



Cisco MDS 9000 Family Storage Services Interface Image Installation and Upgrade Guide

Revised: April 2009, OL-17262-03, Cisco MDS NX-OS Release 4.x, Through Release 4.1(3a)

Contents

This document describes the procedures for installing and upgrading the Intelligent Storage Services Software Image on the following Cisco MDS 9000 Family Interface modules:

- SSM-1 Storage Services Module
- MSM-18+4 Multiservice Module
- MDS 9222i Module-1 Module

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Note

- Cisco MDS NX-OS Release 4.x refers to Release 4.1(1b) and later.
- Cisco MDS SAN-OS Release 3.x refers to Release 3.0(1) through Release 3.3(1c).
- Cisco MDS SAN-OS Release 2.1(2x) refers to Release 2.1(2) through Release 2.1(2e).

Send documentation comments to mdsfeedback-doc@cisco.com.



Tip

For more information on managing files on the Cisco MDS 9000 family switches, refer to the *Cisco MDS 9000 Family Configuration Guides*.

Overview for Upgrading Software for Intelligent Storage Services

For MDS 9000 Family switches, follow these steps for Cisco MDS SAN-OS software upgrades for Intelligent Storage Services:

Step 1 Determine the correct Cisco MDS Software release and SSI boot image version. Refer to the *Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images*, the *Cisco MDS SAN-OS Software Release Notes*, and, if applicable, the third party support matrix to locate the correct image version for your system. Also, refer to the *Cisco MDS SAN-OS Software Release Notes* for any other SSI boot image upgrading considerations or procedures for the version to which you want to upgrade.

Step 2 Download the kickstart image and system image for the Cisco MDS SAN-OS Release that is appropriate for your installation from the following URL:

<http://www.cisco.com/kobayashi/sw-center/sw-stornet.shtml>



Note

You must upgrade to Cisco SAN-OS Release 2.1(2b), or later, before upgrading to Cisco SAN-OS Release 3.0(2).

Step 3 Download the SSI boot image that is appropriate for your installation from the following URL:

<http://www.cisco.com/kobayashi/sw-center/sw-stornet.shtml>.

Step 4 Install Cisco SAN-OS system and kickstart images and the SSI boot image.

Step 5 Save the configuration.

When you upgrade the SSI boot image, you might disrupt traffic through the module. [Table 1](#) describes how updating the SSI boot image affects SSM traffic.

Table 1 SSI Boot Image Upgrading Affects on SSM Traffic

Current Cisco MDS SAN-OS Release	Traffic Type	Disrupts Traffic?
2.0(2b) through 2.1(1a)	All	Yes
2.1(2) and later	Fiber Channel switching only	No ¹
	Intelligent Storage Services enabled (such as Fibre Channel write acceleration, NASB, SANTap, ISAPI virtualization)	Yes

1. Requires EPLD version 2.1(2). See the *Cisco MDS 9000 Family Configuration Guide, Release 2.x*.

[Send documentation comments to mdsfeedback-doc@cisco.com.](mailto:mdsfeedback-doc@cisco.com)

Guidelines for Image File Locations

When upgrading your switch, we recommend that you keep on the active supervisor bootflash the Cisco MDS SAN-OS system and kickstart image files for the release that your switch is running along with the new release to which you want to upgrade. Because of the increasing size of the Cisco MDS SAN-OS system image files, kickstart image files, and other binary files, it is difficult to have more than one release of these files located on the active supervisor module bootflash on the Cisco MDS 9500 Series switches. To accommodate the SSI boot image files and any third party binary files, Cisco MDS SAN-OS Release 2.1(2b), and later, allows you to place these images on the SSM modflash. For details on the available space on bootflash refer to the [MDS 9000 Family Hardware Installation Guides](#).

To allow copies of more than one release of the kickstart and system image files on the supervisor module bootflash, we recommend locating images on all Intelligent Storage Services installations as described in [Table 2](#).

Table 2 Image File Locations

Image File Type	Memory Device Location
Kickstart and system	Supervisor module bootflash
SSI	Modflash on SSM, MSM-18/4, or 9222i
Third party binary	Modflash on SSM, MSM-18/4, or 9222i

Upgrading to Cisco MDS SAN-OS Release 2.1(2x)

This section describes the procedure for upgrading to Cisco MDS SAN-OS Release 2.1(2x) from a release prior to Cisco SAN-OS Release 2.1(2) on an MDS switch with SSMs installed, and it includes the following actions:

- Place the previous kickstart and system images for Cisco SAN-OS and for Cisco SAN-OS Release 2.1(2x) on the active supervisor module bootflash.
- Make sure that the standby supervisor module on Cisco MDS 9500 Series switches has the kickstart and system images for your current Cisco SAN-OS release on the bootflash and has enough free space for the Cisco SAN-OS Release 2.1(2x) kickstart and system images. During the upgrade process, the MDS SAN-OS Release 2.1(2x) kickstart and system images are copied to the standby supervisor module bootflash on Cisco MDS 9500 Series switches.
- Delete any unnecessary files on the standby supervisor module bootflash on Cisco MDS 9500 Series switches.

You can have one of three different types of SSM installations on your switch:

- Only one SSM installed.
- Two or more SSMs installed that are running only one type of application, either Fibre Channel switching or the same Intelligent Storage Service, that uses the same SSI boot image version.
- Two or more SSMs installed that run a mixture of Fibre Channel switching and Intelligent Storage Services and that require different SSI boot image versions.



Note

Upgrading to Cisco MDS SAN-OS Release 2.1(2x) from Release 2.1(1b), or earlier, disrupts traffic on the SSMs that are installed on the MDS switch.

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Table 3 lists the features supported on the Cisco MDS SAN-OS Release 2.x for the SSM.

Table 3 Cisco MDS SAN-OS Release 2.x Feature Support for SSMs

Cisco MDS SAN-OS Releases			
2.0(1b)	2.0(2b), 2.0(3), 2.0(4), and 2.0(4a)	2.1(1a)	2.1(2) and later
None	Fibre Channeling switching Intelligent Storage Services VSFN	Fibre Channel switching Intelligent Storage Services VSFN	Fibre Channel switching Intelligent Storage Services Nondisruptive upgrade for Fibre Channel switching traffic ¹

1. Requires EPLD version 2.1(2). See “Related Documentation” section on page 23.

To upgrade your MDS switch to run Cisco MDS SAN-OS Release 2.1(2x), follow these steps:

- Step 1** Upgrade the electrical programmable logical devices (EPLD) image on each SSM to Release 2.1(2). Refer to the “Managing Modules” chapter in the *Cisco MDS 9000 Family Configuration Guide, Release 2.x* for upgrade information. You can obtain the EPLD image file from the Cisco.com software download site at the following URL:

<http://www.cisco.com/kobayashi/sw-center/sw-stornet.shtml>



Caution Upgrading the EPLD disrupts traffic on the SSM.

- Step 2** Determine which Cisco MDS SAN-OS Release your switch is running.

```
switch# show version
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2006, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software may be covered under the GNU Public
License or the GNU Lesser General Public License. A copy of
each such license is available at
http://www.gnu.org/licenses/gpl.html and
http://www.gnu.org/licenses/lgpl.html

Software
  BIOS:          version 1.1.0
  loader:        version 1.2(2)
  kickstart:     version 2.1(1a)
  system:        version 2.1(1a)

  BIOS compile time:      10/24/03
  kickstart image file is: bootflash:/m9500-sf1ek9-kickstart-mz.2.1.1a.bin
  kickstart compile time: 4/6/2005 19:00:00 [09/18/2005 18:47:39]
  system image file is:   bootflash:/m9500-sf1ek9-mz.2.1.1a.bin
  system compile time:    4/6/2005 19:00:00 [09/18/2005 19:15:42]
  ...
```

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- Step 3** Determine the correct SSI boot image version for the Cisco SAN-OS release to which you are upgrading (See the [Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images](#).)



Note You must obtain an SSI image that is compatible with the Cisco SAN-OS kickstart image and system image for the MDS switch and SSMs to boot successfully.

- Step 4** Obtain the kickstart image and system image for Cisco SAN-OS Release 2.1(2x) and the desired SSI boot image from the Cisco.com software download site if your switch is running an earlier release:

<http://www.cisco.com/kobayashi/sw-center/sw-stornet.shtml>

This site also shows the size of the image files in bytes.

- Step 5** Verify that there is available space on the active supervisor module bootflash.

```
switch# dir bootflash:
 12288      Jan 01 00:01:06 1980  lost+found/
 3821032    Apr 06 16:50:22 2006  m9000-ek9-ssi-mzg.2.1.1a.bin
14765056    Mar 21 15:35:06 2006  m9500-sflek9-kickstart-mz.2.1.1.bin
15944704    Apr 06 16:46:04 2006  m9500-sflek9-kickstart-mz.2.1.1a.bin
48063243    Mar 21 15:34:46 2006  m9500-sflek9-mz.2.1.1.bin
48036239    Apr 06 16:45:41 2006  m9500-sflek9-mz.2.1.1a.bin
```

```
Usage for bootflash://sup-local
130642562 bytes used
53917054 bytes free
184559616 bytes total
```

- Step 6** If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# delete bootflash:m9500-sflek9-kickstart-mz.2.1.1.bin
switch# delete bootflash:m9500-sflek9-mz.2.1.1.bin
```

- Step 7** Verify that there is space available on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch.

```
switch# dir bootflash://sup-standby/
 12288      Jan 01 00:01:06 1980  lost+found/
 3821032    Apr 06 16:50:22 2006  m9000-ek9-ssi-mzg.2.1.1a.bin
14765056    Mar 21 15:35:06 2006  m9500-sflek9-kickstart-mz.2.1.1.bin
15944704    Apr 06 16:46:04 2006  m9500-sflek9-kickstart-mz.2.1.1a.bin
48063243    Mar 21 15:34:46 2006  m9500-sflek9-mz.2.1.1.bin
48036239    Apr 06 16:45:41 2006  m9500-sflek9-mz.2.1.1a.bin
```

```
Usage for bootflash://sup-standby
130642562 bytes used
53917054 bytes free
184559616 bytes total
```

- Step 8** If you need more space on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch, delete unnecessary files to make space available.

```
switch# delete bootflash://sup-standby/m9500-sflek9-kickstart-mz.2.1.1.bin
switch# delete bootflash://sup-standby/m9500-sflek9-mz.2.1.1.bin
```

- Step 9** Copy the MDS SAN-OS kickstart and system images and the SSI boot image to the active supervisor module bootflash using FTP or TFTP.

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Note When you download an image file, change to your FTP environment IP Address or DNS name and the path where the files are located.

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sf1ek9-kickstart-mz.2.1.2b.bin
bootflash:m9500-sf1ek9-kickstart-mz.2.1.2b.bin
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sf1ek9-mz.2.1.2b.bin
bootflash:m9500-sf1ek9-mz.2.1.2b.bin
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.2.1.2i.bin
bootflash:m9000-ek9-ssi-mz.2.1.2i.bin
```

Step 10 Install the MDS SAN-OS Release 2.1(2x) or go to the next step.

```
switch# install all system bootflash:m9500-sf1ek9-mz.2.1.2b.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.2.1.2b.bin ssi bootflash:m9000-ek9-ssi-mz.2.1.2i.bin
```



Caution The **install all** command disrupts traffic on the SSM when you upgrade from a release prior to Cisco SAN-OS 2.1(2) to Cisco SAN-OS Release 2.1(2) or later.



Note The **install all** command disrupts traffic on the Cisco MDS 9216 Series switches.



Note Every SSM on the switch that is configured with an SSI boot variable is upgraded to the new SSI boot image that is provided with the **install all** command, along with the Fiber Channel switching firmware. Any SSM that is not configured with an SSI boot variable is nondisruptively upgraded with the new Cisco SAN-OS kickstart and system firmware. The SSI boot variables are set to the SSI boot image on bootflash.

Step 11 Move the SSI image to the modflash on each SSM in the switch by performing [Step a](#) through [Step d](#) for each SSM. On a Cisco MDS 9500 Series switch, if an SSM requires a different SSI boot image version than that referenced in the **install all** command, you can copy the correct SSI boot image to the modflash of each such SSM. For example, one SSM on the switch might require SSI version 2.1(2i) for SANTap and another SSM might require SSI version 2.1(2i) for EMC Invista).

a. Copy the desired SSI boot image to the SSM modflash.

The following example copies the same SSI boot image as referenced in the **install all** command:

```
switch# copy bootflash:m9000-ek9-ssi-mz.2.1.2i.bin modflash://2-1/
m9000-ek9-ssi-mz.2.1.2i.bin
```

The following example copies a different SSI boot image to the SSM modflash in slot 3 on a Cisco MDS 9500 Series switch than referenced in the **install all** command:



Note Before copying the SSI boot image to the SSM modflash, verify that the SSM is online using the **show module** command and that the modflash is available using the **dir modflash://slot-1/** command.

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.2.1.2i.bin
modflash://3-1/m9000-ek9-ssi-mz.2.1.2i.bin
```

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- b. Set the SSI boot variable.

The following example sets the SSI boot variable to the same SSI boot image as referenced in the **install all** command:

```
switch# config t
switch(config)# boot ssi modflash://2-1/m9000-ek9-ssi-mz.2.1.2i.bin module 2
switch(config)# exit
switch#
```

The following example sets the SSI boot variable on a Cisco MDS 9500 Series switch to a different SSI boot image than referenced in the **install all** command:

```
switch# config t
switch(config)# boot ssi modflash://3-1/m9000-ek9-ssi-mz.2.1.2i.bin module 3
switch(config)# exit
switch#
```



Caution

The SSI boot variable must reference the correct SSI boot image, otherwise the SSM fails to initialize. If you do not correctly set the SSI boot variable, the SSM remains in the power-down state after attempting to initialize three times.

- c. Verify the boot variables to verify the location of the boot images for each SSM.

For Cisco MDS 9500 Series switches:

```
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9500-sf1ek9-mz.2.1.2b.bin
sup-2
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9500-sf1ek9-mz.2.1.2b.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.2.1.2i.bin
Module 3
ssi variable = modflash://3-1/m9000-ek9-ssi-mz.2.1.2i.bin
```

For Cisco MDS 9200 Series switches:

```
switch# show boot
kickstart variable = bootflash:/m9200-sf1ek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9200-sf1ek9-mz.2.1.2b.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.2.1.2i.bin
```

- d. Reload the SSM with the different SSI image if you are upgrading on a Cisco MDS 9500 Series switch.

```
switch# reload module 3
```



Caution

The **reload module** command disrupts traffic on the SSM.

- Step 12** Remove the SSI boot image files from the supervisor module bootflash.

For Cisco MDS 9500 Series switches:

```
switch# delete bootflash:m9000-ek9-ssi-mz.2.1.2i.bin
switch# delete bootflash://sup-standby/m9000-ek9-ssi-mz.2.1.2i.bin
```

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For Cisco MDS 9200 Series switches:

```
switch# delete bootflash:m9000-ek9-ssi-mz.2.1.2i.bin
```

Step 13 Save the configuration.

```
switch# copy running-config startup-config
```

For more information about upgrading Cisco SAN-OS on your MDS switch, refer to the [Cisco MDS 9000 Family Software Upgrade and Downgrade Guide](#).

Upgrading to Cisco MDS SAN-OS Release 3.0(1) and Later

This section describes the procedure to upgrade your MDS switch from Cisco MDS SAN-OS Release 2.1(2b), or later, to Release 3.0(1), or later, and it includes the following actions:

- Place the kickstart and system images for both Cisco SAN-OS Release 2.1(2b), or later, and Release 3.0(1), or later, on the active supervisor module bootflash.
- Make sure that the standby supervisor module on Cisco MDS 9500 Series switches has at least the kickstart and system images for Cisco SAN-OS Release 2.1(2b), or later, on the bootflash and has enough free space for the Cisco SAN-OS Release 3.0(1), or later, kickstart and system images.
- Delete any unnecessary files on the standby supervisor module bootflash on a Cisco MDS 9500 Series switches.



Note

You must upgrade to Cisco SAN-OS Release 2.1(2b), or later, before upgrading to Cisco SAN-OS Release 3.0(1).



Note

During the process of upgrading, the Cisco SAN-OS Release 3.0(1) or later, kickstart image and system images are copied to the standby supervisor module bootflash on Cisco MDS 9500 Series switches.

To upgrade your MDS switch to Cisco MDS SAN-OS Release 3.0(1), or later, follow these steps:

Step 1 Determine the correct SSI boot image version for the Cisco SAN-OS release to which you are upgrading (See the [Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images](#).)



Note

You must obtain an SSI image that is compatible with the Cisco SAN-OS kickstart image and system image for the MDS switch and SSMs to boot successfully.

Step 2 Obtain the kickstart image and system image for Cisco SAN-OS Release 3.0(1), or later, and the appropriate SSI boot image from the Cisco.com software download site. This site also shows the size of the image files in byte:

<http://www.cisco.com/kobayashi/sw-center/sw-stornet.shtml>

Step 3 Verify that SSI boot images for all SSMs on the switch are installed on the modflash on each SSM. (See the [“Moving SSI Boot Image Files to SSM Modflash”](#) section on page 21.)

Step 4 Verify that there is available space on the active supervisor module bootflash for the image files.

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```
switch# dir bootflash:
    12288      Jan 01 00:01:06 1980  lost+found/
   3821032    Apr 06 16:50:22 2006  m9000-ek9-ssi-mzg.2.1.1a.bin
  15944704    Apr 06 16:46:04 2006  m9500-sflek9-kickstart-mz.2.1.1a.bin
  14753792    Apr 06 16:46:04 2005  m9500-sflek9-kickstart-mz.2.1.2b.bin
  48036239    Apr 06 16:45:41 2006  m9500-sflek9-mz.2.1.1a.bin
  48474490    Apr 06 16:45:41 2006  m9500-sflek9-mz.2.1.2b.bin

Usage for bootflash://sup-local
131042545 bytes used
53517071 bytes free
184559616 bytes total
```



Note Verify that the SSI boot image file is on the SSM modflash. See the [“Moving SSI Boot Image Files to SSM Modflash”](#) section on page 21.

Step 5 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# delete bootflash:m9500-sflek9-kickstart-mz.2.1.1a.bin
switch# delete bootflash:m9500-sflek9-mz.2.1.1a.bin
switch# delete bootflash:m9500-ek9-ssi-mzg.2.1.1a.bin
```

Step 6 Verify that there is space available on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch.

```
switch# dir bootflash://sup-standby/
    12288      Jan 01 00:01:06 1980  lost+found/
   3821032    Apr 06 16:50:22 2006  m9000-ek9-ssi-mzg.2.1.1a.bin
  15944704    Apr 06 16:46:04 2006  m9500-sflek9-kickstart-mz.2.1.1a.bin
  14753792    Apr 06 16:46:04 2005  m9500-sflek9-kickstart-mz.2.1.2b.bin
  48036239    Apr 06 16:45:41 2006  m9500-sflek9-mz.2.1.1a.bin
  48474490    Apr 06 16:45:41 2006  m9500-sflek9-mz.2.1.2b.bin

Usage for bootflash://sup-standby
131042545 bytes used
53517071 bytes free
184559616 bytes total
```

Step 7 If you need more space on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch, delete unnecessary files to make space available.

```
switch# delete bootflash://sup-standby/m9500-sflek9-kickstart-mz.2.1.2.bin
switch# delete bootflash://sup-standby/m9500-sflek9-mz.2.1.2.bin
switch# delete bootflash://sup-standby/m9500-ek9-ssi-mzg.2.1.1a.bin
```

Step 8 Copy the MDS SAN-OS kickstart image and system image to the active supervisor module bootflash using FTP or TFTP.



Note When you download an image file, change to your FTP environment IP address or DNS name and the path where the files are located.

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sflek9-kickstart-mz.3.0.1.bin
bootflash:m9500-sflek9-kickstart-mz.3.0.1.bin
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sflek9-mz.3.0.1.bin
bootflash:m9500-sflek9-mz.3.0.1.bin
```

Step 9 Copy the SSI boot image the modflash on an SSM on the MDS switch.

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Note Before copying the SSI boot image to the SSM modflash, verify that the SSM is online using the **show module** command and that the modflash is available using the **dir modflash://slot-1/** command.

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.3.0.1.bin
modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
```

Step 10 Ensure that the admin mode on the SSM interfaces is correctly configured.

a. Verify the operational mode for each interface on the SSM using the **show interface** command.

```
switch# show interface fc 2/1 - 32 brief
```

```
-----
Interface  Vsan   Admin  Admin  Status      SFP   Oper  Oper  Port
          Mode   Trunk  Mode
          Mode
-----
fc2/1      1       Auto   --     up           sw1   F     --   --
...

```

b. Change the configuration for the first interface of the port groups when the admin mode is **auto**. These are the interfaces 1, 5, 9, 13, 17, 21, 25, and 29. Do not leave the port mode for these interfaces set to auto.

- If the current operating port mode is F or FL, set the admin mode to Fx.

```
switch# config t
switch(config)# interface fc 2/1
switch(config-if)# switchport mode fx
switch(config-if)# exit
switch(config)#
```

- If the current operating port mode is E or TE, set the admin mode to E .

```
switch# config t
switch(config)# interface fc 2/5
switch(config-if)# switchport mode e
switch(config-if)# exit
switch(config)#
```

c. Change the configuration for the remaining three ports in each port group (2–4, 6–8, 10–12, 14–16, 18–20, 22–24, 26–28, and 30–32). Do not leave the port mode for these interfaces set to auto or E.

- If the admin mode of these ports is auto or E and the first interface in the port group does not have admin mode of E, change the admin port mode to Fx.

```
switch# config t
switch(config)# interface fc 2/2
switch(config-if)# switchport mode fx
switch(config-if)# exit
switch(config)#
```

- If the first interface in the port group has admin mode E or is operating in E port mode, change the admin state of remaining ports to shutdown .



Note Only the first port in a port group is available for traffic in E port mode. Shutting down the other three interfaces in the port group disrupts the traffic on those interfaces.

```
switch# config t
```

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```
switch(config)# interface fc 2/6 - 8
switch(config-if)# shutdown
switch(config-if)# exit
switch(config)#
```

- d. Save the configuration.

```
switch# copy running-config startup-config
```

- Step 11** Install Cisco SAN-OS Release 3.0(1), or later, and the SSI image.

```
switch# install all system bootflash:m9500-sf1ek9-mz.3.0.1.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.3.0.1.bin ssi
modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
```



Caution The **install all** command with the **ssi** option can be disruptive for SSM traffic, as described in [Table 1](#).



Note The **install all** command disrupts traffic on the Cisco MDS 9216 Series switches.



Note The **install all** command automatically copies the SSI boot image referenced in the **ssi** option to the modflash of SSMs that already have SSI images installed and SSI boot variables set. The SSI boot variables are updated to point to the correct SSI boot image.

- Step 12** Perform [Step a](#) through [Step b](#) if an SSM on a Cisco MDS 9500 Series switch requires a different SSI boot image version than the one referenced in the **install all** command. You can copy the correct SSI boot image to the modflash of each such SSM and install it for that SSM. For example, one SSM on the switch might require one SSI boot image version for SANTap while another SSM on the switch requires a different SSI boot image version for EMC Invista.

- a. Copy the desired SSI boot image to the SSM modflash.



Note Before copying the SSI boot image to the SSM modflash, verify that the SSM is online using the **show module** command and that the modflash is available using the **dir modflash://slot-1/** command.

```
switch# copy ftp://ftpservers.cisco.com/MDS/m9000-ek9-ssi-mz.3.0.2.bin
modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin
```

- b. Install the SSI boot image.

The following example installs the SSI boot image for Cisco SAN-OS Release 3.0(1):

```
switch# config t
switch(config)# boot ssi modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin module 3
switch(config)# exit
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sf1ek9-mz.3.0.1.bin
sup-2
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sf1ek9-mz.3.0.1.bin
Module 2
```

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```
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
Module 3
ssi variable = modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin

switch# reload module 3
```



Caution The **reload module** command disrupts traffic on the SSM.



Caution The SSI boot variable must reference the correct SSI boot image, otherwise the SSM fails to initialize. If you do not correctly set the SSI boot variable, the SSM remains in the power-down state after attempting to initialize three times.

The following example installs the SSI boot image for Cisco SAN-OS Release 3.0(2) and later:

```
switch# install ssi modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin module 3
```

Step 13 Verify that the boot variables are configured correctly. These variables are needed if a system reboot is necessary.

For Cisco MDS 9500 Series switches:

```
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sflek9-mz.3.0.1.bin
sup-2
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sflek9-mz.3.0.1.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin

Module 3
ssi variable = modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin
```

For Cisco MDS 9200 Series switches:

```
switch# show boot
kickstart variable = bootflash:/m9200-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9200-sflek9-mz.3.0.1.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
```



Caution Make sure that the SSI boot variable is pointing to the correct location. If the variable points to an incorrect location for the SSI image, the SSM does not boot properly.

Step 14 Remove the SSI boot image files from the supervisor module bootflash, if necessary.

For Cisco MDS 9500 Series switches:

```
switch# delete bootflash:m9000-ek9-ssi-mz.3.0.1.bin
switch# delete bootflash://sup-standby/m9000-ek9-ssi-mz.3.0.1.bin
```

For Cisco MDS 9200 Series switches:

```
switch# delete bootflash:m9000-ek9-ssi-mz.3.0.1.bin
```

Step 15 Save the configuration.

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```
switch# copy running-config startup-config
```

Upgrading to Cisco MDS NX-OS Release 4.1(1b) and Later From Earlier SAN-OS Releases

This section describes the guidelines to upgrade to Cisco MDS NX-OS Release 4.1(1b):

- The procedure to upgrade to Cisco MDS NX-OS Release 4.1(1b) and later is same as release 3.0(1) or later, in addition to the guidelines discussed in this section. For the general procedure, see the [“Upgrading to Cisco MDS SAN-OS Release 3.0\(1\) and Later”](#) section on page 8.
- To upgrade to Cisco MDS NX-OS SSI image Release 4.1(1b), an SSM must be running SAN-OS SSI image Release 3.3(1a) or 3.3(1c), or should not be running on an SSI image.



Note As of Cisco MDS NX-OS Release 4.1(1b), when there are multiple SSM or MSM-18/4 modules in the same chassis, you can set the amount of time to delay between SSM or MSM-18/4 modules in a rolling SSI upgrade. For more information, refer to the *Cisco MDS 9000 Family Configuration Guides* for Release 4.x.

- If the module was running an SSI image, clear the SSI bootvar on the MSM-18/4, and MDS 9222i module 1 modules before you upgrade to Cisco MDS NX-OS Release 4.1(1b) or later.
- If you have an SSM module running on an SSI image, then perform the following operations to upgrade the MDS NX-OS and the SSI image on the SSM module:

```
switch# install all system bootflash:m9500-sf1ek9-mz.4.1.1a.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.4.1.1a.bin ssi bootflash:
m9000-ek9-ssi-mz.4.1.1a.bin
```



Caution The **install all** command with the **ssi** option will upgrade the SSI image on an SSM not running the specified SSI image.
The **install all** command with the **ssi** option will not upgrade the SSI image on an MSM-18/4 for a system running on MDS SAN-OS release earlier than 3.3(1c).
The **install all** command does not disrupt traffic on the Cisco MDS 9222i switches.

- If you do not have an SSM module running SSI image, or have only MSM-18/4 modules, or have an SSM running SAN-OS Release 3.3(1c) compatible SSI image and you do not want to upgrade the SSI image but upgrade only the NX-OS image, then perform the following operations:

```
switch# install all system bootflash:m9500-sf1ek9-mz.4.1.1a.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.4.1.1a.bin
```

- To install an SSI image on an SSM, MSM-18/4, or MDS 9222i module 1 on a switch running MDS NX-OS Release 4.1(1b), perform the following operations:
 - Use the **install ssi** command to install a new MDS NX-OS Release 4.1(1b) compatible SSI image on an SSM module.

```
switch# install ssi bootflash:m9000-ek9-ssi-mz.4.1.1a.bin module 2
```

 - Use the **install all** command with the **ssi** option to install a new MDS NX-OS Release 4.1(1b) compatible SSI image on an SSM, MSM-18/4, and MDS 9222i module 1 modules.

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```
switch# install all ssi bootflash:m9000-ek9-ssi-mz.4.1.1a.bin
```

Guidelines for SSM, MSM-18/4, and MDS 9222i Module 1

The NX-OS Release 4.1(1b) and later releases support SSI bootvar for MDS-18/4 and MDS 9222i module 1 with some restrictions. Before you install the SSI image on MDS-18/4 and MDS 9222i module 1, check and modify the **ssi bootvar** configuration and use the **install all** or the **install ssi** command based on these guidelines.

In a NX-OS release lower than 4.1(1b), the SSI bootvar was not supported for the MSM-18/4 and MDS 9222i module 1 and the installer would not update the SSI bootvars for these modules while upgrading to 4.1(1b). Before upgrading to NX-OS Release 4.1(1b), be sure that the SSI bootvar is not set for MSM-18/4 or MDS 9222i module 1 modules.

- In a SAN-OS Release earlier than 4.1(1b), the SSI bootvar is not supported for MSM-18/4 modules. The installer will not update the SSI bootvar for these modules while upgrading to NX-OS Release 4.1(1b) from a lower version. If the SSI bootvar is set for these modules pointing to an image not compatible with NX-OS Release 4.1(1b), and the upgrade to NX-OS Release 4.1(1b) is done using the **install all** command, the module will be brought into power down state.



Caution The **boot ssi image-uri** command will set the SSI bootvar for all the modules in the switch. Though the SSI bootvar was not supported for MSM-18/4 in a SAN-OS release earlier than 4.1(1b), the bootvar might have been set.

- While running a SAN-OS release earlier than 4.1(1b), if there is no SSI bootvar set for the SSM, MSM-18/4, and MDS 9222i module 1, and the **install all** command without **ssi** option is used, then the installer does not update the SSI bootvar and does a rolling upgrade of the modules: SSM is upgraded in nondisruptive mode, MSM-18/4 and MDS 9222i module 1 18FC ports are upgraded in a nondisruptive mode, but the 4-Gigabit Ethernet ports are upgraded in disruptive mode.
- While upgrading the SSI image on MDS 9222i or any MDS switch with MSM-18/4 module running NX-OS Release 4.1(1b) by using the **install all** command with the **ssi** option, the installer will set the SSI bootvar for MDS 9222i module 1 and MSM-18/4. Unless there is a requirement for the MSM-18/4 or MDS 9222i have a new SSI image, we recommend that you do not use the **ssi** option in the **install all** command.
- While running NX-OS Release 4.1(1b), if the SSI boot variable was configured to an SSI image not compatible with NX-OS Release 4.1(1b) for the SSM, MSM-18/4, or 9222i module 1 modules, and then the module is reloaded, or if the bootvar set SSI image does not exist, the SSM, MSM-18/4, or 9222i module will be brought online without the SSI image.
- While running NX-OS Release 4.1(1b), if there is no SSI bootvar set for SSM, MSM-18/4, and MDS 9222i module 1, and the **install all ssi** command is used, the installer sets the SSI bootvar for MSM-18/4 and MDS 9222i module 1, and does rolling upgrade of the modules: SSM is upgraded in nondisruptive mode, MSM-18/4 and 9222i 18FC ports are upgraded in nondisruptive mode but the 4-Gigabit Ethernet ports are upgraded in disruptive mode.
- While running NX-OS Release 4.1(1b), if the SSI bootvar is set for the SSM, MSM-18/4, and MDS 9222i module 1, and the **install all** command without **ssi** option is used, then the installer upgrades the kickstart and system images and does a rolling upgrade of the modules: SSM is upgraded in disruptive mode, MSM-18/4 and MDS 9222i module 1 18FC ports are upgraded in nondisruptive mode, and the 4-Gigabit Ethernet ports are upgraded in disruptive mode. SSM, MSM-18/4, and

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MDS 9222i module 1 load the SSI images newly set in the SSI bootvars. If the **ssi** option was not used, then the modules load the SSI images previously set in the SSI bootvars. The SSI bootvar image has to be compatible with the supervisor; if not, the modules will go into power down state.

- While running NX-OS Release 4.1(1b), if the SSI bootvar is set for SSM but not for MSM-18/4 and MDS 9222i module 1, and the **install all ssi** command is used, then the installer sets the SSI bootvar for MSM-18/4 and MDS 9222i module 1, and does a rolling upgrade of the modules: SSM is upgraded in disruptive mode, MSM-18/4 and MDS 9222i module 1 18FC ports are upgraded in nondisruptive mode, and the 4-Gigabit Ethernet ports are upgraded in disruptive mode. SSM, MSM-18/4, and 9222i load the SSI images newly set in the SSI bootvar. The SSI bootvar image has to be compatible with the supervisor.
- While running NX-OS Release 4.1(1b) on a chassis with multiple SSM and MSM-18/4 modules, to install different SSI images on each, use the **install ssi** command separately for each module. Use the **install ssi** command to install different SSI images only on the SSM modules.
- While downgrading from NX-OS Release 4.1(1b) to any release earlier than 4.1(1b), if the SSI bootvar is set for MSM-18/4 and MDS 9222i module 1, it will be removed if you use the **install all** command with the SSI image because it is not supported in the releases earlier than NX-OS Release 4.1(1b).

Upgrading to Cisco MDS NX-OS Release 4.1(3a) From NX-OS Release 4.1(1b)

This section describes the guidelines to upgrade to Cisco MDS NX-OS Release 4.1(3a) from MDS NX-OS Release 4.1(1b).



Note As of Cisco MDS NX-OS Release 4.1(1b), when there are multiple SSM or MSM-18/4 modules in the same chassis, you can set the amount of time to delay between SSM or MSM-18/4 modules in a rolling SSI upgrade. For more information, refer to the *Cisco MDS 9000 Family Configuration Guides* for Release 4.x.

- If you have an SSM, MSM-18/4, or MDS 9222i module 1 running an SSI image, then perform the following operations to upgrade the MDS NX-OS software and the SSI image on all modules in the chassis:

```
switch# install all system bootflash:m9500-sf1ek9-mz.4.1.3a.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.4.1.3a.bin ssi bootflash:
m9000-ek9-ssi-mz.4.1.3a.bin
```

- To install an SSI image on an SSM, MSM-18/4, or MDS 9222i module 1 on a switch running MDS NX-OS Release 4.1(3a), use the appropriate command for the module. See [Table 4](#) for the commands that you can use on each module.
 - Use the **install ssi** command to install a new MDS NX-OS Release 4.1(3a) compatible SSI image on an SSM module.


```
switch# install ssi bootflash:m9000-ek9-ssi-mz.4.1.3a.bin module 2
```
 - Use the **install all** command with the **ssi** option to install a new MDS NX-OS Release 4.1(3a) compatible SSI image on the SSM and MSM-18/4 modules in a switch.

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```
switch# install all ssi bootflash:m9000-ek9-ssi-mz.4.1.3a.bin
```

- Use the **install module ssi** command to install a new MDS NX-OS Release 4.1(3a) compatible SSI image on a SSM or MSM-18/4 module.

```
switch# install module ssi bootflash:m9000-ek9-ssi-mz.4.1.3a.bin
```



Note The **install module ssi** command is not supported on the MDS 9222i module 1.

Table 4 lists the commands that you should use to upgrade an SSI image from Cisco MDS NX-OS 4.1(1b) to MDS NX-OS 4.1(3a), and the modules that support these commands.

Table 4 Commands to Upgrade from Cisco MDS NX-OS 4.1(1b) to MDS NX-OS 4.1(3a)

Module	Command Name			
	install all system <i>image-name</i> kickstart <i>image-name</i> ssi <i>image-name</i>	install all ssi	install ssi	install module ssi¹
SSM	yes	yes	yes	yes
MSM-18/4	yes	yes	no	yes
MDS 9222i module 1	yes	no	no	no

1. The **install module ssi** command was introduced in Cisco MDS NX-OS 4.1(3a).



As Table 4 shows, you cannot upgrade an MDS 9222i module 1 separately. You must upgrade it as a part of entire switch upgrade, using the **install all system *image-name* kickstart *image-name* ssi *image-name*** command, which will reload the switch. Traffic on Fibre Channel ports is not disrupted during this upgrade procedure.

Table 5 lists the impact of the SSI upgrade procedure. The procedure is disruptive or nondisruptive depending on the module being upgraded and if an SSI image was previously installed.

Table 5 ISSI Upgrade Impact

Module	Upgrade Impact - SSI Installation	Upgrade Impact - No SSI Installation
SSM (without SSI image)	Nondisruptive upgrade for 32 Fibre Channel ports	Nondisruptive upgrade for 32 Fibre Channel ports
SSM (with SSI image)	Disruptive upgrade for 32 Fibre Channel ports	Disruptive upgrade for 32 Fibre Channel ports
MSM-18/4	Nondisruptive upgrade for 18 Fibre Channel ports Disruptive upgrade for 4 Gigabit Ethernet ports	Nondisruptive upgrade for 18 Fibre Channel ports Disruptive upgrade for 4 Gigabit Ethernet ports
MDS 9222i module 1	Nondisruptive upgrade for 18 Fibre Channel ports Disruptive upgrade for 4 Gigabit Ethernet ports	Nondisruptive upgrade for 18 Fibre Channel ports Disruptive upgrade for 4 Gigabit Ethernet ports

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Downgrading to an Earlier Cisco MDS SAN-OS Release

To downgrade to an earlier Cisco MDS SAN-OS release, you must also downgrade to an earlier SSI boot image release.

For example, to downgrade to Cisco MDS SAN-OS Release 2.1(2e) or 3.0(1) from Release 3.0(2), follow these steps:

- Step 1** Determine the correct SSI boot image version for the Cisco SAN-OS release to which you are upgrading (See the [Cisco MDS SAN-OS Release Compatibility Matrix for Storage Service Interface Images](#).)



Note You must obtain an SSI image that is compatible with the Cisco SAN-OS kickstart image and system image for the MDS switch and SSMs to boot successfully.

- Step 2** Obtain the kickstart image and system image for Cisco SAN-OS to which you want to downgrade and the appropriate SSI boot image from the Cisco.com software download site. This site also shows the size of the image files in bytes:

<http://www.cisco.com/kobayashi/sw-center/sw-stornet.shtml>

- Step 3** Verify that there is available space on the active supervisor module bootflash for the image files.

```
switch# dir bootflash:
 12288      Jan 01 00:01:06 1980  lost+found/
14753792    Apr 06 16:46:04 2005  m9500-sf1ek9-kickstart-mz.2.1.2b.bin
14651392    Apr 06 16:46:04 2006  m9500-sf1ek9-kickstart-mz.3.0.2.bin
48474490    Apr 06 16:45:41 2006  m9500-sf1ek9-mz.2.1.2b.bin
66971845    Apr 06 16:45:41 2006  m9500-sf1ek9-mz.3.0.2.bin
```

```
Usage for bootflash://sup-local
144727052 bytes used
39832564 bytes free
184559616 bytes total
```



Note Verify that the SSI boot image file is on the SSM modflash. See the [“Moving SSI Boot Image Files to SSM Modflash”](#) section on page 21.

- Step 4** If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# delete bootflash:m9500-sf1ek9-kickstart-mz.2.1.2b.bin
switch# delete bootflash:m9500-sf1ek9-mz.2.1.2b.bin
```

- Step 5** Verify that there is space available on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch.

```
switch# dir bootflash://sup-standby/
 12288      Jan 01 00:01:06 1980  lost+found/
14753792    Apr 06 16:46:04 2005  m9500-sf1ek9-kickstart-mz.2.1.2b.bin
14651392    Apr 06 16:46:04 2006  m9500-sf1ek9-kickstart-mz.3.0.2.bin
48474490    Apr 06 16:45:41 2006  m9500-sf1ek9-mz.2.1.2b.bin
66971845    Apr 06 16:45:41 2006  m9500-sf1ek9-mz.3.0.2.bin
```

```
Usage for bootflash://sup-standby
144727052 bytes used
39832564 bytes free
184559616 bytes total
```

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- Step 6** If you need more space on the standby supervisor module bootflash on a Cisco MDS 9500 Series switch, delete unnecessary files to make space available.

```
switch# delete bootflash://sup-standby/m9500-sf1ek9-kickstart-mz.2.1.2b.bin
switch# delete bootflash://sup-standby/m9500-sf1ek9-mz.2.1.2b.bin
```

- Step 7** Copy the MDS SAN-OS kickstart image and system image to the active supervisor module bootflash using FTP or TFTP.



Note When you download an image file, change to your FTP environment IP address or DNS name and the path where the files are located.

For Cisco SAN-OS Release 2.1(2e):

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sf1ek9-kickstart-mz.2.1.2e.bin
bootflash:m9500-sf1ek9-kickstart-mz.2.1.2e.bin
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sf1ek9-mz.2.1.2e.bin
bootflash:m9500-sf1ek9-mz.2.1.2e.bin
```

For Cisco SAN-OS Release 3.0(1):

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sf1ek9-kickstart-mz.3.0.1.bin
bootflash:m9500-sf1ek9-kickstart-mz.3.0.1.bin
switch# copy ftp://ftpserver.cisco.com/MDS/m9500-sf1ek9-mz.3.0.1.bin
bootflash:m9500-sf1ek9-mz.3.0.1.bin
```

- Step 8** Copy the SSI boot image the modflash on an SSM on the MDS switch.



Note Before copying the SSI boot image to the SSM modflash, verify that the SSM is online using the **show module** command and that the modflash is available using the **dir modflash://slot-1/** command.

For Cisco SAN-OS Release 2.1(2e):

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.2.1.2j.bin
modflash://2-1/m9000-ek9-ssi-mz.2.1.i.bin
```

For Cisco SAN-OS Release 3.0(1):

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.3.0.1.bin
modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
```

- Step 9** Issue the **show incompatibility system image-filename** command to determine if you need to disable any features not supported by the older release. Disable any features that are incompatible with the downgrade system image.

- Step 10** Save the configuration using the **copy running-config startup-config** command.

- Step 11** Install the downgrade Cisco SAN-OS release.

For Cisco SAN-OS Release 2.1(2e):

```
switch# install all system bootflash:m9500-sf1ek9-mz.2.1.2e.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.2.1.2e.bin ssi
modflash://2-1/m9000-ek9-ssi-mz.2.1.2j.bin
```

For Cisco SAN-OS Release 3.0(1):

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```
switch# install all system bootflash:m9500-sf1ek9-mz.3.0.1.bin kickstart
bootflash:m9500-sf1ek9-kickstart-mz.3.0.1.bin ssi
modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
```

**Caution**

The **install all** command with the **ssi** option can be disruptive for SSM traffic, as described in [Table 1](#).

**Note**

The **install all** command disrupts traffic on the Cisco MDS 9216 Series switches.

**Note**

The **install all** command automatically copies the SSI boot image referenced in the **ssi** option to the modflash of SSMs that already have SSI images installed and SSI boot variables set. The SSI boot variables are updated to point to the correct SSI boot image.

- Step 12** Perform [Step a](#) through [Step b](#) if an SSM on a Cisco MDS 9500 Series switch requires a different SSI boot image version than the one referenced in the **install all** command. You can copy the correct SSI boot image to the modflash of each such SSM and install it for that SSM. For example, one SSM on the switch might require one SSI boot image version for SANTap while another SSM on the switch requires a different SSI boot image version for EMC Invista.

- a. Copy the desired SSI boot image to the SSM modflash.

**Note**

Before copying the SSI boot image to the SSM modflash, verify that the SSM is online using the **show module** command and that the modflash is available using the **dir modflash://slot-1/** command.

For Cisco SAN-OS Release 2.1(2e):

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.2.1.2m.bin
modflash://3-1/m9000-ek9-ssi-mz.2.1.2k.bin
```

For Cisco SAN-OS Release 3.0(1):

```
switch# copy ftp://ftpserver.cisco.com/MDS/m9000-ek9-ssi-mz.3.0.2.bin
modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin
```

- b. Install the SSI boot image.

The following example installs the SSI boot image for Cisco SAN-OS Release 2.1(2e):

```
switch# config t
switch(config)# boot ssi modflash://3-1/m9000-ek9-ssi-mz.2.1.2m.bin module 3
switch(config)# exit
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.2.1.2e.bin
system variable = bootflash:/m9500-sf1ek9-mz.2.1.2e.bin
sup-2
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.2.1.2e.bin
system variable = bootflash:/m9500-sf1ek9-mz.2.1.2e.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.2.1.2j.bin
Module 3
ssi variable = modflash://3-1/m9000-ek9-ssi-mz.2.1.2m.bin
```

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```
switch# reload module 3
```

The following example installs the SSI boot image for Cisco SAN-OS Release 3.0(1):

```
switch# config t
switch(config)# boot ssi modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin module 3
switch(config)# exit
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sflek9-mz.3.0.1.bin
sup-2
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sflek9-mz.3.0.1.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
Module 3
ssi variable = modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin

switch# reload module 3
```



Caution The **reload module** command disrupts traffic on the SSM.



Caution The SSI boot variable must reference the correct SSI boot image, otherwise the SSM fails to initialize. If you do not correctly set the SSI boot variable, the SSM remains in the power-down state after attempting to initialize three times.

Step 13 Verify that the boot variables are configured correctly. These variables are needed if a system reboot is necessary.

For Cisco MDS 9500 Series switches downgraded to Cisco SAN-OS 3.0(1):

```
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sflek9-mz.3.0.1.bin
sup-2
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9500-sflek9-mz.3.0.1.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin

Module 3
ssi variable = modflash://3-1/m9000-ek9-ssi-mz.3.0.2.bin
```

For Cisco MDS 9200 Series switches downgraded to Cisco SAN-OS 3.0(1):

```
switch# show boot
kickstart variable = bootflash:/m9200-sflek9-kickstart-mz.3.0.1.bin
system variable = bootflash:/m9200-sflek9-mz.3.0.1.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.3.0.1.bin
```



Caution Make sure that the SSI boot variable is pointing to the correct location. If the variable points to an incorrect location for the SSI image, the SSM does not boot correctly.

Step 14 Save the configuration.

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```
switch# copy running-config startup-config
```

Moving SSI Boot Image Files to SSM Modflash

For installation that are running Cisco MDS SAN-OS Release 2.1(2b) and later, we recommend that you locate the SSI boot image files on the SSM modflash. In most installations, all of the MDS SAN-OS image files are located on the supervisor module bootflash (both active and standby). This section describes how to move the appropriate files to the new location.

To move the SSI boot image files from bootflash to SSM modflash, follow these steps:

- Step 1** Display the contents of the active supervisor module bootflash to locate the SSI boot image file.

```
switch# dir bootflash:
 12288      Dec 03 13:14:42 2004  lost+found/
 4004706    Jan 31 00:23:33 2006  m9000-ek9-ssi-mz.2.1.2i.bin
14753792   Jan 30 23:54:12 2006  m9500-sf1ek9-kickstart-mz.2.1.2b.bin
48474490   Jan 30 23:54:41 2006  m9500-sf1ek9-mz.2.1.2b.bin
```

```
Usage for bootflash://sup-local
101636096 bytes used
 82923520 bytes free
184559616 bytes total
```

- Step 2** If the SSI boot image files are located on the active supervisor module bootflash, perform [Step a](#) through [Step d](#) for each SSM installed on your switch:

- a. Copy the SSI boot image file to the SSM modflash.

```
switch# copy bootflash:m9000-ek9-ssi-mz.2.1.2i.bin modflash://2-1/
m9000-ek9-ssi-mz.2.1.2i.bin
```

- b. Verify the current configuration of the boot variables.

For Cisco MDS 9500 Series switches:

```
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9500-sf1ek9-mz.2.1.2b.bin
sup-2
kickstart variable = bootflash:/m9500-sf1ek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9500-sf1ek9-mz.2.1.2b.bin
Module 2
ssi variable = bootflash:/m9000-ek9-ssi-mz.2.1.2i.bin
```

For Cisco MDS 9200 Series switches:

```
switch# show boot
kickstart variable = bootflash:/m9200-sf1ek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9200-sf1ek9-mz.2.1.2b.bin
Module 2
ssi variable = bootflash:/m9000-ek9-ssi-mz.2.1.2i.bin
```

- c. Change the SSI boot variable to the new SSI image location.

```
switch# config terminal
switch(config)# boot ssi modflash://2-1/ m9000-ek9-ssi-mz.2.1.2i.bin module 2
switch(config)# exit
```

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```
switch#
```



Caution The SSI boot variable must reference the correct SSI boot image, otherwise the SSM fails to initialize. If you do not correctly set the SSI boot variable, the SSM remains in the power-down state after attempting to initialize three times.

- d. Verify the updated configuration of the boot variables.

For Cisco MDS 9500 Series switches:

```
switch# show boot
sup-1
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9500-sflek9-mz.2.1.2b.bin
sup-2
kickstart variable = bootflash:/m9500-sflek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9500-sflek9-mz.2.1.2b.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.2.1.2i.bin
```

For Cisco MDS 9200 Series switches:

```
switch# show boot
kickstart variable = bootflash:/m9200-sflek9-kickstart-mz.2.1.2b.bin
system variable = bootflash:/m9200-sflek9-mz.2.1.2b.bin
Module 2
ssi variable = modflash://2-1/m9000-ek9-ssi-mz.2.1.2i.bin
```

- Step 3** Save the configuration.

```
switch# copy running-config startup-config
```

- Step 4** Delete the files copied to the SSM modflash from the active supervisor module bootflash and standby supervisor module bootflash (on Cisco MDS 9500 Series switches). The SSI boot image files are no longer needed on those devices.

For Cisco MDS 9500 Series switches:

```
switch# delete bootflash:m9000-ek9-ssi-mz.2.1.2i.bin
switch# delete bootflash://sup-standby/m9000-ek9-ssi-mz.2.1.2i.bin
```

For Cisco MDS 9200 Series switches:

```
switch# delete bootflash:m9000-ek9-ssi-mz.2.1.2i.bin
```

For more information about handling files, refer to the [Cisco MDS 9000 Family Configuration Guides](#).

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Related Documentation

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

http://www.cisco.com/en/US/products/ps5989/products_documentation_roadmap09186a00804500c1.html.

For information about IBM TotalStorage SAN Volume Controller Storage Software for the Cisco MDS 9000 Family, refer to the IBM TotalStorage Support website at this URL:

<http://www.ibm.com/storage/support/2062-2300/>

Release Notes

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

Regulatory Compliance and Safety Information

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

Compatibility Information

- *Cisco MDS 9000 NX-OS Hardware and Software Compatibility Information*
- *Cisco MDS NX-OS Release Compatibility Matrix for Storage Service Interface Images*
- *Cisco MDS 9000 Family Interoperability Support Matrix*
- *Cisco MDS NX-OS Release Compatibility Matrix for IBM SAN Volume Controller Software for Cisco MDS 9000*

Hardware Installation

- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*

Software Installation and Upgrade

- *Cisco MDS 9000 Family Software Upgrade and Downgrade Guide - For Cisco NX-OS*
- *Cisco MDS 9000 Family Storage Services Interface Image Install and Upgrade Guide - For Cisco NX-OS*
- *Cisco MDS 9000 Family Port Analyzer Adapter Installation and Configuration Note*

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Cisco Fabric Manager

- *Cisco MDS 9000 Family Fabric Manager Installation and Upgrade Guide*
- *Cisco MDS 9000 Family Fabric Manager Configuration Guide*
- *Cisco MDS 9000 Fabric Manager Online Help*
- *Cisco MDS 9000 Fabric Manager Web Services Online Help*

Command-Line Interface

- *Cisco MDS 9000 Family CLI Configuration Guide*
- *Cisco MDS 9000 Family Command Reference*
- *Cisco MDS 9000 Family SAN Volume Controller Configuration Guide*

Intelligent Storage Networking Services Configuration Guides

- *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 - For Cisco MDS 9500 and 9200 Series*

Troubleshooting and Reference

- *Cisco MDS 9000 Family Troubleshooting Guide*
- *Cisco MDS 9000 Family MIB Quick Reference*
- *Cisco MDS 9000 Family SMI-S Programming Reference*
- *Cisco MDS 9000 Family System Messages Reference*

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

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