

Cisco Nexus 9000 Series NX-OS Mode Switch FPGA/EPLD Upgrade Release Notes

Release 10.4(4)M

Note: The documentation set for this product strives to use bias-free language. For the purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

This document lists the current and past versions of EPLD images and describes how to update them for use with the Cisco Nexus 9000 Series switches.

This document also covers later releases. If a new Cisco Nexus 9000 Series FPGA/EPLD Upgrade Release Notes document isn't available, then that means that these are the latest available numbers for upgrade.

This table lists the changes to this document.

Date	Description
October 19, 2024	Release 10.4(4)M became available.

Introduction

The Cisco Nexus 9000 Series NX-OS mode switches contain several programmable logical devices (PLDs) that provide hardware functionalities in all modules. Cisco provides electronic programmable logic device (EPLD) image upgrades to enhance hardware functionality or to resolve known issues. PLDs include electronic programmable logic devices (EPLDs), field programmable gate arrays (FPGAs), and complex programmable logic devices (CPLDs), but they do not include ASICs. In this document, the term EPLD is used for FPGA and CPLDs.

The advantage of having EPLDs for some module functions is that when you need to upgrade those functions, you just upgrade their software images instead of replacing their hardware.

Note: EPLD image upgrades for a line card disrupt the traffic going through the module because the module must power down briefly during the upgrade. The system performs EPLD upgrades on one module at a time, so at any one time the upgrade disrupts only the traffic going through one module.

Cisco provides the latest EPLD images with each release. Typically, these images are the same as provided in earlier releases but occasionally some of these images are updated. These EPLD image updates are not mandatory unless otherwise specified. The EPLD image upgrades are independent from the Cisco In Service Software Upgrade (ISSU) process, which upgrades the system image with no impact on the network environment.

When Cisco makes an EPLD image upgrade available, these release notes announce their availability, and you can download the EPLD images from <https://software.cisco.com/download/navigator.html>.

When choosing an EPLD version for upgrade, ensure you have already installed the corresponding NXOS software version first. It is generally not supported to upgrade to a newer EPLD image built for a future version of NXOS while running on an older NXOS version, unless explicitly supported as per the specific EPLD Release Notes. NXOS and EPLD images are labeled for their related version to avoid any unsupported upgrades.

When to Upgrade EPLDs

When new EPLD images are available, the upgrades are always recommended if your network environment allows for a maintenance period in which some level of traffic disruption is acceptable. If such a disruption is not acceptable, then consider postponing the upgrade until a better time.

Note: The EPLD upgrade operation is a disruptive operation. Execute this operation only at a programmed maintenance time. The system ISSU upgrade is a nondisruptive upgrade.

Note: Do not perform an EPLD upgrade during an ISSU system upgrade.

EPLD version is backward compatible. The NXOS software can be downgraded for the switch and the EPLD version does not have to be downgraded to match the older NXOS version.

Switch Requirements

- The Cisco Nexus 9000 Series switch must be running the Cisco NX-OS operating system.
- You must be able to access the switch through a console, SSH, or Telnet (required for setting up a switch running in NX-OS mode).
- You must have administrator privileges to work with the Cisco Nexus 9000 Series switch.

EPLD Upgrades Available for NX-OS Mode Releases 10.3(1) through 10.4(4)

Each EPLD image that you can download from Software Download page is a bundle of EPLD upgrades packaged into a single EPLD image file. To see the recent updated EPLD versions for the Cisco Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 platforms, see the tables.

Note: All updates to an image are shown in boldface. If more than one release is shown for a column, the boldface applies to the first release listed for the column.

Note: The 10.4(3) release of EPLD addresses the Secure Boot Hardware Tampering vulnerability for the Nexus 3K and Nexus 9000 Series switches. Please refer to Security Advisory.

Please review the advisory for affected HW-PIDs (see table) for more details on how to apply the patch. The 10.2(1) release EPLD requires a specific sequence of upgrade.

Vulnerable Products addressed in Security Advisory (cisco-sa-20190513-secureboot)

Table 1. Nexus 9000 Series Switches

PID	Fixed IO FPGA Version
N9K-C93180YC-EX	0x15
N9K-C93108TC-EX	0x15
N9K-C93180YC-FX	0x20
N9K-C93108TC-FX	0x20
N9K-C9348GC-FXP	0x10

PID	Fixed IO FPGA Version
N9K-C93240YC-FX2	0x10
N9K-C9336C-FX2	0x10
N9K-C9364C	0x6
N9K-C9332C	0x10
N9K-C93180YC-FX	0x20
N9K-C9232C	0x8
N9K-SUP-A+	0x14
N9K-SUP-B+	0x14
N9K-SUP-B	0x30
N9K-SUP-A	0x30

Cisco Secure Boot Hardware Tampering Vulnerability - Remediation Steps

This section details updating your EPLD version for affected switches listed in:

<https://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20190513-secureboot>

Nexus 9000 Modular chassis with dual supervisor

Note: It is required to update both Golden and Primary regions of FPGA to address this particular vulnerability. It is by design, that we do not allow updating both primary and golden at the same time (to avoid programming errors, that may cause switch to not boot, so only one region is allowed to be programmed per reload).

Please do not attempt to upgrade Golden region of FPGA once it is on a fixed version.

1. Copy the EPLD image to bootflash (e.g., used n9000-epld.10.4.4.img).
2. If you have dual supervisor, determine which is the standby Supervisor by doing 'show module' and start upgrading it first. On the N9K, only supervisors need upgrade for this vulnerability. LC/FM/SC cards are not affected.
3. Assume standby supervisor is slot 28. Update the Primary FPGA region of standby supervisor.
4. Install epld bootflash:n9000-epld.10.4.4.img module 28.

Expected result: Switch will update primary EPLD of standby supervisor and will reload the standby supervisor module automatically. Please don't interrupt, power cycle, or reload when EPLD update is happening. Once standby is booted, it will again come up as standby supervisor. A **show version module 28 epld** will continue to show old version.

Note: The CLI content in this document is only an example. Your CLI will reflect your hardware.

```
switch# show mod | grep SUP
```

```
27 0 Supervisor Module N9K-SUP-A active *
```

```

28  0      Supervisor Module                N9K-SUP-A                ha-standby
27  9.3(0.416)                1.0      SUP1
28  9.3(0.416)                0.3011  SUP2

```

```
switch# show version module 28 epld
```

```

EPLD Device                Version
-----
IO FPGA                    0x27

```

This is expected, as the switch has booted from Golden FPGA that is still not updated. You can verify this from the syslog as displayed:

```
%CARDCLIENT-5-MOD_BOOT_GOLDEN: Module 28 IOFPGA booted from Golden
```

Update the Golden (also called backup) FPGA region of the standby supervisor.

```
install epld bootflash:n9000-epld.10.4.4.img module 28 golden
```

```
Module 28 : IO FPGA [Programming] : 100.00% (64 of 64 total sectors)
```

```
Module 28 EPLD upgrade is successful.
```

```
Module      Type  Upgrade-Result
```

```

-----
28          SUP      Success

```

Expected result: Switch will update the golden EPLD of standby supervisor and will reload the standby supervisor module automatically. Please do not interrupt, power cycle, or reload when EPLD update is happening. After the standby is booted, it will again come up as ha-standby supervisor.

After this is done, when you check **show version module 28 epld** command, you will see FPGA version that is greater or equal to the fixed version for the standby supervisor. Your switch has the fixed version for standby supervisor.

```
switch# show version module 28 epld
```

```

EPLD Device                Version
-----
IO FPGA                    0x30

```

Repeat Step 3 and 4, for the active supervisor. At the end of Step 3, supervisor in slot 27 will reload and so now will become standby supervisor. The active supervisor will be Supervisor in slot 28.

(considering SUP 27 is active to begin with, for the above activity, such as Steps 3 and 4, commands would have 27 in place of 28.)

The following Log displays what happens when EPLD upgrade happens for active supervisor.

```
Module 27 : IO FPGA [Programming] : 100.00% ( 64 of 64 sectors)
```

```
Module 27 EPLD upgrade is successful.
```

```
Module      Type  Upgrade-Result
```

```

-----
27          SUP      Success

```

```
EPLDs upgraded. Performing switchover.
```

After the supervisor in Slot 27 becomes ha-standby complete Step 4 for Slot 27, and it will again boot and become ha-standby. Both the supervisors now have the vulnerability fixed version of FPGA.

At the end of the upgrades, switch should boot with primary for both SUPs, logs below

```
switch# show logging log | grep -i fpga | grep -i 27
2019 Jul 10 07:55:04 switch %CARDCLIENT-5-MOD_BOOT_PRIMARY: Module 27 IOFPGA booted from Primary
switch# show logging log | grep -i fpga | grep -i 28
2019 Jul 10 07:58:01 switch %CARDCLIENT-5-MOD_BOOT_PRIMARY: Module 28 IOFPGA booted from Primary
```

Nexus 9000 Modular chassis with single supervisor

Note: It is required to update both Golden and Primary regions of FPGA to address this particular vulnerability. It is by design, that we don't allow updating both primary and golden at the same time (to avoid programming errors, that may cause switch to not boot, so only one region is allowed to be programmed per reload).

Please do not attempt to upgrade Golden region of FPGA once it is on a fixed version.

1. Copy the EPLD image to bootflash (e.g., used n9000-epld.10.4.4.img).
2. Assume the supervisor is in Slot27. Update the Primary FPGA region.
3. Install epld bootflash:n9000-epld.10.4.4.img module 27

Expected result: Switch will update primary EPLD of the supervisor and will reload the switch automatically. Please don't interrupt, power cycle, or reload when EPLD update is happening. Once the supervisor is booted, the 'show version module 27 epld' will continue to show old version

Note: The CLI content in this document is only an example. Your CLI will reflect your hardware.

```
Switch#show version module 27 epld
```

```
-----
Name                               InstanceNum      Version          Date
-----
IO FPGA                             0                0x27            20160111
BIOS version                         v08.35(08/31/2018)
Alternate BIOS version               v08.32(10/18/2016)
```

This is expected, as the switch would have booted from Golden FPGA which is still not updated. You can verify this from syslog which would say:

```
%CARDCLIENT-5-MOD_BOOT_GOLDEN: Module 27 IOFPGA booted from Golden
```

4. As there is only one supervisor, update the Golden (also called backup) FPGA region.

```
install epld bootflash:n9000-epld.10.4.4.img module 27 golden
Module 27 : IO FPGA [Programming ] : 100.00% ( 64 of 64 total sectors)
Module 27 EPLD upgrade is successful.
Module      Type Upgrade-Result
```

```
-----
27          SUP          Success
```

Expected result: Switch will update the golden EPLD of the supervisor and will reload the switch automatically. Please do not interrupt, power cycle, or reload when EPLD update is happening.

After this is done, check **show version module 27 epld** command to view the FPGA version that is greater than or equal to the fixed version for the supervisor. Your supervisor has the vulnerability fixed version of FPGA.

```
SWITCH# show version module 27 epld
```

```
-----
```

Name	InstanceNum	Version	Date
IO FPGA	0	0x30	20190625
BIOS version	v08.35(08/31/2018)		
Alternate BIOS version	v08.32(10/18/2016)		

```
-----
```

At the end of the upgrades, switch should boot with primary for the SUP, log below

```
switch# show logging log | grep -i fpga | grep -i 27
```

```
2019 Jul 10 07:55:04 switch %CARDCLIENT-5-MOD_BOOT_PRIMARY: Module 27 IOFPGA booted from Primary
```

Note: IMPORTANT: If you attempt to upgrade the Golden region of the FPGA once it is on the fixed version, the system will not automatically allow you to upgrade the Golden region of SUP and will provide this prompt:

```
switch# install epld bootflash:n9000-epld.10.4.4.img module all golden
```

```
Digital signature verification is successful
```

```
Compatibility check:
```

Module	Type	Upgradable	Impact	Reason
22	FM	Yes	disruptive	Module Upgradable
24	FM	Yes	disruptive	Module Upgradable
27	SUP	No	none	Golden Not Upgradable
28	SUP	No	none	Golden Not Upgradable
29	SC	Yes	disruptive	Module Upgradable
30	SC	Yes	disruptive	Module Upgradable

```
Retrieving EPLD versions.... Please wait.
```

```
Images will be upgraded according to the table:
```

Module	Type	EPLD	Running-Version	New-Version	Upg-Required
22	FM	IO FPGA	0x19	0x19	Yes

24	FM	IO FPGA	0x19	0x19	Yes
29	SC	IO FPGA	0x17	0x20	Yes
30	SC	IO FPGA	0x17	0x20	Yes

Module 27 (EPLD ver 0x29) Golden upgrade not supported

Module 28 (EPLD ver 0x30) Golden upgrade not supported

The above modules require upgrade.

Since both System Controller modules need an upgrade, a chassis reload will happen at the end of the upgrade.

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

Nexus 9000 TOR

Note: It is required to update both Golden and Primary regions of FPGA to address this particular vulnerability. It is by design that we don't allow updating both primary and golden at the same time (to avoid programming errors, that may cause switch to not boot, so only one region is allowed to be programmed per reload).

Please do not attempt to upgrade Golden region of FPGA once it is on a fixed version.

1. Copy the EPLD image to bootflash (e.g., used n9000-epld.10.4.4.img).
2. Update the Primary FPGA region.
3. Install epld bootflash:n9000-epld.10.4.4.img module 1

Expected result: Switch will update EPLD and will reload automatically. Please don't interrupt, power cycle, or reload when EPLD update is happening. Switch would boot up with golden FPGA, **show version module 1 epld** would show the old FPGA version for IO, due to this. This is expected.

Note: The CLI content in this document is only an example. Your CLI will reflect your hardware.

```
show version module 1 epld
```

```
-----
```

Name	InstanceNum	Version	Date
IO FPGA	0	0x06	20180920
MI FPGA	0	0x01	20170609
BIOS version	v01.14(06/15/2019)		
Alternate BIOS version	v01.12(07/25/2018)		

```
-----
```

You can verify this from syslog which would say:

```
%CARDCLIENT-5-MOD_BOOT_GOLDEN: Module 1 IOFPGA booted from Golden
```

```
%CARDCLIENT-2-FPGA_BOOT_GOLDEN: IOFPGA booted from Golden
```

Update the Golden (also called backup) FPGA region.

```
install epld bootflash:n9000-epld.10.4.4.img module 1 golden
```

Expected result: Switch will update EPLD and will reload automatically. Please don't interrupt, power cycle, or reload when EPLD update is happening.

After this is done, when you check **show version module 1 epld** you will see FPGA version that is greater than or equal to to the fixed version.

```
show version module 1 epld
```

```
-----
Name                               InstanceNum      Version          Date
-----
IO FPGA                             0                0x07            20180920
MI FPGA                             0                0x01            20170609
BIOS version                         v01.14(06/15/2019)
Alternate BIOS version               v01.12(07/25/2018)
```

After uprade is complete, switch should boot up with primary, shown logs below

```
show logging log | grep -i fpga
```

```
2019 Jul 9 19:46:11 Deervalley4 %CARDCLIENT-2-FPGA_BOOT_PRIMARY: IOFPGA booted from Primary
2019 Jul 9 19:46:11 Deervalley4 %CARDCLIENT-2-FPGA_BOOT_PRIMARY: MIFPGA booted from Primary
2019 Jul 9 19:46:11 Deervalley4 %CARDCLIENT-5-MOD_BOOT_PRIMARY: Module 1 IOFPGA booted from
Primary
2019 Jul 9 19:46:11 Deervalley4 %CARDCLIENT-5-MOD_BOOT_PRIMARY: Module 1 MIFPGA booted from
Primary
```

Note: For N3K-C36180YC-R and N3K-C3636C-R, CPU FPGA will have the fix, so look for CPU FPGA instead of IO.

Table 2. Available EPLD Images for the Cisco Nexus 9200, 9300, 9300-EX, and 9300-FX Platform Switches

Switch or Uplink Module	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
Cisco Nexus 92348GC-X (N9K-C92348GC-X)	IOFPGA	0X14 (0.020)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)
Cisco Nexus 93108TC-EX (N9K-C93108TC-EX)	IOFPGA	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)
	MIFPGA	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)
Cisco Nexus 93108TC-FX (N9K-C93108TC-FX)	IOFPGA	0x22 (0.034)	0x22 (0.034)	0x23 (0.035) ¹	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)
	MIFPGA	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
Cisco Nexus 93108TC2-FX (N9K-C93108TC2-FX)	IOFPGA	0x22 (0.034)	0x22 (0.034)	0x22 (0.034)	0x22 (0.034)	0x22 (0.034)	0x22 (0.034)	0x22 (0.034)	0x22 (0.034)
	MIFPGA	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)

Switch or Uplink Module	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
Cisco Nexus 93108TC-FX3 (N9K-C93108TC-FX3)	IOFPGA	N/A	N/A	N/A	N/A	0x16 (0.022)	0x16 (0.022)	0x19 (0.025)	0x19 (0.025)
	MIFPGA	N/A	N/A	N/A	N/A	0x12 (0.018)	0x12 (0.018)	0x15 (0.021)	0x15 (0.021)
Cisco Nexus 93108TC-FX3P (N9K-C93108TC-FX3P)	IOFPGA	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 x(0.008)	0x8 x(0.008)	0x8 x(0.008)	0x8 (0.008)
	MIFPGA	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x10 (0.016)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)
Cisco Nexus 9316D-GX (N9K-C9316D-GX)	IOFPGA	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
	MIFPGA	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)
Cisco Nexus 93180YC-FX3 (N9K-C93180YC-FX3)	IOFPGA	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x13 (0.019) ³	0x13 (0.019) ³	0x13 (0.019) ³	0x13 (0.019)	0x13 (0.019) ³
	MIFPGA	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x20 (0.032)	0x20 (0.032)
Cisco Nexus 93180YC-FX3S (N9K-C93180YC-FX3S)	IOFPGA	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x13 (0.019) ³	0x13 (0.019) ³	0x13 (0.019) ³	0x13 (0.019)	0x13 (0.019) ³
	MIFPGA	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x19 (0.025)	0x19 (0.025)
Cisco Nexus 93180YC-FX3H (N9K-C93180YC-FX3H)	IOFPGA	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)
	MIFPGA	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
Cisco Nexus 93180YC-EX (N9K-C93180YC-EX)	IOFPGA	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)
	MIFPGA	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)
Cisco Nexus 93180YC-FX (N9K-C93180YC-FX)	IOFPGA	0x22 (0.034)	0x22 (0.034)	0x23 (0.035) ¹	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)
	MIFPGA	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)
Cisco Nexus 93216TC-FX2 (N9K-C93216TC-FX2)	IOFPGA	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)
	MIFPGA0	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)
	MIFPGA1	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)

Switch or Uplink Module	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
Cisco Nexus 93240YC-FX2 (N9K-C93240YC-FX2)	IOFPGA	0x16 (0.022)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x18 (0.023)	0x18 (0.023)	0x18 (0.023)
	MIFPGA1	0x8 (0.007)	0x8 (0.007)	0x8 (0.007)	0x8 (0.007)	0x8 (0.007)	0x8 (0.007)	0x8 (0.007)	0x8 (0.007)
	MIFPGA2	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)
Cisco Nexus 9332C (N9K-C9332C)	IOFPGA	0x16 (0.022)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x18 (0.024) ⁶	0x18 (0.024) ⁶	0x18 (0.024) ⁶
	MIFPGA	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
Cisco Nexus 9332D-GX2B (N9K-C9332D-GX2B)	IOFPGA	0x12 (0.018)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)
	MIFPGA	0x13 (0.019)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x15 (0.021)	0x16 (0.022)	0x16 (0.022)
Cisco Nexus 9332D-H2R (N9K-C9332D-H2R)	IOFPGA	N/A	N/A	N/A	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x20 (0.032)	0x15 (0.021)
	MIFPGA	N/A	N/A	N/A	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x12 (0.018)	0x9 (0.009)
	BIOS	N/A	N/A	N/A	1.06	1.06	1.06	1.06	1.06
Cisco Nexus 9336C-FX2 (N9K-C9336C-FX2)	IOFPGA	0x16 (0.022)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x17 (0.023)	0x18 (0.024) ⁶	0x18 (0.024) ⁶	0x18 (0.024) ⁶
	MIFPGA	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)
Cisco Nexus 9336C-FX2-E (N9K-C9336C-FX2-E)	IOFPGA	0x12 (0.018)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x14 (0.020)
	MIFPGA	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)
Cisco Nexus 93360YC-FX2 (N9K-C93360YC-FX2)	IOFPGA	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)
	MIFPGA0	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)
	MIFPGA1	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
Cisco Nexus 9348GC-FXP (N9K-C9348GC-FXP)	IOFPGA	0x10 (0.016)	0x10 (0.016)	0x13 (0.019) ²	0x14 (0.020) ³	0x14 (0.020) ³	0x14 (0.020) ³	0x14 (0.020) ³	0x14 (0.020) ³
	MIFPGA	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)

Switch or Uplink Module	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
Cisco Nexus 9348GC-FXP (N9K-C9348GC2-FXP)	IOFPGA	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)
	MIFPGA	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
Cisco Nexus 93600CD-GX (N9K-C93600CD-GX)	IOFPGA	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
	MIFPGA	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)
Cisco Nexus 9348GC-FX3 (N9K-C9348GC-FX3)	IOFPGA	N/A	N/A	N/A	0x20 (0.032)	0x20 (0.032)	0x20 (0.032)	0x20 (0.032)	0x20 (0.032)
	MIFPGA	N/A	N/A	N/A	0x7 (0.007)	0x08 ⁵	0x08 ⁵	0x08 ⁵	0x08 ⁵
	BIOS	N/A	N/A	N/A	1.04	1.04	1.04	1.04	1.04
Cisco Nexus 9348GC-FX3PH (N9K-C9348GC-FX3PH)	IOFPGA	N/A	N/A	N/A	0x20 (0.032)	0x20 (0.032)	0x20 (0.032)	0x20 (0.032)	0x20 (0.032)
	MIFPGA	N/A	N/A	N/A	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
	BIOS	N/A	N/A	N/A	1.04	1.04	1.04	1.04	1.04
Cisco Nexus 9364C (N9K-C9364C)	IOFPGA	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
	IOFPGA	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
	MIFPGA0	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)
Cisco Nexus 9364C-H1 (N9K-C9364C-H1)	IOFPGA	N/A	N/A	N/A	N/A	N/A	0x11	0x11	0x11
	MIFPGA	N/A	N/A	N/A	N/A	N/A	0x15	0x16	0x16
	BIOS	N/A	N/A	N/A	N/A	N/A	1.03	1.03	1.03
Cisco Nexus 9364C-GX (N9K-C9364C-GX)	IOFPGA	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)
	MIFPGA0	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)
	MIFPGA1	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)
Cisco Nexus 9364D-GX2A (N9K-C9364D-GX2A)	IOFPGA	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x15 (0.021) ³	0x15 (0.021) ³	0x15 (0.021) ³	0x15 (0.021) ³	0x15 (0.021) ³
	MIFPGA0	0x23	0x23	0x23	0x23	0x23	0x23	0x23	0x23

Switch or Uplink Module	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
		(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
	MIFPGA1	0x11(0.017)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)
Cisco Nexus 9348D-GX2A (N9K-C9348D-GX2A)	IOFPGA	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)	0x16 (0.022)
	MIFPGA0	0x8 (0.008)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)
	MIFPGA1	0x5 (0.005)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
Cisco Nexus 93400LD-H1 (N9K-C93400LD-H1)	MIFPGA	N/A	N/A	N/A	N/A	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)
	IOFPGA	N/A	N/A	N/A	N/A	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)

- i2c_4buses_1device_64b_wr/i2c_master_ctrl_64b_wr.v with fix removing low drive of SCL during clock stretch to resolve issues on systems with low edge rate on SCL
- Increase 1.7V domain wait time to 20 msec for consistency with new VRMs
-Use smb_4buses_1device_new.v with start, stop, repeat start and timeout fetures added as per i2c_4buses_1device_64b_wr
- Clock stretch bug fix (don't drive low at the end of clock stretch) to prevent PSU flap issue caused by slow SCL rise time.
- Allows forcing the x86 to boot from the golden BIOS.
- Change front panel LED PWM default value.
- Immediate shut down on BIOS validation failure. Recommended to Upgrade.

Table 3. Available EPLD Images for the Cisco Nexus 9400 Switches

Component	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
Cisco Nexus 9408 (N9K-C9408)	IOFPGA	N/A	0x29 (0.041)	0x29 (0.041)	0x29 (0.041)	0x29 (0.041)	0x29 (0.041)	0x29 (0.041)	0x29 (0.041)
	MIFPGA	N/A	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
22 Port LEM (N9K-X9400-22L)	IOFPGA	N/A	0x07 (0.007)	0x07 (0.007)	0x07 (0.007)	0x07 (0.007)	0x07 (0.007)	0x08 (0.008)	0x08 (0.008)
16 Port LEM (N9K-X9400-16W)	IOFPGA	N/A	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x16 (0.022)	0x16 (0.022)
8 Port LEM (N9K-X9400-8D)	IOFPGA	N/A	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x16 (0.022)	0x16 (0.022)

Table 4. Available EPLD Images for the Cisco Nexus 9500 Platform Switches

Component	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
Supervisor A (N9K-SUP-A)	IOFPG A	0x32 (0.050)	0x32 (0.050)	0x32 (0.050)	0x32 (0.050)	0x32 (0.050)	0x32 (0.050)	0x32 (0.050)	0x32 (0.050)
Supervisor A+ (N9K-SUP-A+)	IOFPG A	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
Supervisor B (N9K-SUP-B)	IOFPG A	0x30 (0.049)	0x30 (0.049)	0x30 (0.049)	0x30 (0.049)	0x30 (0.049)	0x30 (0.049)	0x30 (0.049)	0x30 (0.049)
Supervisor B+ (N9K-SUP-B+)	IOFPG A	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
System Controller (N9K-SC-A)	IOFPG A	0x22 (0.034)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)	0x23 (0.035)
32-port 100-Gigabit QSFP28 line card (N9K-X9432C-S)	IOFPG A	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)
	MIFPG A	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)	0x4 (0.004)
32-port 100-Gigabit QSFP28 line card (N9K-X9732C-EX) (for -E fabric modules)	IOFPG A	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)	0x13 (0.019)
	MIFPG A	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)
32-port 100-Gigabit QSFP28 line card (N9K-X9732C-EXM) (for -E fabric modules)	IOFPG A	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)
	MIFPG A	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)
36-port 100-Gigabit QSFP28 line card (N9K-X9732C-FX)	IOFPG A	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
	MIFPG A	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)	0x2 (0.002)
16-port 400-Gigabit QSFP-DD line card (N9K-X9716D-GX)	IOFPG A	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)
	MIFPG A	0x9 (0.009)	0x10 (0.016)	0x10 (0.016)	0x11 (0.017) ¹	0x11 (0.017) ¹	0x11 (0.017) ¹	0x11 (0.017) ¹	0x11 (0.017) ¹
36-port 100-Gigabit QSFP28 line card (N9K-X9736C-EX)	IOFPG A	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)
	MIFPG A	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)
36-port 100-Gigabit QSFP28 line card (N9K-X9736C-FX)	IOFPG A	0x11 (0.017)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)
	MIFPG A	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)

Component	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
48-port 1/10GBASE-T and 4-port 40-Gigabit QSFP+ line card (N9K-X9464TX)	IOFPG A	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)
	MIFPG A	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)
48-port 1-/10-/25-Gigabit SFP28 and 4-port 40-/100-Gigabit QSFP28 line card (N9K-X97160YC-EX)	IOFPG A	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)	0x15 (0.021)
	MIFPG A	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)	0x5 (0.005)
48-port 10-Gigabit SFP+ and 4-port 100-Gigabit QSFP28 line card (N9K-X9788TC-FX)	IOFPG A	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
	MIFPG A	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)
48-port 10-Gigabit SFP+ and 4-port 100-Gigabit QSFP28 line card (N9K-X9788TC2-FX)	IOFPG A	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)	0x6 (0.006)
	MIFPG A	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
Fabric module for Cisco Nexus 9504 100-Gigabit -EX line (N9K-C9504-FM-E)	IOFPG A	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
Fabric module for Cisco Nexus 9504 100-Gigabit -S line cards (N9K-C9504-FM-S)	IOFPG A	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)
Fabric module for Cisco Nexus 9508 100-Gigabit -EX line cards (N9K-C9508-FM-E)	IOFPG A	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)	0x14 (0.020)
Fabric module for Cisco Nexus 9508 100-Gigabit -EX line (N9K-C9508-FM-E2)	IOFPG A	0x11 (0.017)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)
Fabric module for Cisco Nexus 9508 100-Gigabit -S line (N9K-C9508-FM-S)	IOFPG A	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)	0x11 (0.017)
Fabric module for Cisco Nexus 9516 100-Gigabit -EX and -FX line cards (N9K-C9516-FM-E2)	MIFPG A	0x11 (0.011)	0x11 (0.011)	0x11 (0.011)	0x11 (0.011)	0x11 (0.011)	0x11 (0.011)	0x11 (0.011)	0x11 (0.011)
	IOFPG A	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)	0x8 (0.008)

Component	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)

1. -MTK retimer MDIO TA glitch fix. Fixed MDIO tri-state output logic.

Table 5. Available EPLD Images for the Cisco Nexus 9500 Switches with R Line Card

Component	EPLD Device	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
36-port 100-Gigabit QSFP28 line card (N9K-X9636C-RX)	IOFPGA	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)	0x18 (0.024)
	MIFPGA	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
36-port 100-Gigabit QSFP28 line card (N9K-X9636C-R)	IOFPGA	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)	0x12 (0.018)
	MIFPGA	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)	0x9 (0.009)
36-port 40-Gigabit QSFP+ line card (N9K-X9636Q-R)	IOFPGA	0x19 (0.025)	0x19 (0.025)	0x19 (0.025)	0x19 (0.025)	0x19 (0.025)	0x19 (0.025)	0x19 (0.025)
	MIFPGA	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)	0x3 (0.003)
52-port 100-Gigabit -R line cards (N9K-X96136YC-R)	IOFPGA	0xD	0xD	0xD	0xD	0xD	0xD	0xD
	MIFPGA	0xF	0xF	0xF	0xF	0xF	0xF	0xF
	DBFPGA	0xE	0xE	0xE	0xE	0xE	0xE	0xE
Fabric module for Cisco Nexus 9504 100-Gigabit -R line cards (N9K-C9504-FM-R)	IOFPGA	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)	0x7 (0.007)
Fabric module for Cisco Nexus 9508 100-Gigabit -R line cards (N9K-C9508-FM-R)	IOFPGA	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)	0x10 (0.016)

Table 6. Available EPLD Images for the Cisco Nexus 9800 Platform Switches

Component	EPLD Device	Release 10.3(1)	Release 10.3(2)	Release 10.3(3)	Release 10.4(1)	Release 10.4(2)	Release 10.4(3)	Release 10.4(4)	Release 10.5(1)
N9K-C9800-SUP-A	TMFPGA	0x010006	0x010006	0x010006	0x010006	0x010006	0x010006	0x010006	0x010006
	IOFPGA	0x01001b	0x010020	0x010020	0x010020	0x010020	0x010020	0x010020	0x010020
N9K-X9836DM-A	IOFPGA	0x10018	0x1001e	0x1001e	1.36 ¹	1.36 ¹	1.48	1.48	1.48
	MIFPGA	0x1000a	0x1000d	0x1000d	0x1000d	0x1000e	0x1000e	0x1000e	0x1000e
N9K-X98900CD-A	IOFPGA	N/A	N/A	N/A	0x0005b	0x0005b	0x0005b	0x00061	0x00061
	MIFPGA	N/A	N/A	N/A	0x1000a	0x1000c	0x1000c	0x1000c	0x1000c
N9K-C9804-FM-A	IOFPGA	N/A	N/A	N/A	0x10002	0x10002	0x10002	0x10002	0x10002
N9K-C9808-FM-A	MIFPGA	0x10000	0x10002	0x10002	0x10002	0x10002	0x10002	0x10002	0x10002

1. -Fix for Microchip sync issue -X86 counter reset and force failover to golden.

Determining Whether to Upgrade EPLD Images

If the current EPLD image number for a card is greater than or matches the version expected for your current NXOS software version, you can skip the upgrade.

- To determine the EPLD upgrades needed for a Cisco Nexus 9000 Series switch running 10.4(4) software, use the `show install impact epld bootflash: filename` command on that switch, where the filename given is the `n9000-epld.10.4.4.img` file. First, copy this file to the bootflash to proceed. In this example, the MIFPGA and IOFPGA EPLD images do not need to be upgraded.

Note: The CLI content in this document is only an example. Your CLI will reflect your hardware.

```
switch# show install all impact epld n9000-epld.10.4.4.img
```

```
Retrieving EPLD versions.... Please wait.
```

Images will be upgraded according to this table:

Module	Type	EPLD	Running-Version	New-Version	Upg-Required
1	LC	MI FPGA	0x0f	0x0f	No
1	LC	IO FPGA	0x0d	0x0d	No
1	LC	DB FPGA	0x0e	0x0e	No
21	FM	IO FPGA	0x07	0x07	No
27	SUP	IO FPGA	0x15	0x15	No
28	SUP	IO FPGA	0x15	0x15	No
29	SC	IO FPGA	0x20	0x20	No
30	SC	IO FPGA	0x20	0x20	No

Compatibility check:

Module	Type	Upgradable	Impact	Reason
1	LC	Yes	disruptive	Module Upgradable
21	SUP	Yes	disruptive	Module Upgradable
27	SUP	Yes	disruptive	Module Upgradable
28	SUP	Yes	disruptive	Module Upgradable
29	SC	Yes	disruptive	Module Upgradable
30	SC	Yes	disruptive	Module Upgradable

Upgrade During ISSU

This feature offers the option to upgrade EPLD images during disruptive system (NXOS) upgrade. You will designate the target EPLD image using the ISSU cli. The EPLD image will be validated during the pre-upgrade stage of the installation and the actual EPLD upgrade will be done before reloading the system. When the system comes back online, all EPLDs and NXOS system (including BIOS) will be upgraded to the new versions.

To upgrade your EPLD image using the ISSU cli, enter the EPLD image to be installed using the **install all nxos <nxos-image> epld <epld-image>** command.

For additional information about ISSU, please see the [Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide](#).

Displaying the Status of EPLD Upgrades

To display the status of EPLD upgrades on the switch, use the **show install epld status** command.

Limitations

When EPLDs are upgraded, apply these guidelines and observations:

- If a module is not online, you cannot upgrade its EPLD images.
- If there are two supervisors that are installed in the switch (Cisco Nexus 9504, 9508, and 9516 switches only), you can either upgrade only the standby or upgrade all modules (including both supervisor modules) by using these commands:
 - **install epld bootflash:** image module standby-supervisor-slot-number (upgrades only the standby supervisor module)

Note: After you use this command, you can switchover the active and standby supervisor modules and then upgrade the other supervisor.

- **install epld bootflash:** image module all (upgrades all of the modules)
- If there is only one supervisor that are installed in the switch, your upgrading or downgrading of EPLD images is disruptive.

Related Documentation

The entire [Cisco NX-OS 9000 Series documentation](#) set.

Release Notes

The entire [Cisco NX-OS 9000 Series release notes](#) set.

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