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Cisco MDS 9000 Family Release Notes for Storage Services Interface Image Release 2.1(1f)

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This document describes the caveats and limitations for the Storage Service Interface (SSI) software for the Cisco MDS Storage Services Module (SSM).Use this document in conjunction with the documents listed in the "Related Documentation" section on page 7.

Table 1 shows the on-line change history for this document.

Table 1 Online History Change

Revision	Date	Description
A0	07/25/2005	Created release notes
B0	09/30/2005	Added DDTS CSCej14568
C0	05/05/2006	Removed DDTS CSCej14568

Contents

This document includes the following sections:

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Introduction

The SSM provides distributed intelligent storage services for the Cisco MDS 9000 Family and supports up to 32 Fibre Channel ports. It provides the following:

- Network-based volume management
- Management and copy services
- 32 autosensing 1-Gbps/2-Gbps Fibre Channel interfaces
- Hot-swappable Fibre Channel small form-factor pluggable (SFP) transceiver connectivity
  - Short wavelength (SWL) for connectivity up to 500 m
  - Long wavelength (LWL) for connectivity up to 10 km
  - Coarse wavelength-division multiplexing (CWDM) for connectivity up to 100 km and aggregation of up to 8 ports onto a single optical fiber

System Requirements

This section describes the system requirements for Cisco MDS SAN-OS Release 2.1(1a) and includes the following topics:

Components Supported

Table 2 lists the software and hardware components supported by the Cisco MDS 9000 Family.

Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components

Component	Part Number	Description	Applicable Products
Software	M95S1K9-2.1.1a	MDS 9500 Supervisor/Fabric-I, SAN-OS software SAN-OS	MDS 9500 Series only
	M92S1K9-2.1.1a	MDS 9216 Supervisor/Fabric-I, SAN-OS Software	MDS 9216 only
	SSI-M9K9-2.1.1f	MDS 9000 Storage Services Interface	MDS 9500 Series and MDS 9216
License	M9500ENT1K9	Enterprise package	MDS 9500 Series
	M9200ENT1K9	Enterprise package	MDS 9200 Series
	M9100ENT1K9	Enterprise package	MDS 9100 Series
	M9500FIC1K9	Mainframe package	MDS 9500 Series
	M9200FIC1K9	Mainframe package	MDS 9200 Series
	M9100FIC1K9	Mainframe package	MDS 9100 Series
	M9500FMS1K9	Fabric Manager Server package	MDS 9500 Series
	M9200FMS1K9	Fabric Manager Server package	MDS 9200 Series
	M9100FMS1K9	Fabric Manager Server package	MDS 9100 Series
	M9500EXT1K9	SAN Extension over IP package for IPS-8 module	MDS 9500 Series
	M9200EXT1K9	SAN Extension over IP package for IPS-8 module	MDS 9200 Series
	M9500EXT14K9	SAN Extension over IP package for IPS-4 module	MDS 9500 Series
	M9200EXT14K9	SAN Extension over IP package for IPS-4 module	MDS 9200 Series
	M9500EXT12K9	SAN Extension over IP package for MPS-14/2 module	MDS 9500 Series
	M9200EXT12K9	SAN Extension over IP package for MPS-14/2 module	MDS 9200 Series
	M9500SSE1K9	Storage Services Enabler package	MDS 9500 series with SSM
	M9200SSE1K9	Storage Services Enabler package	MDS 9200 series with SSM

Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Products
Chassis	DS-C9509	MDS 9509 director, base configuration (9-slot modular chassis includes 7 slots for switching modules and 2 slots for supervisor modules—SFPs sold separately)	MDS 9509 only
	DS-C9506	MDS 9506 director (6-slot modular chassis includes 4 slots for switching modules and 2 slots for supervisor modules—SFPs[1] sold separately)	MDS 9506 only
	DS-C9216-K9	MDS 9216 16-port semi-modular fabric switch (includes 16 1-Gbps /2-Gbps Fibre Channel ports, power supply, and expansion slot—SFPs sold separately)	MDS 9216 only
	DS-C9216A-K9	MDS 9216A 16-port semi-modular fabric switch (includes 16 1-Gbps/2-Gbps Fibre Channel ports, power supply, and expansion slot—SFPs sold separately).	MDS 9216A only
	DS-C9216i-K9	MDS 9216i 16-port semi-modular fabric switch (includes 14 1-Gbps/2-Gbps Fibre Channel ports, 2 Gigabit Ethernet ports, power supply, and expansion slot—SFPs sold separately).	MDS 9216i only
Supervisor modules	DS-X9530-SF1-K9	MDS 9500 Supervisor/Fabric-I, module	MDS 9500 Series only
Switching modules	DS-X9016	MDS 9000 16-port 1-Gbps /2-Gbps Fibre Channel module (SFPs sold separately)	MDS 9500 Series and 9216
	DS-X9032	MDS 9000 32-port 1-Gbps /2-Gbps Fibre Channel module (SFPs sold separately)	
Services modules	DS-X9308-SMIP	8-port Gigabit Ethernet IP Storage Services module	
	DS-X9304-SMIP	4-port Gigabit Ethernet IP Storage Services module	
	DS-X9032-SSM	MDS 9000 32-Port 1-Gbps/2-Gbps Fibre Channel Storage Services Module (SSM)	
LC-type fiber-optic SFP	DS-SFP-FC-2G-SW	1-Gbps /2-Gbps Fibre Channel — short wavelength SFP	MDS 9000 Family
	DS-SFP-FC-2G-LW	1-Gbps /2-Gbps Fibre Channel — long wavelength SFP	
	DS-SFP-FCGE-SW	1-Gbps Ethernet and 1-Gbps /2-Gbps Fibre Channel—short wavelength SFP	
	DS-SFP-FCGE-LW	1-Gbps Ethernet and 1-Gbps /2-Gbps Fibre Channel — long wavelength SFP	
CWDM[2]	CWDM-SFP-xxxx-2G	Gigabit Ethernet and 1-Gbps /2-Gbps Fibre Channel SFP LC interface xxxx nm, where xxxx = 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610 nm	MDS 9000 Family
	CWDM-MUX-4	Add/drop multiplexer for 4 CWDM wavelengths	
	CWDM-MUX-8	Add/drop multiplexer for 8 CWDM wavelengths	
	CWDM-CHASSIS-2	Two slot chassis for CWDM add/drop multiplexer(s)	

Table 2 Cisco MDS 9000 Family Supported Software and Hardware Components (continued)

Component	Part Number	Description	Applicable Products
Power supplies	DS-CAC-300W	300-W[3] AC power supply	MDS 9100 Series only
	DS-CAC-845W	845-W AC power supply	MDS 9216 only
	DS-CAC-2500W	2500-W AC power supply	MDS 9509 only
	DS-CDC-2500W	2500-W DC power supply	
	DS-CAC-4000W-US	4000-W AC power supply for US (cable attached)	
	DS-CAC-4000W-INT	4000-W AC power supply international (cable attached)	
	DS-CAC-1900W	1900-W AC power supply	MDS 9506 only
	DS-CDC-1900W	1900-W DC power supply	
CompactFlash	MEM-MDS-FLD512M	MDS 9500 supervisor Compact Flash disk, 512 MB	MDS 9500 Series only
Port analyzer adapter	DS-PAA	A standalone Fibre Channel-to-Ethernet adapter that allows for simple, transparent analysis of Fibre Channel traffic in a switched fabric	MDS 9000 Family
	DS-PAA-2		

1. SFP = small form-factor pluggable
2. CWDM = coarse wavelength division multiplexing
3. W = Watt

Determining the Software Version

Note We strongly recommend that you use the latest available software release supported by your vendor for all Cisco MDS 9000 Family products.

To determine the version of the Cisco SAN-OS software currently running on a Cisco MDS 9000 Family switch using the CLI, log into the switch and enter the **show version** EXEC command.

To determine the version of the Cisco SAN-OS software currently running on a Cisco MDS 9000 Family switch using the Fabric Manager, from the Switches tab in the information pane, locate the switch using the IP address, logical name, or WWN, and then check its version in the Release column.

Image Upgrade

If SSMs are present in a Cisco MDS 9000 Family switch, several kinds of upgrade may be performed as required—upgrading a previously provided package, upgrading the SAN-OS image, or reformatting the SSM add-on image.

New Features

This section describes the new features introduced in this release. For more information about the features listed, refer to the documentation set listed in the"Related Documentation" section on page 7.

The SSI image release 2.1(1f) add-on image is compatible with the Cisco MDS SAN-OS Release 2.1(1a) image.

Fibre Channel Write Acceleration Support

Fibre Channel write acceleration minimizes application latency or increases transactions per second over long distances. For synchronous data replication, Fibre Channel write acceleration increases the distance of replication or reduces effective latency to improve performance. To take advantage of this feature, both the initiator and target devices must be directly attached to an SSM

Invista Support

The SSI image release 2.1(1f) supports EMC Invista.

Limitations

The SSI add-on image for release 2.1(2)requires the Cisco MDS SAN-OS Release 2.1(2) image and will not work with earlier releases.

The SSI add-on image for release 2.1(1f) does not support SANTap or NASB

Compatibility Matrix

The latest *Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images* is available from the following Cisco Systems website:
http://www.cisco.com/en/US/products/ps5989/products_device_support_table09186a0080485272.html

Caveats

This section lists the open and resolved caveats for this release. Use Table 3 to determine the status of a particular caveat. In the table, "O" indicates an open caveat and "R" indicates a resolved caveat.

Table 3 Release Caveats and Caveats Corrected Reference

DDTS Number	Severity	Status
•CSCeh37066	3	R

Resolved Caveats

- CSCeh37066

  Symptom: If you have an SSM with Fibre Channel write acceleration enabled, flapping a port during heavy I/Os causes the DPP software to drain all the pending I/Os. If the draining process takes too long, it can result in timeouts for reconfiguration of the affected SCSI flows.

  Workaround: Issue the shutdown/no shutdown command sequence, disable the scsi-flow features and then re-enable them.

Related Documentation

The documentation set for the Cisco MDS 9000 Family includes the following documents:

- *Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Releases*
- *Cisco MDS 9000 Family Interoperability Support Matrix*
- *Cisco MDS SAN-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*
- *Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images*
- *Cisco MDS 9000 Family SSM Configuration Note*
- *Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family*
- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*
- *Cisco MDS 9216 Switch Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9020 Fabric Switch Hardware Installation Guide*
- *Cisco MDS 9000 Family Software Upgrade and Downgrade Guide*
- *Cisco MDS 9000 Family Configuration Guide*
- *Cisco MDS 9000 Family Command Reference*
- *Cisco MDS 9020 Fabric Switch Configuration Guide and Command Reference*
- *Cisco MDS 9000 Family Fabric Manager Configuration Guide*
- *Cisco MDS 9000 Family Fabric and Device Manager Online Help*
- *Cisco MDS 9000 Family SAN Volume Controller Configuration Guide*
- *Cisco MDS 9000 Family Quick Configuration Guide*
- *Cisco MDS 9000 Family Fabric Manager Quick Configuration Guide*
- *Cisco MDS 9000 Family MIB Quick Reference*
- *Cisco MDS 9020 Fabric Switch MIB Quick Reference*
- *Cisco MDS 9000 Family CIM Programming Reference*
- *Cisco MDS 9000 Family System Messages Reference*
- *Cisco MDS 9020 Fabric Switch System Messages Reference*
- *Cisco MDS 9000 Family Troubleshooting Guide*
- *Cisco MDS 9000 Family Port Analyzer Adapter 2 Installation and Configuration Note*
- *Cisco MDS 9000 Family Port Analyzer Adapter Installation and Configuration Note*

For information on VERITAS Storage Foundation™ for Networks for the Cisco MDS 9000 Family, refer to the VERITAS website: http://support.veritas.com/

For information on IBM TotalStorage SAN Volume Controller Storage Software for the Cisco MDS 9000 Family, refer to the IBM TotalStorage Support website: http://www.ibm.com/storage/support/2062-2300/

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

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Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/

Cisco Marketplace:

http://www.cisco.com/go/marketplace/

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

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- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

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Documentation Feedback

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You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

http://www.cisco.com/go/psirt

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com
- Nonemergencies—psirt@cisco.com

Tip We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.*x* through 8.*x*.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year, at this URL:

http://www.cisco.com/techsupport

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

http://tools.cisco.com/RPF/register/register.do

Note Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is "down," or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

  http://www.cisco.com/go/marketplace/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html

This document is to be used in conjunction with the documents listed in the "Related Documentation" section.