



Cisco Nexus 7000 Series FPGA/EPLD Upgrade Release Notes, Release 7.x

Release Date: February 12, 2016

[Table 1](#) shows the revision history changes for this document.

Table 1 Online History Change

Date	Description
February 12, 2016	Created for Cisco NX-OS Release 7.3(0)D1(1).
June 2015	Created for Cisco NX-OS Release 7.2(0)D1(1).

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

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Introduction

The Cisco Nexus 7000 Series switches, which include the Cisco Nexus 70xx and 77xx 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 an I/O module 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. To determine if there are any updated images, see [Table 3 on page 5](#). These EPLD image updates are not mandatory unless otherwise specified. The EPLD image upgrades are independent from the Cisco NX-OS In Service Software Upgrade (ISSU) process, which upgrades the system and kickstart images 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 them from <http://www.cisco.com>.

Deciding When to Upgrade EPLDs

You do not always need to upgrade EPLD images but the following circumstances do require that you upgrade these images:

- If you are enabling software features (LISP, VPCs, and so on) that require EPLDs
- If you are using M2 Series 100-Gbps Ethernet I/O modules that remain powered down after booting up the switch

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 at this time, then you might consider postponing the upgrade until a better time.



Note

The EPLD upgrade operation is a disruptive operation. You should execute this operation only at a programmed maintenance time. The system/kickstart ISSU upgrade is a nondisruptive upgrade.



Note

Do not perform an EPLD upgrade during an ISSU system/kickstart upgrade.

Table 2 provides high-level guidelines to help network administrators determine whether an EPLD upgrade is necessary when upgrading the Cisco NX-OS Release 5.0(1) or later releases. If you are upgrading an earlier release, see one of the following earlier versions of the release notes:

- *Cisco Nexus 7000 Series FPGA/EPLD Upgrade Release Notes, Release 4.0*
- *Cisco Nexus 7000 Series FPGA/EPLD Upgrade Release Notes, Release 4.1*

Table 2 Conditions For Upgrading EPLD Images

Condition	Modules Recommended for Upgrades ¹
Upgrading Supervisor 2 E from any Cisco Nexus N77xx device to Cisco Nexus N7702 device for Release 7.2(0)D1(1).	Upgrade the EPLD to (1.004) 20.0.
M2 Series I/O modules remain powered down after booting up the switch for Cisco NX-OS Release 6.1(1) or 6.1(2).	Download one of the following EPLD images and use the no poweroff module command for each powered down M2 Series I/O module: <ul style="list-style-type: none"> • For Release 6.1(1) and supervisor 2 modules download n7000-s2-epld.6.1.1a.img. • For Release 6.1(2) and supervisor 2 modules download n7000-s2-epld.6.1.2a.img.
Upgrading the Cisco NX-OS operating system from Release 4.x to Release 5.0 or later releases.	Update all supervisor, I/O, and fabric modules with the latest EPLD images.
Moving 32-port 10-Gbps Ethernet I/O modules from a Cisco Nexus 7010 switch to a Cisco Nexus 7018 switch.	32-port 10-Gbps Ethernet I/O modules (N7K-M132XP-12)
Moving 48-port 10/100/1000 Ethernet I/O modules from a Cisco Nexus 7010 switch to a Cisco Nexus 7018 switch.	48-port 10/100/1000 Ethernet I/O modules (N7K-M148GT-11)

1. We recommend (not mandatory) that you upgrade the EPLD images for the supervisor, I/O, and fabric modules.

Switch Requirements

The Cisco Nexus 7000 Series switch must be running the Cisco NX-OS operating system and include the following hardware:

- Supervisor modules—one or two, each with at least 120 MB of available bootflash or slot0 memory
- I/O modules—at least one
- Fabric modules—at least three (Cisco Nexus 7009, 7010, 7018, 7706, 7710, and 7718 only)
- Fan trays
 - For the Cisco Nexus 7004, one fan tray
 - For the Cisco Nexus 7009 chassis, one fan tray
 - For the Cisco Nexus 7010 chassis, two system fan trays and two fabric fan trays

- For the Cisco Nexus 7018 chassis, two fan trays
- For the Cisco Nexus 7702 chassis, one fan tray
- For the Cisco Nexus 7706, 7710, and 7718 chassis, three fan trays

You must be able to access the switch through a console, SSH, or Telnet.

You must have administrator privileges to work with the Cisco Nexus 7000 Series switch.

EPLDs Available for Releases 7.x

Each EPLD image that you can download from <http://www.cisco.com> is a bundle of EPLD upgrades. To see the updated EPLD versions for each release, see [Table 3](#).

Cisco NX-OS Release 7.3(0)D1(1) includes the following new EPLD images:

- n7000-s1-epld.7.3.0.D1.1.img
- n7700-s2-epld.7.3.0.D1.1.img

Cisco NX-OS Release 7.2(0)D1(1) includes new EPLD images for the supervisor 2E module, N77-C7702-FAN, and the F3 series modules as listed below.

- Supervisor 2E module (N77-SUP2E) (from 19.000 to 20.000)
- N77-C7702-FAN (Version 0.016)
- F3 Series 48-port, 1- and 10-Gigabit Ethernet I/O module (N77-F348XP-23) (from 1.007 to 1.008)
- F3 Series 12-port, 100-Gigabit Ethernet I/O module (N77-F312CK-26) (Version 0.019)
- F3 Series 48-port, 1- and 10-Gigabit Ethernet I/O module (N77-F348XP-23) (from 1.004 to 1.007)
- F3 Series 48-port, 1- and 10-Gigabit Ethernet I/O module (N77-F348XP-23) (from 0.026 to 0.031)
- F3 Series 48-port, 1- and 10-Gigabit Ethernet I/O module (N77-F348XP-23) (from 1.002 to 1.003)

Cisco Nexus 7700 switches have an EPLD image that is programmed on the switches. This EPLD image is different than the EPLD image for the Cisco Nexus 7000 switches.



Note

The CPAK-100G-ER4L transceiver works in N77-F312CK-26 only when you upgrade EPLD IO SPI to version 0.021. Other transceivers such as CPAK-100G-LR4, CPAK-100G-SR10, and CPAK-100G-SR4 function properly in N77-F312CK-26 with EPLD version 0.019.

The Cisco Nexus 7000 Series Network Analysis Module (Cisco NAM-NX1) also includes an EPLD image that is programmed on the device.

The following modules are supported in Cisco NX-OS 7.3.x and in Cisco NX-OS 7.2.x releases:



Note

[Table 3](#) shows EPLD image numbers in X.00y format but the **show** commands might display these numbers in an older X.y format (without leading zeros) for earlier EPLD images.

Table 3 *EPLD Upgrades for Cisco NX-OS Releases*

Module Type EPLD Device	Module Versions	Releases
		Cisco NX-OS 7.3.x and 7.2.x Releases
Supervisor 2 and 2E modules (N7K-SUP2 and N7K-SUP2E) (for Cisco Nexus 70xx switches)		
Power Manager	All	2.005
IO	All	1.013
Supervisor 2E module (N77-SUP2E) (for Cisco Nexus 7702 switches)		
Power Manager	All	1.4
Note: This is mandatory for Cisco Nexus 7702 Switches.		
F1 Series 32-port, 1- and 10-Gigabit Ethernet I/O module (N7K-F132XP-15)		
Power Manager	All	1.001
IO	All	0.045
F2 Series 48-port, 1- and 10-GBASE-T Ethernet (enhanced) (N77-F248XP-23E)		
Power Manager	All	0.006
IO	All	0.005
F2 Series 48-port, 1- and 10-Gigabit Ethernet I/O modules (N7K-F248XP-25)		
Power Manager	All	1.006
IO	All	0.006
F2 Series 48-port, 1- and 10-Gigabit Ethernet I/O modules (enhanced) (N7K-F248XP-25E)		
Power Manager	All	1.006
IO	All	0.001
F2 Series 48-port, 1- and 10-GBASE-T Ethernet I/O modules (enhanced) (N7K-F248XT-25E)		
Power Manager	All	1.009
IO	All	0.016
F3 Series 48-port, 1- and 10-Gigabit Ethernet I/O module (N77-F348XP-23)		
Power Manager	All	1.007
IO	All	0.031
SFP	All	1.003
F3 Series 48-port, 1- and 10-Gigabit Ethernet I/O module (N7K-F348XP-25)		
Power Manager	All	1.000
IO	All	1.003
SFP	All	1.002
F3 Series 24-port, 40-Gigabit Ethernet I/O module (N77-F324FQ-25)		
Power Manager	All	1.004
IO	All	0.028
F3 Series 12-port, 100-Gigabit Ethernet I/O module (N77-F312CK-26)		
Power Manager	All	1.008

Table 3 EPLD Upgrades for Cisco NX-OS Releases (continued)

Module Type	Module	Releases
EPLD Device	Versions	Cisco NX-OS 7.3.x and 7.2.x Releases
IO	All	0.021
F3 Series 12-port, 40-Gigabit Ethernet I/O module (N7K-F312FQ-25)		
Power Manager	All	2.003
IO	All	1.005
F3 Series 6-port, 100-Gigabit Ethernet I/O module (N7K-F306CK-25)		
Power Manager	All	2.003
IO	All	1.004
M1 Series 48-port, 1-Gigabit Ethernet I/O module (N7K-M148GS-11)		
Power Manager	All	4.008
IO	All	1.006
SFP	All	1.004
Forwarding Engine	All	1.006
M1 Series 48-port, 1-Gigabit Ethernet I/O module with XL (N7K-M148GS-11L)		
Power Manager	All	4.008
IO	All	1.006
SFP	All	1.004
Forwarding Engine	V01-V04	1.006
	V05+	2.012
M1 Series 48-port, 10/100/1000 Ethernet I/O module (N7K-M148GT-11)		
Power Manager	All	5.006
IO	All	2.014
Forwarding Engine	All	1.006
M1 Series 48-port, 10/100/1000 Ethernet I/O module with XL (N7K-M148GT-11L)		
Power Manager	All	5.006
IO	All	2.014
Forwarding Engine	V01-V03	1.006
	V04+	2.012
M1 Series 32-port, 10-Gigabit Ethernet I/O module (N7K-M132XP-12)		
Power Manager	All	4.008
IO	All	1.016
LinkSec Engine	All	2.007
FE Bridge	All	186.010
Forwarding Engine	All	1.006

Table 3 *EPLD Upgrades for Cisco NX-OS Releases (continued)*

Module Type	Module	Releases
EPLD Device	Versions	Cisco NX-OS 7.3.x and 7.2.x Releases
M1 Series 32-port, 10-Gigabit Ethernet I/O module with XL (N7K-M132XP-12L)		
Power Manager	All	4.008
IO	All	1.016
LinkSec Engine	All	2.007
FE Bridge	All	186.010
Forwarding Engine	V01-V03	1.006
	V06+	2.012
M1 Series 8-port, 10-Gigabit Ethernet I/O module with XL (N7K-M108X2-12L)		
Power Manager	All	4.008
IO	All	2.007
CDL FPGA	All	2.004
Forwarding Engine	V01-V05	1.006
	V03+	2.012
M2 Series 24-port, 10-Gigabit Ethernet I/O module with XL (N7K-M224XP-23L)		
Power Manager	All	1.006
IO	All	1.003
SFP	All	1.003
Forwarding Engine	V01-V02	1.006
	V03+	2.012
M2 Series 6-port, 40-Gigabit Ethernet I/O module with XL (N7K-M206FQ-23L)		
Power Manager	All	1.006
IO	All	0.012
SFP	All	2.008
Forwarding Engine	V01-V02	1.006
	V03+	2.012
M2 Series 2-port, 100-Gigabit Ethernet I/O module with XL (N7K-M202CF-22L)		
Power Manager	All	1.007
IO	All	0.009
SFP	All	0.004
Forwarding Engine	V01-V02	1.006
	V03+	2.012

Table 3 EPLD Upgrades for Cisco NX-OS Releases (continued)

Module Type EPLD Device	Module	Releases
	Versions	Cisco NX-OS 7.3.x and 7.2.x Releases
NAM service module (N7K-SM-NAM-K9)		
Power Manager	All	2.008
IO	All	2.003
Azuma	All	0.006
Promenade	All	3.001
Fabric-1 module (Cisco Nexus 7010) (N7K-C7010-FAB1)		
Power Manager	All	2.010
Fabric-1 module (Cisco Nexus 7018) (N7K-C7018-FAB1)		
Power Manager	All	1.003
Fabric-2 module (Cisco Nexus 7009) (N7K-C7009-FAB2)		
Power Manager	All	1.003
Fabric-2 module (Cisco Nexus 7010) (N7K-C7010-FAB2)		
Power Manager	All	0.007
Fabric-2 module (Cisco Nexus 7018) (N7K-C7018-FAB2)		
Power Manager	All	0.007
Fabric-2 module (Cisco Nexus 7706) (N77-C7706-FAB2)		
Power Manager	All	1.002
Fabric-2 module (Cisco Nexus 7710) (N77-C7710-FAB2)		
Power Manager	All	1.003
Fabric-2 module (Cisco Nexus 7718) (N77-C7718-FAB2)		
Power Manager	All	1.002
Fan (Cisco Nexus 7004) (N7K-C7004-FAN)		
Fan Controller	All	0.005
Fan (Cisco Nexus 7009) (N7K-C7009-FAN)		
Fan Controller	All	0.009
Fan (Cisco Nexus 7010) (N7K-C7010-FAN)		
Fan Controller	All	0.007
Fan (Cisco Nexus 7018) (N7K-C7018-FAN)		
Fan Controller	All	0.002
Fan (Cisco Nexus 7702) (N77-C7702-FAN)		
Fan Controller	All	0.016
Fan (Cisco Nexus 7706) (N77-C7706-FAN)		
Fan Controllers 1 and 2	All	0.006
Fan (Cisco Nexus 7710) (N77-C7710-FAN)		
Fan Controllers 1 and 2	All	0.006

Table 3 EPLD Upgrades for Cisco NX-OS Releases (continued)

Module Type	Module	Releases
EPLD Device	Versions	Cisco NX-OS 7.3.x and 7.2.x Releases
Fan (Cisco Nexus 7718) (N77-C7718-FAN)		
Fan Controllers 1 and 2	All	0.006

**Note**

To list the EPLDs running on your switch, use the **show version module *module_number* epld** command. If any of the versions that you list are older than what is listed in [Table 3](#), we recommend that you update the EPLDs.

Determining Whether to Upgrade EPLD Images

As shown in [Table 4](#), you can use various **show** commands to determine whether the EPLDs can be upgraded for all the modules or for specific modules on a switch. These commands indicate the current EPLD images, new EPLD images, and whether the upgrades would be disruptive to switch operations.

Table 4 Displaying the EPLD Upgrade Status for the Switch and its Modules

Modules to Verify EPLD Status	Command
All modules on the switch	<code>show install all impact epld bootflash:filename</code>
I/O and supervisor modules	<code>show install module slot_number impact epld bootflash:filename</code>
Fabric modules	<code>show install xbar-module slot_number impact epld bootflash:filename</code>
Fan-tray modules	<code>show install fan-module slot_number impact epld bootflash:filename</code>

If there are different EPLD images to use depending on the version ID (VID) of a hardware module (see [Table 3 on page 5](#)), then you must determine the version number of the module by using the **show sprom module number** command as shown in [Example 1](#).

Example 1 Determining the Version Number of a Supervisor or I/O Module

```
switch# show sprom module 8 1
DISPLAY linecard sprom contents of module 8:
Common block:
  Block Signature : 0xabab
  Block Version   : 3
  Block Length    : 160
  Block Checksum  : 0x198b
  EEPROM Size     : 65535
  Block Count     : 3
  ...
  H/W Version     : 0.102
  Mfg Bits        : 0
  Engineer Use    : 0
```

```

snmpOID      : 9.12.3.1.9.66.5.0
Power Consump : -600
RMA Code     : 0-0-0-0
CLEI Code    : COUIAY6CAA
VID          : V01          <-----Version ID
...

```

Downloading the EPLD Images

Before you can prepare the EPLD images for installation, you must download them to the FTP or management server.

To download the EPLD images, follow these steps:

-
- Step 1** From a browser, go to the following URL:
<http://www.cisco.com>
The browser will display the Cisco website.
 - Step 2** From the Products & Services tab, choose **Switches**.
The Switches page opens.
 - Step 3** In the Data Center area, click the arrow next to View Products.
The page lists the Data Center products.
 - Step 4** Click **Nexus 7000**.
The Cisco Nexus 7000 Series Switches page opens.
 - Step 5** In the Support area, click **Download Software**.
The Downloads page opens and lists the Data Center switches.
 - Step 6** Choose a Cisco Nexus 7000 Series switch from the list under **Data Center Switches > Cisco Nexus 7000 Series Switches**.
The Log In page opens.
 - Step 7** If you are an existing user, enter your username in the **User Name** field and your password in the **Password** field. If you are a new user, click Register Now and provide the required information before returning to the Log In page and logging in with your new username.
The Downloads page lists the software types that can be downloaded for the switch that you specified.
 - Step 8** Click **NX-OS EPLD Updates**.
The Downloads page lists software releases that you can download.
 - Step 9** Choose **Latest Releases > 6.2(10)**.
The Downloads page displays image information, including a link to the downloadable Tar file, to the right of the releases.



Note For Releases 6.1(1) or 6.1(2), you must download EPLD image files for 6.1(1a) or 6.1(2a).

- Step 10** Click the link for the Tar file.
The Downloads page displays a Download button and lists information for the Tar file.
- Step 11** Click **Download**.

The Supporting Documents page opens to display the rules for downloading the software.

Step 12 Read the rules and click **Agree**.

A File Download dialog box opens to ask if you want to open or save the images file.

Step 13 Click **Save**.

The Save As dialog box appears.

Step 14 Indicate where to save the Tar file and click **Save**.

The Tar file saves to the location that you specified.

You are ready to prepare the EPLD images for Installation (see the [“Preparing the EPLD Images for Installation” section on page 13](#)).

EPLD Images Needed for vPCs

The virtual port channel (vPC) feature is available beginning with Cisco NX-OS Release 4.1(3). When you enable vPC on the chassis, you must have EPLD image 186.3 (or later image) on the 32-port 10-Gigabit Ethernet types of I/O modules (N7K-M132XP-12 and N7K-M132XP-12L).



Note

The EPLD upgrade operation is a disruptive operation. You should execute this operation only at a programmed maintenance time. The system/kickstart ISSU upgrade is a nondisruptive upgrade.



Note

Do not perform an EPLD upgrade during an ISSU system/kickstart upgrade.

Most of the N7K-M132XP-12 modules in the chassis already meet this minimum EPLD requirement, but if you are working with an N7K-M132XP-12 module that was shipped before June 2008, you might need to upgrade the EPLD version.

To determine the EPLD version for all N7K-M132XP-12 modules, enter the **show version module slot_number epld** command. If the line FE Bridge(x) version displays a version earlier than 186.7, you should schedule an EPLD upgrade to a version that is compatible with the target Cisco NX-OS release. For example, if you want to run Cisco NX-OS Release 6.1(2), you should choose Release 6.1(2) EPLDs.

The following example shows Release 186.008 on the FE Bridge line, which is a correct EPLD version:

```
Nexus-7k(config)# show version module 7 epld

EPLD Device                               Version
-----
Power Manager                             4.008
IO                                          1.016
Forwarding Engine                         1.006
FE Bridge(1)                              186.008 << OK!
FE Bridge(2)                              186.008 << OK!
Linksec Engine(1)                         2.007
Linksec Engine(2)                         2.007
Linksec Engine(3)                         2.007
Linksec Engine(4)                         2.007
Linksec Engine(5)                         2.007
Linksec Engine(6)                         2.007
```

Linksec Engine(7)	2.007
Linksec Engine(8)	2.007

EPLD Images Needed for LISP

The Locator/ID Separator Protocol (LISP) feature is available beginning with Cisco NX-OS Release 5.2(1). When you enable LISP on the chassis, you must have EPLD image 186.008 (or later image) on the 32-port 10-Gigabit Ethernet types of I/O modules (N7K-M132XP-12 and N7K-M132XP-12L).



Note

The EPLD upgrade operation is a disruptive operation. You should execute this operation only at a programmed maintenance time. The system/kickstart ISSU upgrade is a nondisruptive upgrade.



Note

Do not perform an EPLD upgrade during an ISSU system/kickstart upgrade.

If you are working with an N7K-M132XP-12 module that was shipped before July 2011, you might need to upgrade the EPLD version.

To determine the EPLD version for all N7K-M132XP-12 and N7K-M132XP-12L modules, enter the **show version module *module_id* epld**. If the line FE Bridge(x) version displays a version earlier than 186.008, you should schedule an EPLD upgrade to a version that is compatible with the target Cisco NX-OS release. For example, if you want to run Cisco NX-OS Release 5.2(1), you should choose Release 5.2(1) EPLDs.

The following example shows Release 186.008 on the FE Bridge line, which is the correct EPLD version:

```
Nexus-7k(config)# show version module 7 epld

EPLD Device                               Version
-----
Power Manager                             4.008
IO                                          1.016
Forwarding Engine                         1.006
FE Bridge(1)                              186.008 << OK!
FE Bridge(2)                              186.008 << OK!
Linksec Engine(1)                         2.007
Linksec Engine(2)                         2.007
Linksec Engine(3)                         2.007
Linksec Engine(4)                         2.007
Linksec Engine(5)                         2.007
Linksec Engine(6)                         2.007
Linksec Engine(7)                         2.007
Linksec Engine(8)                         2.007
```

Installation Guidelines

You can upgrade (or downgrade) EPLDs using CLI commands on the Cisco Nexus 7000 Series switch. By default, EPLD images are not downgraded when you downgrade the NX-OS software release because each EPLD image works with older releases of the software. If you need to downgrade the EPLD version, you must include the **allow-downgrade** keyword with the **install** command. Follow these guidelines when you upgrade or downgrade EPLDs:

- Before you upgrade any EPLD images, be sure that you have updated the Cisco NX-OS operating system to the level required for the images and be sure that you have one of the following EPLD image files:
 - n7000-s2-epld.6.2.8.img (for Cisco Nexus 7004, 7009, 7010, and 7018 switches with Supervisor 2 or Supervisor 2E modules)
 - n7700-s2-epld.6.2.8.img (for Cisco Nexus 7706, 7710, and 7718 switches)
- You can execute an upgrade from the active supervisor module only. This upgrade is for one or all of the modules as follows:
 - You can upgrade a module individually.
 - You can upgrade all modules sequentially.
 - You can upgrade all modules in parallel.
- You can update the images for one or all modules whether the switch is online or offline as follows:
 - If the modules are on line, only the EPLD images with version numbers that differ from the new EPLD images are upgraded.
 - If the modules are offline, all of the EPLD images are upgraded.
- On a system that has two supervisor modules, upgrade the EPLDs for the standby supervisor and then switch the active supervisor to the standby mode to upgrade its EPLDs (the supervisor switchover is not disruptive to traffic on Cisco Nexus 7000 Series switches). On a switch that has only one supervisor module, you can upgrade the active supervisor, but this will disrupt its operations during the upgrade.
- If you interrupt an upgrade, you must upgrade the module that is being upgraded again.
- The upgrade process disrupts traffic on the targeted module.
- Do not insert or remove any modules while an EPLD upgrade is in progress.

Preparing the EPLD Images for Installation

Before you can update the EPLD images for each of your switch modules, you must determine the Cisco NX-OS version that your switch is using, make sure that there is space for the new EPLD images, and download the images.

To prepare the EPLD images for installation, follow these steps:

-
- Step 1** Log in to the switch through the console port, an SSH session, or a Telnet session.

- Step 2** Verify that the switch is using the expected version of the Cisco NX-OS operating system. The kickstart and system lines indicate the Cisco NX-OS version. This step determines the versions of EPLD images that you must download.

```
switch# show version
...
Software
_ BIOS:_____ version 7.2.0
_ kickstart: version 7.2(0)
_ system:___ version 7.2(0)
_ BIOS compile time:_____ 09/29/2014
_ kickstart image file is: bootflash:///n7000-s2-kickstart.7.2.0.bin
_ kickstart compile time:___ 10/9/2014 12:00:00 [10/12/2014 10:51:03]
_ system image file is:___ bootflash:///n7700-s2-dk9.7.2.0.bin
_ system compile time:_____ 10/9/2014 12:00:00 [10/12/2014 12:33:26]
...
switch#
```

- Step 3** Verify that you have 120 MB of free space on the active or standby supervisor memory devices for the EPLD images that you will be downloading by using the **dir bootflash:** or **dir slot0:** commands.

By default, these commands display the used and free memory for the active supervisor. If your switch has an additional supervisor (a standby supervisor), use the **show module** command to find the module number for the other supervisor, use the **attach module** command to attach to the module number, and then use the **dir bootflash:** or **dir slot0:** command to determine the amount of used and free memory. See [Example 2](#) to determine the amount of available bootflash memory, and see [Example 3](#) to determine the amount of available slot0 memory.

Example 2 *Determining the Amount of Available Bootflash Memory*

```
switch# dir bootflash:
...
      4096      Oct 05 01:19:53 2014 lost+found/
...
 29479424      Dec 11 12:03:47 2013 n7000-s2-kickstart.6.2.8.gbin
 29467136      Oct 15 10:35:18 2014 n7000-s2-kickstart.6.2.10.gbin
...

Usage for bootflash://sup-local
 978673664 bytes used
 860184576 bytes free
1838858240 bytes total
switch# show module
Mod  Ports  Module-Type                Model                Status
---  ---
 6    8       10 Gbps Ethernet XL Module N7K-M108X2-12L      ok
 7    48      1/10 Gbps Ethernet Modul  N7K-F248XP-24       ok
 8    48      1000 Mbps Optical Ethernet XL Mo N7K-M148GS-11L      ok

switch# attach module 9
Attaching to module 9 ...
To exit type 'exit', to abort type '$.'
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
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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
switch#
```

Example 3 Determining the Amount of Available Slot0 Memory

```
switch# dir slot0:
...

Usage for slot0://sup-local
    4096 bytes used
 2044850176 bytes free
 2044854272 bytes total

switch# show module
Mod  Ports  Module-Type                               Model                               Status
---  -
2    48     10/100/1000 Mbps Ethernet Module      N7K-M148GT-11                       ok
3    48     10/100/1000 Mbps Ethernet Module      N7K-M148GT-11                       ok
4    48     10/100/1000 Mbps Ethernet Module      N7K-M148GT-11                       ok
5    32     1/10 Gbps Ethernet Module              N7K-F248XP-25                       ok
6    48     1000 Mbps Optical Ethernet Modul      N7K-M148GS-11                       ok
...

switch(standby)# dir slot0://sup-standby/
...

Usage for slot0://sup-standby
    1376256 bytes used
 2073870336 bytes free
 2075246592 bytes total
```

- Step 4** If there is not at least 120 MB of memory free for the EPLD files, delete some unneeded files, such as earlier images, so there is enough free memory.

```
switch# delete bootflash:n7000-s2-kickstart.7.2.0.bin
```

- Step 5** Copy the EPLD image file from the FTP or management server to the bootflash or slot0 memory in the active supervisor module. The following example shows how to copy from the FTP server to the bootflash memory:

```
switch# copy ftp://10.1.7.2/ n7000-s2-epld.7.2.0.D1.1.img
bootflash:n7000-s2-epld.7.2.0.D1.1.img
```



Note

For NX-OS Release 6.1(1), you must copy the n7000-s2-epld.6.1.1a.img (for supervisor 2 modules) files. For NX-OS Release 6.1(2), you must copy the n7000-s2-epld.6.1.2a.img (for supervisor 2 modules) files.

- Step 6** Copy the EPLD image to the standby supervisor.

```
switch# copy bootflash:n7000-s2 epld.7.2.0.D1.1.img
bootflash://sup-standby/ n7000-s2-epld.7.2.0.D1.1.img
```

You are ready to upgrade the EPLD images (see the [“Manual Upgrading of EPLD Images”](#) section on page 16).

Manual Upgrading of EPLD Images

You can manually upgrade the EPLD images for either all of the modules installed in your switch or specific modules installed in your switch. When you request an upgrade, the Cisco NX-OS software lists the current and new versions for each EPLD image with the following results:

- If a module is installed and online, the software lists the installed and new versions for each EPLD. Where there is a difference in versions, the software indicates an upgrade or downgrade to occur when you confirm the process.
- If a module is installed and offline, the software cannot list its current EPLD versions so all EPLDs will be updated when you confirm the upgrade.
- If a module is not installed, the software displays an error message and does not upgrade the EPLDs.

If you need to know which modules can be updated and which upgrades are disruptive to switch operations, see the [“Determining Whether to Upgrade EPLD Images”](#) section on page 9.

To upgrade the EPLD images for a Cisco Nexus 7000 Series switch, you use one of the **install** commands listed in [Table 5](#). These commands enable you to upgrade the EPLD images for all of the modules on the switch, multiple modules of one or two types, or single modules. When specifying a *slot_number*, use one number. When specifying *slot_numbers*, you can specify **all** for all slots, multiple slots separated by commas (*x,y,z*) or a range of slot numbers (*x-y*).

Table 5 EPLD Upgrade Commands

Modules Upgraded	Command
All installed modules with one module upgraded at a time	install all epld <i>epld_image</i>
All installed modules with the I/O modules upgraded in parallel	install all epld <i>epld_image</i> parallel
One or more I/O and supervisor modules with the I/O modules upgraded in parallel	install all epld <i>epld_image</i> parallel module { all <i>slot_numbers</i> }
One or more I/O and supervisor modules with the I/O modules upgraded in parallel and one or more fan-tray modules	install all epld <i>epld_image</i> parallel module { all <i>slot_numbers</i> } fan-module { all <i>slot_numbers</i> }
One or more I/O and supervisor modules with the I/O modules upgraded in parallel and one or more fabric (xbar) modules	install all epld <i>epld_image</i> parallel module { all <i>slot_numbers</i> } xbar-module { all <i>slot_numbers</i> }
One or more fan-tray modules and one or more fabric (xbar) modules	install all epld <i>epld_image</i> parallel fan-module { all <i>slot_numbers</i> } xbar-module { all <i>slot_numbers</i> }
One I/O (F1, F2, M1, and M2 Series only) or supervisor module	install all epld <i>epld_image</i> parallel module <i>slot number</i>
One I/O (F3 Series)	install all epld <i>epld_image</i> parallel module { all <i>slot_numbers</i> }
One fan module	install fan-module <i>slot_number</i> epld <i>epld_image</i>
One fabric module	install xbar-module <i>slot_number</i> epld <i>epld_image</i>

When you upgrade both supervisor modules in a switch, Cisco NX-OS upgrades the EPLD images for the standby supervisor module and then upgrades the active supervisor module. This action enables the upgrade of supervisor modules to be nondisruptive to switch operations.

**Note**

When upgrading EPLD images for Supervisor 2 or Supervisor 2E modules in a dual-supervisor switch, the standby supervisor will reset twice towards the end of that upgrade but the upgrade continues to completion and the console displays the upgrade status.

When you upgrade supervisor module in a single-supervisor switch, the operation is disruptive to switch operations if the switch is active.

To start the installation of all new EPLD images for all modules in a switch, use the **install all epld** command as shown in [Example 4](#) (switches with Supervisor 2 or Supervisor 2E modules).

**Note**

When upgrading EPLD images for F3 Series I/O modules, you must upgrade them in parallel by including the **parallel** keyword with the **install** command. For example, if you are updating the images for the F3 Series I/O module in slot 2, you use the following command:

```
switch# install all epld epld_image parallel module 2
```

**Note**

EPLD and software images for a chassis with Supervisor 2 and Supervisor 2E have “s2” in the image name.

Example 4 Installing EPLD Images in Parallel for Switches with Supervisor 2 or Supervisor 2E Modules

```
switch# install all epld bootflash:n7000-s2-epld.7.2.0.D1.1.img parallel
```

**Note**

For Releases 6.1(1) and 6.1(2), if there are any powered down M2 Series I/O modules, use the **no poweroff module** command to power up that module.

```
switch# no poweroff module slot_number
```

**Note**

For Release 4.0(2) or earlier releases, if you updated the power management EPLD image, you must reset the power for the module so that EPLD can take effect (this is not required for release 4.0(3) or later). You can reset the power in one of the following two ways: reset the power for the module (physically remove the module and reinstall it—a module reload or just pressing the ejector buttons is not sufficient for this reset requirement), or reset the entire switch (power cycle the switch).

**Caution**

Resetting the power disrupts any data traffic going through the affected modules. If you power cycle the entire switch, all data traffic going through the switch at the time of the power cycling is disrupted. This is not necessary for Release 4.0(3) or later releases.

**Note**

For Release 4.0(3) and later releases, the switch automatically loads the new power management EPLD after an upgrade, so it is no longer necessary to reset the power for the module or switch.

To confirm the EPLD upgrades, see the [“Verifying the EPLD Upgrades and Downgrades”](#) section on page 20.

Automatic Upgrading of EPLD Images

You can enable, disable, and verify automatic upgrading of EPLD images for I/O modules installed in the Cisco Nexus 70xx (as of Release 6.2[2]) and 77xx (as of Release 6.2[6]) switches. Also, if the upgrade is canceled because it exceeds a maximum number of programmed attempts, you can reset the process to enable the upgrades.



Note

You can set automatic upgrading of EPLD images for only I/O modules, not for other modules such as the supervisor modules, fabric modules, or fan trays.

This section includes the following topics:

- [Enabling or Disabling Automatic Upgrades of EPLD Images, page 18](#)
- [Verifying Automatic Upgrades of EPLD Images, page 19](#)
- [Resetting Automatic Upgrades of EPLD Images, page 19](#)

Enabling or Disabling Automatic Upgrades of EPLD Images

You can enable or disable automatic upgrades of EPLD images for I/O modules. When enabled, the switch checks the EPLD image versions on newly installed or powered up I/O modules to see if they are older than the images that were installed on the switch. If the images on the I/O modules are older, the switch automatically upgrades the images to the newer versions.

SUMMARY STEPS

1. **configure terminal**
2. **system auto-upgrade epld**
3. **show running-config | inc epld**



Note

Alternatively, to prevent automatic upgrades of EPLD images for I/O modules, use the **no system auto-upgrade epld** command.

DETAILED STEPS

	Command	Purpose
Step 1	<pre>configure terminal Example: switch# configure terminal switch(config)#</pre>	Enters global configuration mode.

	Command	Purpose
Step 2	system auto-upgrade epld Example: switch(config)# system auto-upgrade epld Auto upgrade enabled switch(config)#	Enables automatic updates.
	no system auto-upgrade epld Example: switch(config)# no system auto-upgrade epld Auto upgrade disabled switch(config)#	Disables automatic updates.
Step 3	show running-config inc epld Example: switch(config)# show running-config inc epld system auto-upgrade epld switch(config)#	Verifies whether auto upgrades are part of the running configuration.

Verifying Automatic Upgrades of EPLD Images

To check on the automatic upgrade status while the upgrades occur or after the upgrades, use the commands listed in [Table 1-6](#).

Table 1-6 Automatic EPLD Upgrade Verification Commands

Command	Action
show system auto-upgrade epld status	Displays the status of the ongoing automatic upgrades.
show install auto-upgrade epld status	Displays the current and old EPLD versions after an upgrade.



Note

During automatic upgrades of I/O modules, the status for VDC creation is pending until all of the installed I/O modules are upgraded and online.

Resetting Automatic Upgrades of EPLD Images

If the automatic upgrade function has stopped because it has exceeded the maximum number of allowed update attempts, you will see the following message:

```
switch# 2013 May 21 13:30:21 switch %$ VDC-1 %$_ %USER-2-SYSTEM_MSG:
<<%EPLD_AUTO-2-AUTO_UPGRADE_CHECK>> Automatic EPLD upgrade check for module 15: Max
retries reached. Use 'clear auto-upgrade epld flags all' to upgrade. - epld_auto
```

You can reset the automatic upgrade process in one of the following ways:

- Clearing the auto-upgrade epld flags for all of the I/O modules by using the **clear auto-upgrade epld flags all** command.
- Clearing the auto-upgrade epld flags for a specific I/O module by using the **clear auto epld flags module_number** command.
- Restarting the switch.

Downgrading EPLD Images

By default, you cannot downgrade EPLD images when you downgrade the NX-OS software release because the EPLD images work with downlevel versions of the software. For this reason, we do not recommend downgrading EPLD images. If you need to downgrade EPLD images, you must include the **allow-downgrade** keyword after the **parallel** keyword in the **install** command as shown in [Example 5](#).

Example 5 Downgrading EPLD Images

```
switch# install all epld bootflash: n7000-s2-epld.7.2.0.D1.1.img parallel allow-downgrade
```

Verifying the EPLD Upgrades and Downgrades

You can verify the EPLD upgrades and downgrades for each slot in the switch by using the commands listed in [Table 7](#).

Table 7 Commands Used to Display EPLD Information for Modules

Command	Modules Verified
show version module <i>slot_number</i> epld	I/O and supervisor modules
show version fan <i>slot_number</i> epld	Fan-tray modules
show version xbar <i>slot_number</i> epld	Fabric modules

This example shows how to verify the EPLD images for the Cisco Nexus 7018 supervisor module in slot 9:

```
switch# show version module 9 epld
```

This example shows how to verify the EPLD images for the fan-tray module in fan-tray module slot 2:

```
switch# show version fan 2 epld
```

This example shows how to verify the EPLD images for the fabric module in fabric module slot 4:

```
switch# show version xbar 4 epld
```

Displaying the Available EPLD Versions

To view the available EPLD versions in an EPLD image file, use the **show version epld url** command as shown in [Example 6](#).



Note

If the NX-OS and the EPLD versions do not match, issuing the `show version epld url` command may cause it to exit with the error message: `Could not extract EPLD images, Insufficient space in bootflash, Failed to extract EPLD image versions, Exiting`. For example, if a Nexus 7000 switch is running NX-OS 6.1(4) and the EPLD version is 6.2(2), issuing the `show version epld url` command will return the error message: `Could not extract EPLD images, Insufficient space in bootflash, Failed to extract EPLD image versions, Exiting`.

Example 6 *Displaying the Available EPLD Versions*

```

switch# show version epld bootflash:n7700-s2-epld.7.2.0.img
-
Retrieving EPLD versions... Please wait.
-
EPLD image file 6.2.6 built on Thu Dec 19 03:28:49 2014
-
Module Type_____ Model_____ EPLD Device_____ Version
-----
Fan_____ N77-C7706-FAN_____ Fan Controller (1)_ 0.005
Fan_____ N77-C7706-FAN_____ Fan Controller (2)_ 0.005
-
1/10 Gbps Ethernet Module_____ N77-F248XP-23E_____ Power Manager_____ 0.005
1/10 Gbps Ethernet Module_____ N77-F248XP-23E_____ IO_____ 0.005
-
Fabric Module 2_____ N77-C7706-FAB-2_____ Power Manager_____ 1.002
Supervisor Module 2_____ N77-SUP2E_____ Power Manager SPI_ 19.000
-
10/40 Gbps Ethernet Module_____ N77-F324FQ-25_____ Power Manager SPI_ 1.003
10/40 Gbps Ethernet Module_____ N77-F324FQ-25_____ IO SPI_____ 0.023
-
100 Gbps Ethernet Module_____ N77-F312CF-26_____ Power Manager SPI_ 1.004
100 Gbps Ethernet Module_____ N77-F312CF-26_____ IO SPI_____ 0.017
-
1/10 Gbps Ethernet Module_____ N77-F348XP-23_____ Power Manager SPI_ 1.003
1/10 Gbps Ethernet Module_____ N77-F348XP-23_____ SFP SPI_____ 1.001
1/10 Gbps Ethernet Module_____ N77-F348XP-23_____ IO SPI_____ 0.024
switch#
    
```

Displaying the Status of EPLD Upgrades

To display the status of EPLD upgrades on the switch, use the **show install epld status** command as shown in [Example 7](#).

Example 7 *Displaying EPLD Upgrades*

```

switch# show install epld status

1) Module 6 upgraded on Thu Sep 25 16:36:27 2014 (229507 us)

Status: EPLD Upgrade was Successful

EPLD                Curr Ver    Old Ver
-----
Power Manager SPI   37.000     34.000
IO SPI              1.013     1.012
...
    
```

Caveats

This section includes the following topics:

- [Open Caveats](#)
- [Resolved Caveats](#)

Open Caveats

This section lists the EPLD related caveats that are resolved for Cisco NX-OS Release 7.2(0)D1(1).

Table 8 *Cisco NX-OS Release 7.2(0)D1(1) Open Caveats Related to EPLD*

Record Number	Open Caveat Headline
CSCuu29557	Supervisor EPLD rev 1.4 needed to support the N7702 chassis
CSCuo79837	Improve manufacture yield with no UART character drop on virtual console
CSCuo91441	After ISSU all port LEDs on N77-F324FQ-25 are turned off
CSCuo12933	F3: One of the AOC breakout ports (5M) went to link flap err disabled state after switch reload: S13

Resolved Caveats

There are no resolved caveats related to EPLD for Cisco NX-OS Release 7.2(0)D1(1).

Limitations

When EPLDs are upgraded or downgraded, the following guidelines and observations apply:

- You cannot upgrade the Local Bus CPLD and CMP CPLD while you are upgrading a supervisor module in the 4.0(1) release only.
- You must upgrade each installed module individually. If the module is online, Cisco NX-OS upgrades only the EPLD images that have different current and new versions. If the module is offline, all EPLDs are upgraded, even if their version numbers are the same.
- The existing FPGA image version should match the new FPGA image version. For Example, the FPGA image version 2.x cannot be downloaded onto cards which already have FPGA image version 1.x, and vice-versa [FPGA images 1.x cannot be downloaded onto the revised cards, which have FPGA images 2.x].
- If you interrupt an upgrade, you must upgrade the module again.
- You can execute an upgrade or downgrade only from the active supervisor module. On switches with two supervisors, upgrade the standby supervisor and then switch the standby supervisor to active to place the previously active supervisor module in standby mode. Upgrade the EPLDs on the standby supervisor. On switches that have only one supervisor, you must upgrade or downgrade the EPLDs on the active supervisor, which will interfere with data traffic during the upgrade.
- Release 4.1(2) does not provide EPLD upgrades for the Cisco Nexus 7018 fan controller.

Related Documentation

Cisco Nexus 7000 Series documentation is available at the following URL:

http://www.cisco.com/en/US/products/ps9402/tsd_products_support_series_home.html

The documentation set includes the following documents:

- *Cisco Nexus 7000 Series Site Preparation Guide*

- *Cisco Nexus 7000 Series Hardware Installation and Reference Guide*
- *Cisco Nexus 7000 Series Regulatory Compliance and Safety Information*
- *Cisco Nexus 7000 Series Connectivity Management Processor Configuration Guide*

The release notes for upgrading Cisco NX-OS and DCNM are available at the following URL:

http://www.cisco.com/en/US/products/ps9402/prod_release_notes_list.html

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>

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