Managing the Switch Hardware

This chapter describes how to manage the switch hardware, which includes the fabric and I/O modules, and it provides information on how to monitor system and module states. This chapter includes the following sections:

Displaying the Switch Hardware Inventory

You can display information about the field replaceable units (FRUs), including product IDs, serial numbers, and version IDs by entering the **show inventory** command. See Example 8-1.

Example 8-1 Displaying the Hardware Inventory

```
switch# show inventory
psconfigs# sh inventory
NAME: "Chassis",  DESCR: "Nexus7000 C7009 (9 Slot) Chassis "
PID: N7K-C7009           ,  VID: V01 ,  SN: JAF1437APPD

NAME: "Slot 1",  DESCR: "Supervisor module-1X"
PID: N7K-SUP-1           ,  VID: V09 ,  SN: JAF1414AQFD

NAME: "Slot 2",  DESCR: "Supervisor module-1X"
PID: N7K-SUP-1           ,  VID: V03 ,  SN: JAF1240AHNH

NAME: "Slot 3",  DESCR: "10/100/1000 Mbps Ethernet Module"
PID: N7K-M148GT-11       ,  VID: V01 ,  SN: JAB115000NJ

NAME: "Slot 4",  DESCR: "10 Gbps Ethernet Module"
PID: N7K-M132XP-12       ,  VID: V01 ,  SN: JAB1152010A

NAME: "Slot 5",  DESCR: "10/100/1000 Mbps Ethernet XL Module"
PID: N7K-M148GT-11L      ,  VID: 0   ,  SN: JAF1416ABPM

NAME: "Slot 6",  DESCR: "10 Gbps Ethernet XL Module"
PID: N7K-M108X2-12L      ,  VID: 0   ,  SN: JAF1333AAJR

NAME: "Slot 7",  DESCR: "1000 Mbps Optical Ethernet Module"
PID: N7K-M148GS-11       ,  VID: V02 ,  SN: JAF1409APRB

NAME: "Slot 8",  DESCR: "1/10 Gbps Ethernet Module"
PID: N7K-F132XP-15       ,  VID: V01 ,  SN: JAF1424CFJR

NAME: "Slot 9",  DESCR: "1/10 Gbps Ethernet Module"
PID: N7K-F132XP-15       ,  VID: V01 ,  SN: JAF1321ANHP

NAME: "Slot 10",  DESCR: "Fabric card module"
PID: N7K-C7009-FAB-2     ,  VID: V01 ,  SN: JAF1448ARHJ

NAME: "Slot 11",  DESCR: "Fabric card module"
PID: N7K-C7009-FAB-2     ,  VID: V01 ,  SN: JAF1451BSSF

NAME: "Slot 12",  DESCR: "Fabric card module"
PID: N7K-C7009-FAB-2     ,  VID: V01 ,  SN: JAF1448ARHQ

NAME: "Slot 13",  DESCR: "Fabric card module"
PID: N7K-C7009-FAB-2     ,  VID: V01 ,  SN: JAF1509BHBE

NAME: "Slot 14",  DESCR: "Fabric card module"
PID: N7K-C7009-FAB-2     ,  VID: V01 ,  SN: JAF1509BHCB

NAME: "Slot 33",  DESCR: "Nexus7000 C7009 (9 Slot) Chassis Power Supply"
PID: N7K-AC-6.0KW        ,  VID: V01 ,  SN: DTM141600XT

NAME: "Slot 34",  DESCR: "Nexus7000 C7009 (9 Slot) Chassis Power Supply"
PID: N7K-AC-6.0KW        ,  VID: V01 ,  SN: DTM1414007T

NAME: "Slot 35",  DESCR: "Nexus7000 C7009 (9 Slot) Chassis Fan Module"
PID: N7K-C7009-FAN       ,  VID: V00 ,  SN: JAF1433DDEJ

switch#
```

To display switch hardware inventory details, enter the **show hardware** command. See Example 8-2.

Example 8-2 Displaying Hardware Information

```
switch# show hardware
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2010, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php

Software
  BIOS:      version 3.19.0
  loader:    version N/A
  kickstart: version 5.0(2)
  system:    version 5.0(2)
  BIOS compile time:       03/31/09
  kickstart image file is: bootflash:/n7000-s1-kickstart.5.0.2.bin.S19
  kickstart compile time:  12/25/2020 12:00:00 [03/04/2010 19:45:32]
  system image file is:    bootflash:/n7000-s1-dk9.5.0.2.bin.S19
  system compile time:     2/7/2010 3:00:00 [03/04/2010 20:32:24]


Hardware
  cisco Nexus7000 C7010 (10 Slot) Chassis ("Supervisor module-1X")
  Intel(R) Xeon(R) CPU         with 4135780 kB of memory.
  Processor Board ID JAF1309AECN

  Device name: psconfigs
  bootflash:    2000880 kB
  slot0:        2075246 kB (expansion flash)

Kernel uptime is 0 day(s), 1 hour(s), 5 minute(s), 53 second(s)

Last reset at 65404 usecs after  Fri Dec 12 19:34:13 2008

  Reason: Reset Requested by CLI command reload
  System version: 5.0(2)
  Service:

plugin
  Core Plugin, Ethernet Plugin


CMP (Module 5) ok
 Hardware
  Freescale Inc mpc8343 (rev 3.1 (pvr 8083 0031)) CPU with 128 MB of memory
  Model number is N7K-SUP1
  H/W Version is 1.2
  Part Number is 73-10877-11
  Part Revision is A1
  Serial number is JAF1309AECN
  CLEI code is COUCAHLCAA
  MAC address is 00-24-98-e8-20-00

CMP (Module 6) ok
 Hardware
  Freescale Inc mpc8343 (rev 3.1 (pvr 8083 0031)) CPU with 128 MB of memory
  Model number is N7K-SUP1
  H/W Version is 1.2
```

```
  Part Number is 73-10877-11
  Part Revision is A1
  Serial number is JAF1309AEFE
  CLEI code is COUCAHLCAA
  MAC address is 00-24-98-6f-37-92

--------------------------------
Switch hardware ID information
--------------------------------

Switch is booted up
  Switch type is : Nexus7000 C7010 (10 Slot) Chassis
  Model number is N7K-C7010
  H/W version is 1.1
  Part Number is 73-10900-04
  Part Revision is B0
  Manufacture Date is Year 13 Week 10
  Serial number is JAF13100003
  CLEI code is IPMKA00ARA

--------------------------------
Chassis has 10 Module slots and 5 Fabric slots
--------------------------------

Module1  empty

Module2  ok
  Module type is : 10/100/1000 Mbps Ethernet Module
  1 submodules are present
  Model number is N7K-M148GT-11
  H/W version is 1.3
  Part Number is 73-10098-12
  Part Revision is A0
  Manufacture Date is Year 13 Week 6
  Serial number is JAF1306AAFP
  CLEI code is COUIAW3CAA

Module3  ok
  Module type is : 10/100/1000 Mbps Ethernet Module
  1 submodules are present
  Model number is N7K-M148GT-11
  H/W version is 1.3
  Part Number is 73-10098-12
  Part Revision is A0
  Manufacture Date is Year 13 Week 3
  Serial number is JAF1303ACPB
  CLEI code is COUIAW3CAA

Module4  ok
  Module type is : 10/100/1000 Mbps Ethernet Module
  1 submodules are present
  Model number is N7K-M148GT-11
  H/W version is 1.3
  Part Number is 73-10098-12
  Part Revision is A0
  Manufacture Date is Year 13 Week 9
  Serial number is JAF1309ABLE
  CLEI code is COUIAW3CAA

Module5  ok
  Module type is : Supervisor module-1X
  0 submodules are present
  Model number is N7K-SUP1
  H/W version is 1.2
```

```
  Part Number is 73-10877-11
  Part Revision is A1
  Manufacture Date is Year 13 Week 9
  Serial number is JAF1309AECN
  CLEI code is COUCAHLCAA

Module6  ok
  Module type is : Supervisor module-1X
  0 submodules are present
  Model number is N7K-SUP1
  H/W version is 1.2
  Part Number is 73-10877-11
  Part Revision is A1
  Manufacture Date is Year 13 Week 9
  Serial number is JAF1309AEFE
  CLEI code is COUCAHLCAA

Module7  ok
  Module type is : 10 Gbps Ethernet Module
  2 submodules are present
  Model number is N7K-M132XP-12
  H/W version is 1.5
  Part Number is 73-10899-09
  Part Revision is B1
  Manufacture Date is Year 13 Week 7
  Serial number is JAF1307ALCB
  CLEI code is COUIAWGCAA

Module8  empty

Module9  ok
  Module type is : 1000 Mbps Optical Ethernet Module
  1 submodules are present
  Model number is N7K-M148GS-11
  H/W version is 1.2
  Part Number is 73-11584-05
  Part Revision is A0
  Manufacture Date is Year 13 Week 11
  Serial number is JAF1311AEMM
  CLEI code is COUIAV0CAB

Module10  empty

Xbar1  ok
  Module type is : Fabric card module
  0 submodules are present
  Model number is N7K-C7010-FAB-1
  H/W version is 1.0
  Part Number is 73-10624-04
  Part Revision is C0
  Manufacture Date is Year 13 Week 9
  Serial number is JAF1309ACAP
  CLEI code is COUCAGVCAA

Xbar2  ok
  Module type is : Fabric card module
  0 submodules are present
  Model number is N7K-C7010-FAB-1
  H/W version is 1.0
  Part Number is 73-10624-04
  Part Revision is C0
  Manufacture Date is Year 13 Week 9
  Serial number is JAF1309AAHB
  CLEI code is COUCAGVCAA
```

```
Xbar3  ok
  Module type is : Fabric card module
  0 submodules are present
  Model number is N7K-C7010-FAB-1
  H/W version is 1.0
  Part Number is 73-10624-04
  Part Revision is C0
  Manufacture Date is Year 13 Week 6
  Serial number is JAF1306ANJJ
  CLEI code is COUCAGVCAA

Xbar4  ok
  Module type is : Fabric card module
  0 submodules are present
  Model number is N7K-C7010-FAB-1
  H/W version is 1.0
  Part Number is 73-10624-04
  Part Revision is C0
  Manufacture Date is Year 13 Week 9
  Serial number is JAF1309ACAT
  CLEI code is COUCAGVCAA

Xbar5  ok
  Module type is : Fabric card module
  0 submodules are present
  Model number is N7K-C7010-FAB-1
  H/W version is 1.0
  Part Number is 73-10624-04
  Part Revision is C0
  Manufacture Date is Year 13 Week 6
  Serial number is JAF1306ANKF
  CLEI code is COUCAGVCAA

---------------------------------------
Chassis has 3 PowerSupply Slots
---------------------------------------

PS1 ok
  Power supply type is: 6000.00W 220v AC
  Model number is N7K-AC-6.0KW
  H/W version is 1.0
  Part Number is 341-0230-02
  Part Revision is A0
  Manufacture Date is Year 12 Week 16
  Serial number is DTH1216T020
  CLEI code is IPUPADBAAA

PS2 ok
  Power supply type is: 6000.00W 220v AC
  Model number is N7K-AC-6.0KW
  H/W version is 1.0
  Part Number is 341-0230-02
  Part Revision is A0
  Manufacture Date is Year 12 Week 17
  Serial number is DTH1217T029
  CLEI code is IPUPADBAAA

PS3 ok
  Power supply type is: 6000.00W 220v AC
  Model number is N7K-AC-6.0KW
  H/W version is 1.0
  Part Number is 341-0230-02
  Part Revision is A0
```

```
  Manufacture Date is Year 12 Week 15
  Serial number is DTH1215T139
  CLEI code is IPUPADBAAA

---------------------------------
Chassis has 4 Fan slots
---------------------------------

Fan1(sys_fan1) ok
  Model number is N7K-C7010-FAN-S
  H/W version is 1.1
  Part Number is 73-10741-04
  Part Revision is B0
  Manufacture Date is Year 13 Week 3
  Serial number is FOX1303XABC
  CLEI code is COM8210ARA

Fan2(sys_fan2) ok
  Model number is N7K-C7010-FAN-S
  H/W version is 1.1
  Part Number is 73-10741-04
  Part Revision is B0
  Manufacture Date is Year 13 Week 6
  Serial number is FOX1306X03U
  CLEI code is COM8210ARA

Fan3(fab_fan1) ok
  Model number is N7K-C7010-FAN-F
  H/W version is 1.1
  Part Number is 73-10967-02
  Part Revision is B0
  Manufacture Date is Year 12 Week 41
  Serial number is FOX1241XA6Q
  CLEI code is IPEQABAEAA

Fan4(fab_fan2) ok
  Model number is N7K-C7010-FAN-F
  H/W version is 1.1
  Part Number is 73-10967-02
  Part Revision is B0
  Manufacture Date is Year 12 Week 41
  Serial number is FOX1241XA7U
  CLEI code is IPEQABAEAA

switch#
```

Displaying the Switch Serial Number

The serial number of your Cisco Nexus 7000 Series switch can be obtained by looking at the serial number label on the back of the switch (next to the power supply), or by entering the **show sprom backplane 1** command. See Example 8-3.

Example 8-3 Displaying the Switch Serial Number

```
switch# show sprom backplane 1
DISPLAY backplane sprom contents:
Common block:
 Block Signature : 0xabab
 Block Version   : 3
 Block Length    : 160
```

```
 Block Checksum  : 0x13bd
 EEPROM Size     : 65535
 Block Count     : 5
 FRU Major Type  : 0x6001
 FRU Minor Type  : 0x0
 OEM String      : Cisco Systems, Inc.
 Product Number  : N7K-C7010
 Serial Number   : TBM11493268
 Part Number     : 73-10900-04
 Part Revision   : 06
 Mfg Deviation   : 0
 H/W Version     : 0.406
 Mfg Bits        : 0
 Engineer Use    : 0
 snmpOID         : 0.0.0.0.0.0.0.0
 Power Consump   : 0
 RMA Code        : 0-0-0-0
 CLEI Code       : 0
 VID             : V01
Chassis specific block:
 Block Signature : 0x6001
 Block Version   : 3
 Block Length    : 39
 Block Checksum  : 0x268
 Feature Bits    : 0x0
 HW Changes Bits : 0x0
 Stackmib OID    : 0
 MAC Addresses   : 00-1b-54-c2-1e-00
 Number of MACs  : 128
 OEM Enterprise  : 9
 OEM MIB Offset  : 5
 MAX Connector Power: 0
WWN software-module specific block:
 Block Signature : 0x6005
 Block Version   : 1
 Block Length    : 0
 Block Checksum  : 0x66
wwn usage bits:
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
```

```
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00
License software-module specific block:
 Block Signature : 0x6006
 Block Version   : 1
 Block Length    : 16
 Block Checksum  : 0x77
lic usage bits:
 00 00 00 00 00 00 00 00
Second Serial number specific block:
 Block Signature : 0x6007
 Block Version   : 1
 Block Length    : 28
 Block Checksum  : 0x312
 Serial Number   : TBM11476798
switch#
```

Displaying Power Usage Information

To display the actual power usage information for the entire switch, use the **show environment power** command (see Example 8-4 for power allocations displayed for a Cisco Nexus 7018 switch). This command shows the power usage for many of the modules in the switch. For the older modules that do not have the capability to output this information, the output is shown as N/A.

Note In a Cisco Nexus 7000 Series switch, power usage is reserved for both supervisor modules regardless of whether one or both supervisor modules are present.

Example 8-4 Power Management Information Displayed for a Cisco Nexus 7018 Switch

```
switch# show environment power
Power Supply:
Voltage: 50 Volts
Power                                  Actual        Total
Supply    Model                        Output     Capacity    Status
                                      (Watts )     (Watts )
-------  ------------------  -----------  -----------  --------------
1        N7K-AC-6.0KW            1272 W       6000 W     Ok
2        N7K-AC-6.0KW             584 W       3000 W     Ok
3        -                          0 W          0 W     Shutdown
4        -                          0 W          0 W     Shutdown


                                    Actual        Power
Module    Model                       Draw    Allocated    Status
                                    (Watts )     (Watts )
-------  ------------------  -----------  -----------  --------------
4        N7K-F248XP-24            292 W        400 W    Powered-Up
5        N7K-F132XP-15            302 W        425 W    Powered-Up
6        N7K-M108X2-12L           464 W        850 W    Powered-Up
8        N7K-M148GS-11L           248 W        400 W    Powered-Up
9        N7K-SUP1                 N/A          210 W    Powered-Up
10       supervisor               N/A          210 W    Absent
Xb1      N7K-C7018-FAB-1          N/A          150 W    Powered-Up
Xb2      xbar                     N/A          150 W    Absent
```

```
Xb3      xbar                      N/A          150 W    Absent
Xb4      xbar                      N/A          150 W    Absent
Xb5      xbar                      N/A          150 W    Absent
fan1     N7K-C7018-FAN             213 W        578 W    Powered-Up
fan2     N7K-C7018-FAN             148 W        422 W    Powered-Up

N/A - Per module power not available


Power Usage Summary:
--------------------
Power Supply redundancy mode (configured)                PS-Redundant
Power Supply redundancy mode (operational)               Non-Redundant

Total Power Capacity (based on configured mode)               9000 W
Total Power of all Inputs (cumulative)                        9000 W
Total Power Output (actual draw)                              1856 W
Total Power Allocated (budget)                                4245 W
Total Power Available for additional modules                  4755 W

switch#
```

Power Supply Configuration Modes

This section includes the following topics:

Power Supply Configuration Overview

You can configure one of the following power modes to either use the combined power provided by the installed power supply units or to provide power redundancy when there is a power loss:

- Combined mode—Provides the maximum amount of available power by utilizing the combined power output from all installed power supply units for switch operations. This mode does not provide redundancy.
- Power-supply redundancy mode—Allows you to replace a power supply during switch operations. All power supplies are active. The available power is calculated as the least amount of power available from all but one of the power supply units (N+1). The reserve power is the amount of power output by the power supply unit that can output the most power. For example, if three power supply units output 3 kW, 6 kW, and 6 kW, the available power is 9 kW (3 kW + 6 kW) and the reserve power is 6 kW.
- Input source redundancy mode—Takes power from two electrical grids so that if one grid goes down, the other grid can provide the power needed by the switch. For the Cisco Nexus 7004 chassis, each grid powers half of the power supplies. For the Cisco Nexus 7009, 7010, and 7018 chassis, each grid powers half of each power supply unit (grid A is connected to the Input 1 receptacle on each power supply unit and grid B is connected to the Input 2 receptacle on each power supply unit). The available power is the amount of power output by the portions of the power supply units that are connected to the same grid. For example, if three power supply units are connected to a 110-V grid and a 220-V grid, each power supply outputs 1.2 kW for the 110-V grid and 3.0 kW for the 220-V grid. The available power would be 3.6 kW (1.2 kW + 1.2 kW + 1.2 kW) and the reserve power would be 9.0 kW (3.0 kW + 3.0 kW + 3.0 kW).

- Full redundancy mode—Provides both power-supply redundancy and input-source redundancy. This mode allows you to replace a power supply unit without interrupting switch operations or continue powering the switch if one of two grids goes down. The available power is the lesser amount of output power for power supply redundancy or input source redundancy.

The amount of power available for use with your Cisco Nexus 7000 Series switch depends on the number of power supply units, input voltage used, and the power mode used. To determine the amount of available power for the power supply units, see the following tables:

- For the 3-kW AC power supply units, see Table A-11 on page A-13
- For the 6-kW AC power supply units, see Table A-13 on page A-16
- For the 7.5-kW AC power supply units, see Table A-14 on page A-17
- For the 3-kW DC power supply units, see Table A-15 on page A-18
- For the 6-kW DC power supply units, see Table A-17 on page A-19
- For the 3.5-kW HVAC/HVDC power supplies, see Table A-12 on page A-15 and Table A-16 on page A-18

Configuring the Power Supply Mode

You can configure the power supply mode.

SUMMARY STEPS

1. **config t**
2. **power redundancy-mode** *mode*

DETAILED STEPS

	Command	Purpose

Step 1	`config t`
	
	Example:
	`switch# config t`
	`switch(config)#`
		Starts the global configuration mode.

Step 2	`power redundancy-mode` *mode*
	
	Example:
	`switch(config)# power redundancy-mode redundant`
	`switch(config)#`
		Configures one of the following power supply modes:
		• For combined mode, use the **combined** keyword.
		• For power supply redundancy, use the **ps-redundant** keyword.
		• For input source redundancy, use the **insrc-redundant** keyword.
		• For full redundancy, use the **redundant** keyword.

Note To display the current power supply configuration, use the **show environment power** command.

Power Supply Configuration Guidelines

Follow these guidelines when configuring power supply units:

- When power supply units with different capacities are installed in the switch, the amount of available power differs based on one of the following configuration modes:
  - Combined mode—To activate this mode, use the **power redundancy-mode combined** command. If the combined power provided by all of the installed power supply units meets the power requirements of all of the switch modules, then this mode is sufficient for running your switch.

    For example, suppose your system has the following setup:

    Power supply unit 1 outputs 6 kW.
    The switch power requirement is 8.784 kW.

    The following two scenarios explain what happens for different numbers of power supply units that you install:

    Scenario 1: If you do not add a power supply unit, the available power (6 kW) is insufficient for the switch power requirement, so the switch powers the supervisor modules, fabric modules, and fan trays, before powering as many I/O modules as the remaining available power can support (one or more I/O modules might not be powered).

    Scenario 2: If you install an additional power supply unit that can output 3 kW, the available power becomes 9.0 kW. The increased amount of available power exceeds the switch power requirement, so all of the modules and fan trays in the switch can power up.

    Table 8-1 shows the results for each scenario.

Table 8-1 Combined Power Mode Scenarios

Scenario	Power Supply 1 (kW)	Power Supply 2 (kW)	System Usage (kW)	Available Power (kW)	Result
1	6.0	—	8.784	6.0	Available power is less than system usage, so you cannot power the entire system with this mode.
2	6.0	3.0	8.784	9.0	Available power exceeds the system usage, so you can use this mode to power your entire system.

  - Power supply redundancy mode—To activate this power mode, use the **power redundancy-mode ps-redundant** command. The power supply unit that outputs the most power provides the reserve power, and the combined output for the other power supply units becomes the available power.

    For example, suppose your system has the following setup:

    Power supply unit 1 outputs 3.0 kW.
    Power supply unit 2 outputs 6.0 kW.
    The switch power requirement is 8.784 kW.

The following three scenarios explain what happens depending on what you install for the third power supply unit:

Scenario 1: If you do not add a third power supply unit, the reserve power is 6 kW and the available power is 3 kW. The available power is insufficient for the switch power requirement, so you cannot power the entire switch.

Scenario 2: If you add a power supply unit that outputs 3 kW, the reserve power remains 6 kW and available power becomes 6 kW. The available power is still insufficient because it does not meet the switch power requirement, so you can power more modules than you could with Scenario 1, but you still cannot power the entire switch.

Scenario 3: If you add a power supply unit that outputs 7.5 kW, the reserve power becomes 7.5 kW and the available power becomes 9 kW. The available power exceeds the switch power requirement, so you can power up all of the modules and fan trays in the switch.

Table 8-2 shows the results for each scenario.

Table 8-2 Power Supply Redundancy Mode Scenarios

Scenario	Power Supply 1 (kW)	Power Supply 2 (kW)	Power Supply 3 (kW)	System Usage (kW)	Available Power (kW)	Reserve Power (kW)	Result
1	3.0	6.0	—	8.784	6.0	—	The available power does not meet the system usage requirement, so you cannot power the entire system with this power supply configuration and mode.
2	3.0	6.0	3.0	8.784	6.0	6.0	The available power does not meet the system usage, so you cannot power the entire system with this power supply configuration and mode.
3	3.0	6.0	7.5	8.784	9.0	7.5	The available power exceeds the system usage, so you can power the entire system with this power supply configuration and mode.

– Input source redundancy mode—To activate this power mode, use the **power redundancy-mode insrc_redundant** command. The reserve power is the greater of power outputs for the two grids, and the available power becomes the lesser of power outputs for the two grids.

For example, suppose your system has the following setup:

Grids 1 and 2 each input 220 V to the power supply units.
Power supply units 1 and 2 each output 6 kW.
Current usage requirement is 8.784 kW.

The following three scenarios explain what happens for different numbers of power supply units that you install:

Scenario 1: If you do not add a power supply unit, the reserve power is 6 kW (3 kW for one power supply unit and 3 kW for the other power supply unit), and the available power is 6 kW (3 kW for one power supply unit plus 3 kW for the other power supply unit). The available power does not meet the switch usage requirement, so you cannot power the entire switch.

Scenario 2: If you add a power supply that outputs 3 kW, the reserve power is 9 kW (3 kW for three power supply units), and the available power is 6 kW (3 kW for each of two power supply units). The available power does not meet the system usage requirement, so you cannot power the entire switch.

Scenario 3: If you add a power supply unit that outputs 7.5 kW, the reserve power is 9.75 kW (3 kW for two power supply units and 3.75 kW for the new power supply unit), and the available power is 9.75 kW (3 kW for two power supply units and 3.75 kW for the new power supply unit). The available power exceeds the switch usage requirement, so you can power up all of the modules and fan trays in the switch.

Table 8-3 shows the results for each scenario.

Table 8-3 Input Source Redundancy Mode Scenarios

Scenario	Power Supply 1 (kW)	Power Supply 2 (kW)	Power Supply 3 (kW)	System Usage (kW)	Available Power (kW)	Reserve Power (kW)	Result
1	6.0	6.0	-	8.784	6.0	6.0	Available power (the power supply output for either grid) does not meet the system usage requirement.
2	6.0	6.0	3.0	8.784	9.0	6.0	The power supply output for one grid meets the system usage requirement, but the power supply output for the other grid does not meet the system usage requirement.
3	6.0	6.0	7.5	8.784	9.75	9.75	The power supply output for both grids meet the meet the system usage requirement.

– Full redundancy mode—To activate this power mode, use the **power redundancy-mode redundant** command. The reserve power is the greater amount of reserve power for power supply redundancy and input source redundancy, and the available power is the lesser amount of available power for the same two redundancy modes.

For example, suppose your system has the following setup:

Grids A and B each provide 220 V.
Power supply units 1 and 2 each output 6.0 kW.
Switch usage requirement is 8.784 kW.

The following three scenarios explain what happens for different numbers of power supply units that you install:

Scenario 1: If you do not add a power supply unit, the reserve power is 6 kW and the available power is 6 kW. The available power does not meet the switch usage requirement, so you cannot power up the entire switch.

Scenario 2: If you add a 3-kW power supply unit, the reserve power is 9 kW (3 kW for three power supply units on one grid), and the available power is 6 kW (3 kW for two power supply units on a second grid). The available power does not meet the switch usage requirement, so you cannot power up the entire switch.

Scenario 3: If you add a 6-kW power supply unit, the reserve power is 9 kW (3 kW for three power supply units on the same grid), and the available power is 9 kW (3 kW for three power supply units on a second grid). The available power meets the switch usage requirements, so you can power up the entire switch.

Table 8-4 shows the results for each scenario.

Table 8-4 Full Redundancy Mode Scenarios

Scenario	Power Supply 1 (kW)	Power Supply 2 (kW)	Power Supply 3 (kW)	System Usage (kW)	Input Source Mode		Power Supply Mode		Result
					Available Power (kW)	Reserve Power (kW)	Available Power (kW)	Reserve Power (kW)	
1	6.0	6.0	—	8.784	6.0	6.0	6.0	6.0	Available power does not meet the switch usage requirement.
2	6.0	6.0	3.0	8.784	6.0	9.0	9.0	6.0	Available power for the power supply mode is sufficient but the available power for the input source mode is insufficient, so the available power does not meet the switch usage requirement.
3	6.0	6.0	6.0	8.784	9.0	9.0	12.0	6.0	Available power for both modes meets the switch usage requirement, so you can power up the entire switch.

Information About Modules

The following sections explain how you can manage operations for the switch modules:

- Supervisor Modules, page 8-15
- I/O Modules, page 8-17
- Fabric Modules, page 8-18

Supervisor Modules

The Cisco Nexus 7000 Series switch has one or two supervisor modules. The switch can use the following supervisor module types:

- Supervisor 1 (N7K-SUP1)
- Supervisor 2 (N7K-SUP2)
- Supervisor 2 Enhanced (N7K-SUP2E)

Note Supervisor 1 modules are supported by the Cisco 7009, 7010, and 7018 switches, but it is not supported by the Cisco Nexus 7004 switch. Supervisor 2 and 2E modules are supported by all Cisco Nexus 7000 Series switches.

Note If a switch has two supervisor modules, both must be the same type and have the same amount of memory in case the supervisor functions must switch over from one supervisor module to the other supervisor module.

When it has two supervisors, one supervisor is automatically active while the other is in standby mode. If the active supervisor goes down or is disconnected for replacement, the standby supervisor automatically becomes active. If you need to replace one of two installed supervisor modules with another module of the same type and amount of memory, you can do this without interrupting operations—the supervisor that you are not replacing becomes the active supervisor and retains the kickstart configuration while you replace the other supervisor. If you need to shutdown the switch to replace a supervisor module (for example, when there is only one supervisor installed in the switch or when the replacement supervisor is of another type or has a different amount of memory) you must follow the migration process explained in the "Replacing a Supervisor Module" section on page 10-18.

Supervisor modules are automatically powered up and started with the switch.

To understand the terms used for the supervisors, see Table 8-5.

Table 8-5 Supervisor Module Terms and Usage in Console Displays

Module Terms	Fixed or Relative	Usage
`module-1 and module-2`	Fixed usage	Cisco Nexus 7004 and 7009 • Module-1 refers to the supervisor module in slot 1. • Module-2 refers to the supervisor module in slot 2.
`module-5 and module-6`		Cisco Nexus 7010 • Module-5 refers to the supervisor module in slot 5. • Module-6 refers to the supervisor module in slot 6.
`module-9 and module-10`		Cisco Nexus 7018 • Module-9 refers to the supervisor module in slot 9. • Module-10 refers to the supervisor module in slot 10.

Table 8-5 Supervisor Module Terms and Usage in Console Displays (continued)

Module Terms	Fixed or Relative	Usage
`sup-1 and sup-2`	Fixed usage	Cisco Nexus 7004 and 7009 • sup-1 refers to the supervisor module in slot 1. • sup-2 refers to the supervisor module in slot 2. Cisco Nexus 7010 • sup-1 refers to the supervisor module in slot 5. • sub-2 refers to the supervisor module in slot 6. Cisco Nexus 7018 • sup-1 refers to the supervisor module in slot 9. • sup-2 refers to the supervisor module in slot 10.
`sup-active and sup-standby`	Relative usage	Cisco Nexus 7004, 7009, 7010, and Cisco Nexus 7018 • sup-active refers to the active supervisor module—relative to the slot that contains the active supervisor module. • sup-standby refers to the standby supervisor module—relative to the slot that contains the standby supervisor module.
`sup-local and sup-remote`	Relative usage	If you are logged into the active supervisor (in any Cisco Nexus 7000 Series chassis), the following applies: • sup-local refers to the active supervisor module. • sup-remote refers to the standby supervisor module. If you are logged into the standby supervisor (in any Cisco Nexus 7000 Series chassis), the following applies: • sup-local refers to the standby supervisor module (the one that you are logged into). • There is no sup-remote available from the standby supervisor module (you cannot access a file system on the active supervisor).

I/O Modules

Cisco Nexus 7000 Series switches support the following I/O modules:

- F1-Series 32-port 1- and 10-Gigabit Ethernet I/O modules (N7K-F132XP-15)[1]
- F2-Series 48-port 1-/10-Gigabit Ethernet I/O modules with XL (N7K-F248XP-25)
- F2-Series 48-port 1-/10-Gigabit Ethernet I/O modules with XL and enhancements (N7K-F248XP-25E)
- F3-Series 48-Port 1-/10-Gigabit Ethernet I/O modules (N7K-F348XP-25)
- F3-Series 12-Port 40-Gigabit Ethernet I/O modules (N7K-F312FQ-25)
- F3-Series 6-Port 100-Gigabit Ethernet I/O modules (N7K-F306CK-25)
- M1-Series 48-port 10/100/1000 I/O modules (N7K-M148GT-11)[1]
- M1-Series 48-port 10/100/1000 I/O modules with XL option (N7K-M148GT-11L)

1. Not supported by the Cisco Nexus 7004 switch.

- M1-Series 48-port 1-Gigabit Ethernet I/O modules (N7K-M148GS-11)[1]
- M1-Series 48-port 1-Gigabit Ethernet I/O modules with XL option (N7K-M148GS-11L)
- M1-Series 32-port 10-Gigabit Ethernet I/O modules (N7K-M132XP-12)[1]
- M1-Series 32-port 10-Gigabit Ethernet I/O modules with XL option (N7K-M132XP-12L)
- M1-Series 8-port 10-Gigabit Ethernet I/O modules with XL option(N7K-M108X2-12L)
- M2-Series 24-port 10-Gigabit Ethernet I/O modules with XL option (N7K-M224XP-23L)
- M2-Series 6-port 40-Gigabit Ethernet I/O modules with XL option (N7K-M206XP-23L)
- M2-Series 2-port 100-Gigabit Ethernet I/O modules with XL option (N7K-M202XP-23L)
- M3-Series 48-port 1- and 10-Gigabit Ethernet SFP+ I/O modules with XL option (N7K-M348XP-25L)
- M3-Series 24-port 40-Gigabit Ethernet QSFP+ I/O modules with XL option (N7K-M324FQ-25L)

Note
- M3-Series I/O modules are not compatible with Sup-1 and Fab-1 modules.
- M3-Series and F2e-Series modules cannot be in the same VDC.
- M3-Series modules cannot be combined with M1-,F1- or F2-Series modules in the same Cisco Nexus 7000 Series switch.
- Starting with Cisco NX-OS Release 8.0(1), F2-Series I/O modules and M1-Series with XL option I/O modules are not compatible with Cisco Nexus 7000 Series switches. For more information on unsupported I/O modules, refer Cisco Nexus 7000 Series Release Notes.

Fabric Modules

Cisco Nexus 7000 Series switches support up to five fabric modules in the chassis. Each chassis has its own type of fabric module as follows:

- Cisco Nexus 7009 chassis uses the Fabric 2 (N7K-C7009-FAB-2) modules.
- Cisco Nexus 7010 chassis uses the Fabric 1 (N7K-C7010-FAB-1) or Fabric 2 (N7K-C7010-FAB-2) modules.
- Cisco Nexus 7018 chassis uses the Fabric 1 (N7K-C7018-FAB-1) or Fabric 2 (N7K-C7018-FAB-2) modules.

Note The Cisco Nexus 7004 switch does not include fabric modules.

Note You can replace a Fabric 1 module with a Fabric 2 module in the Cisco Nexus 7010 and 7018 switches during operations, but while there is a mix of fabric module types, all of the fabric modules perform as Fabric 1 modules. If you power up a switch with both types of fabric modules installed, only the Fabric 2 modules will power up. To utilize the Fabric 2 module capabilities, all of the installed fabric modules must be Fabric 2 modules.

Verifying the Status of a Module

Before you begin configuring the switch, you need to ensure that the modules in the chassis are functioning as designed. To verify the status of all modules, enter the **show module** command. To verify the status of a supervisor or I/O module, enter the **show module** *slot_number* command. To verify the status of a fabric module, enter the **show module xbar** *slot_number* command. The interfaces in each module are ready to be configured when the ok status is displayed in the **show module** command output. See Example 8-5.

Example 8-5 Displaying Module Information

```
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            active *
6    0      Supervisor module-1X              N7K-SUP1            ha-standby
7    32     10 Gbps Ethernet Module           N7K-M132XP-12       ok
9    48     1000 Mbps Optical Ethernet Modul  N7K-M148GS-11       ok

Mod  Sw              Hw
---  --------------  ------
2    5.0(2)          1.3
3    5.0(2)          1.3
4    5.0(2)          1.3
5    5.0(2)          1.2
6    5.0(2)          1.2
7    5.0(2)          1.5
9    5.0(2)          1.2

Mod  MAC-Address(es)                         Serial-Num
---  --------------------------------------  ----------
2    00-24-98-e9-14-58 to 00-24-98-e9-14-8c  JAF1306AAFP
3    00-24-98-e8-28-84 to 00-24-98-e8-28-b8  JAF1303ACPB
4    00-24-f7-1c-85-b0 to 00-24-f7-1c-85-e4  JAF1309ABLE
5    00-24-98-6f-95-00 to 00-24-98-6f-95-08  JAF1309AECN
6    00-24-f7-18-92-88 to 00-24-f7-18-92-90  JAF1309AEFE
7    00-24-98-e9-29-60 to 00-24-98-e9-29-84  JAF1307ALCB
9    00-24-f7-1c-d5-50 to 00-24-f7-1c-d5-84  JAF1311AEMM

Mod  Online Diag Status
---  ------------------
2    Pass
3    Pass
4    Pass
5    Pass
6    Pass
7    Pass
9    Pass
…
switch#
```

The Status column in the output should display an ok status for switching modules and an active or standby (or HA-standby) status for supervisor modules. If the status is either ok or active, you can continue with your configuration.

Note A standby supervisor module reflects the HA-standby status if the HA switchover mechanism is enabled. If the warm switchover mechanism is enabled, the standby supervisor module reflects the standby status.

For information about the states through which a switching module progresses, see the "Checking the State of a Module" section on page 8-20.

Checking the State of a Module

If your chassis has more than one I/O module, you can check the progress by repeatedly using the **show module** command and viewing the Status column each time.

The I/O module goes through a testing and an initializing stage before displaying an ok status. Table 8-6 describes the possible states in which a module can exist.

Table 8-6 Module States

show module Command Status Output	Description
`powered up`	The hardware has electrical power. When the hardware is powered up, the software begins booting.
`testing`	The switching module has established connection with the supervisor and the switching module is performing bootup diagnostics.
`initializing`	The diagnostics have completed successfully and the configuration is being downloaded.
`failure`	The switch detects a switching module failure upon initialization and automatically attempts to power-cycle the module three times. After the third attempt, the module powers down.
`ok`	The switch is ready to be configured.
`power-denied`	The switch detects insufficient power for a switching module to power up.
`active`	This module is the active supervisor module and the switch is ready to be configured.
`HA-standby`	The HA switchover mechanism is enabled on the standby supervisor module.

Specifying the Boot Up Order for I/O Modules

By default, the NAM and I/O modules in the I/O module slots boot up in the order of their chassis slot numbers (that is, modules in the lower numbered slots boot up before the modules in the higher numbered slots). To reverse that boot up sequence, use the **hardware module boot-order reverse** command. To use the default boot up sequence, use the **no hardware module boot-order reverse** command.

SUMMARY STEPS

1. **config t**
2. **[no] hardware module boot-order reverse**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Starts the global configuration mode
Step 2	**[no] hardware module boot-order reverse** **Example:** switch(config)# hardware module boot-order reverse switch(config)#	Switches the boot-up order for the modules from a default low-to-high slot numbered order to high-to-low slot numbered order. **Tip** To use the defalut low-to-high order, use the **no hardware module boot-order reverse** command.

Connecting to a Module

At any time, you can connect to any module by using the **attach module** command. Once you are at the module prompt, you can obtain further details about the module by using module-specific commands in EXEC mode.

SUMMARY STEPS

1. **attach module** *slot_number*
2. **dir bootflash**

DETAILED STEPS

	Command	Purpose

Step 1	**attach module** *slot_number*
	
	Example:
	`switch# attach module 6`
	`switch(standby)#`
		Provides direct access to the specified module (in this example, the standby supervisor module is in slot 6).

Step 2	**dir bootflash**
	
	Example:
	`switch# dir bootflash:`
	`80667580 Feb 21 22:04:59 2008 is855.S7`
	`22168064 Feb 21 22:04:19 2008 ks855.S7`
	`16384 Jan 03 19:56:00 2005 lost+found/`
	
	`Usage for bootflash://sup-local`
	`234045440 bytes used`
	`1684602880 bytes free`
	`1918648320 bytes total`
	`switch#`
		Provides the available space information for the standby supervisor module.
		Note Use the **exit** command to exit the module-specific prompt.
		Tip If you are not accessing the switch from a console terminal, this step is the only way to access the standby supervisor module.

You can also use the **attach module** command to display the standby supervisor module information, although you cannot configure the standby supervisor module using this command.

Accessing an I/O Module Through the Console

You can troubleshoot bootup problems for an I/O module by accessing the module through its console port. This action establishes a console mode that you must exit in order to use other Cisco NX-OS commands.

To attach to the console port for an I/O module, use the attach console module command to specify the module you need to work with. You can specify a slot number of 1 to 8 or 11 to 18.

SUMMARY STEPS

1. **attach console module** *slot_number*

DETAILED STEPS

	Command	Purpose

Step 1	**attach console module** *slot_number*
	
	Example:
	`switch# attach console module 9`
	`Connected`
	`Escape character is '~,' (tilde comma]`
		Attaches the console port for the I/O module slot number specified.

Note To exit the console mode, enter the **~,** command.

Shutting Down Modules

This section includes the following topics:

Shutting Down a Supervisor

To shut down a supervisor module, use the **out-of-service module** command to specify the slot with that module as follows:

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

Shutting Down a Fabric Module

To shut down a fabric module, use either the **out-of-service xbar** command or the **poweroff xbar** command. If you use the **poweroff** command, the slot remains in that state until you use the **no poweroff** command. If you use the **out-of-service** command, the **out-of-service** state remains in effect until you do something like remove the module and replace it with another module.

Note If you are going to limit the maximum number of fabric modules (see the "Changing the Amount of Power Reserved for Fabric Modules" section on page 8-31), make sure that powered-on fabric modules are in the first *n* fabric module slots, where *n* is the new maximum number of fabric modules. For example, if you are limiting the maximum number of fabric modules to 4, you must make sure that the four powered-on fabric modules are in fabric slots 1 through 4.

Note If you are powering on more fabric modules than allowed by the current maximum number of fabric modules, then make sure that the fabric modules that you are powering on are installed in the first *n* fabric slots (slots 1 through *n*), power-on those modules with the **no poweroff xbar** command, and change the maximum number of fabric modules to *n* (see the "Changing the Amount of Power Reserved for Fabric Modules" section on page 8-31).

SUMMARY STEPS

1. **config t**
2. [**no**] **poweroff xbar** *slot_number*

Note Alternatively, you can use the **out-of-service xbar** *slot_number* command.

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Starts the global configuration mode.
Step 2	**poweroff xbar** *slot_number* **Example:** switch(config)# poweroff xbar 1 switch(config)#	Powers off the specified fabric module in the switch.
	no poweroff xbar *slot_number* **Example:** switch(config)# no poweroff xbar 1 switch(config)#	Powers on the specified fabric module in the switch.

Shutting Down an I/O Module

To shut down an I/O module, use the **poweroff module** command to specify the slot with that module as follows:

```
switch# poweroff module slot
```

When you are ready to power up the module, use the **no poweroff module** command.

SUMMARY STEPS

1. **config t**
2. [**no**] **poweroff module** *slot_number*

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Starts the global configuration mode.
Step 2	**poweroff module** *slot_number* **Example:** switch(config)# poweroff module 1 switch(config)#	Powers off the specified I/O module in the switch.
	no poweroff module *slot_number* **Example:** switch(config)# no poweroff module 1 switch(config)#	Powers up the specified I/O module in the switch.

Information About Module Temperature

This section includes the following topics:

Overview of Module Temperatures

Built-in, automatic sensors are provided in all switches in the Cisco Nexus 7000 Series to monitor your switch at all times.

Each module (supervisor, I/O, and fabric) has temperature sensors with two thresholds:

- Minor temperature threshold—When a minor threshold is exceeded, a minor alarm occurs and the following actions occur for all four sensors:
  - System messages are displayed.
  - Call Home alerts are sent (if configured).
  - SNMP notifications are sent (if configured).
- Major temperature threshold—When a major threshold is exceeded, a major alarm occurs and the following actions occur:
  - For sensors 1, 3, and 4 (outlet and onboard sensors), the following actions occur:

    System messages are displayed.

    Call Home alerts are sent (if configured).

    SNMP notifications are sent (if configured).
  - For sensor 2 (intake sensor), the following actions occur:

    If the threshold is exceeded in a switching module, only that module is shut down.

    If the threshold is exceeded in an active supervisor module with HA-standby or standby present, only that supervisor module is shut down and the standby supervisor module takes over.

    If you do not have a standby supervisor module in your switch, you have 2 minutes to decrease the temperature. During this interval, the software monitors the temperature every 5 seconds and continuously sends system messages as configured.

Tip We recommend that you install dual supervisor modules. If you are using a Cisco Nexus 7000 Series switch without dual supervisor modules, we recommend that you immediately replace the fan module if just one fan is not working.

Note A threshold value of –127 indicates that no thresholds are configured or applicable.

Displaying the Module Temperature

You can display temperature readings for module temperature sensors by using the **show environment temperature** command. See Example 8-6.

Example 8-6 Displaying Temperature Information for Hardware

```
switch# show environment temperature


Temperature:
--------------------------------------------------------------------
Module   Sensor        MajorThresh   MinorThres   CurTemp     Status
                       (Celsius)     (Celsius)    (Celsius)
--------------------------------------------------------------------
1        Crossbar(s5)    105             95          60         Ok
1        QEng1Sn1(s12)   115             110         70         Ok
1        QEng1Sn2(s13)   115             110         68         Ok
1        QEng1Sn3(s14)   115             110         67         Ok
1        QEng1Sn4(s15)   115             110         68         Ok
1        QEng2Sn1(s16)   115             110         70         Ok
1        QEng2Sn2(s17)   115             110         68         Ok
1        QEng2Sn3(s18)   115             110         68         Ok
1        QEng2Sn4(s19)   115             110         68         Ok
1        L2Lookup(s27)   115             105         57         Ok
1        L3Lookup(s28)   120             110         62         Ok
2        Crossbar(s5)    105             95          65         Ok
2        QEng1Sn1(s12)   115             110         70         Ok
2        QEng1Sn2(s13)   115             110         68         Ok
2        QEng1Sn3(s14)   115             110         67         Ok
2        QEng1Sn4(s15)   115             110         68         Ok
2        QEng2Sn1(s16)   115             110         69         Ok
2        QEng2Sn2(s17)   115             110         68         Ok
2        QEng2Sn3(s18)   115             110         67         Ok
2        QEng2Sn4(s19)   115             110         68         Ok
2        L2Lookup(s27)   115             105         56         Ok
2        L3Lookup(s28)   120             110         63         Ok
5        Outlet1 (s1)    125             125         49         Ok
5        Outlet2 (s2)    125             125         37         Ok
5        Intake  (s3)    60              42          32         Ok
5        EOBC_MAC(s4)    105             95          43         Ok
5        CPU     (s5)    105             95          40         Ok
5        Crossbar(s6)    105             95          61         Ok
5        Arbiter (s7)    110             100         67         Ok
5        CTSdev1 (s8)    115             105         43         Ok
5        InbFPGA (s9)    105             95          44         Ok
5        QEng1Sn1(s10)   115             105         60         Ok
5        QEng1Sn2(s11)   115             105         59         Ok
5        QEng1Sn3(s12)   115             105         56         Ok
5        QEng1Sn4(s13)   115             105         57         Ok
xbar-1   Outlet  (s1)    125             125         38         Ok
xbar-1   Intake  (s2)    60              42          32         Ok
xbar-1   Crossbar(s3)    105             95          56         Ok
xbar-2   Outlet  (s1)    125             125         39         Ok
xbar-2   Intake  (s2)    62              42          31         Ok
xbar-2   Crossbar(s3)    105             95          56         Ok
switch#
```

Displaying Environment Information

You can display all of the environment-related switch information by using the **show environment** command. See Example 8-7.

Example 8-7 Displaying All Environmental Information

```
switch# show environment
Clock:
----------------------------------------------------------
Clock           Model                  Hw       Status
----------------------------------------------------------
A               Clock Module           --       NotSupported/None
B               Clock Module           --       NotSupported/None


Fan:
-----------------------------------------------------
Fan             Model                Hw         Status
-----------------------------------------------------
Fan1(sys_fan1)  N7K-C7010-FAN-S      1.1        Ok
Fan2(sys_fan2)  N7K-C7010-FAN-S      1.1        Ok
Fan3(fab_fan1)  N7K-C7010-FAN-F      1.1        Ok
Fan4(fab_fan2)  N7K-C7010-FAN-F      1.1        Ok
Fan_in_PS1      --                   --         Ok
Fan_in_PS2      --                   --         Ok
Fan_in_PS3      --                   --         Ok
Fan Air Filter : Absent
Temperature:
----------------------------------------------------------------------
Module   Sensor        MajorThresh   MinorThres    CurTemp    Status
                       (Celsius)     (Celsius)     (Celsius)
----------------------------------------------------------------------
2        Crossbar(s5)    105             95           43        Ok
2        CTSdev4 (s9)    115             105          58        Ok
2        CTSdev5 (s10)   115             105          56        Ok
2        CTSdev7 (s12)   115             105          53        Ok
2        CTSdev9 (s14)   115             105          51        Ok
2        CTSdev10(s15)   115             105          50        Ok
2        CTSdev11(s16)   115             105          48        Ok
2        CTSdev12(s17)   115             105          47        Ok
2        QEng1Sn1(s18)   115             105          49        Ok
2        QEng1Sn2(s19)   115             105          46        Ok
2        QEng1Sn3(s20)   115             105          44        Ok
2        QEng1Sn4(s21)   115             105          45        Ok
2        L2Lookup(s22)   120             110          44        Ok
2        L3Lookup(s23)   120             110          52        Ok
3        Crossbar(s5)    105             95           43        Ok
3        CTSdev4 (s9)    115             105          56        Ok
3        CTSdev5 (s10)   115             105          54        Ok
3        CTSdev7 (s12)   115             105          53        Ok
3        CTSdev9 (s14)   115             105          50        Ok
3        CTSdev10(s15)   115             105          49        Ok
3        CTSdev11(s16)   115             105          47        Ok
3        CTSdev12(s17)   115             105          46        Ok
3        QEng1Sn1(s18)   115             105          47        Ok
3        QEng1Sn2(s19)   115             105          45        Ok
3        QEng1Sn3(s20)   115             105          44        Ok
3        QEng1Sn4(s21)   115             105          43        Ok
3        L2Lookup(s22)   120             110          44        Ok
3        L3Lookup(s23)   120             110          50        Ok
4        Crossbar(s5)    105             95           44        Ok
4        CTSdev4 (s9)    115             105          56        Ok
4        CTSdev5 (s10)   115             105          54        Ok
4        CTSdev7 (s12)   115             105          54        Ok
4        CTSdev9 (s14)   115             105          51        Ok
4        CTSdev10(s15)   115             105          51        Ok
4        CTSdev11(s16)   115             105          48        Ok
4        CTSdev12(s17)   115             105          47        Ok
```

4	QEng1Sn1(s18)	115	105	49	Ok
4	QEng1Sn2(s19)	115	105	48	Ok
4	QEng1Sn3(s20)	115	105	47	Ok
4	QEng1Sn4(s21)	115	105	46	Ok
4	L2Lookup(s22)	120	110	45	Ok
4	L3Lookup(s23)	120	110	52	Ok
5	Intake (s3)	60	42	23	Ok
5	EOBC_MAC(s4)	105	95	44	Ok
5	CPU (s5)	105	95	36	Ok
5	Crossbar(s6)	105	95	47	Ok
5	Arbiter (s7)	110	100	54	Ok
5	CTSdev1 (s8)	115	105	46	Ok
5	InbFPGA (s9)	105	95	41	Ok
5	QEng1Sn1(s10)	115	105	48	Ok
5	QEng1Sn2(s11)	115	105	47	Ok
5	QEng1Sn3(s12)	115	105	44	Ok
5	QEng1Sn4(s13)	115	105	45	Ok
6	Intake (s3)	60	42	24	Ok
6	EOBC_MAC(s4)	105	95	47	Ok
6	CPU (s5)	105	95	37	Ok
6	Crossbar(s6)	105	95	48	Ok
6	Arbiter (s7)	110	100	54	Ok
6	CTSdev1 (s8)	115	105	47	Ok
6	InbFPGA (s9)	105	95	44	Ok
6	QEng1Sn1(s10)	115	105	50	Ok
6	QEng1Sn2(s11)	115	105	48	Ok
6	QEng1Sn3(s12)	115	105	46	Ok
6	QEng1Sn4(s13)	115	105	49	Ok
7	Crossbar(s5)	105	95	58	Ok
7	QEng1Sn1(s12)	115	110	66	Ok
7	QEng1Sn2(s13)	115	110	63	Ok
7	QEng1Sn3(s14)	115	110	62	Ok
7	QEng1Sn4(s15)	115	110	62	Ok
7	QEng2Sn1(s16)	115	110	66	Ok
7	QEng2Sn2(s17)	115	110	63	Ok
7	QEng2Sn3(s18)	115	110	63	Ok
7	QEng2Sn4(s19)	115	110	63	Ok
7	L2Lookup(s27)	115	105	51	Ok
7	L3Lookup(s28)	120	110	61	Ok
9	Crossbar(s5)	105	95	43	Ok
9	CTSdev1 (s6)	115	105	53	Ok
9	CTSdev3 (s8)	115	105	53	Ok
9	CTSdev4 (s9)	115	105	56	Ok
9	CTSdev5 (s10)	115	105	53	Ok
9	CTSdev6 (s11)	115	105	57	Ok
9	CTSdev7 (s12)	115	105	52	Ok
9	CTSdev9 (s14)	115	105	50	Ok
9	CTSdev10(s15)	115	105	53	Ok
9	CTSdev11(s16)	115	105	50	Ok
9	CTSdev12(s17)	115	105	53	Ok
9	QEng1Sn1(s18)	115	105	55	Ok
9	QEng1Sn2(s19)	115	105	54	Ok
9	QEng1Sn3(s20)	115	105	52	Ok
9	QEng1Sn4(s21)	115	105	51	Ok
9	L2Lookup(s22)	120	110	52	Ok
9	L3Lookup(s23)	120	110	60	Ok
xbar-1	Intake (s2)	60	42	27	Ok
xbar-1	Crossbar(s3)	105	95	59	Ok
xbar-2	Intake (s2)	60	42	26	Ok
xbar-2	Crossbar(s3)	105	95	50	Ok
xbar-3	Intake (s2)	60	42	26	Ok
xbar-3	Crossbar(s3)	105	95	54	Ok
xbar-4	Intake (s2)	60	42	26	Ok
xbar-4	Crossbar(s3)	105	95	53	Ok

```
xbar-5   Intake (s2)     60              42           26        Ok
xbar-5   Crossbar(s3)    105             95           55        Ok


Power Supply:
Voltage: 50 Volts
Power                                  Actual       Total
Supply    Model                        Output     Capacity    Status
                                      (Watts )     (Watts )
-------  ------------------  -----------  -----------  --------------
1        N7K-AC-6.0KW              816 W       6000 W     Ok
2        N7K-AC-6.0KW              713 W       6000 W     Ok
3        N7K-AC-6.0KW              730 W       6000 W     Ok


                                  Actual       Power
Module    Model                     Draw   Allocated     Status
                                  (Watts )    (Watts )
-------  ------------------ -----------  -----------   --------------
2        N7K-M148GT-11             N/A         400 W     Powered-Up
3        N7K-M148GT-11             N/A         400 W     Powered-Up
4        N7K-M148GT-11             N/A         400 W     Powered-Up
5        N7K-SUP1                  N/A         210 W     Powered-Up
6        N7K-SUP1                  N/A         210 W     Powered-Up
7        N7K-M132XP-12             N/A         750 W     Powered-Up
9        N7K-M148GS-11             283 W       400 W     Powered-Up
Xb1      N7K-C7010-FAB-1           N/A          60 W     Powered-Up
Xb2      N7K-C7010-FAB-1           N/A          60 W     Powered-Up
Xb3      N7K-C7010-FAB-1           N/A          60 W     Powered-Up
Xb4      N7K-C7010-FAB-1           N/A          60 W     Powered-Up
Xb5      N7K-C7010-FAB-1           N/A          60 W     Powered-Up
fan1     N7K-C7010-FAN-S            88 W       720 W     Powered-Up
fan2     N7K-C7010-FAN-S            88 W       720 W     Powered-Up
fan3     N7K-C7010-FAN-F             9 W       120 W     Powered-Up
fan4     N7K-C7010-FAN-F             9 W       120 W     Powered-Up

N/A - Per module power not available


Power Usage Summary:
--------------------
Power Supply redundancy mode (configured)             Redundant
Power Supply redundancy mode (operational)            Redundant
Total Power Capacity (based on configured mode)              9000 W
Total Power of all Inputs (cumulative)                      18000 W
Total Power Output (actual draw)                             2259 W
Total Power Allocated (budget)                               4750 W
Total Power Available for additional modules                 4250 W

switch#
```

Reloading Modules

You can reload the entire switch, reset specific modules in the switch, or reload the image on specific modules in the switch.

This section includes the following topics:

Reloading the Switch

To reload the switch, use the **reload** command without any options. When you use this command, you reboot the switch.

Note If you need to use the **reload** command, be sure to save the running configuration by using the **copy running-config startup-config** command beforehand.

Power Cycling Modules

To power cycle any module, follow these steps:

Step 1 Identify the module that needs to be reset.

Step 2 Reset the identified module by entering the **reload module** command. This command power cycles the selected module.

```
switch# reload module number
```

The *number* indicates the slot in which the identified module resides.

Caution Reloading a module disrupts traffic through the module.

Saving the Module Configuration

To save the new configuration to nonvolatile storage, use the **copy running-config startup-config** command from EXEC mode. Once you enter this command, the running and the startup copies of the configuration are identical.

Table 8-7 displays various scenarios when module configurations are preserved or lost.

Table 8-7 Switching Module Configuration Status

Scenario	Consequence
A particular switching module is removed and you used the **copy running-config startup-config** command again.	The configured module information is lost.
A particular switching module is removed and the same switching module is replaced before you enter the **copy running-config startup-config** command again.	The configured module information is preserved.
A particular switching module is removed and replaced with the same type switching module, and you entered the **reload module** *number* command.	The configured module information is preserved.
A particular switching module is reloaded when you enter the **reload module** *number* command.	The configured module information is preserved.

Purging the Module Configuration

To delete the configuration in an empty slot or in a slot with a powered-down I/O module, use the **purge module** *slot* **running-config** command from EXEC mode. This command clears the running configuration for the specified slot. This command does not work on supervisor modules or on any slot that currently has a powered-up module. This command only works on an empty slot (where the specified module once resided) or on a slot with a powered-down I/O module.

The **purge module** command clears the configuration for any module that previously existed in a slot and has since been removed or powered down. While the module was in that slot, some parts of the configuration may have been stored in the running configuration and cannot be reused (for example, IP addresses), unless you clear that from the running configuration.

For example, suppose you create an IP storage configuration with a 48-port 10/100/1000 Ethernet I/O module in slot 3 in Switch A. This module uses an IP address. You decide to remove this I/O module and move it to Switch B, and you no longer need the IP address. If you try to configure this unused IP address, you will receive an error message that prevents you from proceeding with the configuration. In this case, you need to enter the **purge module 3 running-config** command to clear the old configuration in Switch A before using the IP address.

Changing the Amount of Power Reserved for Fabric Modules

By default, each Cisco Nexus 7000 Series system reserves enough power for the maximum quantity (five) of fabric modules that can be installed in its chassis. If you have installed fewer than five fabric modules and need to free up unused reserve power for I/O modules, you can power down the unused slots and specify a smaller maximum number of fabric modules.

Before you can change the maximum number of fabric modules, you must do all of the following:

- Make sure that the fabric modules that you are using are installed in slots 1 through x where x is the new maximum number of fabric modules.

  You do not have to fill all of those slots with fabric modules, but the fabric modules that you will be using must be in those slots. For example, if you specify 4 as the new maximum number of fabric modules, you must make sure that the fabric modules that you are using are in slots 1 through 4. Also, make sure that any empty fabric module slots have blank modules installed in them.
- Make sure that each of the installed fabric modules is powered up by using the **no poweroff xbar** *slot_number* command (see the "Shutting Down a Fabric Module" section on page 8-23).
- Power down the unused slots by using the **poweroff xbar** *slot_number* command (see the "Shutting Down a Fabric Module" section on page 8-23).

To specify a different maximum number of fabric modules for your system, use the **hardware fabrics max** *number* command. To verify the status of the installed fabric modules, use the **show module xbar** command (see the "Verifying the Status of a Module" section on page 8-19). To verify the amount of reserved power, use the **show environment power** command (see the "Displaying Power Usage Information" section on page 8-9).

Note Power allocations differ for fabric modules depending on the type of fabric module (for example, fabric-1 versus fabric-2) and for the switch model (for example, Cisco Nexus 7004 versus Cisco Nexus 7018).

SUMMARY STEPS

1. **config t**
2. **hardware fabrics max** *number*

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Starts the global configuration mode.
Step 2	**hardware fabrics max** *number* **Example:** switch(config)# hardware fabrics max 4 switch(config)#	Powers off the specified fabric module in the switch. For the number, use a digit between 1 and 5, inclusive.

Information About Fan Trays

Hot-swappable fan trays are provided in all switches in the Cisco Nexus 7000 Series to manage airflow and cooling for the entire switch. Each fan tray contains multiple fans to provide redundancy. The switch can continue functioning in the following situations:

- One or more fans fail within a fan tray—Even with multiple fan failures, the Cisco Nexus 7000 Series switch can continue functioning. When a fan fails within a tray, the functioning fans in the module increase their speed to compensate for the failed fans.
- The fan tray is removed for replacement—The fan tray is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. Depending on the type of fan tray that you remove, one of the following will occur:
  - Cisco Nexus 7004 or 7009 Series fan tray—The switch can function without a fan tray for up to two minutes by which time you must replace the missing fan tray.
  - Cisco Nexus 7010 Series system fan tray—The fans in the remaining system fan tray increase their speeds as needed for the current temperature until you replace the missing fan tray.
  - Cisco Nexus 7010 Series fabric fan tray—The fan in the remaining fabric fan tray increases its speed to the maximum speed until you replace the missing fabric fan tray.
  - Cisco Nexus 7018 Series fan tray—If you do not replace the fan tray within three minutes, the system shuts down the modules cooled by the removed fan tray. For the top fan tray, that means that the system would shut down the supervisor in slot 9, the I/O modules in slots 1 through 8, and the fabric modules. For the bottom fan tray, that means that the system would shut down the supervisor in slot 10 and the I/O modules in slots 11 through 18.

Note When replacing a failed fan tray in a running system, be sure to promptly replace the fan tray.

Tip If one or more fans fail within a fan tray, the Fan Status LED turns red. A fan failure could lead to temperature alarms if not corrected immediately.

The fan status is continuously monitored by the software. In case of a fan failure, the following actions occur:

- System messages are displayed.
- Call Home alerts are sent (if configured).
- SNMP notifications are sent (if configured).

To display the fan module statuses, use the **show environment fan** command as shown inExample 8-8 (Cisco Nexus 7004 switch), Example 8-9 (Cisco Nexus 7009 switch), Example 8-10 (Cisco Nexus 7010 switch), or Example 8-11 (Cisco Nexus 7018 switch).

Example 8-8 Displaying Fan Information for a Cisco Nexus 7004 Series Chassis

```
switch# show environment fan
Fan:
-----------------------------------------------------
Fan             Model                Hw         Status
-----------------------------------------------------
Fan1(sys_fan1)  N7K-C7004-FAN        0.110      Ok
Fan_in_PS1      --                   --         Ok
Fan_in_PS2      --                   --         Ok
Fan_in_PS3      --                   --         Absent
Fan_in_PS4      --                   --         Absent
Fan Zone Speed: Zone 1: 0x7f
Fan Air Filter : Absent
```

Example 8-9 Displaying Fan Information for a Cisco Nexus 7009 Series Chassis

```
switch# show environment fan
Fan:
-----------------------------------------------
Fan            Model          Hw     Status
-----------------------------------------------
Fan1(sys_fan1) N7K-C700-FAN   0.31   Ok
Fan_in_PS1     --             --     Ok
Fan_in_PS2     --             --     Ok
Fan Air Filter:Absent
switch#
```

Example 8-10 Displaying Fan Information for a Cisco Nexus 7010 Series Chassis

```
switch# show environment fan

Fan:
-----------------------------------------------------
Fan             Model                Hw         Status
-----------------------------------------------------
ChassisFan1     N7K-C7010-FAN-S      0.410      Ok
ChassisFan2     N7K-C7010-FAN-S      0.410      Ok
ChassisFan3     N7K-C7010-FAN-F      0.209      Ok
ChassisFan4     N7K-C7010-FAN-F      0.209      Ok
Fan_in_PS1      --                   --         Ok
Fan_in_PS2      --                   --         Ok
Fan_in_PS3      --                   --         Ok
Fan Air Filter : Absent

switch#
```

Example 8-11 Displaying Fan Information for a Cisco Nexus 7018 Series Chassis

```
switch# show environment fan
Fan:
-----------------------------------------------------
Fan             Model                Hw         Status
-----------------------------------------------------
Fan1(sys_fan1)  N7K-C7018-FAN        0.204      Ok
Fan2(sys_fan2)  N7K-C7018-FAN        0.204      Ok
Fan_in_PS1      --                   --         Ok
Fan_in_PS2      --                   --         Ok
Fan_in_PS3      --                   --         Absent
Fan_in_PS4      --                   --         Absent
Fan Air Filter : Absent
switch#
```

The possible Status field values are as follows:

- If the fan module is operating properly, the status is Ok.
- If the fan is physically absent, the status is Absent.
- If the fan is physically present but not working properly, the status is Failure.

If the status for one of the fan trays is “Failure,” the status field also displays the numbers of the failing fans. For the Cisco Nexus 7010 system, each system fan tray has six fans to cool the supervisor and I/O modules and each fabric fan tray has one fan to cool the fabric modules. For the Cisco Nexus 7018 system, each fan tray has 14 fans to cool the supervisor, I/O modules, and fabric modules as follows:

- Top fan tray
  - Fans 1 through 12 cool the I/O modules in slots 1 through 8 and the supervisor module in slot 9.
  - Fans 13 and 14 cool the fabric modules
- Bottom fan tray
  - Fans 1 through 12 cool the I/O modules in slots 11 through 18 and the supervisor module in slot 10
  - Fans 13 and 14 are not used

Configuring EPLDs

The Cisco Nexus 7000 Series switches, which include the Cisco Nexus 70*xx* and 77*xx* switches, contain several programmable logical devices (PLDs) that provide hardware functionalities in all modules. Cisco provides electronic programmable logical device (EPLD) image upgrades to enhance hardware functionality or to resolve known issues. PLDs include electronic programmable logical 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, the *Cisco Nexus 7000 Series FPGA/EPLD Upgrade Release Notes* announce its availability, and you can download it from http://www.cisco.com.

This section includes the following topics:

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 upgrading Supervisor 1 modules with Supervisor 2 or Supervisor 2E modules and the switch has Fabric 2 modules (For the Cisco Nexus 7009 switch, make sure that you are using image 1.003 or later image for the fabric 2 modules. For Cisco Nexus 7010 and 7018 switches, make sure that you are using image 0.007 or later image.)

Note Supervisor 1 modules are not supported by the Cisco Nexus 7004 switches.

- If you are enabling software features (LIST, 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, 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 8-8 provides high-level guidelines to help network administrators determine whether an EPLD upgrade is necessary when upgrading Cisco NX-OS Release 5.0(1) or a later release. 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 8-8 Conditions For Upgrading EPLD Images

Condition	Modules Targeted for Upgrades[1]
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: • For Release 6.1(1) and supervisor 1 modules download n7000-s1-epld.6.1.1a.img. • For Release 6.1(1) and supervisor 2 modules download n7000-s2-epld.6.1.1a.img. • For Release 6.1(2) and supervisor 1 modules download n7000-s1-epld.6.1.2a.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-Gigabit Ethernet I/O modules from a Cisco Nexus 7010 switch to a Cisco Nexus 7018 switch	32-port 10-Gigabit 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

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:

- 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
- One fan tray module (Cisco Nexus 7009)
- 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 system through a console, SSH, or Telnet.

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

Determining Whether to Upgrade EPLDs

As shown in Table 8-9, 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 8-9 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*

If there are different EPLD images to use depending on the version ID (VID) of a hardware module (see Table 9 on page 8-37), then you must determine the version number of the module by using the **show sprom module** *number* command as shown in Example 8-12.

Example 8-12 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(8)**.

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 8-41).

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.

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(1), you should choose Release 6.1(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
```

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 186.8 or 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.

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** *slot_number* **epld**. If the line FE Bridge(x) version displays a version earlier than 186.8 or 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. 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-s1-epld.6.2.8.img (for Cisco Nexus 7004, 7009, 7010, and 7018 switches with Supervisor 1 modules)
  - 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 7710 and 7718 switches)

Note EPLD and software images for a chassis with Supervisor 1 modules include “s1” in the image name and images for Supervisor 2 and Supervisor 2E have “s2” in the image name.

- 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 online, 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 3.22.0
  kickstart: version 6.2(8)
  system:    version 6.2(8)
  BIOS compile time:       02/20/10
  kickstart image file is: bootflash:/n7000-s2-kickstart.6.2.8.bin
  kickstart compile time:  4/06/2014 12:00:00 [04/06/2014 18:37:07]
  system image file is:    bootflash:/n7000-s2-dk9.6.2.8.bin
  system compile time:     4/06/2014 13:00:00 [04/06/2014 19:21:22]
```

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 8-13 to determine the amount of available bootflash memory, and see Example 8-14 to determine the amount of available slot0 memory.

Example 8-13 Determining the Amount of Available Bootflash Memory

```
switch# dir bootflash:
...
       4096    Apr 06 01:19:53 2014 lost+found/
    3020665    Jan 02 07:47:36 2014  n7000-s1-debug-sh-bash.6.2.6.gbin
  207429135    Jan 02 07:35:03 2014  n7000-s1-dk9.6.2.6.gbin
  207558132    Apr 06 07:11:31 2014  n7000-s2-dk9.6.2.8.gbin
   29479424    Jan 02 12:03:47 2014  n7000-s2-kickstart.6.2.6.gbin
   29467136    Apr 06 10:35:18 2014  n7000-s2-kickstart.6.2.8.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
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
Copyright (c) 2002-2013, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
switch#
```

Example 8-14 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    48     1/10 Gbps Ethernet Modul         N7K-F248XP-24      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.6.2.8.img bootflash:n7000-s1-epld.6.2.8.img
```

Note For NX-OS Release 6.1(1) , you must copy the n7000-s1-epld.6.1.1a.img (for supervisor 1 modules) or n7000-s2-epld.6.1.1a.img (for supervisor 2 modules) files. For NX-OS Release 6.1(2), you must copy the n7000-s1-epld.6.1.2a.img (for supervisor 1 modules) or n7000-s1-epld.6.1.2a.img (for supervisor 2 modules) files.

Step 6 Copy the EPLD image to the standby supervisor.

```
switch# copy bootflash:n7000-s1-epld.6.2.8.img
bootflash://sup-standby/n7000-s1-epld.6.2.8.img
```

You are ready to upgrade the EPLD images (see the "Manual Upgrading of EPLD Images" section on page 8-43).

Manual Upgrading of EPLD Images

You can manually upgrade the EPLD images for 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 EPLDs" section on page 8-37.

To upgrade the EPLD images for a Cisco Nexus 7000 Series switch, you use one of the **install** commands listed in Table 8-10. 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 8-10 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.

Note When upgrading EPLD images for Supervisor 2 or Supervisor 2E modules in a two-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 either Example 8-15 (switches with Supervisor 1 modules) or Example 8-16 (switches with Supervisor 2 or Supervisor 2E modules).

Example 8-15 Installing EPLD Images in Parallel for Switches with Supervisor 1 Modules

```
switch# install all epld bootflash:n7000-s1-epld.6.2.8.img parallel
```

Example 8-16 Installing EPLD Images in Parallel for Switches with Supervisor 2 or Supervisor 2E Modules

```
switch# install all epld bootflash:n7000-s2-epld.6.2.8.img parallel
```

Example 8-17 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 (in this case for a switch with Supervisor 1 modules).

Example 8-17 Installing Supervisor and I/O Modules Plus Other Specific Modules (for Switches with Supervisor 1 Modules)

```
switch# install all epld bootflash:n7000-s1-epld.6.2.8.img parallel module all fan-module
1
```

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" section on page 8-47.

Automatic Upgrading of EPLD Images for I/O Modules

You can enable, disable, and verify automatic upgrading of EPLD images for I/O modules installed in the Cisco Nexus 7004, 7009, 7010, and 7018 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

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 with the current version of Ciscon NX-OS software 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	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Starts the global configuration mode.

Step 2	**system auto-update epld**
	Example:
	`switch(config)# system auto-update epld`
	`Auto upgrade enabled`
	`switch(config)#`
		Enables automatic updates.

	no system auto-update epld
	Example:
	`switch(config)# no system auto-update epld`
	`Auto upgrade disabled`
	`switch(config)#`
		Disables automatic updates.

Step 3	**show running-config | inc epld**
	Example:
	`switch(config)# sh 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 8-11.

Table 8-11 Automatic EPLD Upgrade Verification Commands

Command	Action
show system auto 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.

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.

Verifying the EPLD Upgrades

You can verify the EPLD upgrades for each slot in the switch by using the commands listed in Table 8-12.

Table 8-12 Commands Used to Display EPLD Information for Modules

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 8-18.

Example 8-18 Displaying the Available EPLD Versions

```
switch# show version epld bootflash:n7000-s1-epld.6.2.8.img

...
Module Type                          EPLD Device          Version
------------------------------------------------------------------
Supervisor-1X                        Power Manager          3.009
Supervisor-1X                        IO                     3.029
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                     2.014
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            186.008
10 Gbps Ethernet Module              Linksec Engine         2.007

1000 Mbps Optical Ethernet Module    Power Manager          4.008
1000 Mbps Optical Ethernet Module    IO                     1.006
1000 Mbps Optical Ethernet Module    Forwarding Engine      1.006
1000 Mbps Optical Ethernet Module    SFP                    1.004
...
Fabric Module 2                      Power Manager          1.003

Fabric Module 2                      Power Manager          1.003
...
Fan<Cisco Nexus 7009>                Fan Controller         0.009
Fan<Cisco Nexus 7009>                Fan Controller         0.009
```

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 8-19.

Example 8-19 Displaying EPLD Upgrades

```
switch# show install epld status

1) Xbar Module 4 upgraded on Wed Oct 26 16:36:27 2011 (524778 us)
Status: EPLD Upgrade was Successful
```

```
EPLD                                 Curr Ver    Old Ver
-----------------------------------------------------
Power Manager                         1.003         1.003

2) Module 14 upgraded on Mon May 23 19:45:55 2011 (835895 us)
Status: EPLD Upgrade was Successful

...
```

Default Settings

Table 8-13 lists the default hardware settings.

Table 8-13 Default Hardware Parameters

Parameters	Default
Power supply mode	Power supply redundancy mode