Cisco Nexus 7000 Series FPGA/EPLD Upgrade Release Notes, Release 5.2

Part Number: OL-25216-04
Release Date: March 22, 2012

Table 1 shows the online history changes for this document.

Table 1 Online History Change

Part Number	Date	Description
OL-25216-01	July 2011	Created for Cisco NX-OS Release 5.2(1).
OL-25216-02	August 14, 2011	Updated image number for the power manager.
OL-25216-03	October 11, 2011	Updated image numbers for supervisor, fabric, and fan modules.
	November 4, 2011	Updated image number format for examples.
	November 22, 2011	Updated the supervisor FPGA image number for Release 5.2(1).
OL-25216-04	December 10, 2011	Updated for Cisco NX-OS Release 5.2(3)
	March 22, 2012	Added notes about not doing EPLD upgrades during ISSU system/kickstart.

Contents

This document includes the following sections:

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Introduction

The Cisco Nexus 7000 Series 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 does not provide upgrade EPLD images very frequently, and you do not have to upgrade your EPLD images unless they fix the functions for the hardware that you are using in your Cisco Nexus 7000 Series switch. 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; however, 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. The Cisco Defect and Enhancement Tracking System (CDETS) listed in this table can be found in the following earlier versions of FPGA/EPLD 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 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.
Upgrading the Cisco NX-OS operating system from Release 4.0 to Release 4.1(2) or later releases.	Supervisor modules (N7K-SUP1) • Cisco Nexus 7010—Required for CSCsr03766 and to fix a kernel booting failure. • Cisco Nexus 7018—Required for CSCsq28232, CSCsr03766, CSCsu55410, and to fix a kernel booting failure. 32-port 10-Gbps Ethernet I/O modules (N7K-M132XP-12) • Cisco Nexus 7010—Required for CSCsu50821. • Cisco Nexus 7018—Required for CSCsq28232 and CSCsu50821. 48-port 10/100/1000 Ethernet I/O modules (N7K-M148GT-11) • Cisco Nexus 7010—Required for CSCsq97271, CSCsr42519, and CSCsr44846. • Cisco Nexus 7018—Required for CSCsq28232, CSCsq97271, CSCsr42519, and CSCsr44846.
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)
Moving the supervisor (N7K-SUP1) modules from a Cisco Nexus 7010 switch to a Cisco Nexus 7018 switch.	Supervisor (N7K-SUP1) modules

Table 2 Conditions For Upgrading EPLD Images (continued)

Condition	Modules Recommended for Upgrades[1]
Upgrading the Cisco NX-OS operating system from Release 4.1(2) to Release 4.1(3) or later releases on a switch that shipped with Release 4.1(2).	32-port 10-Gbps Ethernet I/O modules (N7K-M132XP-12) • Cisco Nexus 7010 and 7018—Required for CSCsv92355. Fabric modules for Cisco Nexus 7018 (N7K-C7018-FAB1) • Required for CSCsv92355 and CSCsx22079.
Upgrading the Cisco NX-OS operating system from Release 4.1(2) to Release 4.1(3) or later releases on a switch that did not ship with Release 4.1(2) and a full EPLD upgrade to Release 4.1(2) was not performed.	Supervisor modules (N7K-SUP1) • Cisco Nexus 7010—Required for CSCsr03766 and to fix a kernel booting failure. • Cisco Nexus 7018—Required for CSCsq28232, CSCsr03766, CSCsu55410, and to fix a kernel booting problem. 48-port 10/100/1000 Ethernet I/O modules (N7K-M148GT-11) • Cisco Nexus 7010—Required for CSCsq97271, CSCsr42519, and CSCsr44846. • Cisco Nexus 7018—Required for CSCsq28232, CSCsq97271, CSCsr42519, and CSCsr44846.
Using vPC on a system that you are upgrading NX-OS from Release 4.0 to Release 4.1(2) or later releases.	32-port 10-Gbps Ethernet I/O modules (N7K-M132XP-12) • Cisco Nexus 7010 and 7018—Required upgrade for using vPC.
Using Cisco Trusted Security on a system that you are upgrading Cisco NX-OS from Release 4.0 to Release 4.1(2) or later releases.	32-port 10-Gbps Ethernet I/O modules (N7K-M132XP-12) • Cisco Nexus 7010 and 7018—Required upgrade for using Cisco Trusted Security.

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

Switch Requirements

This section includes the following topics:

Hardware Requirements

The Cisco Nexus 7000 Series switch must include the following hardware:

- One or two supervisor modules, each with at least 120 MB of available bootflash or slot0 memory
- One or more I/O modules
- One or more fabric modules
- Two fabric fan tray modules (Cisco Nexus 7010)
- Two system fan tray modules (Cisco Nexus 7010)
- Two fan tray modules (Cisco Nexus 7018)

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.

Supported Switch Operating Systems

The Cisco Nexus 7000 Series switch must be running the Cisco NX-OS operating system, which is used to perform the EPLD upgrades.

EPLDs Available with Release 5.2(3)

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 1-3.

Table 1-3 EPLD Upgrades for Cisco NX-OS Releases

Module Type	Release								
EPLD Device	4.0(x)	4.1(2)	4.2(4)	4.2(6)	5.0(2)	5.0(3)	5.1(1)	5.2(1)	5.2(3)
Supervisor module (N7K-SUP1)									
Power Manager	3.6	3.7	–	–	3.009	–	–	–	–
IO	3.25	3.26	–	–	3.028	–	–	–	–
INBAND	1.7	–	–	–	1.008	–	–	–	–
Local Bus and CPLD	2.1	3.0	–	–	–	–	–	–	–
CMP CPLD	6.0	–	–	–	–	–	–	–	–
48-port 10/100/1000 Ethernet I/O module (N7K-M148GT-11 and N7K-M148GT-11L [beginning with Release 5.1(2)])									
Power Manager	5.3	5.4	–	–	5.006	–	–	–	–
IO	2.10	2.11	–	–	2.013	–	2.014	–	–
Forwarding Engine	1.6	–	–	–	–	–	–	–	–
48-port 1-Gigabit Ethernet I/O module (N7K-M148GS-11 and N7K-M148GS-11L [beginning with Release 5.0])									

Table 1-3 EPLD Upgrades for Cisco NX-OS Releases (continued)

Module Type / EPLD Device	Release 4.0(x)	4.1(2)	4.2(4)	4.2(6)	5.0(2)	5.0(3)	5.1(1)	5.2(1)	5.2(3)
Power Manager	N/A[1]	4.6	–	–	4.008	–	–	–	–
IO	N/A[1]	1.3	–	–	1.005	–	1.006	–	–
SFP	N/A[1]	1.4	–	–	–	–	–	–	–
Forwarding Engine	N/A[1]	1.6	–	–	–	–	–	–	–
32-port 10-Gigabit Ethernet I/O module (N7K-M132XP-12 and N7K-M132XP-12L [beginning with Release 5.1(1)])									
Power Manager	4.4	4.6	–	–	4.008	–	–	–	–
IO	1.10	1.13	1.14	1.15	–	–	1.016	–	–
LinkSec Engine	1.7	–	1.13	–	2.006	–	–	2.007	–
FE Bridge	186.3	–	–	–	186.005	–	186.006	186.008	–
Forwarding Engine	1.6	–	–	–	–	–	–	–	–
32-port 1- and 10-Gigabit Ethernet I/O module (N7K-F132XP-15)									
Power Manager	N/A	N/A	N/A	N/A	N/A	N/A	1.000	1.001	–
IO	N/A	N/A	N/A	N/A	N/A	N/A	0.045	–	–
8-port 10-Gigabit Ethernet I/O module (N7K-M108X2-12L)									
Power Manager	N/A[1]	N/A[1]	N/A[1]	N/A[1]	4.008	–	–	–	–
IO	N/A[1]	N/A[1]	N/A[1]	N/A[1]	2.006	–	2.007	–	–
CDL FPGA	N/A[1]	N/A[1]	N/A[1]	N/A[1]	2.004	–	–	–	–
Forwarding Engine	N/A[1]	N/A[1]	N/A[1]	N/A[1]	1.006	–	–	–	–
Fabric module Series 2 (Cisco Nexus 7009) (N7K-C7009-FAB2)									
Power Manager	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1.003	–
Fabric module Series 1 (Cisco Nexus 7010) (N7K-C7010-FAB1)									
Power Manager	2.8	2.9	–	–	2.010	–	–	–	–
Fabric module Series 1 (Cisco Nexus 7018) (N7K-C7018-FAB1)									
Power Manager	N.A.	1.1	1.2	–	1.003	–	–	–	–
Fan (Cisco Nexus 7009)									
Fan Controller	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.007	0.009
Fan (Cisco Nexus 7010)									
Fan Controller	0.7	–	–	–	–	–	–	–	–
Fan (Cisco Nexus 7018)									
Fan Controller	N/A[1]	0.2	–	–	–	–	–	–	–

1. Module and EPLD are not available for that release.

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 1-3, we recommend that you update the EPLDs.

Determining Whether to Upgrade EPLD Images

As shown in Table 1-4, 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 1-4 Displaying the EPLD Upgrade Status for the Switch and its Modules

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

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 web site.

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 > 5.2(3)**.

The Downloads page displays image information, including a link to the downloadable Tar file, to the right of the releases.

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 10).

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** *module_id* **epld**. If the line FE Bridge(x) version displays a version earlier than 186.006, 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 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 186.8 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. 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.
- You can execute an upgrade from the active supervisor module only. All the modules, including the active supervisor module, can be updated individually.
- You can individually update each module whether it is online or offline as follows:
  - If you upgrade EPLD images on an online module, only the EPLD images with version numbers that differ from the new EPLD images are upgraded.
  - If you upgrade EPLD images on an offline module, 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 3.22.0
  kickstart: version 5.2(1) [gdb]
  system:    version 5.2(1) [gdb]
  BIOS compile time:       02/20/10
  kickstart image file is: bootflash:/n7000-s1-kickstart.5.2.1.bin
  kickstart compile time:  12/25/2020 12:00:00 [06/01/2011 04:24:07]
  system image file is:    bootflash:/n7000-s1-dk9.5.2.1.bin
```

```
  system compile time:     4/17/2011 3:00:00 [06/01/2011 05:06:22]
```

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 1-1 to determine the amount of available bootflash memory, and see Example 1-2 to determine the amount of available slot0 memory.

Example 1-1 Determining the Amount of Available Bootflash Memory

```
switch# dir bootflash:
...
       4096    Jul 13 09:13:43 2011  lost+found/
    2386687    May 20 09:09:50 2011  n7000-s1-debug-sh.5.2.0.bin
  108604827    May 20 09:03:45 2011  n7000-s1-dk9.5.2.1.bin
   24345600    Feb 04 12:03:47 2011  n7000-s1-kickstart.5.2.0.bin
   23667200    May 20 09:07:28 2011  n7000-s1-kickstart.5.2.1.bin
...

Usage for bootflash://sup-local
  542175232 bytes used
 1296683008 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     1000 Mbps Optical Ethernet Modul N7K-M148GS-11      ok
8    48     1000 Mbps Optical Ethernet XL Mo N7K-M148GS-11L     ok
9    0      Supervisor module-1X              N7K-SUP1           ha-standby
10   0      Supervisor module-1X              N7K-SUP1           active *
...
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
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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
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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 1-2 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    0      Supervisor module-1X             N7K-SUP1           ha-standby
6    0      Supervisor module-1X             N7K-SUP1           active *
7    32     10 Gbps Ethernet Module          N7K-M132XP-12      ok
9    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-s1-kickstart.5.2.0.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-s1-epld.5.2.1.img bootflash:n7000-s1-epld.5.2.1.img
```

Step 6 Copy the EPLD image to the standby supervisor.

```
switch# copy bootflash:n7000-s1-epld.5.2.1.img bootflash://sup-standby/n7000-s1-epld.5.2+
.1.img
```

You are ready to upgrade the EPLD images (see the "Upgrading the EPLD Images" section on page 12).

Upgrading the EPLD Images

You can 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 7.

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** *epld_image*
All installed modules with the I/O modules upgraded in parallel	**install all epld** *epld_image* **parallel**
One or more I/O and supervisor modules with the I/O modules upgraded in parallel	**install all epld** *epld_image* **parallel module {all |** *slot_numbers***}**
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** *epld_image* **parallel module {all |** *slot_numbers***} fan-module {all |** *slot_numbers***}**
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** *epld_image* **parallel module {all |** *slot_numbers***} xbar-module {all |** *slot_numbers***}**
One or more fan-tray modules and one or more fabric (xbar) modules	**install all epld** *epld_image* **parallel fan-module {all |** *slot_numbers***} xbar-module {all |** *slot_numbers***}**
One I/O or supervisor module	**install module** *slot_number* **epld** *epld_image*
One fan module	**install fan-module** *slot_number* **epld** *epld_image*
One fabric module	**install xbar-module** *slot_number* **epld** *epld_image*

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.

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

This example shows how to start the installation of all new EPLD images for all modules in a switch:

switch# **install all epld bootflash:n7000-s1-epld.5.2.1.img parallel**

This example shows how to start the installation of all new EPLD images for all of the I/O and supervisor modules and the fan-tray module in fan-tray slot 1.

switch# **install all epld bootflash:n7000-s1-epld.5.2.1.img parallel module all fan-module 1**

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:

- To reset the power for the module, physically remove the module and reinstall it.

Note A module reload or just pressing the ejector buttons on the module is not sufficient for this reset requirement.

- To 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" section on page 14.

Verifying the EPLD Upgrades

You can verify the EPLD upgrades for each slot in the switch by using the commands listed in table.

Table 1-6

Command	Modules Verified
show version module *slot_number* **epld**	I/O and supervisor modules
show version fan *slot_number* **epld**	Fan-tray modules
show version xbar *slot_number* **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, use the **show version epld** *url* command as shown in Example 1-3.

Example 1-3 Displaying the Available EPLD Versions

```
switch# show version epld bootflash:n7000-s1-epld.5.2.1.img

...
```

```
Module Type                          EPLD Device          Version
------------------------------------------------------------------
Supervisor-1X                        Power Manager          3.009
Supervisor-1X                        IO                     3.028
Supervisor-1X                        Inband                 1.008
Supervisor-1X                        Local Bus CPLD         3.000
Supervisor-1X                        CMP CPLD               6.000

10/100/1000 Mbps Eth Module          Power Manager          5.006
10/100/1000 Mbps Eth Module          IO                     2.013
10/100/1000 Mbps Eth Module          Forwarding Engine      1.006

10 Gbps Ethernet Module              Power Manager          4.008
10 Gbps Ethernet Module              IO                     1.016
10 Gbps Ethernet Module              Forwarding Engine      1.006
10 Gbps Ethernet Module              FE Bridge            186.007
10 Gbps Ethernet Module              Linksec Engine         2.007

1000 Mbps Optical Ethernet Module    Power Manager          4.008
1000 Mbps Optical Ethernet Module    IO                     1.005
1000 Mbps Optical Ethernet Module    Forwarding Engine      1.006
1000 Mbps Optical Ethernet Module    SFP                    1.004

Fabric Module 2                      Power Manager          1.003

Fan                                  Fan Controller         0.002
Fan                                  Fan Controller         0.002
```

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 1-4.

Example 1-4 Displaying EPLD Upgrades

```
switch# show install epld status

...
Status: EPLD Upgrade was Successful

EPLD                                Curr Ver    Old Ver
------------------------------------------------------
Power Manager                        5.006       5.004
IO                                   2.013       2.011
```

Caveats

This section includes the following topics:

Open Caveats in Release 5.2

There are no open caveats for Release 5.2.

Resolved Caveats in Release 5.2(3)

There are no resolved caveats in Release 5.2(3).

Resolved Caveats in Release 5.2(1)

There are no resolved caveats in Release 5.2(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.
- 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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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.

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