Cisco MDS 9000 Software Upgrade and Downgrade Guide, Release 9.x

First Published: August 25, 2021

This document describes how to upgrade or downgrade the Cisco MDS NX-OS software for Cisco MDS 9000 Series Multilayer Switches.

This guide includes the following sections:

Table 1 Change History

Date	Description
January 27, 2022	Updated the nondisruptive ISSU and ISSD paths for the Cisco MDS NX-OS Release 9.2(2).
August 25, 2021	Initial release.

Introduction

The Cisco MDS 9000 Series of Multilayer Directors and Fabric Switches provide best-in-class high availability, scalability, security, and management, allowing you to deploy high-performance storage area networks. Layering a rich set of intelligent features onto a high-performance switch fabric, the Cisco MDS 9000 Series addresses the stringent requirements of large data center storage environments: high availability, security, scalability, ease of management, and seamless integration of new technologies.

About Software Images

Cisco MDS switch is shipped with the Cisco MDS NX-OS operating system for the Cisco MDS 9000 Series Multilayer Directors and Fabric Switches. The Cisco MDS NX-OS software consists of two images: the kickstart image and the system image.

- To select the kickstart image, use the KICKSTART variable.
- To select the system image, use the SYSTEM variable.

The images and variables are important factors in any install procedure. Specify the variable and the respective image to upgrade or downgrade your switch. You do not always need both the kickstart and system images for installing the operating system.

Note Do not rename the standard image filenames.

Note To download a new Cisco MDS 9000 Series software, including Cisco NX-OS and Cisco DCNM management software, go to the Storage Networking Software download website at http://www.cisco.com/cisco/software/navigator.html

Release notes are sometimes updated with the new information on restrictions and caveats. Refer to the following website for the most recent version of the Cisco MDS 9000 Series Release Notes.

Dependent Factors for Software Installation

The software image install procedure depends on the following factors:

- Software images — The kickstart and system image files reside in directories or folders that can be accessed from the Cisco MDS 9000 Series Multilayer switch prompt.
- Image version — Each image file has a version.
- Flash disks on the switch — The bootflash: resides on the supervisor module, and the CompactFlash disk is inserted into the slot0: device.
- Supervisor modules — Either single or dual supervisor modules are present.

Supported Components

For information on supported software and hardware components, see the *Cisco MDS 9000 Series Compatibility Matrix*.

Determining the Software Version

To determine the version of the Cisco MDS NX-OS software that is currently running on a Cisco MDS 9000 switch using the CLI, log in to the switch and run the **show version** command in privileged EXEC mode.

To determine the version of the Cisco MDS NX-OS software currently running on a Cisco MDS 9000 switch using Cisco DCNM for SAN, click the **Switches** tab in the **Information** pane, locate the relevant switch using the corresponding IP address, logical name, or worldwide name (WWN), and check its version in the **Release** column.

Downloading Software

The Cisco MDS NX-OS software is designed for mission-critical high-availability environments. To realize the benefits of nondisruptive upgrade on the Cisco MDS 9700 Series Multilayer Directors, we recommend that you install dual supervisor modules.

Note All the CLI session examples that are provided in this document are intended only for reference. The actual switch output differs based on your switch model.

To download the latest Cisco MDS NX-OS software, access the Software Center at:

http://www.cisco.com/cisco/software/navigator.html?a=a&i=rpm

Use the **show incompatibility-all system bootflash**:*system image filename* command to determine which features are incompatible with the destination upgrade release.

```
switch(config)# show incompatibility-all system bootflash:m9700-sf4ek9-mz.9.2.1.bin

Checking incompatible configuration(s):
No incompatible configurations

Checking dynamic incompatibilities:
No incompatible configurations
```

To request a copy of the source code under the terms of either GPL (General Public License) or LGPL (Lesser General Public License), email mds-software-disclosure@cisco.com.

Selecting the Software Image for a Cisco MDS Switch

Table 2 lists the system and kickstart image that you can use for a Cisco MDS switch.

Table 2 Software Images for Cisco MDS Switches

Cisco MDS Switch	Naming Convention
Cisco MDS 9396T	Filenames begin with m9300-s2ek9
Cisco MDS 9148T	Filenames begin with m9148-s6ek9
Cisco MDS 9132T	Filenames begin with m9100-s6ek9
Cisco MDS 9148S	Filenames begin with m9100-s5ek9
Cisco MDS 9220i	Filenames begin with m9220-s7ek9
Cisco MDS 9250i	Filenames begin with m9250-s5ek9
Cisco MDS 9396S	Filenames begin with m9300-s1ek9
Cisco MDS 9718, 9710, and 9706	Filenames begin with m9700-sf3ek9[1] Filenames begin with m9700-sf4ek9[2]

1. The m9700-sf3ek9 filename images are supported only on Cisco MDS 9700 Series Supervisor-1 Module on Cisco MDS 9710 and 9706 Director Switches, and Cisco MDS 9700 Series Supervisor-1E Module on Cisco MDS 9718 Director Switches.
2. The m9700-sf4ek9 filename images are supported only on Cisco MDS 9700 Series Supervisor-4 Module on Cisco MDS 9718, 9710, and 9706 Director Switches.

No Payload Encryption Software Images

No payload encryption (NPE) images are available with the Cisco MDS NX-OS Release 9.2(2) software. The NPE images are intended for countries that have import restrictions on products that encrypt payload data.

To differentiate an NPE image from a standard software image, the letters *npe* are included in the image name as follows:

- m9100-s6ek9-kickstart-mz-npe.9.2.2.bin
- m9100-s6ek9-mz-npe.9.2.2.bin
- m9100-s6ek9-kickstart-mz-npe.9.2.2.bin
- m9100-s6ek9-mz-npe.9.2.2.bin
- m9100-s5ek9-kickstart-mz-npe.9.2.2.bin
- m9100-s5ek9-mz-npe.9.2.2.bin
- m9148-s6ek9-kickstart-mz-npe.9.2.2.bin
- m9148-s6ek9-mz-npe.9.2.2.bin
- m9300-s2ek9-kickstart-mz-npe.9.2.2.bin
- m9300-s2ek9-mz-npe.9.2.2.bin
- m9220-s7ek9-kickstart-mz-npe.9.2.2.bin
- m9220-s7ek9-mz-npe.9.2.2.bin
- m9700-sf4ek9-kickstart-mz-npe.9.2.2.bin
- m9700-sf4ek9-mz-npe.9.2.2.bin
- m9300-s1ek9-kickstart-mz-npe.9.2.2.bin
- m9300-s1ek9-mz-npe.9.2.2.bin
- m9700-sf3ek9-kickstart-mz-npe.9.2.2.bin
- m9700-sf3ek9-mz-npe.9.2.2.bin
- m9700-sf4ek9-kickstart-mz-npe.9.2.2.bin
- m9700-sf4ek9-mz-npe.9.2.2.bin

Note When downloading software, ensure that you select the correct software image for your Cisco MDS 9000 Series Multilayer switch. Nondisruptive software upgrades or downgrades between NPE images and non-NPE images are not supported.

Installing Cisco MDS NX-OS Release 9.x Software on a Cisco MDS Switch

To install the latest Cisco MDS NX-OS Release 9.x software images on a new Cisco MDS 9000 Series Multilayer switch, perform the following steps:

Step 1 Log in to Cisco.com and click **Log In** at the top of the page. Enter your Cisco username and password.

Note Use your registered Cisco username and password to access the links provided in this document.

Step 2 Verify the following physical connections for the new Cisco MDS 9000 Series Multilayer switch:

- The console port is physically connected to a computer terminal (or terminal server).
- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or a router.

For more information about physical connections, see the *Cisco MDS 9000 Series Hardware Installation guides*.

Note On switches with dual supervisor modules, both the supervisor modules must have Ethernet connections on the management interfaces (mgmt 0) to maintain connectivity when switchovers occur during upgrades and downgrades.

Note If the management 10/100/1000 Ethernet port (mgmt0) interface of the Cisco MDS 9700 Series Multilayer Directors has a preconfigured "/0" IPv6 address that cannot be removed, use the **write erase boot** command to clear the complete configuration of the device and reload the device using the **reload** command. Perform this process before commissioning the device into production, because this process is disruptive to the user traffic if it is applied to the active supervisor of a system. Ensure that there is an active console connection to the supervisor, because this process removes the IPv4 address of the mgmt0 interface.

Tip Save the host ID information for future use, for example, to enable licensed features. The host ID information is provided in the Proof of Purchase document that accompanies the switch.

Step 3 Verify that the default console port parameters listed below are identical to the parameters of the computer terminal (or terminal server) attached to the switch console port:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity

See the "Configuring Terminal Settings and Sessions" chapter in the *Cisco MDS 9000 Series NX-OS Fundamentals Configuration Guide*.

Step 4 Power up the Cisco MDS 9000 Series Multilayer switch. The switch boots up automatically after powering on the switch.

Step 5 Obtain the IP address, subnet mask, and default gateway information that is required for the Cisco MDS 9000 Series Multilayer switch to communicate over the supervisor module Ethernet interface. This information is required to configure and manage the switch.

See the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Series NX-OS Fundamentals Configuration Guide*.

Step 6 Complete the System Admin Account Setup process.
If you create a short, easy-to-decipher password, your password will be rejected. Configure a strong password, as shown in the sample configuration. Passwords are case-sensitive. Explicitly create a password that meets the requirements that are listed in the "Characteristics of Strong Passwords" section in the "Configuring Users and Common Roles" chapter in the *Cisco MDS 9000 Series NX-OS Security Configuration Guide*.

Note You can change the default password during the initial setup process. All Cisco MDS 9000 Series Multilayer switches have the network administrator as the default user (admin) with a default password (admin). You cannot change the default user.

```
---- System Admin Account Setup ----

Do you want to enforce secure password standard (yes/no) [y]: no

Enter the password for "admin":

Confirm the password for "admin":
```

Step 7 Enter **yes** to when prompted, to set up a mode and assign the information that is obtained in Step 5.

See the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Series NX-OS Fundamentals Configuration Guide*.

Note Press **Ctrl-C** at prompts to skip the remaining configuration options and proceed with what is configured until that point.

Tip If you do not want to answer a previously configured question, or if you want to skip answers to any questions, press **Enter**. If a default answer is not available (for example, a switch name), the switch uses the previously configured settings and moves to the next question.

The CLI configuration step (using factory defaults) is as follows:

```
---- Basic System Configuration Dialog ----

This setup utility will guide you through the basic configuration of
the system. Setup configures only enough connectivity for management
of the system.

Press Enter incase you want to skip any dialog. Use ctrl-c at anytime
to skip remaining dialogs.

Would you like to enter the basic configuration dialog (yes/no): yes
```

By default, two roles exist in all the switches:

- Network operator (network-operator) — Has permission to view only the configuration. The operator cannot make any configuration changes.
- Network administrator (network-admin) — Has permission to execute all commands and make configuration changes. The administrator can also create and customize up to 64 additional roles. One of these 64 additional roles can be configured during the initial setup process.

```
Create another login account (yes/no) [n]: yes
```

Note While configuring your initial setup, you can create an additional user account (if you are in the network-admin role) besides the administrator's account. The username must contain only non-numeric characters. See the "Configuring User Accounts" section in the "Configuring Users and Common Roles" chapter in the *Cisco MDS 9000 Series NX-OS Security Configuration Guide*.

```
Enter the user login ID: test

Enter the password for "test":
Confirm the password for "test":
Enter the user role [network-operator]:
```

Note If you use SNMPv3, do not configure the SNMPv2 community string. Refer to the "Configuring SMNP" chapter in the *Cisco MDS 9000 Series NX-OS System Management Configuration Guide*.

```
Configure read-only SNMP community string (yes/no) [n]: yes

SNMP community string: admin
```

Note The switch name is limited to 32 alphanumeric characters.

```
Enter the switch name: switch

Continue with Out-of-band (mgmt0) management configuration? [yes/no]: yes
```

Note IPv6 is supported in Cisco MDS NX-OS Release 4.1(x) and later. However, the setup script supports only IPv4 for the management interface. For information about configuring IPv6 in the management interface, see the *Cisco MDS 9000 Series NX-OS IP Services Configuration Guide* or the *IP Services Configuration Guide, Cisco DCNM for SAN*.

```
Mgmt0 IPv4 address: ip_address

Mgmt0 IPv4 netmask: subnet_mask

Configure the default gateway? (yes/no) [y]: yes

IPv4 address of the default gateway : 10.104.122.1

Configure advanced IP options? (yes/no) [n]: yes

Continue with In-band (vsan1) management configuration? (yes/no) [n]: yes
```

```
Enable IP routing? (yes/no) [n]: yes

Configure static route? (yes/no) [n]: n
```

Note Ensure that you have configured the IP route, IP default network address, and IP default gateway address to enable the SNMP access. If IP routing is enabled, the switch uses the IP route and the default network IP address. If IP routing is disabled, the switch uses the default gateway IP address.

```
Configure the default-network: (yes/no) [y]: yes
```

Note The default network address is Destination prefix: dest_prefix provided in Mgmt0 IPv4 netmask: subnet_mask.

```
Default network IPv4 address: dest_prefix


Configure the DNS IPv4 address? (yes/no) [y]: yes

DNS IP address: name_server_ip_address

Configure the default domain name? (yes/no) [n]: yes

Default domain name: domain_name

Enable the ssh service? (yes/no) [y]:

Type of ssh key you would like to generate (dsa/rsa) [rsa]:

Number of rsa key bits <1024-4096> [1024]:

Enable the telnet service? (yes/no) [n]: y

Configure congestion/no_credit drop for fc interfaces? (yes/no) [y]: n

Enable the http-server? (yes/no) [y]:

Configure clock? (yes/no) [n]:

Configure timezone? (yes/no) [n]: yes

Enter timezone config [PST/MST/CST/EST] :PST

Enter Hrs offset from UTC [-23:+23] :

Enter Minutes offset from UTC [0-59] :+23

Configure summertime? (yes/no) [n]: yes
summer-time config :PDT 2 sunday march 02:00 1 sunday november 02:00 59

Configure NTP server? (yes/no) [n]: yes

NTP server IP address: ntp_server_IP_address

Configure default switchport interface state (shut/noshut) [shut]: shut
```

Note The mgmt0 interface is not shut down at this point. Only the Fibre Channel, iSCSI, FCIP, and Gigabit Ethernet interfaces are shut down.

```
Configure default switchport trunk mode (on/off/auto) [on]: on

Configure default switchport port mode F (yes/no) [n]: yes

Configure default zone policy (permit/deny) [deny]: deny

Enable full zoneset distribution (yes/no) [n]: yes

Configure default zone mode (basic/enhanced) [basic]: basic
```

See the "Configuring and Managing Zones" chapter in the *Cisco MDS 9000 Series NX-OS Fabric Configuration Guide*.

```
The following configuration is applied:
username admin password admin_pass role network-admin
  username user_name password user_pass role network-admin
  snmp-server community snmp_community role
  switchname switch
  interface mgmt0
    ip address ip_address subnet_mask
    no shutdown
  ip routing
  ip route dest_prefix dest_mask dest_address
  ip default-network dest_prefix
  ip default-gateway default_gateway
  ip name-server name_server
  ip domain-name domain_name
  telnet server disable
  ssh key rsa 2048 force
  ssh server enable
  ntp server ipaddr ntp_server
  system default switchport shutdown
  system default switchport trunk mode on
  system default switchport mode F
  system default port-channel auto-create
  zone default-zone permit vsan 1-4093
  zoneset distribute full vsan 1-4093
  system default zone mode enhanced

Would you like to edit the configuration? (yes/no) [n]: no

Would you like to edit the configuration? (yes/no) [n]: no

Use this configuration and save it? (yes/no) [y]: yes
```

Caution If you do not save the configuration at this point, your changes will not be updated the next time the switch is rebooted. Type **yes** in order to save the new configuration. This process ensures that the kickstart and system boot images are also automatically configured.

Tip Up to this point, you can only configure the switch using the CLI. Post this point, continue to configure the switch using either the CLI or the Cisco DCNM application. For more information on using the Cisco DCNM application to configure a switch, see the *Cisco DCNM Fundamentals Configuration Guide*.

```
Would you like to save the running-config to startup-config? (yes/no) [n]: y

[########################################] 100%
Copy complete.
```

If you continue to use the CLI, the login prompt is automatically displayed on your terminal:

Step 8 Log in to the switch using the new username and password.

Step 9 Verify that the required licenses are installed in the switch using the **show license** command.

Note The switch is initially shipped with the required licenses installed in the system. However, the initial license file does not cover unlicensed features that may be used during the grace period. For more information on licensing, see the *Cisco MDS 9000 Series NX-OS Licensing Guide*.

The following example shows the CLI output for a valid license:

```
switch# show license
license.lic:
SERVER this_host ANY
VENDOR cisco
INCREMENT ENTERPRISE_PKG cisco 1.0 permanent uncounted \
        VENDOR_STRING=MDS HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>0</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=FB454F0A0D40
INCREMENT MAINFRAME_PKG cisco 1.0 permanent uncounted \
        VENDOR_STRING=MDS HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>1</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=0DAE1B086D9E
INCREMENT SAN_EXTN_OVER_IP cisco 1.0 permanent 7 VENDOR_STRING=MDS \
        HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>2</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=D336330C76A6
INCREMENT FM_SERVER_PKG cisco 1.0 permanent uncounted \
        VENDOR_STRING=MDS HOSTID=VDH=REG070201 \
        NOTICE="<LicFileID>ent_ips_main_fm.lic</LicFileID><LicLineID>3</LicLineI
D> \
        <PAK>dummyPak</PAK>" SIGN=AEAEA04629E8
```

Step 10 Verify that the switch is running the desired Cisco MDS NX-OS Release 9.x software, depending on which version you have installed, by using the **show version** command:

```
switch# show version

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents:
http://www.cisco.com/en/US/products/ps9372/tsd_products_support_series_home.html
Copyright (c) 2002-2019, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
```

```
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php

Software
BIOS: version 3.2.0
kickstart: version 9.2(1) [build 9.2(1)]
system: version 9.2(1) [build 9.2(1)]
BIOS compile time: 09/27/2018
kickstart image file is: bootflash:///m9700-sf4ek9-kickstart-mz.9.2.1.bin
kickstart compile time: 5/31/2019 12:00:00 [03/20/2019 12:14:26]

system image file is: bootflash:///m9700-sf4ek9-mz.9.2.1.bin
system compile time: 5/31/2019 12:00:00 [03/20/2019 13:49:56]


Hardware
cisco MDS 9710 (10 Slot) Chassis ("Supervisor Module-3")
Intel(R) Xeon(R) CPU with 8167260 kB of memory.
Processor Board ID JAE17050AU2

Device name: switch
bootflash:  3915776 kB
slot0: 0 kB (expansion flash)

Kernel uptime is 0 day(s), 0 hour(s), 48 minute(s), 25 second(s)

Last reset
Reason: Unknown
System version: 8.4(1)
Service:

plugin
Core Plugin, Ethernet Plugin
3:22 PM
```

If the desired Cisco MDS NX-OS Release 9.x software version is displayed, you can continue configuring the switch using one of the following options:

- Configure other Cisco MDS NX-OS features using the CLI. For more information about this, see *Cisco MDS 9000 NX-OS and SAN-OS Configuration guides*.
- Use Cisco DCNM-SAN to configure your switch. For more information, see the *Cisco DCNM for SAN Configuration guides*.

If the latest Cisco MDS NX-OS Release 9.x software is not displayed, continue upgrading or downgrading the switch, as required, to install the correct version.

Step 11 Verify the status of the modules on the switch, using the **show module** command.

```
switch# show module

Mod  Ports  Module-Type                          Model              Status
---  -----  ----------------------------------- ------------------ ----------
1    48     4/8/16/32 Gbps Advanced FC Module   DS-X9648-1536K9    ok
2    48     4/8/16/32 Gbps Advanced FC Module   DS-X9648-1536K9    ok
3    48     2/4/8/10/16 Gbps Advanced FC Module DS-X9448-768K9     ok
4    48     4/8/16/32 Gbps Advanced FC Module   DS-X9648-1536K9    ok
5    0      Supervisor Module-4                 DS-X97-SF4-K9      active *
6    0      Supervisor Module-4                 DS-X97-SF4-K9      ha-standby
```

```
7    48     2/4/8/10/16 Gbps Advanced FC Module DS-X9448-768K9     ok
8    48     1/10 Gbps Ethernet Module           DS-X9848-480K9     ok
10   34     1/10/40G IPS,2/4/8/10/16G FC Module DS-X9334-K9        ok

Mod  Sw               Hw
---  ---------------  ------
1    8.4(1)           1.0
2    8.4(1)           1.0
3    8.4(1)           2.0
4    8.4(1)           1.0
5    8.4(1)           1.0
6    8.4(1)           1.4
7    8.4(1)           2.0
8    8.4(1)           1.1
10   8.4(1)           1.0


Mod  MAC-Address(es)                         Serial-Num
---  --------------------------------------  ----------
1    2c-31-24-50-59-d4 to 2c-31-24-50-5a-08  JAE205202WW
2    00-b8-b3-ee-03-38 to 00-b8-b3-ee-03-6c  JAE223403BK
3    00-d6-fe-b0-4b-88 to 00-d6-fe-b0-4b-8b  JAE223003C1
4    00-76-86-be-41-79 to 00-76-86-be-41-ad  JAE2039020M
5    00-2f-5c-fc-81-dc to 00-2f-5c-fc-81-ef  JAE22490XKR
6    70-18-a7-7e-f8-94 to 70-18-a7-7e-f8-a7  JAE22440CB0
7    3c-0e-23-c4-9c-84 to 3c-0e-23-c4-9c-87  JAE18030477
8    0c-68-03-29-90-4c to 0c-68-03-29-90-7f  JAE173000Q4
10   00-8e-73-39-81-50 to 00-8e-73-39-81-5f  JAE200504DK

Mod  Online Diag Status
---  ------------------
1    Pass
2    Pass
3    Pass
4    Pass
5    Pass
6    Pass
7    Pass
8    Pass
10   Pass

Xbar Ports  Module-Type                          Model              Status
---  -----  ----------------------------------- ------------------ ----------
1    0      Fabric Module 3                     DS-X9710-FAB3      ok
2    0      Fabric Module 3                     DS-X9710-FAB3      ok
3    0      Fabric Module 3                     DS-X9710-FAB3      ok
4    0      Fabric Module 3                     DS-X9710-FAB3      ok

Xbar Sw               Hw
---  ---------------  ------
1    NA               1.1
2    NA               1.1
3    NA               1.1
4    NA               1.1


Xbar MAC-Address(es)                         Serial-Num
---  --------------------------------------  ----------
1    NA                                      JAE222305V6
2    NA                                      JAE222305VA
3    NA                                      JAE22170963
4    NA                                      JAE2217096Z
```

Supported Nondisruptive Upgrade Paths for Cisco MDS NX-OS Releases

This section provides information on nondisruptive upgrade paths that are supported for Cisco MDS NX-OS software Release 9.x. It includes the following topics:

Nondisruptive Upgrade Paths to Cisco MDS NX-OS Release 9.2(2)

Table 3 Nondisruptive Upgrade Paths to Cisco MDS NX-OS Release 9.2(2)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
MDS NX-OS:	
9.2(1)	Upgrade directly to MDS NX-OS Release 9.2(2)
8.1(x) and above releases[1]	Upgrade directly to MDS NX-OS Release 9.2(2)
All 7.3(x) releases	1. Upgrade directly to MDS NX-OS Release 8.1(1b) 2. Upgrade to MDS NX-OS Release 9.2(2)
6.2(29) and above releases	1. Upgrade directly to MDS NX-OS Release 8.4(2c) 2. Upgrade to MDS NX-OS Release 9.2(2)
6.2(13a) until 6.2(27)	1. Upgrade directly to MDS NX-OS Release 6.2(29) 2. Upgrade directly to MDS NX-OS Release 8.4(2c) 3. Upgrade to MDS NX-OS Release 9.2(2)
All 6.2(x) releases prior to 6.2(13a)	1. Upgrade directly to MDS NX-OS Release 6.2(13a) 2. Upgrade directly to MDS NX-OS Release 6.2(29) 3. Upgrade to MDS NX-OS Release 8.4(2c) 4. Upgrade to MDS NX-OS Release 9.2(2)

1. If the SAN Analytics feature is enabled, then disable the SAN Analytics feature using the **no feature analytics** command before upgrading from Cisco MDS NX-OS 8.2(x) or Cisco MDS NX-OS 8.3(x) to Cisco MDS NX-OS Release 9.2(1) or later. However, you can upgrade from Cisco MDS NX-OS Release 8.4(1) and above releases to Cisco MDS NX-OS Release 9.2(1) or later without disabling the feature.

Nondisruptive Upgrade Paths to Cisco MDS NX-OS Release 9.2(1)

Table 4 Nondisruptive Upgrade Paths to Cisco MDS NX-OS Release 9.2(1)

Current Release	Nondisruptive Upgrade Path and Ordered Upgrade Steps
MDS NX-OS:	
8.1(x) and above releases[1]	Upgrade directly to MDS NX-OS Release 9.2(1)
All 7.3(x) releases	1. Upgrade directly to MDS NX-OS Release 8.1(1b) 2. Upgrade to MDS NX-OS Release 9.2(1)
6.2(29) and above releases	1. Upgrade directly to MDS NX-OS Release 8.4(2c) 2. Upgrade to MDS NX-OS Release 9.2(1)
6.2(13a) until 6.2(27)	1. Upgrade directly to MDS NX-OS Release 6.2(29) 2. Upgrade directly to MDS NX-OS Release 8.4(2c) 3. Upgrade to MDS NX-OS Release 9.2(1)
All 6.2(x) releases prior to 6.2(13a)	1. Upgrade directly to MDS NX-OS Release 6.2(13a) 2. Upgrade directly to MDS NX-OS Release 6.2(29) 3. Upgrade to MDS NX-OS Release 8.4(2c) 4. Upgrade to MDS NX-OS Release 9.2(1)

1. If the SAN Analytics feature is enabled, then disable the SAN Analytics feature using the **no feature analytics** command before upgrading from Cisco MDS NX-OS 8.2(x) or Cisco MDS NX-OS 8.3(x) to Cisco MDS NX-OS Release 9.2(1). However, you can upgrade from Cisco MDS NX-OS Release 8.4(1) and above releases to Cisco MDS NX-OS Release 9.2(1) without disabling the feature.

Upgrading Cisco MDS NX-OS Release 9.x on an Existing Cisco MDS Switch

This section provides information on upgrading your Cisco MDS NX-OS software to Cisco MDS NX-OS Release 9.x. It includes the following topics:

Upgrading Guidelines

- We recommend that you do not perform an In-Service Software Upgrade (ISSU) concurrently on switches that are connected via FCIP ISLs. Rather perform the ISSU on one switch and after the ISSU is complete perform the ISSU on the adjacent switch. However, you can perform ISSUs concurrently on switches that are connected via Fibre Channel ISLs.

- To upgrade or downgrade to a Cisco MDS NX-OS release version, the same release version of the kickstart and system images in the **install all** command must be used.
- If you copy firmware using the SFTP or SCP clients after enabling the **feature scp-server** or **feature sftp-server** command on your switch, ensure that you close the SFTP or SCP connection using the **no feature scp-server** or **no feature sftp-server** command before performing ISSU. Otherwise, ISSU will be disruptive. To avoid this issue, we recommend that you transfer files to the switch using the **copy** command instead or using the DCNM client.
- If you are upgrading from a release prior to Cisco MDS NX-OS Release 9.2(1), ensure that you use the **clear logging onboard txwait** command after upgrading. Otherwise, the file will be automatically deleted and recreated at the new file size when the file size exceeds 512 KB. For more information, see the *Cisco MDS 9000 Series Interfaces Configuration Guide, Release 9.x*.
- If you are upgrading from Cisco MDS NX-OS Release 8.5(1) to Release 9.2(1) or later, ensure that you disable the Fabric Performance Monitor (FPM) feature using the **no feature fpm** command before upgrading. After the switch is upgraded to Release 9.2(1) or later, FPM can be enabled again via the **feature fpm** command.
- FCIP traffic will be affected when you upgrade Cisco MDS 24/10-Port SAN Extension Module from Cisco MDS NX-OS Release 8.5(1) to Release 9.2(1). To recover from this situation, reload the module.
- You will be unable to upgrade to Cisco MDS NX-OS Release 9.2(2) or later releases if you have configured any device-alias names using 64 alphanumeric characters. The following system message will be displayed:

  ```
  ISSU blocked because device-alias names > 63 characters exist.They can be displayed using 'show file upg_blocking_dev_al_cfg.txt'. Reduce the size of the device-alias names to 63 characters or less and try again.
  ```

- As part of the fix for CSCvz09012, the *cardclient* service is deliberately stopped during the upgrade and the following syslog message is displayed. No action is required.

  ```
  %SYSMGR-2-SERVICE_CRASHED: Service "cardclient" (PID 4941) hasn't caught signal 9 (no core)
  ```

- We recommend that if all of the following conditions are true that the Cisco MDS 48-Port 64-Gbps Fibre Channel Switching Module (DS-X9748-3072K9) NOT be inserted in the chassis:
  - Cisco MDS 9706, MDS 9710, or MDS 9718
  - Cisco MDS NX-OS Release 9.2(1)
  - Non-default FCoE FCMAP is configured. This can be checked by issuing the **show fcoe | i FC-MAP** command. The default value of FCMAP is 0x0e:fc:00.

  Also, for the switches running Release 9.2(1) and equipped with Cisco MDS 48-Port 64-Gbps Fibre Channel Switching Module (DS-X9748-3072K9), the FCMAP should NOT be changed to non-default value. However, after the switch has been upgraded to Release 9.2(2) or later, the FCoE FCMAP can be configured to a non-default value. For more information, see CSCwa34016.

Upgrade Process for a Cisco MDS 9700 Series Multilayer Director

On a Cisco MDS 9700 Series Multilayer Director, the high-level process to upgrade to Cisco MDS NX-OS Release 9.x is as follows:

Step 1 Upgrade to Cisco MDS NX-OS Release 9.x, as described in "Upgrading to Cisco MDS NX-OS Release 9.x on a Cisco MDS 9700 Series Multilayer Director" section on page 16.

Step 2 Install the Cisco MDS 48-port 16-Gbps Fibre Channel Switching module in the Cisco MDS 9700 chassis. For additional information, see the *Cisco MDS 9700 Series Hardware Installation Guide.*

Step 3 Install the Cisco MDS 48-port 10-Gigabit Ethernet module in the Cisco MDS 9700 chassis. For additional information, see the *Cisco MDS 9700 Series Hardware Installation Guide.*

Step 4 If needed, reload the switch.

Upgrading to Cisco MDS NX-OS Release 9.x on a Cisco MDS 9700 Series Multilayer Director

Note Use the console connection for firmware upgrades. If you are upgrading through the management interface, you must have a working connection to both supervisors because this process causes a switchover and the current standby supervisor will be active after the upgrade. To determine the status of the mgmt0 interface on the standby supervisor issue the **show interface mgmt0 standby** command.

Note When the **system auto-collect tech-support** command is enabled, there is a delay of 600 seconds for the standby switch to reload and become HA-Standby in Cisco MDS 9700 Series Multilayer Directors.

To upgrade your switch to use the latest Cisco MDS NX-OS software on your Cisco MDS 9700 Series Multilayer Directors, perform the following steps:

Step 1 Go to http://www.cisco.com/ and click **Log In** at the top of the page. Enter your Cisco Systems username and password.

Note Unregistered Cisco.com users cannot access secure links that are provided in this document.

Step 2 Verify the following physical connections for the new Cisco MDS 9700 Series Multilayer switch:

- The console port is physically connected to a computer terminal (or terminal server).
- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or router.

To verify the physical connections, see the hardware installation guide for your product. For more information, see the *Cisco MDS 9710 Director Hardware Installation Guide*.

Step 3 Log in to the switch.

Step 4 Run the **copy running-config startup-config** command to store your current running configuration. You can also create a backup of your existing configuration in a file by running the **copy running-config bootflash:backup_config.txt** command. See the "Using the Cisco NX-OS Setup Utility" chapter in the *Cisco MDS 9000 Series NX-OS Fundamentals Configuration Guide*.

Step 5 Save a copy of the **show tech-support** command output of the switch. For more information, see https://www.cisco.com/c/en/us/td/docs/dcn/whitepapers/how-to-collect-logs-cisco-mds.html#Theshowtechsupportcommand.

Step 6 Verify that the requested license files installed in the switch are displayed, using the **show license usage** command.

Note The switch is initially shipped with the required licenses installed in the system. However, the initial license file does not cover the unlicensed features that may be used during the grace period. See the *Cisco MDS 9000 Series NX-OS Licensing Guide*. If no license is displayed at this point, perform Step 7 and Step 8 to install the required licenses. If the required licenses are displayed at this point, skip Step 7 and Step 8 and, move to Step 9.

The following is a sample CLI output for a valid license:

```
switch# show license usage
Feature                      Ins  Lic   Status Expiry Date Comments
                                Count
--------------------------------------------------------------------------------
FM_SERVER_PKG                 No    -   Unused             -
MAINFRAME_PKG                 No    -   Unused             -
ENTERPRISE_PKG                Yes   -   Unused never       -
--------------------------------------------------------------------------------
```

Step 7 Install licenses, if necessary, to ensure that the required features are available on the switch. Perform the following steps:

a. Use the **show license host-id** command to obtain the serial number of your switch. The host ID is also referred to as the switch serial number.

```
switch# show license host-id
License hostid: VDH=JAF1721AEQG
```

Tip Use the entire ID that appears after the colon (:). In this example, the host ID is VDH=JAF1721AEQG.

b. Obtain your Claim Certificate or Proof of Purchase document. This document accompanies every Cisco MDS switch.

c. Locate the Product Authorization Key (PAK) from the Claim Certificate or Proof of Purchase document.

d. A URL is provided in the Claim Certificate or Proof of Purchase document for your product.

e. Locate and access the specified URL that applies to your switch's and enter the switch serial number and PAK. The license key file is sent to you by email. The license key file is digitally signed to be used only on the switch for which it was requested. The requested features are also enabled after the Cisco MDS NX-OS software on the specified switch accesses the license key file.

Note Install the license file in the specified Cisco MDS 9000 Series Multilayer switch without modifying the key.

For more information on licensing, see the *Cisco MDS 9000 Series NX-OS Licensing Guide*.

Step 8 Install the license key file when you receive it by email. Perform the following steps:

a. Copy the license file to bootflash using TFTP or SCP.

b. Install the license file by running the **install license** command on the active supervisor module, from the switch console.

```
switch# install license bootflash:license_file.lic
Installing license ..done
```

Note If you provide a target name for the license key file, the file is installed with the specified name. Otherwise, the filename specified in the license key file is used to install the license.

c. Exit the switch console.

For more information on licensing, see the *Cisco MDS 9000 Series NX-OS Licensing Guide*.

Step 9 Ensure that the required space is available in the bootflash: directory for the image files to be copied using the **dir bootflash:** command. Use the **delete bootflash:***filename* command to remove unnecessary files.

```
switch# dir bootflash:

        4096    Nov 23 10:47:46 2018  .patch/
       68230   Dec 10 11:27:20 2018  backup_10_12_2018
        4096    Dec 12 10:23:54 2018  bootflash/
    52692992    Aug 24 06:18:35 2018  diag-bz-npu-F26
    82725888    Aug 24 06:18:24 2018  diag-sup3dc3-bz-F26.bin
     1048576    Aug 24 05:47:10 2018  diag_test_file
       34646    Jan 28 14:45:50 2019  ethpm_act_logs.log
      270463    Jan 28 14:47:51 2019  ethpm_im_tech.log
       30627    Jan 28 14:46:50 2019  ethpm_mts_details.log
          73    Jan 28 14:46:50 2019  ethpm_syslogs.log
     1935271    Jan 28 14:47:50 2019  ethpm_tech.log
       12831    Dec 07 15:57:20 2018  log1
        4096    Feb 07 13:13:47 2019  lost+found/
     4421896    May 02 19:32:22 2019  m9700-sf4ek9-dplug-mz.9.2.1.bin
     4421857    May 07 12:18:16 2019  m9700-sf4ek9-dplug-mz.9.2.1.bin
    60380672    Apr 29 16:15:25 2019  m9700-sf4ek9-kickstart-mz.9.2.1.bin
    60380672    May 02 19:32:34 2019  m9700-sf4ek9-kickstart-mz.9.2.1.bin
    60380672    May 07 12:19:05 2019  m9700-sf4ek9-kickstart-mz.9.2.1.bin
   433279746    Apr 29 16:32:42 2019  m9700-sf4ek9-mz.9.2.1.bin
   433304076    May 02 19:47:52 2019  m9700-sf4ek9-mz.9.2.1.bin
     1548886    May 02 19:47:58 2019  m9700-sf4ek9-mz.9.2.1.tar.gz
   433423429    May 07 12:33:27 2019  m9700-sf4ek9-mz.9.2.1.bin
     1548937    May 07 12:33:35 2019  m9700-sf4ek9-mz.9.2.1.tar.gz
        4096    Mar 26 09:54:14 2019  scripts/
     1286622    Mar 21 15:53:25 2019  sysmgrconfig
       11082    Aug 24 06:14:41 2018  temp.log

Usage for bootflash://sup-local
 3213733888 bytes used
  500277248 bytes free
 3714011136 bytes total
```

Note Before downloading and installing Cisco MDS NX-OS software, verify that the release is supported by your Cisco MDS reseller. If you purchased support from a Cisco reseller, contact them directly for more information. Otherwise, contact Cisco Technical support: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

Step 10 If you need more space on the active supervisor module bootflash, delete the files that are not required to make space available:

```
switch# delete bootflash: m9700-sf3ek9-kickstart-mz.8.3.1.bin
switch# delete bootflash: m9700-sf3ek9-mz.8.3.1.bin
```

Step 11 Verify that there is space available on the standby supervisor module bootflash on a Cisco MDS 9700 Series Multilayer switch:

```
switch# attach mod x (where x is the module number of the standby supervisor)
switch(standby)# dir bootflash:

4096    Nov 23 10:47:46 2018  .patch/
68230    Dec 10 11:27:20 2018  backup_10_12_2018
       4096    Dec 12 10:23:54 2018  bootflash/
   52692992    Aug 24 06:18:35 2018  diag-bz-npu-F26
   82725888    Aug 24 06:18:24 2018  diag-sup3dc3-bz-F26.bin
    1048576    Aug 24 05:47:10 2018  diag_test_file
      34646    Jan 28 14:45:50 2019  ethpm_act_logs.log
     270463    Jan 28 14:47:51 2019  ethpm_im_tech.log
      30627    Jan 28 14:46:50 2019  ethpm_mts_details.log
         73    Jan 28 14:46:50 2019  ethpm_syslogs.log
    1935271    Jan 28 14:47:50 2019  ethpm_tech.log
      12831    Dec 07 15:57:20 2018  log1
       4096    Feb 07 13:13:47 2019  lost+found/
    4421896    May 02 19:32:22 2019  m9700-sf4ek9-dplug-mz.9.2.1.bin
    4421857    May 07 12:18:16 2019  m9700-sf4ek9-dplug-mz.9.2.1.bin
   60380672    Apr 29 16:15:25 2019  m9700-sf4ek9-kickstart-mz.9.2.1.bin
   60380672    May 02 19:32:34 2019  m9700-sf4ek9-kickstart-mz.9.2.1.bin
   60380672    May 07 12:19:05 2019  m9700-sf4ek9-kickstart-mz.9.2.1.bin
  433279746    Apr 29 16:32:42 2019  m9700-sf4ek9-mz.9.2.1.bin
  433304076    May 02 19:47:52 2019  m9700-sf4ek9-mz.9.2.1.bin
    1548886    May 02 19:47:58 2019  m9700-sf4ek9-mz.9.2.1.tar.gz
  433423429    May 07 12:33:27 2019  m9700-sf4ek9-mz.9.2.1.bin
    1548937    May 07 12:33:35 2019  m9700-sf4ek9-mz.9.2.1.tar.gz
       4096    Mar 26 09:54:14 2019  scripts/
    1286622    Mar 21 15:53:25 2019  sysmgrconfig
      11082    Aug 24 06:14:41 2018  temp.log

Usage for bootflash://sup-local
 3213733888 bytes used
  500277248 bytes free
 3714011136 bytes total
switch(standby)# exit (to return to the active supervisor)
```

Step 12 If you need more space on the standby supervisor module bootflash on a Cisco MDS 9700 Series Multilayer switch, delete the files that are not required to make space available:

```
switch(standby)# delete bootflash: m9700-sf3ek9-kickstart-mz.8.3.1.bin
switch(standby)# delete bootflash: m9700-sf3ek9-mz.8.3.1.bin
```

Step 13 Access the Software Download Center using this URL:

http://www.cisco.com/cisco/software/navigator.html

You are prompted to log in, use your Cisco username and password.

Step 14 Select the required Cisco MDS NX-OS Release 8.x image file, depending on the release you are installing.

The Technical Support Encryption Software Export Distribution Authorization form is displayed.

Step 15 Enter the relevant details in this form, to obtain authorization.

Step 16 After obtaining the authorization, download the files to an FTP or TFTP server.

Note Ensure that you have configured an FTP or TFTP server where the files can be downloaded.

Step 17 Copy the Cisco MDS NX-OS kickstart and system images from the FTP or TFTP server to the active supervisor module bootflash.

When you download an image file, change your TFTP environment's IP address or Domain Name System (DNS) name to the path where the files are located.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf4ek9-kickstart-mz.9.2.1.bin
bootflash:m9700-sf4ek9-kickstart-mz.9.2.1.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf4ek9-mz.9.2.1.bin
bootflash:m9700-sf4ek9-mz.9.2.1.bin
```

Step 18 Verify that the switch is running the required software version, using the **show version** command:

```
switch# show version

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2018, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php

Software
BIOS: version 3.2.0
kickstart: version 9.2(1)
system: version 9.2(1)
BIOS compile time: 08/9/2021
kickstart image file is: bootflash:///m9700-sf3ek9-kickstart-mz.9.2.1.bin
kickstart compile time: 11/30/2018 12:00:00 [11/30/2018 23:18:49]
system image file is: bootflash:///m9700-sf3ek9-mz.9.2.1.bin
system compile time: 11/30/2018 12:00:00 [12/01/2018 00:45:13]


Hardware
cisco MDS 9706 (6 Slot) Chassis ("Supervisor Module-3")
Intel(R) Xeon(R) CPU with 8167760 kB of memory.
Processor Board ID JAE17440HVW

Device name: sw-9706-213
bootflash: 3915776 kB
slot0: 0 kB (expansion flash)

Kernel uptime is 0 day(s), 0 hour(s), 57 minute(s), 19 second(s)

Last reset at 818200 usecs after Mon Aug 9 13:49:17 2021
Reason: Reset triggered due to
Switchover************************************************************
```

Step 19 Verify that your switch is running compatible hardware. For more information, see the corresponding version of the *Cisco MDS 9000 Series Release Notes*.

Step 20 Use the **show interface mgmt** *number* **standby** command to verify that the standby supervisor's mgmt0 link is up.

Step 21 Perform the upgrade by running the **install all** command.

The following example displays the result of the **install all** command if the system and kickstart files are specified locally. The example shows the command issued on a Cisco MDS 9700 Series Multilayer switch.

```
switch# install all kickstart m9700-sf4ek9-kickstart-mz.9.2.1.bin system
m9700-sf4ek9-mz.9.2.1.bin
Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9700-sf4ek9-mz.9.2.1.bin for boot variable "system".
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "lctsh" version from image bootflash:/m9700-sf4ek9-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9700-sf4ek9-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Extracting "lc2dce-mds" version from image bootflash:/m9700-sf4ek9-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Extracting "slc4xb" version from image bootflash:/m9700-sf4ek9-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9700-sf4ek9-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Extracting "slcf32" version from image bootflash:/m9700-sf4ek9-mz.9.2.1.bin
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module      bootable Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     2       yes   non-disruptive       rolling
     3       yes   non-disruptive       rolling
     4       yes   non-disruptive       rolling
     5       yes   non-disruptive         reset
     6       yes   non-disruptive         reset
    10       yes   non-disruptive       rolling


Other miscellaneous information for installation:
```

```
Module  info
------  --------------------------------
2  FC ports 1-24 are hitless, IPS 1-8 are hitful, and Intelligent Applications running are
hitful


Images will be upgraded according to following table:
Module       Image Running-Version (pri:alt) New-Version  Upg-Required
------  ----------  ----------------------------------------  --------------------
2 lctsh            8.3(2)                 8.4(1)           yes
2 bios          v4.2.14(03/30/2018):v4.2.14(03/30/2018)    no
3 lc2dce-mds       8.3(2)                 8.4(1)           yes
3 bios          v2.0.32(12/16/13) v2.0.32(12/16/13)         no
4 slc4xb           8.3(2)                 8.4(1)           yes
4 bios          v1.10.21(11/26/12)v1.10.21(11/26/12)        no
5 system           8.3(2)                 8.4(1)           yes
5 kickstart        8.3(2)                 8.4(1)           yes
5 bios          v3.1.0(02/27/2013)v3.2.0(09/27/2018)        yes
6 system           8.3(2)                8.4(1)            yes
6 kickstart        8.3(2)                8.4(1)            yes
6 bios          v3.1.0(02/27/2013) v3.2.0(09/27/2018)       yes
10 slcf32          8.3(2)                 8.4(1)           yes
10 bios         v4.1.49(01/29/2017)v4.1.49(01/29/2017)      no

Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin to standby.
[####################] 100% -- SUCCESS

Syncing image bootflash:/m9700-sf4ek9-mz.9.2.1.bin to standby.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 2:  Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 3:  Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 4:  Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 5:  Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 6:  Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Module 10:  Upgrading bios/loader/bootrom/power-seq.
```

```
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS
2019 Mar 23 15:38:37 switch %PLATFORM-2-MOD_REMOVE: Module 6 removed (Serial number
JAE17480AL1)
2019 Mar 23 15:40:58 switch %USBHSD-STANDBY-2-MOUNT: logflash: online
2019 Mar 23 15:42:06 switch %PLATFORM-1-PFM_ALERT: Disabling ejector based shutdown on sup
in slot 6

Module 6: Waiting for module online.
 -- SUCCESS
2019 Mar 23 15:42:30 switch %PLATFORM-1-PFM_ALERT: Enabling ejector based shutdown on sup
in slot 5

Notifying services about the switchover.
[####################] 100% -- SUCCESS


"Switching over onto standby".

>>>
>>>
>>>
NX7k SUP BIOS version ( 3.02 ) : Build - 03/23/2019 02:38:22
PM FPGA Version : 0x00000014
Power sequence microcode revision - 0x00000001 : card type - f10156EEA0
Booting Spi Flash : Primary
  CPU Signature - 0x000106e4: Version - 0x000106e0
  CPU - 1 : Cores - 4 : HTEn - 1 : HT - 2 : Features - 0xbfebfbff
  FSB Clk - 532 Mhz :  Freq - 2152 Mhz - 2128 Mhz
  MicroCode Version : 0x00000005
  Memory - 8192 MB : Frequency - 1067 MHZ
  Loading Bootloader: Done
  IO FPGA Version   : 0x10001
  PLX Version       : 861910b5
Bios digital signature verification - Passed

Reset Reason Registers: 0x1 0x0
 Filesystem type is ext2fs, partition type 0x83


             GNU GRUB  version 0.97

Autobooting bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin bootflash:/m9700-
sf4ek9-mz.9.2.1.bin..
 Filesystem type is ext2fs, partition type 0x83
Booting kickstart image: bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin...
.....................................................................................
.....................................................................................
.............................................................
Kickstart digital signature verification Successful
Image verification OK

INIT: version 2
boot device node /dev/sda
obfl flash device node /dev/sdb
USB log flash  device not found ...
Checking obfl filesystem.
Checking all filesystems..r.r.r.R. done.
fdisk: cannot open /dev/hd-log: No such file or directory
No partition found for LOG
LOG partition is less than 1G, size found = 0
mounting Log 1
Starting mcelog daemon
cat: /var/log/log_flash_node: No such file or directory
```

```
Initializing the LOG flash
LOG Partitioning result code = 0
rrCreating logflash directories
Loading system software
/bootflash//m9700-sf3ek9-mz.9.2.1.bin read done
System image digital signature verification successful.
Uncompressing system image: bootflash:/m9700-sf4ek9-mz.9.2.1.bin Fri Mar 23 15:46:29 IST
2019
blogger: nothing to do.
C
..done Fri Mar 23 15:46:34 IST 2019
INIT: Entering runlevel: 3
Starting portmap daemon...
starting statd: done
starting 8 nfsd kernel threads: done
starting mountd: done
System is coming up ... Please wait ...
2019 Mar 23 15:48:10 switch %LICMGR-2-LOG_LIC_NO_LIC: No license(s) present for feature
ENTERPRISE_PKG. Application(s) shut down in 96 days.

>>>
>>>
NX7k SUP BIOS version ( 3.02 ) : Build - 03/23/2019 02:38:22
PM FPGA Version : 0x00000014
Power sequence microcode revision - 0x00000001 : card type - f10156EEA0
Booting Spi Flash : Primary
  CPU Signature - 0x000106e4: Version - 0x000106e0
  CPU - 1 : Cores - 4 : HTEn - 1 : HT - 2 : Features - 0xbfebfbff
  FSB Clk - 532 Mhz :  Freq - 2153 Mhz - 2128 Mhz
  MicroCode Version : 0x00000005
  Memory - 8192 MB : Frequency - 1067 MHZ
  Loading Bootloader: Done
  IO FPGA Version   : 0x10001
  PLX Version       : 861910b5
Bios digital signature verification - Passed

Reset Reason Registers: 0x0 0x8
 Filesystem type is ext2fs, partition type 0x83


              GNU GRUB  version 0.97

Autobooting bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin bootflash:/m9700-
sf3ek9-mz.9.2.1.bin..
 Filesystem type is ext2fs, partition type 0x83
Booting kickstart image: bootflash:/m9700-sf4ek9-kickstart-mz.9.2.1.bin...
.....................................................................
.....................................................................
.............................................................
Kickstart digital signature verification Successful
Image verification OK

INIT: version 2
boot device node /dev/sda
obfl flash device node /dev/sdb
log flash device node /dev/sdc
Checking obfl filesystem.
Checking all filesystems..r.r.r..r done.
Mounting Log Dir /logflash
mounting Log 0
Starting mcelog daemon
reCreating logflash directories
Loading system software
/bootflash//m9700-sf4ek9-mz.9.2.1.bin read done
```

```
System image digital signature verification successful.
Uncompressing system image: bootflash:/m9700-sf4ek9-mz.9.2.1.bin Fri Mar 23 15:40:22 IST
2019
blogger: nothing to do.
C
..done Fri Mar 23 15:40:27 IST 2019
INIT: Entering runlevel: 3
Starting portmap daemon...
starting statd: done
starting 8 nfsd kernel threads: done
starting mountd: done
2019 Mar 23 15:40:58 switch %USBHSD-2-MOUNT: logflash: online
2019 Mar 23 15:41:12 switch %LICMGR-2-LOG_LIC_NO_LIC: No license(s) present for feature
ENTERPRISE_PKG. Application(s) shut down in 96 days.

Continuing with installation, please wait

Module 6: Waiting for module online.
 -- SUCCESS
2019 Mar 23 15:42:35 switch %KERN-2-SYSTEM_MSG: [  203.622504] Switchover started by
redundancy driver - kernel
2019 Mar 23 15:42:36 switch %SYSMGR-2-HASWITCHOVER_PRE_START: This supervisor is becoming
active (pre-start phase).
2019 Mar 23 15:42:36 switch %SYSMGR-2-HASWITCHOVER_START: Supervisor 6 is becoming active.
2019 Mar 23 15:42:36 switch %SYSMGR-2-SWITCHOVER_OVER: Switchover completed.
2019 Mar 23 15:42:37 switch %PLATFORM-1-PFM_ALERT: Disabling ejector based shutdown on sup
in slot 6
2019 Mar 23 15:42:41 switch %LICMGR-2-LOG_LIC_NO_LIC: No license(s) present for feature
ENTERPRISE_PKG. Application(s) shut down in 96 days.
2019 Mar 23 15:42:41 switch %LICMGR-2-LOG_LIC_NO_LIC: No license(s) present for feature
MAINFRAME_PKG. Application(s) shut down in 120 days.
2019 Mar 23 15:42:41 switch %LICMGR-2-LOG_LICAPP_NO_LIC: Application Fabric Binding
running without MAINFRAME_PKG license, shutdown in 120 days
2019 Mar 23 15:42:42 switch %CALLHOME-2-EVENT: LICENSE_ALERT

Module 2: Non-disruptive upgrading.
[#                   ]   0%2019 Mar 23 15:49:27 switch %PLATFORM-1-PFM_ALERT: Enabling
ejector based shutdown on sup in slot 6
2019 Mar 23 15:52:05 switch %PMON-SLOT2-2-PMON_CRIT_INFO: Port Monitor Critical
Information: Config download success .
[####################] 100% -- SUCCESS

Module 3: Non-disruptive upgrading.
[####################] 100% -- SUCCESS

Module 4: Non-disruptive upgrading.
[#                   ]   0%2019 Mar 23 15:57:44 switch %PMON-SLOT4-2-PMON_CRIT_INFO: Port
Monitor Critical Information: Config download success .
[####################] 100% -- SUCCESS

Module 10: Non-disruptive upgrading.
[#                  ]   0%2019 Mar 23 16:00:00 switch %PMON-SLOT10-2-PMON_CRIT_INFO: Port
Monitor Critical Information: Config download success .
[####################] 100% -- SUCCESS

Install has been successful.
switch# You have now upgraded the Cisco NX-OS software in your switch.
```

Upgrading to Cisco MDS NX-OS Release 9.x on a Cisco MDS Fabric Switch

This section describes how to perform nondisruptive upgrades on the following Cisco MDS fabric switches:

- Cisco MDS 9132T Multilayer Fabric Switch
- Cisco MDS 9148T Multilayer Fabric Switch
- Cisco MDS 9148S Multilayer Fabric Switch
- Cisco MDS 9220i Multilayer Fabric Switch
- Cisco MDS 9250i Multiservice Fabric Switch
- Cisco MDS 9396S Multilayer Fabric Switch
- Cisco MDS 9396T Multilayer Fabric Switch

Guidelines and Limitations for a Nondisruptive Upgrade on a Cisco MDS Fabric Switch

Before attempting to upgrade software images on the fabric switches, follow these guidelines:

- During the upgrade, the fabric must be stable.
- Do not perform the following configuration activities during an upgrade:
  - Zoning changes
  - Telnet sessions
  - Schedule changes
  - Switch cabling
  - Addition or removal of physical devices
- Configure the Fabric Shortest Path First (FSPF) timers to the default value of 20 seconds.
- If Cisco Fabric Services commits are pending in the fabric, the upgrade is aborted.
- If a zone server merge is in progress, the upgrade is aborted.
- If the upgrade is aborted due to a service not being ready for an upgrade, you are prompted to enter the **show install all failure-reason** command to identify the reason.
- Use the Software Install wizard to check whether sufficient space is available in the system to load the new images. Depending on the available space, you must either terminate the upgrade or proceed with a disruptive upgrade.
- Enter the **no logging level all** command before beginning the upgrade. If you do not enter this command, a failure might occur due to the debug system log messages being printed. This failure might result in the control plane downtime exceeding 80 seconds.
- When the installation is completed, the supervisor kickstart image, supervisor system image, module image, and the system BIOS are all updated.
- Nondisruptive upgrade on fabric switches disrupt the control plane for about 80 seconds. The software upgrade can be disruptive, if the upgrade process goes beyond the period it can be stopped gracefully, or if a failure occurs.

- If Virtual Router Redundancy Protocol (VRRP) is running on the mgmt0 interface, and the switch being upgraded is the master, a new master is selected. This situation cannot be avoided because the mgmt0 interface goes down when the control plane goes down.
- On the Cisco MDS 18/4-port Multiservice Module, upgrading the 4-Gigabit Ethernet ports for the hybrid Supervisor 18/4 module is disruptive.
- Perform the upgrade process by using the console port. This method enables you to log your session to a file (in case you need it later for troubleshooting). Telnet sessions are lost when the switch is rebooted. Therefore, if you want to view the process in its entirety, ensure that you use the console port.
- Before performing an upgrade, use the **show install all impact** command to view the effect of updating the system from the running image to another specified image.

To upgrade to Cisco MDS NX-OS Release 9.2(1) from an earlier 9.x release, on a Cisco MDS fabric switch, perform the following steps:

Step 1 Verify that the system image files for the upgrade are present on the active supervisor module bootflash:

```
switch# dir bootflash:

25863680    Sep 23 12:02:16 2021 m9250-s5ek9-kickstart-mz.9.2.1.bin
25864704    Jan 05 12:21:26 2022 m9250-s5ek9-kickstart-mz.9.2.2.bin

Usage for bootflash://sup-local

2838728704 bytes used
520916992 bytes free
3359645696 bytes total
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to bootflash. You can obtain the software image file from the Cisco.com Software Download Center at http://www.cisco.com/cisco/software/navigator.html

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9250-s5ek9-kickstart-mz.9.2.2.bin
bootflash:m9250-s5ek9-kickstart-mz.9.2.2.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9250-s5ek9-mz.9.2.2.bin
bootflash:m9250-s5ek9-mz.9.2.2.bin
```

Step 3 Ensure that the required space is available on the switch:

```
switch# dir bootflash:
25863680    Sep 23 12:02:16 2017  m9250-s5ek9-kickstart-mz.9.2.1.bin
25864704    Sep 05 12:21:26 2018  m9250-s5ek9-kickstart-mz.9.2.2.bin

Usage for bootflash://sup-local
  120695976 bytes used
   63863640 bytes free
  184559616 bytes total
```

Step 4 If you need more space on the switch, delete the files that are not required:

```
switch# delete bootflash: m9250-s5ek9-kickstart-mz.9.2.1.bin
```

Step 5 Save the configuration using the **copy running-config startup-config** command:

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

You can also back up your existing configuration to a file, using the **copy running-config bootflash:backup_config.txt** command. You can add a date reference to the .txt filename to identify the file later.

Step 6 Save a copy of the **show tech-support** command output of the switch. For more information, see https://www.cisco.com/c/en/us/td/docs/dcn/whitepapers/how-to-collect-logs-cisco-mds.html#Theshowtechsupportcommand.

Step 7 Perform the upgrade by running the **install all** command:

```
switch# install all kickstart m9250-s5ek9-kickstart-mz.9.2.2.bin system
m9250-s5ek9-mz.9.2.2.bin
Installer will perform compatibility check first. Please wait.
y
Verifying image bootflash:/m9250-s5ek9-kickstart-mz.9.2.2.bin for boot variable
"kickstart".
[#                    ]   0%
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9250-s5ek9-mz.9.2.2.bin for boot variable "system".
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9250-s5ek9-mz.9.2.2.bin
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/m9250-s5ek9-kickstart-mz.9.2.2.bin
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9250-s5ek9-mz.9.2.2.bin
[####################] 100% -- SUCCESS

Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable Impact  Install-type  Reason
------  -------- --------------  ------------  ------
1       yes        non-disruptive         reset


Other miscellaneous information for installation:
Module  info
------  --------------------------------
1  FC ports 1-40 and FCoE ports 1-8 are hitless, IPS 1-2 are hitful, and Intelligent
Applications running are hitful


Images will be upgraded according to following table:
Module             Image         Running-Version             New-Version  Upg-Required
------  ----------  ----------------------------------------  --------------------  -----
1            system                9.2(1)                 9.2(2)           yes
1         kickstart                9.2(1)                 9.2(2)           yes
```

```
1 bios  v2.1.17(01/08/14):v2.1.17(01/08/14)       v2.1.17(01/08/14)          no


Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.
[####################] 100% -- SUCCESS

Loading images into memory.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS

Saving mts state.
[####################] 100% -- SUCCESS

Reloading the kernel to proceed with the upgrade.
All telnet and ssh connections will now be temporarily terminated.


>> NX7--LC-loader-02.01.17 (June 8 2019 - 16:30:41), Build: 02.01.17

CPU0:  8572E, Version: 2.2, (0x80e80022)
Core:  E500, Version: 3.0, (0x80210030)
Clock Configuration:
       CPU:1066.672 MHz, CCB:533.336 MHz,
       DDR:266.668 MHz (533.336 MT/s data rate), LBC:33.334 MHz
L1:    D-cache 32 kB enabled
       I-cache 32 kB enabled
Board: 9044, IOFPGA: 0x0000001A, SPROM: 0xAB
Boot flash : Primary
I2C:   ready
DRAM:  Initializing
DDR: dimm type 10, registered 1
DDR: dimm type 10, registered 1
    DDR:  4 GB
L2:    1024 KB enabled
Using default environment

In:    serial
```

```
Out:   serial
Err:   serial
Net:   INFO: Net boot mode = 1
INFO: Net boot mode = 1
INFO: Board will come up MGMT interface
INFO: MAC address is: b8:38:61:4a:24:40
 eTSEC2 board phy 3
INFO: Net boot mode = 1
eTSEC2
IDE:   Bus 0: OK
  Device 0: Model: UGB30STC4000Z4-EBY-ASD Firm: FW100511 Ser#: UNIGEN3     30021309
            Type: Hard Disk
            Capacity: 3907.9 MB = 3.8 GB (8003520 x 512)

Booting image bootflash://m9250-s5ek9-kickstart-mz.9.2.2.bin
25968640 bytes read
 NBI at 08000000 size 134217728

Booting image at addr 0x00800000 ...
Memory <- <0x0 0x0 0x1 0x0> (4096MB)
ethernet0: local-mac-address <- b8:38:61:4a:24:40
ethernet1: local-mac-address <- 00:e0:0c:00:01:fd
ethernet2: local-mac-address <- 00:e0:0c:00:02:fd
CPU clock-frequency <- 0x3f941f80 (1067MHz)
CPU timebase-frequency <- 0x3f941f8 (67MHz)
CPU bus-frequency <- 0x1fca0fc0 (533MHz)

Image starting: loaded at 0x00800000 (sp: 0x7fedc4c0)
Allocating 0x620d88 bytes for kernel ...
unzipping (0x00000000 <- 0x00817000:0x00de3838)...done 0x5bc060 bytes
Using loader supplied ramdisk at 0x2800000-0x3ddaa00
initrd head: 0x1f8b0808

Linux/PowerPC load: rw root=/dev/ram0 rdbase=0x7000000 card_index=9044 maxcpus=2 ip=off
ramdisk_size=262144 noquiet obfl_type_ide=1 kgdboc=ttyS0,9600,B isanimg_loc=0x6000000
isanimg_size=0x400 console=ttyS0,9600n8nn loader_ver="02.01.17" card_index=9044 quiet
bootdev=ide0 server_ip=171.69.21.28 ksimg=/m9250-s5ek9-kickstart-mz.9.2.2.bin
isanimg=/m9700-sf4ek9-mz.9.2.1.bin Finalizing device tree... flat tree at 0xdf0140
ï¿½setup_arch: bootmem
mpc85xx_ds_setup_arch()
arch: exit

[    0.060041] Host controller irq 26
[    0.134631] Assign root port irq 26
[    0.755227] physmap-flash physmap-flash.0: Could not reserve memory region
[    1.032812] Enabling all PCI devices
INIT: Checking all filesystems.....retval=[0]
 done.
Loading system software
Uncompressing system image: bootflash:///m9250-s5ek9-kickstart-mz.9.2.2.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Load plugins that defined in image conf: /isan/plugin_img/img.conf
No Patching support on this platform
Loading plugin 0: core_plugin...
No Patching support on this platform
Enter pboot_chk_compatibility
num srgs 1
0: swid-core-s5ek9, swid-core-s5ek9
num srgs 1
0: swid-sup-ali-ks, swid-sup-ali-ks
INIT: Entering runlevel: 3

[  127.215099] clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD
[  127.293946] clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD
```

```
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.

Status for linecard upgrade.
[####################] 100% -- SUCCESS

Performing supervisor state verification.
[####################] 100% -- SUCCESS

Supervisor non-disruptive upgrade successful.

Install has been successful.
```

Step 8 Log in to the switch:

```
MDS Switch
x.x.x.x login: admin
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2014, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
```

Step 9 Run the **show version** command:

```
switch# show version

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2019, 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 2.1.17
  loader:    version N/A
  kickstart: version 9.2(2) [build 9.2(2)]
  system:    version 9.2(2) [build 9.2(2)]
  BIOS compile time:       01/08/14
```

```
  kickstart image file is: bootflash:///m9250-s5ek9-kickstart-mz.9.2.2.bin
  kickstart compile time: 8/9/2021 23:00:00 [08/09/2021 04:18:10]
  system image file is:    bootflash:///m9250-s5ek9-kickstart-mz.9.2.2.bin
  system compile time: 8/9/2019 23:00:00 [08/09/2021 07:09:57]


Hardware
  cisco MDS 9250i 40 FC 2 IPS 8 FCoE (2 RU) Chassis ("40FC+8FCoE+2IPS Supervisor
")
  Motorola, e500v2 with 4088636 kB of memory.
  Processor Board ID JAF1804AAFG

  Device name: MDS9250i
  bootflash:    4001760 kB

Kernel uptime is 0 day(s), 0 hour(s), 7 minute(s), 42 second(s)

Last reset at 288238 usecs after Mon Aug 9 11:40:56 2021
  Reason: Reset due to upgrade
  System version: 9.2(1)
  Service:

plugin
  Core Plugin
```

Step 10 Verify the status of the modules on the switch, using the **show module** command:

```
switch# show module

Mod Ports Module-Type Model Status
--- ----- ------------------------------- ------------------ ----------
1 50 40FC+8FCoE+2IPS Supervisor DS-C9250I-K9-SUP active *

Mod Sw Hw World-Wide-Name(s) (WWN)
--- --------------- ------ --------------------------------------------------
1 8.4(1) 1.0 20:01:00:2a:6a:1b:64:d0 to 20:28:00:2a:6a:1b:64:d0


Mod MAC-Address(es) Serial-Num
--- -------------------------------------- ----------
1 b8-38-61-4a-25-c0 to b8-38-61-4a-25-cf JAF1804AAFG
```

Step 11 To display the status of a nondisruptive upgrade on a fabric switch, use the **show install all status** command. The command output displays the status only after the switch has rebooted with the new image. All the actions preceding the reboot are not captured in this output because when you enter the **install all** command using a Telnet session, the session is disconnected when the switch reboots. When you reconnect to the switch through a Telnet session, the upgrade may already be complete, in which case, the output displays the status of the upgrade.

```
switch# show install all status

This is the log of last installation.

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.

Status for linecard upgrade.
-- SUCCESS

Performing supervisor state verification.
-- SUCCESS
```

```
Install has been successful
```

Troubleshooting a Nondisruptive Upgrade on a Fabric Switch

When a nondisruptive upgrade begins, the system notifies all the services that an upgrade is about to start, and finds out whether the upgrade can proceed. If a service cannot allow the upgrade to proceed immediately, for example, if Fabric Shortest Path First (FSPF) timers are not configured to the default value, or a Cisco Fabric Services operation is in progress, the service terminates the upgrade. If such a situation occurs, you are prompted to enter the **show install all failure-reason** command to determine the reason why the upgrade cannot proceed.

```
Do you want to continue with the installation (y/n)? [n] y

Install is in progress, please wait.

Notifying services about the upgrade.
[# ] 0% -- FAIL. Return code 0x401E0066 (request timed out).

Please issue "show install all failure-reason" to find the cause of the failure.<---system
prompt to enter the show all failure-reason command.

Install has failed. Return code 0x401E0066 (request timed out).
Please identify the cause of the failure, and try 'install all' again.

switch# show install all failure-reason
Service: "cfs" failed to respond within the given time period.
```

When the upgrade is in progress, if any failures occur, for example, if a save runtime state failure or module upgrade failure occurs, the switch is rebooted disruptively because the changes cannot be rolled back. In this case, the upgrade fails, but you are not prompted to enter the **show install all failure-reason** command because the command does not yield any useful information.

If you need additional information to determine why an upgrade is unsuccessful, you can obtain the details by using the **show tech-support** command output, and from the console output from the installation, if available.

Moving From an NPE Image to a non-NPE Image and Vice Versa

The following section describes how to upgrade from a no payload encryption (NPE) image to a non-NPE image and vice versa.

Note

- If the image file name includes *npe* text, the image is an NPE image. If the image file name does not include *npe* text, the image is a non-NPE image.
- If you are moving from using an NPE image to a non-NPE image, we recommend that you use the corresponding non-NPE Cisco MDS NX-OS release image and vice versa.
  If you are upgrading from one release of Cisco MDS NX-OS to a newer release, and as part of this

activity, you are moving from using an NPE image to a non-NPE image, we recommended that you first upgrade the existing NPE Cisco MDS NX-OS release image and then upgrade to the respective non-NPE Cisco MDS NX-OS release image and vice versa.

- Use the console connection for firmware upgrades. Be aware that if you are upgrading through the management interface, you must have a working connection to both supervisors, as this process causes a switchover and the current standby supervisor will be active after the upgrade.

Step 1 Log in to Cisco.com to access the links provided in this document. To log in to Cisco.com, go to the URL http://www.cisco.com/ and click **Log In** at the top of the page. Enter your Cisco Systems user name and password.

Note Unregistered Cisco.com users cannot access the links provided in this document.

Step 2 Verify the following physical connections for the switch:

- The console port is physically connected to a computer terminal (or terminal server).
- The management 10/100/1000 Ethernet port (mgmt0) is connected to an external hub, switch, or router.
- On switches with dual supervisor modules, both supervisor modules must have the management 10/100/1000 Ethernet ports (mgmt0) connected to an external hub, switch, or router.

These procedures are specified in the hardware installation guide for the required product.

Step 3 Log in to the switch.

Step 4 Issue the **copy running-config startup-config** command to store your current running configuration. You can also create a backup of your existing configuration to a file by issuing the **copy running-config bootflash:backup_config.txt** command.

Step 5 Verify that the requested license files installed in the switch are displayed in response to the **show license usage** command.

Note The switch is initially shipped with the required licenses installed in the system; however, the initial license file will not cover unlicensed features that may be used during the grace period. If no license is displayed at this point, perform Step 6 and Step 7 to install the required licenses. If the required licenses are displayed at this point, skip Step 6 and Step 7 and move to Step 8.

The example CLI output for a valid license follows:

```
switch# show license usage
Feature                      Ins  Lic   Status Expiry Date Comments
                                Count
--------------------------------------------------------------------------------
FM_SERVER_PKG                 No    -   Unused             -
MAINFRAME_PKG                 No    -   Unused             -
ENTERPRISE_PKG                Yes   -   Unused never       -
--------------------------------------------------------------------------------
```

Step 6 Install licenses (if necessary) to ensure that the required features are available on the switch. Perform the following steps:

a. Use the **show license host-id** command to obtain the serial number for your switch. The host ID is also referred to as the switch serial number.

```
switch# show license host-id
License hostid: VDH=JAF1721AEQG
```

Tip Use the entire ID that appears after the colon (:) sign. In this example, the host ID is VDH=JAF1721AEQG.

b. Obtain your Claim Certificate or the Proof of Purchase document. This document accompanies every Cisco MDS switch.

c. Locate the Product Authorization Key (PAK) from the Claim Certificate or Proof of Purchase document.

d. Locate the website URL from the Claim Certificate or Proof of Purchase document.

e. Access the specified URL that applies to your switch and enter the switch serial number and the PAK. The license key file is sent to you by email. The license key file is digitally signed to authorize its use only on the switch for which it was requested. The requested features are also enabled once the NX-OS software on the specified switch accesses the license key file.

Caution Install the license file in the specified Cisco MDS 9000 Family switch without making any modifications.

Step 7 Install the license key file when you receive it by email. Perform the following steps:

a. Copy the license file to bootflash using TFTP or SCP.

b. Perform the installation by issuing the **install license** command on the active supervisor module from the switch console.

```
switch# install license bootflash:license_file.lic
Installing license ..done
```

Note If you provide a target name for the license key file, the file is installed with the specified name. Otherwise, the file name specified in the license key file is used to install the license.

c. Exit the switch console.

Step 8 Ensure that the required space is available in the bootflash: directory for the image file(s) to be copied using the **dir bootflash:** command. Use the **delete bootflash:***filename* command to remove unnecessary files.

Note Before downloading and installing Cisco NX-OS software, verify that the release is supported by your Cisco System MDS reseller. If you purchased support through a Cisco Systems reseller, contact them directly for more information. Otherwise, contact Cisco Technical support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

```
switch# dir bootflash:
37011968    Apr 30 16:10:28 2014 m9700-sf4ek9-kickstart-mz-npe.8.4.2a.bin
195875124    Apr 30 12:55:14 2014 m9700-sf4ek9-mz-npe.8.4.2a.bin
Usage for bootflash://sup-local
```

```
    819736576 bytes used
    75313152 bytes free
    895049728 bytes total
```

Step 9 If you need more space on the active supervisor module bootflash, delete unnecessary files to make space available.

```
switch# delete m9700-sf4ek9-kickstart-mz-npe.8.4.2a.bin
switch# delete m9700-sf4ek9-mz-npe.8.4.2a.bin
```

Step 10 For switches with dual supervisor modules, verify that there is space available on the standby supervisor module bootflash on a switch.

```
switch# attach module x (where x is the module number of the standby supervisor)
switch(standby)# dir bootflash:
      12288     Aug 26 19:06:14 2011 lost+found/

16206848     Jul 01 10:54:49 2011 m9700-sf4ek9-kickstart-mz-npe.8.4.2a.bin
    78337129     Jul 01 10:33:52 2011 m9700-sf4ek9-mz-npe.8.4.2a.bin

Usage for bootflash://sup-local
  122811392 bytes used
   61748224 bytes free
  184559616 bytes total

switch(standby)# exit (to return to the active supervisor)
```

Step 11 For switches with dual supervisor modules, if you need more space on the standby supervisor module bootflash on a switch, delete unnecessary files to make space available.

```
switch(standby)# delete bootflash:m9700-sf4ek9-kickstart-mz-npe.8.4.2a.bin
switch(standby)# delete m9700-sf4ek9-mz-npe.8.4.2a.bin
```

Step 12 Access the Software Download Center using this URL:

http://www.cisco.com/cisco/software/navigator.html

If prompted to log in, use your Cisco system user ID and password.

Step 13 Select the same version of the NPE image file or non-NPE image file that the switch is currently running.

You see the Technical Support Encryption Software Export Distribution Authorization form.

Step 14 Complete the required forms to obtain authorization.

Step 15 Download the files to an FTP or TFTP server.

Step 16 Copy the Cisco MDS NX-OS kickstart and system images 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 tftp://tftpserver.cisco.com/MDS/m9700-sf4ek9-kickstart-mz.9.2.1.bin
bootflash:m9700-sf4ek9-kickstart-mz.9.2.1.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf4ek9-mz-npe.9.2.1.bin
bootflash:m9700-sf4ek9-mz-npe.9.2.1.bin
```

Step 17 Issue the **boot kickstart bootflash**:*filename* and **boot system bootflash**:*filename* commands to change the boot variables to point to the new image.

```
switch# configure terminal
switch(config)# boot kickstart bootflash:m9700-sf4ek9-kickstart-mz.9.2.1.bin
Performing image verification and compatibility check, please wait....
```

```
switch(config)# boot system bootflash:m9700-sf4ek9-mz-npe.9.2.1.bin
Performing image verification and compatibility check, please wait....
```

Step 18 Issue the **show incompatibility-all system** *filename* command to verify any incompatible hardware.

```
switch(config-if)# show incompatibility-all system m9700-sf4ek9-mz-npe.9.2.1.bin
Checking incompatible configuration(s)
No incompatible configurations

Checking dynamic incompatibilities:
-----------------------------------
No incompatible configurations
```

Step 19 Save the current running configuration to the startup configuration by issuing the **copy running-config startup-config** command.

```
switch(config)# copy running-config startup-config
[########################################] 100%
Copy complete.
```

Step 20 Issue the **show boot** command to check the current boot variable.

```
switch(config)# show boot

Current Boot Variables:

sup-1
kickstart variable = bootflash:/ m9700-sf4ek9-kickstart-mz.9.2.1.bin
system variable = bootflash:/ m9700-sf4ek9-mz-npe.9.2.1.bin
sup-2
kickstart variable = bootflash:/ m9700-sf4ek9-kickstart-mz.9.2.1.bin
system variable = bootflash:/ m9700-sf4ek9-mz-npe.9.2.1.bin
No module boot variable set

Boot Variables on next reload:

sup-1
kickstart variable = bootflash:/ m9700-sf4ek9-kickstart-mz.9.2.1.bin
system variable = bootflash:/ m9700-sf4ek9-mz-npe.9.2.1.bin
sup-2
kickstart variable = bootflash:/ m9700-sf4ek9-kickstart-mz.9.2.1.bin
system variable = bootflash:/ m9700-sf4ek9-mz-npe.9.2.1.bin
No module boot variable set
```

Step 21 Reload the switch by issuing the **reload** command.

```
switch(config)# reload
This command will reboot the system. (y/n)?  [n]
```

You have now upgraded the Cisco MDS NX-OS software in your existing switch.

Supported Downgrade Paths for Cisco MDS NX-OS Releases

The following section describes how to downgrade from Cisco MDS NX-OS Release 9.x to an earlier Cisco MDS NX-OS Release.

- Nondisruptive Downgrade Paths from Cisco MDS NX-OS Release 9.2(2), page 38
- Nondisruptive Downgrade Paths from Cisco MDS NX-OS Release 9.2(1), page 38

Nondisruptive Downgrade Paths from Cisco MDS NX-OS Release 9.2(2)

Table 5 Nondisruptive Downgrade Paths from NX-OS Release 9.2(2)

To MDS NX-OS Release	Nondisruptive Downgrade Paths and Ordered Downgrade Steps
MDS NX-OS:	
9.2(1)	Downgrade to the target release
8.1(x) and above releases	Downgrade to the target release
All 7.3(x) releases	1. Downgrade directly to MDS NX-OS Release 8.1(1b) 2. Downgrade to the target release
6.2(29) and above releases	1. Downgrade directly to MDS NX-OS Release 8.4(2c) 2. Downgrade to the target release
6.2(13a) until 6.2(27)	1. Downgrade directly to MDS NX-OS Release 8.1(1b) 2. Downgrade to the target release
All 6.2(x) releases prior to 6.2(13a)	1. Downgrade directly to MDS NX-OS Release 8.1(1b) 2. Downgrade to MDS NX-OS Release 6.2(13a) 3. Downgrade to the target release

Nondisruptive Downgrade Paths from Cisco MDS NX-OS Release 9.2(1)

Table 6 Nondisruptive Downgrade Paths from NX-OS Release 9.2(1)

To MDS NX-OS Release	Nondisruptive Downgrade Paths and Ordered Downgrade Steps
NX-OS:	
8.1(x) and above releases	Downgrade to the target release
All 7.3(x) releases	1. Downgrade directly to MDS NX-OS Release 8.1(1b) 2. Downgrade to the target release
6.2(29) and above releases	1. Downgrade directly to MDS NX-OS Release 8.4(2c) 2. Downgrade to the target release
6.2(13a) until 6.2(27)	1. Downgrade directly to MDS NX-OS Release 8.1(1b) 2. Downgrade to the target release
All 6.2(x) releases prior to 6.2(13a)	1. Downgrade directly to MDS NX-OS Release 8.1(1b) 2. Downgrade to MDS NX-OS Release 6.2(13a) 3. Downgrade to the target release

Downgrading from Cisco MDS NX-OS Release 9.x

This section includes the following topics:

Cisco MDS NX-OS Software Downgrade Guidelines

- Downgrading directly from Cisco MDS NX-OS Release 9.x to releases before Cisco MDS NX-OS Release 6.2(9) is not supported. In such a scenario, we recommend that you first downgrade to Cisco MDS NX-OS Release 6.2(13a) or higher and then downgrade to the required release.
- Downgrading directly from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(0)DY(1) is not supported. In such a scenario, we recommend that you first downgrade to Cisco MDS NX-OS Release 7.3(0)D1(1) and then upgrade to 7.3(0)DY(1).
- Downgrading directly from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(1)DY(1) is not supported. In such a scenario, we recommend that you first downgrade to Cisco MDS NX-OS Release 7.3(0)D1(1) and then upgrade to 7.3(1)DY(1).
- Downgrading from Cisco MDS NX-OS Release 9.x is not supported if the FLOGI Scale Optimization feature is enabled on Cisco MDS 9718 Switches.
- We do not recommend parallel In-Service Software Downgrade (ISSD) on Cisco MDS 9148S, Cisco MDS 9250i, and Cisco MDS 9396S fabric switches when these fabric switches are each other's peers.
- If you are downgrading from Cisco MDS NX-OS Release 9.x to a release prior to Cisco MDS NX-OS Release 9.2(1), ensure that you use the **clear logging onboard txwait** command after downgrading. Otherwise, logging to the OBFL TxWait file may cease with an error. For more information, see the *Cisco MDS 9000 Series Interfaces Configuration Guide, Release 9.x*.
- If you copy firmware using the SFTP or SCP clients after enabling the **feature scp-server** or **feature sftp-server** command on your switch, ensure that you close the SFTP or SCP connection using the **no feature scp-server** or **no feature sftp-server** command before performing ISSD. Otherwise, ISSD will be disruptive. To avoid this issue, we recommend that you transfer files to the switch using the **copy** command instead or using the DCNM client.
- To determine if high-bandwidth capability is enabled, use the **show hardware fabric-mode** command. The following example shows that the higher bandwidth capability is not activated:

```
switch# show hardware fabric-mode
Fabric mode supports only one configuration of 8G FC modules - 4/44 Host-Optimized 8G
FC module.
switch#
```

The following example shows that the higher bandwidth capability is activated:

```
switch# show hardware fabric-mode
fabric mode supports FCoE, Gen2 and above linecards
switch#
```

For information on supported chassis and modules, see the *Cisco MDS 9000 Series Compatibility Matrix*. For information on the procedures for installing and upgrading software for Intelligent Storage Services on the Cisco MDS 9000 Series Storage Services Module (SSM), see the *Cisco MDS 9000 Series Storage Services Module Software Installation and Upgrade Guide*.

Downgrade Guidelines for Cisco MDS 9396S Switch

- Downgrading from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(0)D1(1) or Cisco MDS NX-OS Release 6.2(13a) is not supported on a Cisco MDS 9396S Switch which has DS-CAC-1200W as a power supply unit (PSU) and DS-C96S-FAN-I as port side intake fan tray.
- Downgrading from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 6.2(13) is not supported on the Cisco MDS 9396S Multilayer Fabric Switch. The minimum recommended image for Cisco MDS 9396S Multilayer Fabric Switch is 6.2(13a).
- To downgrade from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(x) on a Cisco MDS 9396S Series switch, you must first disable the extended receive BB_credit configuration using the **no feature fcrxbbcredit extended** command. After the downgrade process is complete, enable the extended receive BB_credit configuration using the **feature fcrxbbcredit extended** command.

Downgrade Guidelines for Cisco MDS 9250i Switch

- Downgrading from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(0)D1(1), or 6.2(13a) and lower is not supported on a Cisco MDS 9250i Switch which has only one online PSU.
- Downgrading from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(0)D1(1), or 6.2(13a) and lower on a Cisco MDS 9250i Switch with two online PSUs results in loss of N:N grid redundancy. The switch will run in non-redundant mode.
- Downgrading from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 7.3(0)D1(1), or 6.2(13a) and lower on a Cisco MDS 9250i Switch with three online PSUs results in loss of N:N grid redundancy. The switch will run in N+1 power redundant mode.

Downgrading from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 8.x

To downgrade from Cisco MDS NX-OS Release 9.x to Cisco MDS NX-OS Release 8.x or an earlier release, perform the following steps:

Step 1 Verify that the system image files for the downgrade are present in the active supervisor module bootflash:

```
switch# dir bootflash:

26126848    May 07 11:51:20 2021 m9700-sf4ek9-kickstart-mz.9.2.1.bin
20090368    Apr 06 05:25:31 2018  m9700-sf4ek9-kickstart-mz.8.3.1
20044800    Mar 30 15:42:05 2014  m9700-sf4ek9-kickstart-mz.6.2.7.bin
107197681   Apr 06 05:26:53 2001  m9700-sf4ek9-mz.6.2.5.bin.S68
107587249   Mar 30 15:42:52 2014  m9700-sf4ek9-mz.6.2.7.bin
```

Step 2 If the software image file is not present, download it from an FTP or TFTP server to the active supervisor module bootflash. You can obtain the software image file from the Cisco.com Software Download Center:
http://www.cisco.com/cisco/software/navigator.html

Note If you need more space in the active supervisor module bootflash, use the **delete** command to remove the files that are not necessary, and perform Step 3 and Step 4.

```
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf4ek9-kickstart-mz.8.3.1.bin
bootflash:m9700-sf4ek9-kickstart-mz.8.3.1.bin
switch# copy tftp://tftpserver.cisco.com/MDS/m9700-sf4ek9-kickstart-mz.8.3.1.bin
bootflash:m9700-sf4ek9-kickstart-mz.8.3.1.bin
```

Step 3 Ensure that the required space is available in the active supervisor:

```
switch# dir bootflash:

26126848    May 07 11:51:20 2021 m9700-sf4ek9-kickstart-mz.9.2.1.bin
12288        Aug 26 19:06:14 2011  lost+found/
18939904     Jul 01 10:54:49 2011 m9700-sf4ek9-kickstart-mz.6.2.5.bin
101756072     Jul 01 10:33:52 2011 m9700-sf4ek9-mz.6.2.5.bin

Usage for bootflash://sup-local
  120695976 bytes used
   63863640 bytes free
  184559616 bytes total
```

Step 4 If you need more space in the active supervisor module bootflash, delete the files that are not required, to make space available:

```
switch# delete bootflash: m9700-sf4ek9-kickstart-mz.6.2.5.bin
```

Step 5 Run the **show incompatibility system** *image-filename c*ommand to determine if you must disable the features not supported by a release earlier than release to be installed.

```
switch# show incompatibility system bootflash:m9700-sf4ek9-kickstart-mz.9.2.1.bin
no incompatible configuration
```

Step 6 Save the configuration using the **copy running-config startup-config** command:

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

Step 7 Run the **install all** command to downgrade the software:

```
switch# install all kickstart m9700-sf4ek9-kickstart-mz.8.3.1.bin
system m9700-sf4ek9-mz.8.3.1.bin
install all kickstart m9700-sf4ek9-kickstart-mz.8.3.1.bin system m9700-sf4ek9-mz.8.3.1.
bin
Installer will perform compatibility check first. Please wait.

Verifying image bootflash:/m9700-sf4ek9-kickstart-mz.8.3.1.bin for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/m9700-sf4ek9-mz.8.3.1.bin for boot variable "system".
[####################] 100% -- SUCCESS

Performing module support checks.
[####################] 100% -- SUCCESS

Verifying image type.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/m9700-sf4ek9-mz.8.3.1.bin.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/m9700-sf4ek9-kickstart-mz.8.3.1.bin.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/m9700-sf4ek9-mz.8.3.1.bin.
[####################] 100% -- SUCCESS
```

```
Performing Compact Flash and TCAM sanity test.
[####################] 100% -- SUCCESS

Notifying services about system upgrade.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive         reset


Other miscellaneous information for installation:
Module  info
------  --------------------------------
1  FC ports 1-40 and FCoE ports 1-8 are hitless, IPS 1-2 are hitful, and Intelligent
Applications running are hitful


Images will be upgraded according to following table:
Module       Image         Running-Version(pri:alt)           New-Version  Upg-Required
------  ----------  ----------------------------------------  --------------------
     1      system                    9.2(1)               8.3(1)           yes
     1   kickstart                    9.2(1)               8.3(1)           yes
     1        bios v2.1.17(01/08/14):v2.1.17(01/08/14)     v2.1.17(01/08/14)  no

Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Performing runtime checks.
[####################] 100% -- SUCCESS

Notifying services about the upgrade.
[####################] 100% -- SUCCESS

Setting boot variables.
[####################] 100% -- SUCCESS

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 1: Refreshing compact flash and Upgrading bios/loader/bootrom/power-seq.
Warning: please do not remove or power off the module at this time.
[####################] 100% -- SUCCESS

Converting startup config.
[####################] 100% -- SUCCESS

Upgrade can no longer be aborted, any failure will result in a disruptive upgrade.

Freeing memory in the file system.
[####################] 100% -- SUCCESS

Loading images into memory.
[####################] 100% -- SUCCESS

Saving linecard runtime state.
[####################] 100% -- SUCCESS

Saving supervisor runtime state.
[####################] 100% -- SUCCESS
```

```
Saving mts state.
[####################] 100% -- SUCCESS

Reloading the kernel to proceed with the upgrade.
All telnet and ssh connections will now be temporarily terminated.
alishan-241#

>> NX7--LC-loader-02.01.17 (Jan  8 2014 - 16:30:41), Build: 02.01.17

CPU0:  8572E, Version: 2.2, (0x80e80022)
Core:  E500, Version: 3.0, (0x80210030)
Clock Configuration:
       CPU:1066.672 MHz, CCB:533.336 MHz,
       DDR:266.668 MHz (533.336 MT/s data rate), LBC:33.334 MHz
L1:    D-cache 32 kB enabled
       I-cache 32 kB enabled
Board: 9044, IOFPGA: 0x0000001A, SPROM: 0xAB
Boot flash : Primary
I2C:   ready
DRAM:  Initializing
DDR: dimm type 10, registered 1
DDR: dimm type 10, registered 1
    DDR:  4 GB
L2:    1024 KB enabled
Using default environment

In:    serial
Out:   serial
Err:   serial
Net:   INFO: Net boot mode = 1
INFO: Net boot mode = 1
INFO: Board will come up MGMT interface
INFO: MAC address is: b8:38:61:4a:25:c0
eTSEC2 board phy 3
INFO: Net boot mode = 1
eTSEC2
IDE:   Bus 0: OK
  Device 0: Model: UGB30STC4000Z4-EBY-ASD Firm: FW100511 Ser#: UNIGEN3     30009652
            Type: Hard Disk
            Capacity: 3907.9 MB = 3.8 GB (8003520 x 512)

Booting image bootflash://m9700-sf4ek9-kickstart-mz.8.3.1.bin
25012224 bytes read
NBI at 08000000 size 134217728

Booting image at addr 0x00800000 ...
Memory <- <0x0 0x0 0x1 0x0> (4096MB)
ethernet0: local-mac-address <- b8:38:61:4a:25:c0
ethernet1: local-mac-address <- 00:e0:0c:00:01:fd
ethernet2: local-mac-address <- 00:e0:0c:00:02:fd
CPU clock-frequency <- 0x3f941f80 (1067MHz)
CPU timebase-frequency <- 0x3f941f8 (67MHz)
CPU bus-frequency <- 0x1fca0fc0 (533MHz)

zImage starting: loaded at 0x00800000 (sp: 0x7fedc4c0)
Allocating 0x620d88 bytes for kernel ...
gunzipping (0x00000000 <- 0x00817000:0x00de3838)...done 0x5bc060 bytes
Using loader supplied ramdisk at 0x2800000-0x3cf1000
initrd head: 0x1f8b0808

Linux/PowerPC load: rw root=/dev/ram0 rdbase=0x7000000 card_index=9044 maxcpus=2 ip=off
ramdisk_size
```

```
=262144 noquiet obfl_type_ide=1 kgdboc=ttyS0,9600,B isanimg_loc=0x6000000
isanimg_size=0x400 console
=ttyS0,9600n8nn loader_ver="02.01.17" card_index=9044 quiet bootdev=ide0
server_ip=171.69.21.28 ksim
g=/m9700-sf4ek9-kickstart-mz.8.1.1b.bin isanimg=/m9700-sf4ek9-mz.8.3.1.bin  Finalizing
device tree...
flat tree at 0xdf0140
                                                ï¿½setup_arch: bootmem
mpc85xx_ds_setup_arch()
arch: exit

[    0.060042] Host controller irq 26
[    0.134632] Assign root port irq 26
[    0.753013] physmap-flash physmap-flash.0: Could not reserve memory region
[    1.032836] Enabling all PCI devices
INIT: version 2.88 booting
Checking all filesystems.....retval=[0]
done.
Loading system software
Uncompressing system image: bootflash:///m9700-sf4ek9-mz.8.3.1.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Load plugins that defined in image conf: /isan/plugin_img/img.conf
No Patching support on this platform
Loading plugin 0: core_plugin...
No Patching support on this platform
Enter pboot_chk_compatibility
num srgs 1
0: swid-core-s5ek9, swid-core-s5ek9
num srgs 1
0: swid-sup-ali-ks, swid-sup-ali-ks
INIT: Entering runlevel: 3

[   95.008144] clpk_hw_init_1:Post ISSU instance 0 status 0x00000736 GOOD
[   95.086952] clpk_hw_init_1:Post ISSU instance 1 status 0x00000536 GOOD
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
System is coming up ... Please wait ...

Continuing with installation process, please wait.
The login will be disabled until the installation is completed.

Status for linecard upgrade.
[####################] 100% -- SUCCESS

Performing supervisor state verification.
[####################] 100% -- SUCCESS

Supervisor non-disruptive upgrade successful.

Install has been successful.
```

Step 8 Run the **show version** command to verify the successful downgrade:

```
switch# show version

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
```

```
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2016, 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 2.1.17
  loader:    version N/A
  kickstart: version 8.3(1)
  system:    version 8.3(1)
  BIOS compile time:       01/08/14
  kickstart image file is: bootflash:///m9700-sf4ek9-kickstart-mz.8.3.1.bin.
S21
  kickstart compile time:  1/11/2016 16:00:00 [02/11/2016 10:35:42]
  system image file is:    bootflash:///m9700-sf4ek9-mz.8.3.1.bin.S21
  system compile time:     1/11/2016 16:00:00 [02/11/2016 13:08:53]


Hardware
  cisco MDS 9250i 40 FC 2 IPS 8 FCoE (2 RU) Chassis ("40FC+8FCoE+2IPS Supervisor
")
  Motorola, e500v2, core 0 with 4155752 kB of memory.
  Processor Board ID JAF1626BCQH

  Device name: alishan-dr
  bootflash:    4013856 kB

Kernel uptime is 0 day(s), 17 hour(s), 18 minute(s), 58 second(s)

Last reset at 443194 usecs after  Wed Aug 31 10:58:41 2016

  Reason: Reset due to upgrade
  System version: 8.3(1)
  Service:

plugin
  Core Plugin
switch#
```

Step 9 Verify the status of the modules in the switch, using the **show module** command:

```
switch# show module

Mod  Ports  Module-Type                        Model               Status
---  -----  --------------------------------- ------------------- ----------
1    50     40FC+8FCoE+2IPS Supervisor         DS-C9250i-22PK9-SUP active *

Mod  Sw               Hw      World-Wide-Name(s) (WWN)
---  ---------------  ------  --------------------------------------------------
1    7.3(0)D1(1)      0.9     20:01:54:7f:ee:1b:14:a0 to 20:28:54:7f:ee:1b:14:a0


Mod  MAC-Address(es)                         Serial-Num
---  --------------------------------------  ----------
1    f0-f7-55-29-50-60 to f0-f7-55-29-50-6f  JAF1626BCQH

* this terminal session
```

```
switch#
```

Related Documentation

The documentation set for the Cisco MDS 9000 Series Multilayer switches is available at:

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

The documentation set for Cisco Prime Data Center Network Manager is available at:

http://www.cisco.com/en/US/products/ps9369/tsd_products_support_series_home.html

Release Notes

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-release-notes-list.html

Regulatory Compliance and Safety Information

http://www.cisco.com/c/en/us/td/docs/switches/datacenter/mds9000/hw/regulatory/compliance/RCSI.html

Compatibility Information

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-device-support-tables-list.html

Installation and Upgrade

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-installation-guides-list.html

Configuration Guides

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-installation-and-configuration-guides-list.html

Command-Line Interface

http://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/products-command-reference-list.html

Troubleshooting and Reference

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

Command-Line Interface

- *Cisco MDS 9000 Series Command Reference*

Intelligent Storage Networking Services Configuration Guides

- *Cisco MDS 9000 Series I/O Acceleration Configuration Guide*
- *Cisco MDS 9000 Series SANTap Deployment Guide*
- *Cisco MDS 9000 Series Data Mobility Manager Configuration Guide*
- *Cisco MDS 9000 Series Storage Media Encryption Configuration Guide*

Troubleshooting and Reference

- *Cisco MDS 9000 Series and Nexus 7000 Series System Messages Reference*
- *Cisco MDS 9000 Series NX-OS MIB Quick 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/en/US/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.