent interface information.
Common Information Model (CIM) configuration	Configures the CIM server using the HTTP and HTTPS protocol.
PortChannel quiesce	Gracefully shuts down an interface without dropping any frames.
Zone membership	Assigns zone membership criteria based on the interface and domain ID, domain ID and port number, and IP address.
IVR	Accesses resources across VSANs without compromising other VSAN benefits.
Fabric-Device Management Interface (FDMI)	Enables management of devices using the FDMI feature.
AAA server groups	Configures remote AAA servers using server groups.
TACACS+ authentication	Uses the Terminal Access Controller Access Control System plus (TACACS+) protocol to communicate with remote AAA servers.
RADIUS enhancements	Configures multiple RADIUS server groups.
FC-SP DHCHAP	Configures Fibre Channel Security Protocol (FC-SP) authentication to overcome security challenges for enterprise-wide fabrics. Diffie-Hellman Challenge Handshake Authentication Protocol (DHCHAP) provides authentication between Cisco MDS switches and other devices.

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Fibre Connection (FICON)	Intermixes FICON and Fibre Channel Protocol (FCP) traffic on the same switch without compromising scalability, availability, manageability and network security.
Fabric binding	Prevents unauthorized switches from joining the fabric or disrupting current fabric operations.
Registered Link Incident Report (RLIR)	Uses the RLIR function to send a LIR to a registered Nx port.
Trespass support	Uses the trespass feature to enable the export of logical units (LUs) from the active to the passive port of a statically imported iSCSI target.
Internet Storage Name Service (iSNS)	Uses the iSNS services to automate the discovery and management of iSCSI devices.
Proxy initiator	Connects all iSCSI initiators through one IPS port to make it appear as one Fibre Channel port per VSAN.
FCIP write accelerator	Improves application performance using the FCIP write acceleration feature.
FCIP compression	Allows IP packets to be compressed on the FCIP link if this feature is enabled on that link.
VSAN membership for iSCSI interfaces	Configures an iSCSI host to be a member of one or more VSANs.
Call Home enhancements	Defines a Call Home destination profile, selects predefined types of Call Home alerts, or filters messages based on their level of urgency.
FC domain ID changes	Defines the default behavior to enable persistent FC IDs globally or for each VSAN.
Port rate limiting	Uses the port rate limiting feature to control ingress traffic into a Fibre Channel port.
Quality of Service (QoS)	Configures four priority levels for service differentiation.
Auto-discovery of SCSI targets	Automatically discovers SCSI targets using the show scsi-target auto-poll command.
IPS SPAN source	Assigns a Switched Port Analyzer (SPAN) source on the IP Storage Services (IPS) module.
Per VSAN time out values (TOV)	Configure different TOVs for a specified VSAN with special links like FC or IP tunnels.

[Release Notes for SAN-OS Release 1.3\(1\)](#)

## New Features for SAN-OS Release 1.2(2a)

1.2(2a) Features	Description
The <b>install all</b> command	Recommends issuing the <b>install all</b> command.

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Configuring unique area FC IDs	Using the FC ID persistence feature switches in the Cisco MDS 9000 Family can be manually configured with a different area to either the storage port or the HBA port FC ID.
Assigning LUNs to storage systems	Single-OS and multi-OS scenarios for LUN zoning if LUN masking is enabled on the storage system.

[Release Notes for SAN-OS Release 1.2\(2a\)](#)

## New Features for SAN-OS Release 1.2(1a)

1.2(1a) Features	Description
Port security	Prevents unauthorized access to a switch port in the Cisco MDS 9000 Family.
Remote SPAN (RSPAN)	Remotely monitors traffic for one or more SPAN sources distributed in one or more source switches in a Fibre Channel fabric.
Logical unit number (LUN) zoning	Restricts access to specific LUNs associated with a device.
Read-only zones	Restricts zone members to read-only access to devices within the zone.
Interface-based zoning	Specifies a switch interface as a zone member for local or remote switches.
Common roles	Provides the ability to create and modify roles using CLI or SNMP.
VSAN-based roles	Creates roles that are valid in a specific VSAN.
IP access control lists (IP-ACLs)	Restricts IP-related in-band and out-of-band management traffic based on IP addresses (Layer 3 and Layer 4 information).
Incompatibility check	Verifies feature compatibility during a software downgrade.
ELPD configuration	Provides ability to upgrade or downgrade ELPD images.

[Release Notes for SAN-OS Release 1.2\(1a\)](#)

## New Features for SAN-OS Release 1.1(2)

1.1(2) Features	Description
Performance buffers	Allocates additional buffers per interface beyond the existing buffer-to-buffer credits.
Enhanced <b>show tech-support</b>	Displays the output of several common show commands for troubleshooting purposes.

[Release Notes for SAN-OS Release 1.1\(2\)](#)

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## New Features for SAN-OS Release 1.1(1)

1.1(1) Features	Description
CWPM/FSP	Supports hot-swappable Cisco coarse wavelength-division multiplexing (CWDM) small form-factor pluggables (SFPs).
iSCSI and FCIP	Extends SAN support to IP based networks using Fibre Channel over IP (FCIP) and iSCSI IP storage services.
Zones and VSANs	Restricts fabric access based on zones or virtual SANs.
Cisco Discovery Protocol (CDP)	Supports the advertisement protocol used by Cisco devices to advertise itself to other Cisco devices in the same network.

[Release Notes for SAN-OS Release 1.1\(1\)](#)

## New Features for SAN-OS Release 1.0(5)

1.0(5) Features	Description
Standby supervisor bootup alert	Sends a Call Home message when the standby supervisor fails to boot up.

[Release Notes for SAN-OS Release 1.0\(5\)](#)

## New Features for SAN-OS Release 1.0(3a)

1.0(3a) Features	Description
<code>install all</code> command	Supports upgrading all modules.

[Release Notes for SAN-OS Release 1.0\(3a\)](#)

## New Features for SAN-OS Release 1.0(2a)

1.0(2a)Features	Description
Boot loader upgrade enhancement	Changes to the boot loader upgrade procedure for the active supervisor module.

[Release Notes for SAN-OS Release 1.0\(2a\)](#)