Send documentation comments to

Cisco MDS 9500 Series Supervisor-2A Module Tech Note

Date: June 14, 2010

Part Number: OL-22897-01

This document describes the Cisco MDS 9500 Series Supervisor-2A Module, DS-X9530-SF2A-K9.

Use this document in conjunction with the *Cisco MDS 9500 Series Hardware Installation Guide*, and other documents listed in the "Related Documentation" section on page 14.

Contents

This document includes the following sections:

Introduction

The Cisco MDS 9500 Series Supervisor-2A module is a new supervisor module for the Cisco MDS 9500 Series. The Supervisor-2A module is functionally equivalent to the Supervisor-2 module, but has these distinguishing features:

- The Supervisor-2A module supports the deployment of Fibre Channel over Ethernet (FCoE) in the MDS 9500 Multilayer Director Chassis
- The Supervisor-2A module has 2 GB of memory, twice that of the Supervisor-2 module

Similar to the existing Supervisor-2 module, the Supervisor-2A module provides the control and management functions for the Cisco MDS 9500 Series.

Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

The Cisco MDS 9500 Series supports redundant, hot-swappable, Supervisor-2A modules. Supervisor-2A modules can be used in the Cisco MDS 9509 and 9506 Directors in slots 5 and 6. In the Cisco MDS 9513 Director, the Supervisor-2A modules must be used in slots 7 and 8.

Note Both the active and standby supervisor modules must be of the same type, either Supervisor-2 or Supervisor-2A modules. You cannot mix supervisor modules in the chassis.

System Requirements

The following hardware and software support the Supervisor-2A module:

- Hardware:
  - Cisco MDS 9500 Series switches
  - MDS 9000 Fibre Channel over Ethernet module
- Software:
  - SAN-OS Release 3.x is the minimum software release
  - NX-OS Release 4.x
  - NX-OS Release 5.x

Note FCoE functionality requires the following hardware and software: the Supervisor-2A module, the FCoE module, and a later release of NX-OS Release 5.x software. This later release of software has the capability to recognize the presence of the FCoE module and then enable FCoE software functionality.

Note If you have a Supervisor-2A module installed and you are running SAN-OS Release 3.3(4) or earlier, or if you are running NX-OS Release 4.2(5) or earlier, Cisco Device Manager will identify the Supervisor-2A module as unsupported hardware, even though the module functions correctly. Only when you are running a release later than SAN-OS Release 3.3(4) or NX-OS Release 4.2(5) will Device Manager recognize the module as a Supervisor-2A module.

Migrating From Supervisor-1 Modules to Supervisor-2A Modules

The Cisco MDS 9509 and 9506 Directors support both Supervisor-1, Supervisor-2, and Supervisor-2A modules. For Cisco MDS 9513 Directors, both supervisor modules must be Supervisor-2 or Supervisor-2A modules.

This section includes the following:

Note The software license files are not copied during the migration process of Supervisor-1 to Supervisor-2A modules. The license files have to be copied manually to the Supervisor-2A modules.

Migration Guidelines

Before performing the migration procedure, consider the following guidelines:

- Both Supervisor-1 and Supervisor-2A modules must be running the same SAN-OS release during migration.
- Supervisor-1 and Supervisor-2A modules cannot be installed in the same switch, except during migration. Both the active and standby supervisor modules must be of the same type, either Supervisor-1 or Supervisor-2A modules.
- If you intend to upgrade your SAN-OS software, you must perform the migration and then perform the upgrade.
- To ensure high availability, you must connect the Ethernet port for both active and standby supervisors to the same network or virtual LAN. The active supervisor owns the IP address used by these Ethernet connections. On a switchover, the newly activated supervisor takes over this IP address.
- Migrating from Supervisor-2A modules to Supervisor-1 modules is not supported.
- The procedure described in this section ensures that your configuration is correctly synchronized after completing the migration.

Caution Migrating your supervisor modules is a disruptive operation. The disruption occurs at the time of the switchover. When the Supervisor-2A module is plugged into the chassis and it comes up as the standby, it is in a warm standby mode (only the ASCII configuration is synchronized; global synchronization is not performed). When the switchover is initiated from the active Supervisor-1 module, the Supervisor-2A module takes over as the active supervisor and applies the ASCII configuration on the switch. At this time, all modules in the chassis are powered down and brought back up as if a fresh boot occurred. The Supervisor-1 module gets powered down.

Migrating From a Supervisor 1 Module to a Supervisor-2A Module on a Cisco MDS 9509 or MDS 9506 Director

To migrate from a Supervisor-1 module to a Supervisor-2A module on a Cisco MDS 9509 or 9506 Director, follow these steps:

Step 1 Ensure that the configured domain ID is the same as the current domain ID for every VSAN on the switch by following these steps:

a. Issue a **show vsan** command to display all the VSANs on the switch.

```
switch# show vsan
vsan 1 information
    name:VSAN0001  state:active
    interoperability mode:default
    loadbalancing:src-id/dst-id/oxid
    operational state:down

vsan 2 information
    name:VSAN0002  state:active
    interoperability mode:default
    loadbalancing:src-id/dst-id/oxid
    operational state:down

vsan 10 information
    name:VSAN0010  state:active
    interoperability mode:default
    loadbalancing:src-id/dst-id
    operational state:down

vsan 4094:isolated_vsan
```

b. Display the current and configured domain IDs for a VSAN.

```
switch# show fcdomain vsan 1
The local switch is the Principal Switch.

Local switch run time information:
    State: Stable
    Local switch WWN:    20:01:00:05:30:00:35:df
    Running fabric name: 20:01:00:05:30:00:35:df
    Running priority: 128
    Current domain ID: 0x6a(106)

Local switch configuration information:
    State: Enabled
    FCID persistence: Enabled
    Auto-reconfiguration: Disabled
    Contiguous-allocation: Disabled
    Configured fabric name: 20:01:00:05:30:00:28:df
    Configured priority: 128
    Configured domain ID: 0x00(0) (preferred)

Principal switch run time information:
    Running priority: 128
```

c. Change the configured domain ID if it differs from the current domain ID.

```
switch# config terminal
switch(config)# fcdomain domain 106 static vsan 1
switch(config)# exit
switch#
```

d. Repeat Step b and Step c for each VSAN on the switch.

Step 2 Save the configuration.

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

Step 3 Verify that the switch is running Cisco SAN-OS Release 3.0(1) or later. You must upgrade the switch if necessary.

```
switch# show version
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2005, 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 are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 1.1.0
  kickstart: version 3.3(1c)
  system:    version 3.3(1c)
...
```

Step 4 Issue a **show module** command to determine which Supervisor-1 module is the standby.

```
switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------- ------------------ ------------
1    16     1/2 Gbps FC Module               DS-X9016           ok
2    32     Storage Services Module          DS-X9032-SSM       ok
3    8      IP Storage Services Module       DS-X9308-SMIP      ok
4    12     1/2/4 Gbps FC Module             DS-X9112           ok
5    0      Supervisor/Fabric-1              DS-X9530-SF1-K9    ha-standby
6    0      Supervisor/Fabric-1              DS-X9530-SF1-K9    active *
...
```

Step 5 To set the standby module to manual boot mode, use the **system standby manual-boot** command.

```
switch# system standby manual-boot
```

Step 6 Take the standby Supervisor-1 module out of service.

```
switch# out-of-service module 5
```

Step 7 Verify that the standby Supervisor-1 module is powered down.

```
switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------- ------------------ ------------
1    16     1/2 Gbps FC Module               DS-X9016           ok
2    32     Storage Services Module          DS-X9032-SSM       ok
3    8      IP Storage Services Module       DS-X9308-SMIP      ok
4    12     1/2/4 Gbps FC Module             DS-X9112           ok
5    0      Supervisor/Fabric-1                                 powered-dn
6    0      Supervisor/Fabric-1              DS-X9530-SF1-K9    active *
...
```

Step 8 Remove the standby Supervisor-1 module from the chassis. Shut down the management interface on the active Supervisor-1 module. This ensures that the Supervisor-2A can copy the image from TFTP using the same IP address.

```
switch# config terminal
switch(config)# interface mgmt 0
switch(config-if)# shut
Shutting down this interface will drop all telnet sessions.
Do you wish to continue(y/n)? [n] y
switch(config-if)# end
switch#
```

Step 9 Install the Supervisor-2A module in the chassis.

Step 10 Establish a console session on the standby Supervisor-2A module console port. For information on establishing a console session, refer to the Cisco MDS hardware installation guide for your switch.

Step 11 If the loader> prompt appears on the standby Supervisor-2A module console session, perform the following steps. Otherwise press **Ctrl-C** to break the boot sequence.

a. Verify that the Cisco SAN-OS kickstart image is on the Supervisor-2A module bootflash.

Note In rare instances, if the Supervisor-2A module does not include a kickstart image, we recommend that you replace the module with a Supervisor-2A module that has a kickstart image.

```
loader> dir
bootflash:

    14458880 m9500-sf2ek9-kickstart-mz.3.0.1.bin
    12288    lost+found/
    48522513 m9500-sf2ek9-mz.3.0.1.bin
```

Note The kickstart image can be any version of SAN-OS Release 3.x or later, or NX-OS Release 4.x.

b. Boot the kickstart image file from the bootflash.

```
loader> boot m9500-sf2ek9-kickstart-mz.3.0.1.bin

    Booting bootflash:m9500-sf2ek9-kickstart-mz.3.0.1.bin ...
    ..............
    Automatic boot of image at addr 0x00000000 ...
    Starting kernel...
    INIT: version 2.78 booting
    Checking all filesystems...... done.
    Loading system software
    No system image is specified
    INIT: Sending processes the TERM signal
    Stopping kernel log daemon: klogd.
    Sending all processes the TERM signal... done.
    Sending all processes the KILL signal... done.
    Entering single-user mode...
    INIT: Going single user
    INIT: Sending processes the TERM signal
    Cisco Storage Area Networking Operating System (SAN-OS) Software
    TAC support: http://www.cisco.com/tac
    Copyright (c) 2002-2007, 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
    switch(boot)#
```

c. Configure the IPv4 address, IPv4 subnet mask, and IPv4 address for the default gateway for the switch.

```
switch(boot)# config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
switch(boot)(config)# interface mgmt 0
switch(boot)(config-if)# ip address A.B.C.D E.F.G.H
switch(boot)(config-if)# no shut
```

```
switch(boot)(config-if)# exit
switch(boot)(config)# ip default-gateway A.B.C.D
switch(boot)(config)# exit
switch(boot)#
```

Note The IP address can be any valid IP address but we recommend that you configure the Supervisor-2A module with the same IP address as the management interface of the Supervisor-1 module.

d. Download a Cisco SAN-OS system image to the Supervisor-2A module from a TFTP server.

```
switch(boot)# copy tftp://10.16.10.100/m9500-sf2ek9-mz.3.3.1c.bin bootflash:m9500-sf2ek9-mz.3.3.1c.bin
Trying to connect to tftp server......
```

Note Download the Supervisor-2A module image. Ensure that you download the same version as shown in Step 3.

e. Download a kickstart image to the Supervisor-2A module from a TFTP server.

```
switch(boot)# copy tftp://10.16.10.100/m9500-sf2ek9-kickstart-mz.3.3.1c.bin
bootflash:m9500-sf2ek9-kickstart-mz.3.3.1c.bin
Trying to connect to tftp server......
```

f. Reload the Supervisor-2A module on active the Supervisor-1 module console session.

```
switch# reload module 5
```

g. Press Ctrl-C to break the boot sequence on the standby Supervisor-2A module console session

```
switch(boot)#

    >> MDS-Bootloader-01.00.10 (Jan  8 2009 - 14:53:42) (MPC7447A), Build: 01.00.10

    INFO: Booting off primary flash.
    CPU:   MPC7447A v1.1 @ 1411 MHz
    DRAM: SPD Checksum ok!
    SPD Checksum ok!
    -- DIMM1 (unbuffered) has 1 banks
    -- DIMM2 (unbuffered) has 1 banks
    ECC Initialization of Bank 0: Done
    ECC Initialization of Bank 1: Done
    CAS Latency = 2.5 tRP = 3 tRAS = 7 tRCD=3
    Total SDRAM memory is 1024 MB
    40000000
INFO: SDRAM tests PASSED.
    done.
    PCI 0 bus mode: Conventional PCI
    PCI 1 bus mode: Conventional PCI
    L2 Cache Initialization.

    Internal SRAM ECC Initialization: Done
    IDE:   Bus 0: OK
    Device 0: Model: SILICONSYSTEMS INC 1GB Firm: 841-023 Ser#: 506VTP69Sn605DC0008
         Type: Hard Disk
         Capacity: 999.1 MB = 0.9 GB (2046240 x 512)
    loader> <INTERRUPT>
    loader>
```

h. Verify that the Cisco SAN-OS system image version and the kickstart image version are the same on the standby Supervisor-2A module:

```
loader> dir
```

```
    bootflash:

        16384       lost+found/
        14458880    m9500-sf2ek9-kickstart-mz.3.0.1.bin
        16177664    m9500-sf2ek9-kickstart-mz.3.3.1c.bin
        69924857    m9500-sf2ek9-mz.3.3.1c.bin
        48522513    m9500-sf2ek9-mz.3.0.1.bin
```

i. Boot the standby Supervisor-2A module using the **boot** command.

```
loader> boot m9500-sf2ek9-kickstart-mz.3.3.1c.bin m9500-sf2ek9-mz.3.3.1c.bin
```

Step 12 Verify that the standby Supervisor-2A module is in the warm standby state by using a **show system redundancy status** command on the active Supervisor-1 module session.

```
switch# show system redundancy status
Redundancy mode
---------------
    administrative:   HA
       operational:   Warm

This supervisor (sup-2)
-----------------------
    Redundancy state:   Active
    Supervisor state:   Active
      Internal state:   Active with warm standby

Other supervisor (sup-1)
------------------------
    Redundancy state:   Standby
    Supervisor state:   Warm standby
      Internal state:   Warm standby
```

Note In the above switch output, (sup-1) refers to the Supervisor module in slot 5 and (sup-2) refers to the Supervisor module in slot 6. Depending on the slot number from which the original standby Supervisor-1 module was brought out-of-service and removed in Steps 6 and 8, (sup-1) or (sup-2) can be either the Supervisor-1 module or Supervisor-2A module, and vice versa.

Step 13 Enable the management interface.

```
switch# config terminal
switch(config)# interface mgmt 0
switch(config-if)# no shutdown
switch(config-if)# end
switch#
```

Step 14 Copy the running configuration to the startup configuration on the active Supervisor-1 module to ensure that any running configuration changes are saved to the startup configuration and that the ASCII configuration is synchronized and current on the warm standby Supervisor-2A module.

```
switch# copy running-config start-config
```

Step 15 If your switch has SSMs installed and intelligent services are configured, perform Step a through Step c. Otherwise, continue to Step 16.

a. Power down all SSMs on the switch.

```
switch# config terminal
switch(config)# poweroff module 2
switch(config)# exit
switch#
```

Caution Do not copy the running configuration to the startup configuration after powering down the SSMs. If you do, you will lose the configuration on the SSM interfaces.

b. Verify that the SSMs are powered down.

```
switch# show module
Mod  Ports  Module-Type                       Model              Status
---  -----  --------------------------------- ------------------ ------------
1    16     1/2 Gbps FC Module                DS-X9016           ok
2    32     Storage Services Module                              powered-dn
3    8      IP Storage Services Module        DS-X9308-SMIP      ok
4    12     1/2/4 Gbps FC Module              DS-X9112           ok
5    0      Supervisor/Fabric-2               DS-X9530-SF2A-K9    powered-up
6    0      Supervisor/Fabric-1               DS-X9530-SF1-K9    active *
...
```

c. Copy the contents of the SSM NVRAM to the standby Supervisor-2A module.

```
switch# copy ssm-nvram standby-sup
```

Step 16 Initiate a switchover on the active Supervisor-1 module to power it down and cause the standby Supervisor-2A module to become the active supervisor module.

```
switch:system switchover
.....
CFG-2-ACFG_CONFIGURATION_APPLY_ERROR>>Error encountered while Ascii configuration was being applied. Please
use "show startup-config log" to view details
```

Note This message may be shown if a different version (other than that on the Supervisor-1 module) of kickstart and system images are used on the newly installed Supervisor-2A module.

Step 17 Verify that the Supervisor-1 module is powered down.

```
switch# show module
Mod  Ports  Module-Type                       Model              Status
---  -----  --------------------------------- ------------------ ------------
1    16     1/2 Gbps FC Module                DS-X9016           ok
2    32     Storage Services Module           DS-X9032-SSM       powered-dn
3    8      IP Storage Services Module        DS-X9308-SMIP      ok
4    12     1/2/4 Gbps FC Module              DS-X9112           ok
5    0      Supervisor/Fabric-2               DS-X9530-SF2-K9    active *
6    0      Supervisor/Fabric-1                                  powered-dn
...
```

Note When the switchover is initiated from the active Supervisor-1 module, the Supervisor-2A module takes over as the active supervisor and applies the ASCII configuration on the switch. At this time, all modules in the chassis are powered down and brought back up as if a fresh boot occurred. The Supervisor-1 module gets powered down.

Step 18 Remove the Supervisor-1 module from the chassis.

Step 19 Verify the current console speed of the active Supervisor-2A module by issuing the **show line console** command.

```
switch# show line console
```

```
line Console:
    Speed:        9600 baud
    Databits:     8 bits per byte
    Stopbits:     1 bit(s)
    Parity:       none
    Modem In: Disable
    Modem Init-String -
        default : ATE0Q1&D2&C1S0=1\015
```

Note Make sure that the computer terminal speed or the terminal server speed (that is connected to the newly installed Supervisor-2A module) is the same as the speed on the active Supervisor-2A module. To set up the computer terminal, refer to the "Connecting the Console Port" section in the *Cisco MDS 9500 Series Hardware Installation Guide*.

Step 20 Configure the boot for the Supervisor-2A module.

```
switch# config terminal
switch(config)# boot kickstart bootflash:m9500-sf2ek9-kickstart-mz.3.3.1c.bin
switch(config)# boot system bootflash:m9500-sf2ek9-mz.3.3.1c.bin
switch(config)# end
switch#
```

Step 21 To set the standby module to auto boot mode, use the **system no standby manual-boot** command.

```
switch#system no standby manual-boot
```

Step 22 Install the other Supervisor-2A module in the chassis.

Tip Because the standby autoboot may take up to 5 minutes to start, you may have to wait a few minutes for the standby supervisor module to boot up. To avoid waiting, you can issue the **reload module 6 force-dnld** command (if the second Supervisor-2A module is in slot 6). The second Supervisor-2A module reloads and boots up immediately without waiting a few minutes for the image synchronization and standby autoboot to take place.

Step 23 Verify that the standby Supervisor-2A module is powered up.

```
switch# show module
Mod  Ports  Module-Type                       Model              Status
---  -----  --------------------------------- ------------------ ------------
1    16     1/2 Gbps FC Module                DS-X9016           ok
2    32     Storage Services Module           DS-X9032-SSM       powered-dn
3    8      IP Storage Services Module        DS-X9308-SMIP      ok
4    12     1/2/4 Gbps FC Module              DS-X9112           ok
5    0      Supervisor/Fabric-2               DS-X9530-SF2-K9    active *
6    0      Supervisor/Fabric-2                                  powered-up
...
```

Step 24 Bring up the newly installed Supervisor-2A module using the **reload module 6 force-dnld** command.

```
switch# reload module 6 force-dnld
```

Step 25 Verify that the standby Supervisor-2A module is in the HA standby state.

```
switch# show system redundancy status
Redundancy mode
---------------
    administrative:   HA
       operational:   HA

This supervisor (sup-1)
```

```
----------------------
    Redundancy state:   Active
    Supervisor state:   Active
      Internal state:   Active with HA standby

Other supervisor (sup-2)
------------------------
    Redundancy state:   Standby
    Supervisor state:   HA standby
      Internal state:   HA standby
```

Step 26 If your switch has Storage Services Modules installed and intelligent services are configured, perform Step a and Step b. Otherwise, continue to Step 27.

a. Power up all SSMs on the switch.

```
switch# config terminal
switch(config)# no poweroff module 2
switch(config)#
```

b. Verify that the SSMs have powered up.

```
switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------- ------------------ ------------
1    16     1/2 Gbps FC Module               DS-X9016           ok
2    32     Storage Services Module          DS-X9032-SSM       ok
3    8      IP Storage Services Module       DS-X9308-SMIP      ok
4    12     1/2/4 Gbps FC Module             DS-X9112           ok
5    0      Supervisor/Fabric-2              DS-X9530-SF2A-K9    active
6    0      Supervisor/Fabric-2              DS-X9530-SF2A-K9    ha-standby *
...
```

Step 27 Save the configuration.

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

Step 28 If the Cisco MDS SAN-OS system image on the supervisor modules is the desired release, enter the **install all** command.

```
switch# install all
```

If you want a different release of the Cisco SAN-OS system image running on the switch, refer to the appropriate sections of this guide.

Migrating from Supervisor-2 Modules to Supervisor-2A Modules

The Cisco MDS 9509 and 9506 Directors support Supervisor-2 and Supervisor-2A modules. For Cisco MDS 9513 Directors, both supervisor modules must be Supervisor-2 or Supervisor-2A modules. Supervisor-2 and Supervisor-2A modules cannot be installed in the same switch at the same time, except during migration. Both the active and standby supervisor modules must be of the same type, either Supervisor-2 or Supervisor-2A modules.

This section includes the following topics:

Note Migrating from a Supervisor-2 module to a Supervisor-2A module is a nondisruptive operation.

Migration Guidelines

Before performing the migration procedure, consider the following guidelines:

- Supervisor-2 and Supervisor-2A modules cannot be installed in the same switch, except during migration. Both the active and standby supervisor modules must be of the same type, either Supervisor-2 or Supervisor-2A modules.
- If you intend to upgrade your NX-OS software, you must perform the migration and then perform the upgrade.
- To ensure high availability, you must connect the Ethernet port for both active and standby supervisors to the same network or virtual LAN. The active supervisor owns the IP address used by these Ethernet connections. On a switchover, the newly activated supervisor takes over this IP address.
- Migrating from Supervisor-2A modules to Supervisor-2 modules is not supported.
- The procedure described in this section ensures that your configuration is correctly synchronized after completing the migration.

Note The migration process automatically migrates all existing software license files, either single or multiple, from the Supervisor-2 module to the Supervisor-2A module.

Migrating From a Supervisor 2 Module to a Supervisor-2A Module on a Cisco MDS 9500 Series Switch

To migrate from a Supervisor-2 module to a Supervisor-2A module, follow these steps:

Step 1 From the currently active Supervisor-2 module, enter the **copy running-config startup-config** command:

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

Step 2 From the currently active Supervisor-2 module, enter the **out-of-service module** command to put the standby Supervisor-2 out-of-service.

```
switch# out-of-service module <slot>
```

Step 3 Remove the Supervisor-2 module that is put out-of-service, and insert the first Supervisor-2A module.

Step 4 From the currently active Supervisor-2 module, issue the **reload module <slot> force -dnld** command:

```
switch# reload module X force-dnld
```

Step 5 Wait for the new Supervisor-2A to come up online and become the standby supervisor. Check its status using the **show module** command:

```
switch# show module
```

Verify to check if the versions of the active and standby SUPs are matching.

Step 6 If the new SUP-2A is not matching the Active SUP-2 version, from the currently active Supervisor-2, enter the following commands to copy the kickstart and system images that are specified in the current boot variable settings to the standby Supervisor-2a and reload the module:

```
switch# show boot
```

```
switch# copy bootflash:m9500-sf2ek9-kickstart-mz.5.0.1a.bin bootflash://sup-standby/
switch# copy bootflash:m9500-sf2ek9-mz.5.0.1a.bin bootflash://sup-standby/
switch# reload module <slot>
```

Verify to check if the new SUP-2A module is running the correct version.

Step 7 On the currently active Supervisor-2, enter the **copy running-config startup-config** command:

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

Step 8 From the currently active Supervisor-2 module, enter the **system switchover** command so that the new Supervisor-2A module becomes active. The Supervisor-2 module will reboot after the switchover.

```
switch# system switchover
```

Step 9 Wait for the Supervisor-2 module to come up online and become standby. Check its status using the **show module** command:

```
switch# show module
```

Note The Supervisor-2 module may remain in a powered down status with the following reason: "Policy trigger initiated reset: Standby has lower memory than active"

Step 10 From the currently active Supervisor-2A module, enter the **out-of-service module <slot>** command to put the standby Supervisor-2 out-of-service.

```
switch# out-of-service module <slot>
```

Step 11 Remove the Supervisor-2 that is out-of-service and insert the second Supervisor-2A module.

Step 12 From the currently active Supervisor-2A module, enter the **reload module <slot> force -dnld** command:

```
switch# reload module X force-dnld
```

Step 13 Wait for the second Supervisor-2A module to come up online and become standby. Check its status using the **show module** command:

```
switch# show module
```

Verify to check if the new SUP-2A module is running the correct version.

Step 14 If the new SUP-2a is not matching the Active SUP-2a version, from the currently active Supervisor-2A, enter the following commands to copy the kickstart and system images that are specified in the current boot variable settings to the standby Supervisor-2a and reload the module:

```
switch# show boot
switch# copy bootflash:m9500-sf2ek9-kickstart-mz.5.0.1a.bin bootflash://sup-standby/
switch# copy bootflash:m9500-sf2ek9-mz.5.0.1a.bin bootflash://sup-standby/
switch# reload module <slot>
```

Verify to check if the new SUP-2A module is running the correct version.

Step 15 On the currently active Supervisor-2, enter the **copy running-config startup-config** command:

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

The migration from the Supervisor-2 module to the Supervisor-2A module is complete.

Technical Specifications

Table 1 lists the environmental specifications for the Supervisor-2A module.

Table 1 Environmental Specifications

Specification	Description
Temperature, ambient operating	32 to 104°F (0 to 40°C)
Temperature, ambient nonoperating and storage	–40 to 167°F (–40 to 75°C)
Relative humidity, ambient (noncondensing) operating	10 to 90%
Relative humidity, ambient (noncondensing) nonoperating and storage	10 to 95%
Altitude, operating	–197 to 6500 ft (–60 to 2000 m)

Table 2 lists the physical specifications for the Supervisor 2A module.

Table 2 Physical Specifications

Specification	Description
Dimensions	(H x W x D): 1.75 x 14.4 x 16 in (3.0 x 35.6 x 40.6 cm)
Space requirements	Occupies one supervisor slot in a Cisco MDS 9500 Series chassis
Weight	7.25 lb (2.90 kg)

Table 3 lists the available switching bandwidth for the Supervisor-2A module.

Table 3 Switching Bandwidth Specifications

Specification	Description
Switching Bandwidth	700 Gbps per Cisco MDS 9500 Series Supervisor-2A Module (1.4 Tbps when both Supervisor-2A modules are present)
	1.1 Tbps when combined with the Cisco MDS 9513 Fabric 2(Crossbar) Module (2.2 Tbps when both Fabric 2 modules are present)

Related Documentation

The documentation set for NX-OS for the Cisco MDS 9000 Family includes the following documents. To find a document online, access the following web site:

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/tsd-products-support-series-home.html

The documentation set for Cisco Fabric Manager appears in the *Cisco Fabric Manager Release Notes for Release 4.2(1)*, which is available from the following website:

http://www.cisco.com/c/en/us/support/cloud-systems-management/fabric-manager/products-release-notes-list.html

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*

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 NX-OS Release 4.1(x) and SAN-OS 3(x) Software Upgrade and Downgrade Guide*
- *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 NX-OS

- *Cisco MDS 9000 Family NX-OS Licensing Guide*
- *Cisco MDS 9000 Family NX-OS Fundamentals Configuration 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*
- *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*

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*

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/c/en/us/td/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

Send documentation comments to

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

Send documentation comments to