



CHAPTER 1

Installation and Initial Configuration

This chapter describes how to initially install and configure your Cisco Prime Network Control System (NCS) appliance.

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Note

For configuration details beyond initial installation, refer to the *Cisco Prime Network Control System Configuration Guide* at the following URL:

http://www.cisco.com/en/US/products/ps11686/tsd_products_support_series_home.html

Supported Hardware

NCS software is packaged with your physical appliance, or can be downloaded as an image for installation, or can be downloaded as a software image to run as a virtual appliance on a customer-supplied server. The NCS virtual appliance can be deployed on any of the platforms listed in [Table 1-1](#).

Table 1-1 **Supported Hardware**

Hardware platform	Configuration
Cisco Prime NCS High-End Appliance (physical/virtual appliance)	<ul style="list-style-type: none"> • High End Virtual Appliance supports the same number of managed devices as a Physical Appliance (PRIME-NCS-APL-K9). • Supports up to 15000 Cisco Aironet lightweight access points, 5000 autonomous access points, 5000 switches and 1200 Cisco wireless LAN controllers. • Processors: 8, at 2.93 GHz or better. • Minimum RAM: 16 GB. • Minimum hard disk space allocation: 400 GB.
Cisco Prime NCS Standard Virtual Appliance	<ul style="list-style-type: none"> • Supports up to 7500 Cisco Aironet lightweight access points, 2500 autonomous access points, 2500 switches and 600 Cisco wireless LAN controllers. • Processors: 4, at 2.93 GHz or better. • Minimum RAM: 12 GB. • Minimum hard disk space allocation: 300 GB.
Cisco Prime NCS Low-End Virtual Appliance	<ul style="list-style-type: none"> • Supports up to 3000 Cisco Aironet lightweight access points, 1000 autonomous access points, 1000 switches and 240 Cisco wireless LAN controllers. • Processors: 2, at 2.93 GHz or better. • Minimum RAM: 8 GB. • Minimum hard disk space allocation: 200 GB.
VMware ESX and ESXi Versions (Virtual Appliance on a Customer-Supplied Server)	<ul style="list-style-type: none"> • If deploying NCS as a virtual appliance on a customer-supplied server, one of the following versions of VMware ESX or ESXi may be used: <ul style="list-style-type: none"> – VMware ESX or VMware ESXi version 4.0 – VMware ESX or VMware ESXi version 4.1 – VMware ESXi version 5.0

Required Tools and Information

This section lists the required hardware and other information that you need to install and setup the NCS appliance.

Required Hardware

You need the following equipment to install an NCS appliance in an Electronics Industries Alliance (EIA) rack:

- A Cisco Prime Network Control System appliance
- Network cables
- One rack unit (RU) free space in an EIA-standard rack
- Rack mounting kit (included with the Cisco Prime Network Control System appliance shipment)
- A serial console cable



Note If you are installing this unit in a threaded-hole rack, you must supply screws that fit the threaded-hole rack and the appropriate screwdriver or Torx driver for those screws.

CLI Console Requirements

You need an ANSI or VT-100 terminal emulator application on a laptop, desktop, or palmtop to connect to the NCS appliance console.

System Configuration Parameters

Obtain the following parameters from your network administrator:

- A hostname for the NCS appliance
- An IP address for the NCS appliance
- A default net mask for the IP address
- An IP address for the default gateway
- A default DNS domain
- An IP address for the primary name server
- A primary NTP server

Hardware Specifications

Table 1-2 lists the hardware specifications of the NCS appliance.

Table 1-2 NCS Appliance Hardware Specifications

Size	<ul style="list-style-type: none"> • 1RU • Height: 43 mm (1.7 inches) • Depth: 711 mm (28.0 inches) • Width: 440 mm (17.3 inches) • Weight: approximately 14 kg
Power Supply	<ul style="list-style-type: none"> • Two 675 w high efficiency, hot-swappable power supplies • 6 redundant cooling fans with two motors per fan
CPU/Memory/Network	<ul style="list-style-type: none"> • CPU: 2 x Intel Xeon Processor (2.4-GHz 12-MB Cache) • Memory: 16-GB (1x2-GB, 2Rx8) PC3-10600 CL9 ECC DDR3 • Network Interface Cards: 2 x 10/100/1000 Gigabit
Hard Disk and RAID	<ul style="list-style-type: none"> • RAID-5 • 4 x 300G SAS Disks - Hot swappable • LSI MegaRAID High performance RAID Controller with 512-MB On-board Cache
Air temperature	<ul style="list-style-type: none"> • Server on: 10°C to 35°C (50°F to 95°F); altitude: 0 to 914.4 m (3000 ft), decrease system temperature by 1.0°C for every 1000-foot increase in altitude • Server off: 5°C to 45°C (41°F to 113°F); maximum altitude: 3048 m (10000 ft) • Shipment: -40°C to 60°C (-40°F to 140°F); maximum altitude: 3048 m (10000 ft)
Humidity	<ul style="list-style-type: none"> • Server on: 20% to 80%; • Maximum dew point: 21°C; • Maximum rate of change: 5 °C/hr Server off: 8% to 80%;
Power	<ul style="list-style-type: none"> • Voltage: 100 VAC to 120 VAC and 200 VAC to 240 VAC • Power: System Rating 780 W • BTU/HR: System Rating 2661 BTU/hr • Peak Inrush Current (4 ms): 60 A
pMTBF goal	130,000
Predicted MTBF	142,577 hrs
Predicted monthly failure rate	0.511%
Annual predicted failure rate	5.963%
Predicted RMA rate	5,110 PPM

Choosing a Physical Location for the Cisco Prime Network Control System Appliance

For maximum safety and reliability, mount the NCS appliance using the following guidelines.

General Precautions

To reduce the risk of personal injury or damage to the NCS appliance, observe the following precautions:

- Place the product away from radiators, heat registers, stoves, amplifiers, or other products that produce heat.
- Never use the product in a wet location.
- Avoid inserting foreign objects through openings in the product.
- To reduce risk of injury from electric shock hazards, do not open the product enclosure.

Laser Devices

Laser devices are used within the DVD of the NCS appliance. The DVD has no defined use at the customer site.

To reduce the risk of exposure to hazardous radiation, observe the following precautions:

- Do not try to open the laser device enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only Cisco authorized service technicians to repair the laser device.

Space and Airflow Requirements

Install the NCS appliance in an EIA-standard rack. One rack unit is required for each NCS appliance.

Ensure that you can reach the NCS appliance and all cables.

- Ensure that the NCS appliance is within 328 ft (100 m) equivalent distance from any equipment connected to the 10/100/1000BASE-T ports.
- Ensure that the power cord can reach a 110 or 220 VAC grounded electrical outlet.

Ensure that there is sufficient room at the back of the NCS appliance for all cables and connectors.

- Leave a minimum clearance of 63.5 cm (25 in.) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 in.) behind the rack.
- Leave a minimum clearance of 121.9 cm (48 in.) from the back of the rack to the back of another rack or row of racks.



Caution

To prevent improper cooling and damage to the equipment, do not block the ventilation openings.

**Caution**

Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

**Caution**

When selecting a rack to use, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: (1) Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq. cm (830 sq. in.) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). (2) Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in.).

Temperature Requirements

To ensure continued safe and reliable equipment operation, install or position the system in a well ventilated, climate-controlled environment.

Ensure that the ambient operating temperature remains between 10 and 35° C (50 and 95° F), taking into account the elevated temperatures that occur when equipment is installed in a rack.

**Caution**

To reduce the risk of damage to the equipment when installing third-party options: (1) Do not permit optional equipment to impede airflow around the NCS appliance or to increase the internal rack temperature beyond the maximum allowable limits. (2) Do not exceed the manufacturer's maximum recommended ambient temperature (TMRA).

Power Requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA 75, 1992 (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.

**Caution**

Protect the NCS appliance from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

Power Supplies on the Cisco Prime Network Control System Appliance

The NCS appliance has two power supplies.

**Warning**

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

**Caution**

Verify that the external power source connected to the NCS appliance matches the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your Cisco authorized reseller or local power company.

Batteries

The NCS appliance might include a real-time clock battery or coin cell battery that might contain perchlorate and might require special handling when recycled or disposed of in California.

Refer to the following link for disposal information.

<http://www.dtsc.ca.gov/hazardouswaste/perchlorate>

**Caution**

Do not dispose of batteries with the general household waste. Recycle them using the public collection system.

Electrical Grounding Requirements

The NCS appliance must be grounded properly for proper operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code), Article 250, as well as any local and regional building codes. In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code. In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7.

Furthermore, you must verify that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices. Because of the high ground-leakage currents associated with multiple systems connected to the same power source, Cisco recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the NCS appliance is not recommended.

Rack Warnings



Warning

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety: (1) This unit should be mounted at the bottom of the rack if it is the only unit in the rack. (2) When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack. (3) If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006.



Caution

To reduce the risk of personal injury or equipment damage when unloading a rack, at least two people are needed to safely unload the rack from the pallet.



Caution

To prevent damage, ensure that water or excessive moisture cannot get into the NCS appliance.

Unpacking the Cisco Prime Network Control System Appliance

Follow these steps to unpack the NCS appliance.

-
- Step 1** Open the shipping container and carefully remove the contents.
 - Step 2** Return all packing materials to the shipping container and save it.
 - Step 3** Ensure that all items listed in the “[Package Contents](#)” section are included in the shipment.
 - Step 4** Check each item for damage. If any item is damaged or missing, notify your authorized Cisco sales representative.
-

Package Contents

Each Cisco Prime Network Control System appliance package contains the following items:

- One Cisco Prime Network Control System appliance
- One rack mount kit
- Two power cords

Mounting the Cisco Prime Network Control System Appliance in a Rack

**Warning**

Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

**Caution**

The NCS appliance is heavy (35 lbs, 15.9 kgs).

To reduce the risk of personal injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Getting help to lift and stabilize the NCS appliance during installation or removal is recommended, especially when the system is not fastened to the rails.
- Use caution when installing the NCS appliance in or removing it from the rack; it is unstable when not fastened to the rails.
- Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first and continue to populate the rack from the bottom to the top.

The NCS appliance comes with a universal rack mount kit that can be installed in a square-hole rack, round-hole rack, or a threaded-hole rack. You can order replacement universal rack mount kits from Cisco. The replacement part PID is AIR-SRVR-URMK=.

**Note**

You must provide the threaded-hole screws to secure the mounting rails to the rack. Threaded-hole screws are not shipped with the system.

Installing the Cisco Prime Network Control System Appliance in the Rack Cabinet Using the Universal Rack Mount Kit

Review the documentation that comes with the rack cabinet for safety and cabling information. Before you install the NCS appliance in a rack cabinet, review the following guidelines:

- Make sure that the room air temperature is below 35° C (95° F).
- Do not block any air vents; usually 15 cm (6 in.) of space provides proper airflow.
- Do not leave open spaces above or below an installed NCS appliance in your rack cabinet. To help prevent damage to NCS appliance components, always install a blank filler panel to cover the open space and to help ensure proper air circulation.
- Install the NCS appliance only in a rack cabinet with perforated doors.
- Plan the device installation starting from the bottom of the rack cabinet.
- Install the heaviest device in the bottom of the rack cabinet.
- Do not extend more than one device out of the rack cabinet at the same time.
- Remove the rack doors and side panels to provide easier access during installation.

- Connect the NCS appliance to a properly grounded outlet.
- Do not overload the power outlet when you install multiple devices in the rack cabinet.
- Install the NCS appliance in a rack that meets the following requirement:
 - Minimum depth of 70 mm (2.76 in.) between the front mounting flange and inside of the front door.

**Caution**

Use safe practices when lifting.



≥ 18 kg (39.7 lb.)



≥ 32 kg (70.5 lb.)



≥ 55 kg (121.2 lb.)

**Caution**

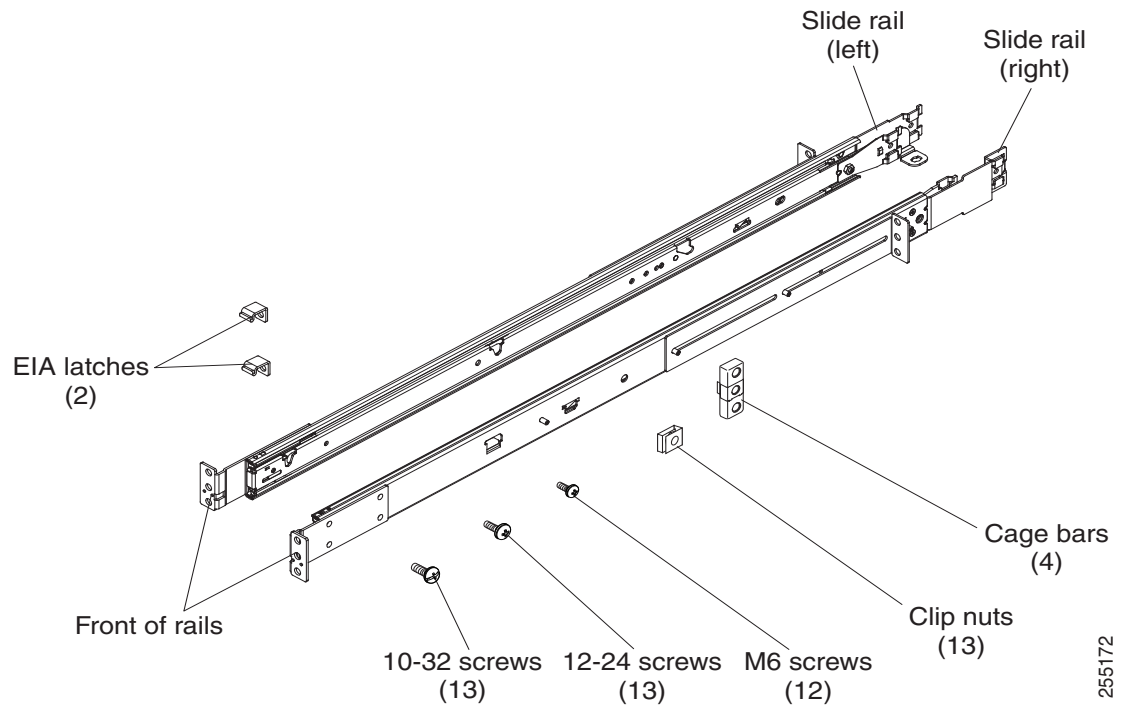
Do not place any object on top of rack-mounted devices.



The following illustration shows the items that you need to install the NCS appliance in the rack cabinet. If any items are missing or damaged, contact your place of purchase.

**Note**

Some items come with the NCS appliance, not in the rack installation kit.

**Note**

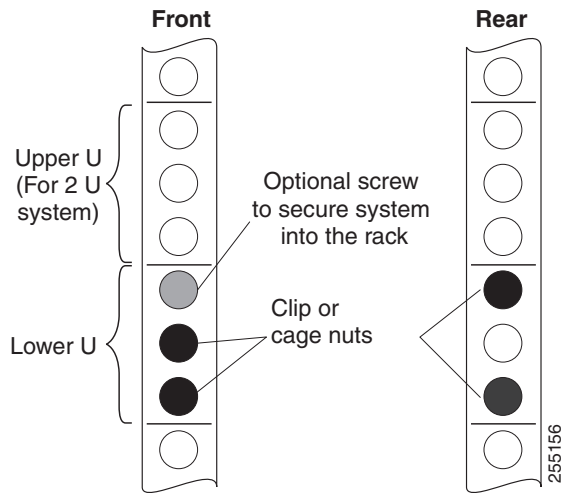
Use cage bars with square-holed racks, clip nuts with round-holed racks, and your own screws or the screws provided in this kit with threaded-hole racks.

**Note**

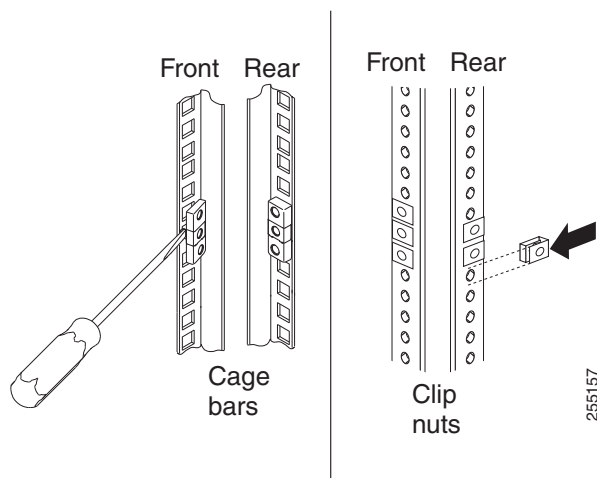
If the slide rails in your rack installation kit came with shipping thumbscrews, remove them before you begin the following installation procedure.

Step 1

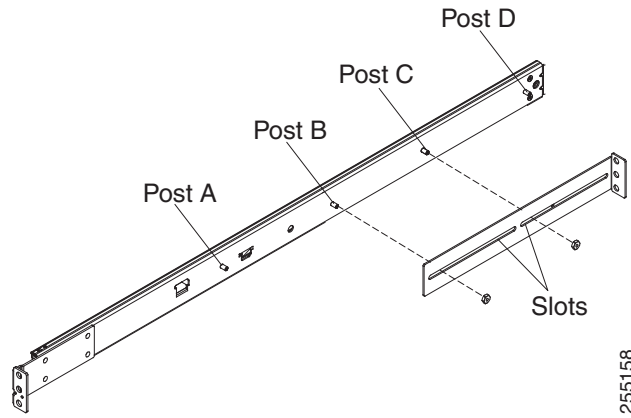
Select an available 1 U space in your rack to install your NCS appliance. If you have either a round-holed or square-holed rack, install cage bars or clip nuts in the middle and the bottom (optional for the upper) holes of the lower U on each side of the front of the rack. Then, install cage bars or clip nuts in the upper and the bottom holes of the lower U on each side of the rear of the rack.



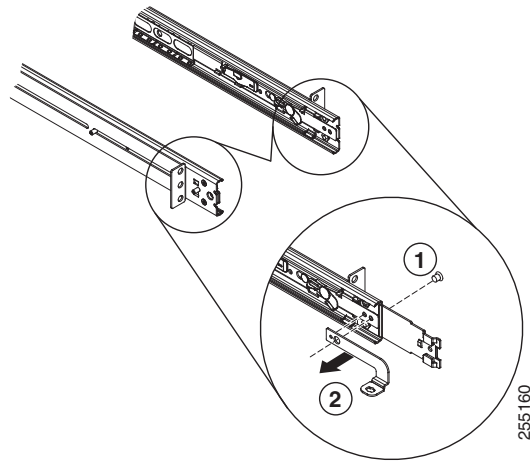
- Step 2** Use a screwdriver to install the cage bars or the clip nuts on the inside of the mounting rail, as required for your rack, into the selected holes.



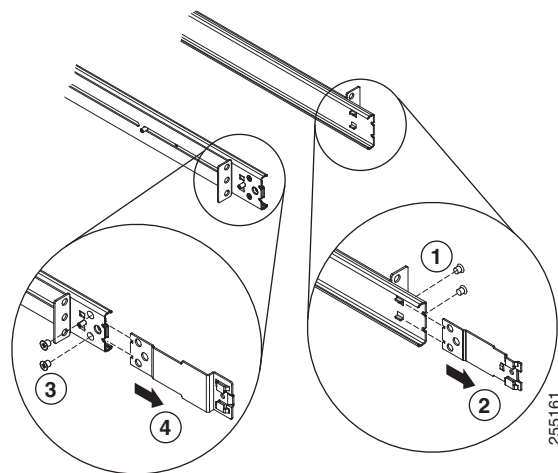
- Step 3** The rail depth can be adjusted from 17 in (432 mm) to 31.25 in (794 mm). To adjust the depth, you can loosen the nuts on the posts and slide the bracket until the distance between the front and rear slide rail flanges matches the distance between the front and rear EIA rails of the rack cabinet. If you need further adjustment, remove the nuts, move the bracket to the appropriate set of posts (A, B, C, and D) to obtain the appropriate slide rail depth, then reinstall and tighten the nuts.



Step 4 To remove the support bracket, remove the screw (1) and remove the bracket (2) from the rear of the slide rail.



Step 5 To remove the mounting brackets, remove the screws (1) and (3). Slide out the brackets (2) and (4) from the rear of the slide rail.



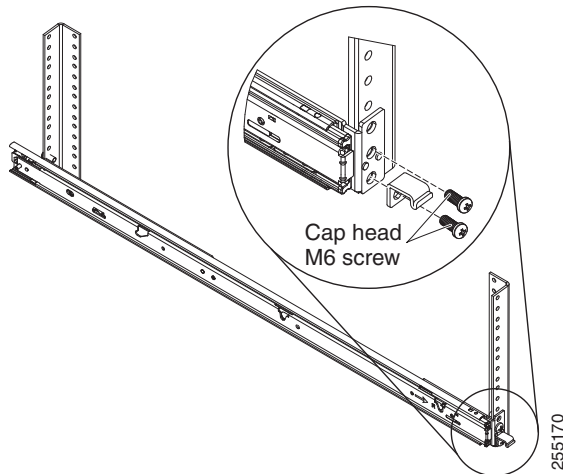
- Step 6** Attach the front of the slide rail and EIA latch to the front of the rack cabinet by installing a screw in the bottom hole of the lower U; then, install another screw in the middle hole of the lower U to attach the front of the slide rail to the front of the rack cabinet.



Note When you fasten the slides to the rack, ensure the screws are engaged but the flange can move slightly. You will use a screwdriver to fully tighten them in [Step 9](#).

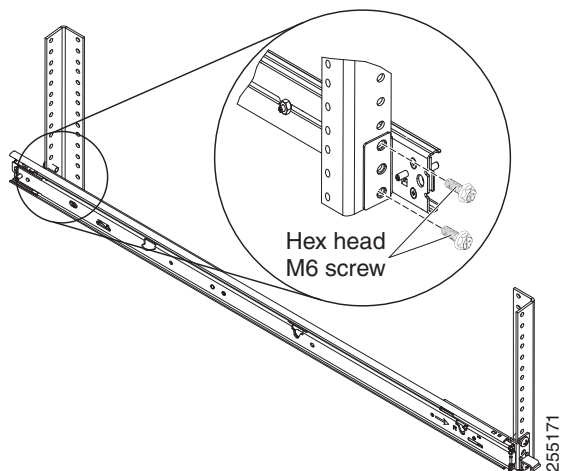


Note Use 12-24 screws (not hex head M6 screws) on the front mounting bracket if you are installing this system into a rack with round or square holes (not threaded holes).

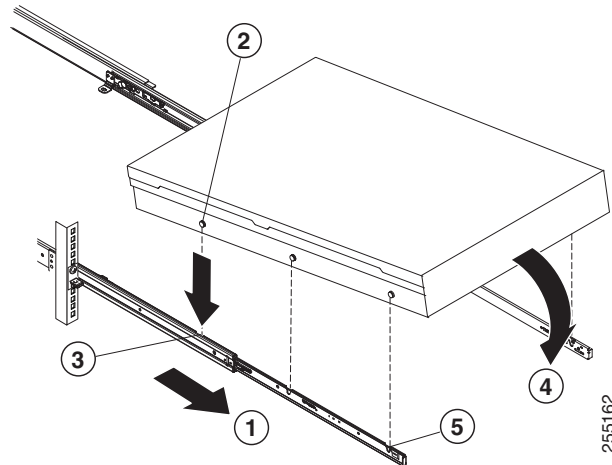


- Step 7** Use two screws to attach the rear of the slide rail to the rear of the rack cabinet in the upper and the bottom holes of the lower U.

Repeat [Step 3](#) through [Step 7](#) to install the other slide rail into the rack.

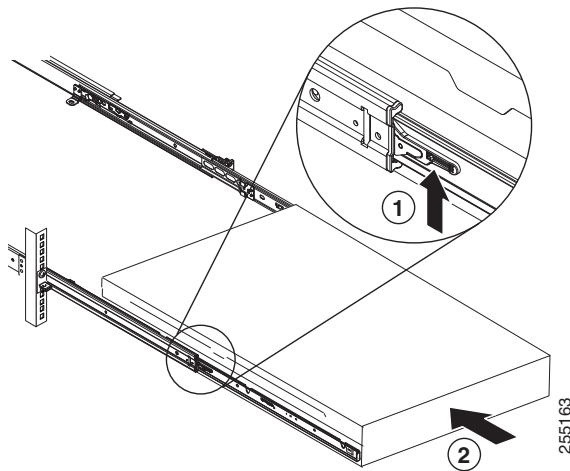


- Step 8** Pull the slide rails forward (1) until they click, two times, into place. Carefully lift the NCS appliance and tilt it into position over the slide rails so that the rear nail heads (2) on the NCS appliance line up with the rear slots (3) on the slide rails. Slide the NCS appliance down until the rear nail heads slip into the two rear slots, and then slowly lower the front of the NCS appliance (4) until the other nail heads slip into the other slots on the slide rails. Make sure that the front latch (5) slides over the nail heads.



- Step 9** Lift the locking levers (1) on the slide rails and push the NCS appliance (2) all the way into the rack until it clicks into place.

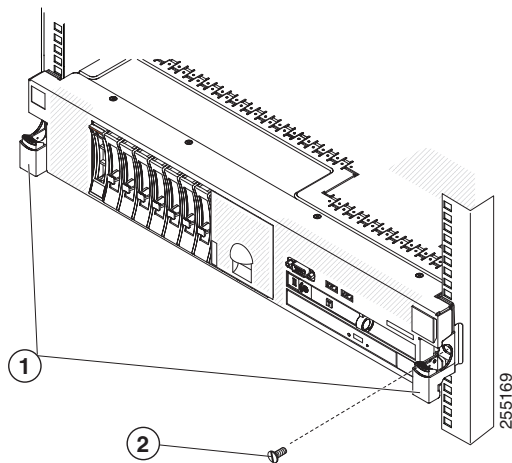
Slide the system in and out twice to make sure the system slides correctly. Push the system inwards to the rack as close as possible but able to access the screws with a screwdriver. Then tighten the screws with a screwdriver.



- Step 10** Slide the NCS appliance into the rack until it snaps into place. To slide the NCS appliance out of the rack, press on the release latches (1).



Note When you move the rack cabinet, or if you install the rack cabinet in a vibration-prone area, insert the optional M6 screws (2) in the front of the NCS appliance.



To remove the NCS appliance from the rack, reverse these instructions. Store this information with your NCS appliance documentation for future use.

Front and Rear Panel

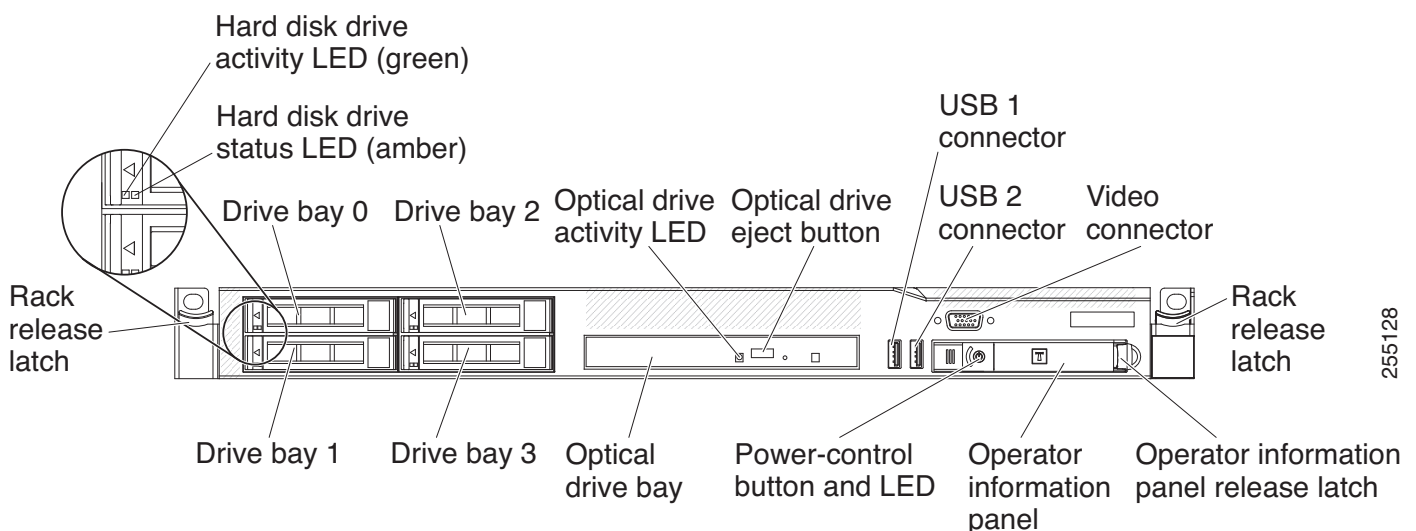
This section describes the controls and light-emitting diodes (LEDs) and how to turn the Cisco Prime Network Control System appliance on and off.

Front Panel

Figure 1-1 shows the controls, LEDs, and connectors the front panel of the Cisco Prime Network Control System appliance.

Figure 1-2 shows a detailed view of the operator information panel.

Figure 1-1 Cisco Prime Network Control System Appliance Front Panel



Front Panel Components

- **Rack release latches:** Press the latches on each front side of the NCS appliance to remove it from the rack.
- **Hard disk drive status LEDs:** This LED is used to indicate the status of the SAS hard disk drives. When this LED is lit, it indicates that the drive has failed. When this LED is flashing slowly (one flash per second), it indicates that the drive is being rebuilt. When the LED is flashing rapidly (three flashes per second), it indicates that the controller is identifying the drive.
- **Hard disk drive activity LEDs:** Each hot-swap hard disk drive has an activity LED, and when this LED is flashing, it indicates that the drive is in use.
- **Optical drive eject button:** Press this button to release a DVD or CD from the DVD drive.
- **Optical drive activity LED:** When this LED is lit, it indicates that the DVD drive is in use.
- **Operator information panel:** This panel contains controls and LEDs that provide information about the status of the NCS appliance. For information about the controls and LEDs on the operator information panel, see [Operator Information Panel, page 1-17](#).
- **Operator information panel release latch:** Slide the blue release latch to the left to pull out the light path diagnostics panel and view the light path diagnostics LEDs and buttons. See [Light Path Diagnostics Panel, page 1-18](#) for more information about the light path diagnostics.
- **Video connector:** Connect a monitor to this connector. The video connectors on the front and rear of the NCS appliance can be used simultaneously.



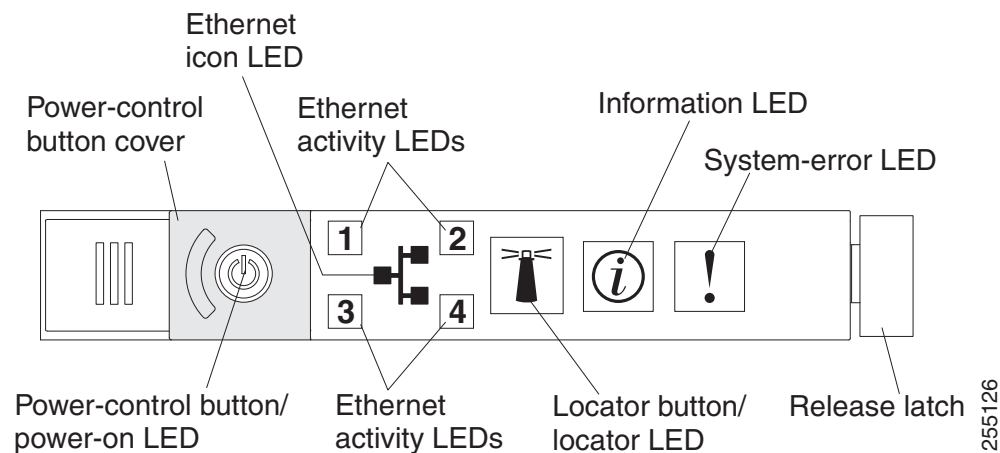
Note The maximum video resolution is 1600 x 1200 at 75 Hz.

- **USB connectors:** Connect a USB device, such as a USB mouse or keyboard, to any of these connectors.

Operator Information Panel

Figure 1-2 shows a detailed view of the controls and LEDs on the operator information panel.

Figure 1-2 Close Up of Cisco Prime Network Control System Appliance Operator Information Panel



Operator Information Panel Components

- **Power-control button and power-on LED:** Press this button to turn the NCS appliance on and off manually or to wake it from a reduced-power state. The states of the power-on LED are as follows:
 - **Off:** Power is not present, or the power supply or the LED itself has failed.
 - **Flashing rapidly (4 times per second):** The NCS appliance is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 20 to 40 seconds.
 - **Flashing slowly (once per second):** The NCS appliance is turned off and is ready to be turned on. You can press the power-control button to turn on the NCS appliance.
 - **Lit:** The NCS appliance is turned on.
 - **Fading on and off:** The NCS appliance is in a reduced-power state. To wake the NCS appliance, press the power-control button.
- **Ethernet activity LEDs:** When any of these LEDs is lit, they indicate that the NCS appliance is transmitting to or receiving signals from the Ethernet LAN that is connected to the Ethernet port that corresponds to that LED.
- **System-locator button/LED:** Use this blue LED to visually locate the NCS appliance among other servers. This LED is also used as a presence detection button. When you press the System-locator button, the LED will blink and it will continue to blink until you press it again to turn it off.
- **System-information LED:** When this amber LED is lit, it indicates that a noncritical event has occurred.
- **System-error LED:** When this amber LED is lit, it indicates that a system error has occurred. A system-error LED is also on the rear of the NCS appliance. An LED on the light path diagnostics panel on the operator information panel is also lit to help isolate the error.

Light Path Diagnostics Panel

The light path diagnostics panel is on the top of the operator information panel, as shown in [Figure 1-3](#). For additional information about the LEDs on the light path diagnostics panel, see [Table 1-3](#).

To access the light path diagnostics panel, slide the blue release button on the operator information panel to the left. Pull forward on the unit until the hinge of the operator panel is free of the chassis. Then pull down on the unit, so that you can view the light path diagnostics panel information.



Note

When you slide the light path diagnostics panel out of the NCS appliance to check the LEDs or checkpoint codes, do not run the NCS appliance continuously with the light path diagnostics panel outside of the NCS appliance. The panel should only be outside of the NCS appliance a short time. The light path diagnostics panel must remain in the NCS appliance when it is running to ensure proper cooling.

Figure 1-3 Light Path Diagnostics Panel

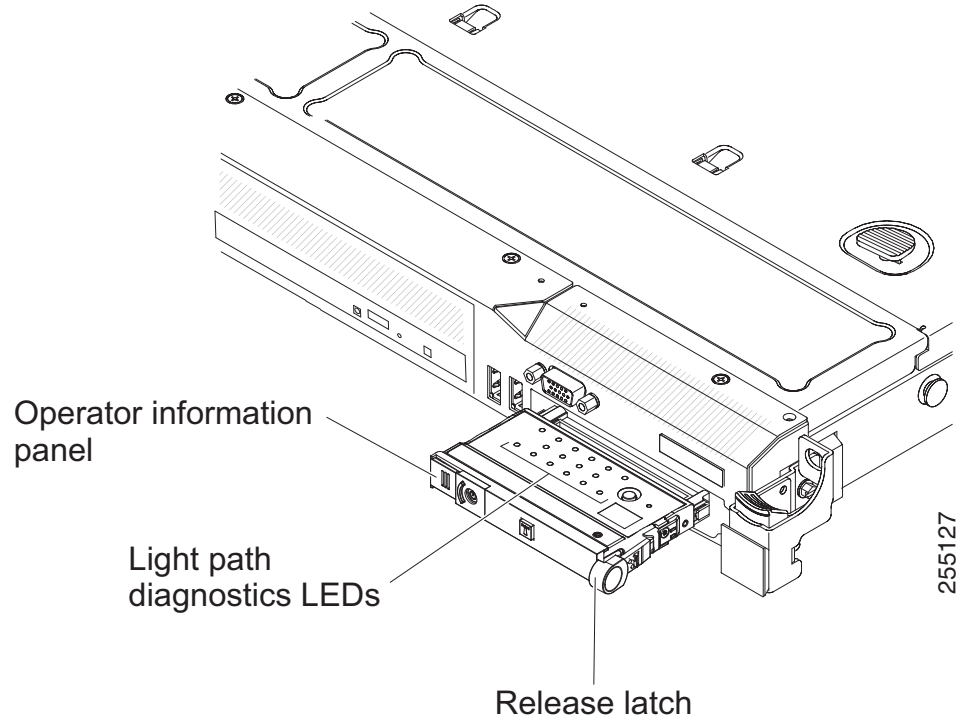
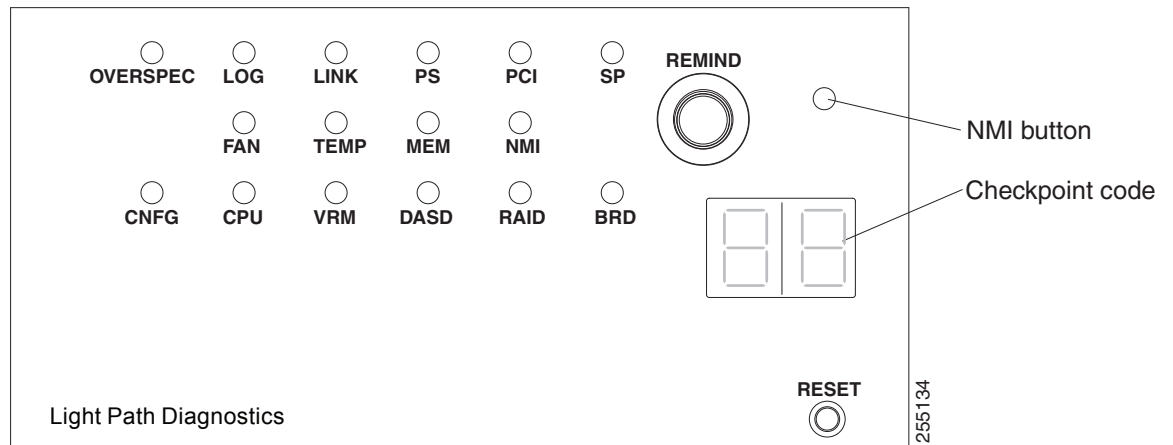


Figure 1-4 shows the LEDs and controls on the light path diagnostics panel.

Figure 1-4 Light Path Diagnostics Panel Components



Light Path Diagnostics Panel Components

- Remind button:** This button places the system-error LED on the front panel into Remind mode. In Remind mode, the system-error LED flashes once every 2 seconds until the problem is corrected, the NCS appliance is restarted, or a new problem occurs.

By placing the system-error LED indicator in Remind mode, you acknowledge that you are aware of the last failure but will not take immediate action to correct the problem.

- **NMI button:** This button is used to force a nonmaskable interrupt to the microprocessor. This button is not currently used by the Cisco Prime Network Control System appliance. Press this button only when directed by the Cisco TAC personnel.
- **Checkpoint code display:** This display provides a checkpoint code that indicates the point at which the system stopped during the boot block and POST. A checkpoint code is either a byte or a word value that is produced by UEFI. The display does not provide error codes or suggest components to be replaced.
- **Reset button:** Press this button to reset the NCS appliance and run the power-on self-test (POST). You might have to use a pen or the end of a straightened paper clip to press the button. The Reset button is in the lower-right corner of the light path diagnostics panel.

Table 1-3 Light path diagnostics panel LEDs

Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.		
LED	Description	Action
None, but the system error LED is lit.	An error occurred and cannot be isolated. The error is not represented by a path.	Contact Cisco TAC for assistance.
OVER SPEC	The power supplies are using more power than their maximum rating.	Contact Cisco TAC for assistance.
LOG	An error occurred.	Contact Cisco TAC for assistance.
LINK	Reserved.	–
PS	Power supply 1 or 2 has failed.	<ol style="list-style-type: none"> 1. Check the power supply that has a lit amber LED (see Power-supply LEDs, page 1-24). 2. Make sure that the power supplies are seated correctly. 3. Remove one of the power supplies to isolate the failed power supply. 4. Replace the failed power supply.
PCI	An error has occurred on a PCI bus or on the system board. An additional LED is lit next to a failing PCI slot.	Contact Cisco TAC for assistance.
SP	A service processor error has been detected.	<ol style="list-style-type: none"> 1. Shut down the system and remove the power cords from the NCS appliance; then, reconnect the NCS appliance to power and restart it. 2. If the problem does not go away, contact Cisco TAC for assistance.
FAN	A fan has failed, is operating too slowly, or has been removed. The TEMP LED might also be lit.	Contact Cisco TAC to replace your Cisco Prime Network Control System appliance and for further assistance.

Table 1-3 *Light path diagnostics panel LEDs (continued)*

Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.

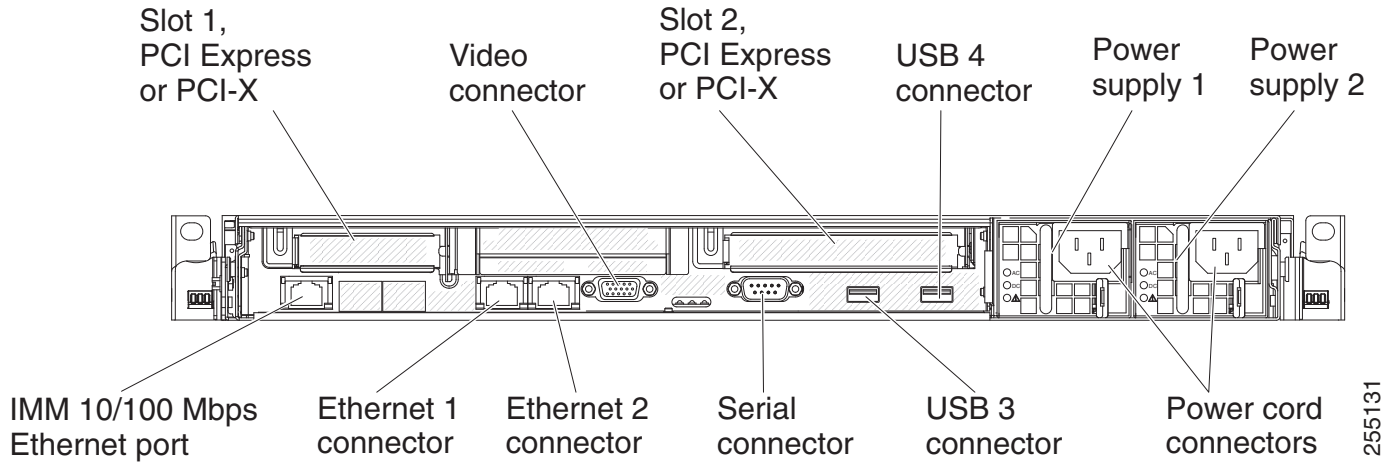
LED	Description	Action
TEMP	The system temperature has exceeded a threshold level. A failing fan can cause the TEMP LED to be lit.	Contact Cisco TAC for assistance.
MEM	When only the MEM LED is lit, a memory error has occurred. When both the MEM and CNFG LEDs are lit, the memory configuration is invalid or the PCI Option ROM is out of resource.	Contact Cisco TAC for assistance.
NMI	A nonmaskable interrupt has occurred, or the NMI button was pressed.	Check the system-error log for information about the error. Contact Cisco TAC if further assistance is needed.
CNFG	A hardware configuration error has occurred.	Contact Cisco TAC for assistance.
CPU	An invalid microprocessor configuration or a microprocessor has failed (both the CPU LED and the CNFG LED might be lit).	Contact Cisco TAC for assistance.
VRM	Reserved.	—
DASD	A hard disk drive has failed or is missing.	<ol style="list-style-type: none"> 1. Check the LEDs on the hard disk drives for the drive with a lit status LED and reseal the hard disk drive. 2. If reseating the drive does not resolve the issue, then the failed hard disk drive must be replaced. Contact Cisco TAC for assistance.
RAID	Reserved.	—
BRD	An error has occurred on the system board.	Contact Cisco TAC for assistance.

Rear Panel

Figure 1-5 shows details of the rear panel for the Cisco Prime Network Control System appliance.

Figure 1-6 shows the Cisco Prime Network Control System appliance back panel LEDs.

Figure 1-5 Cisco Prime Network Control System Appliance Rear Panel



Rear Panel Components

- **PCI slot 1:** Cisco Prime Network Control System does not use this slot.
- **PCI slot 2:** Cisco Prime Network Control System does not use this slot.
- **Power cord connectors:** Connect the power cords to these connectors.



Note

Power supply 1 is the default/primary power supply. If power supply 1 fails, you must replace it immediately.

- **Video connector:** Connect a monitor to this connector. The video connectors on the front and rear of the NCS appliance can be used simultaneously.



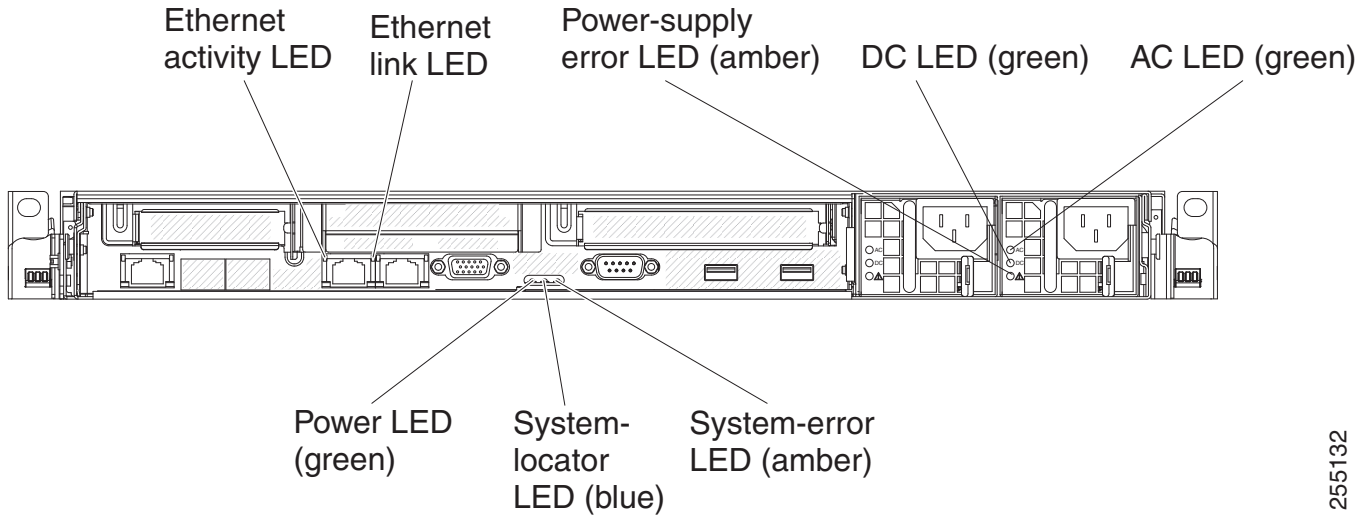
Note

The maximum video resolution is 1600 x 1200 at 75 Hz.

- **Serial connector:** Connect the serial console cable to this connector.
- **USB connectors:** Connect a USB device, such as a USB mouse or keyboard to any of these connectors.
- **IMM 10/100 Mbps Ethernet port:** For use in a future release.
- **Ethernet connectors:** Use Ethernet 1 to connect the NCS appliance to a network.

Figure 1-6 shows the LEDs on the rear of the NCS appliance.

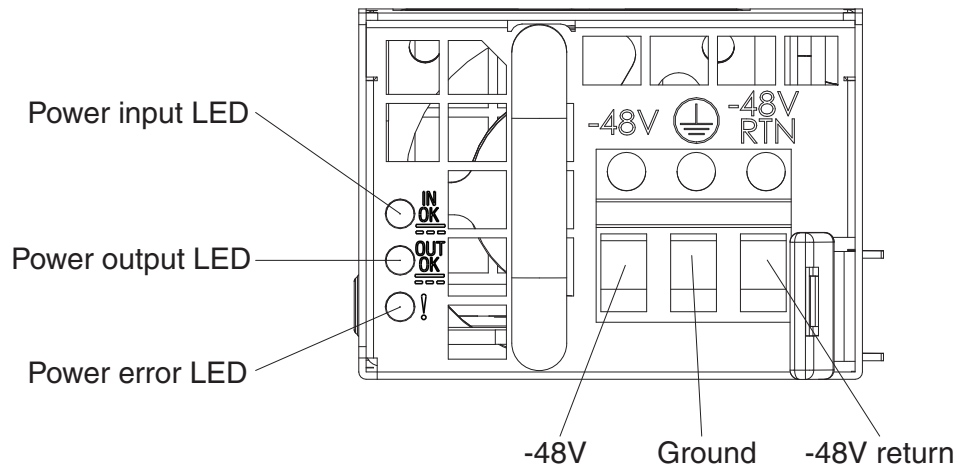
Figure 1-6 Cisco Prime Network Control System Appliance Rear Panel LEDs



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Figure 1-7 shows a detailed view of the LEDs on a DC power supply.

Figure 1-7 Close Up of Cisco Prime Network Control System Appliance DC Power Supply LEDs



255133

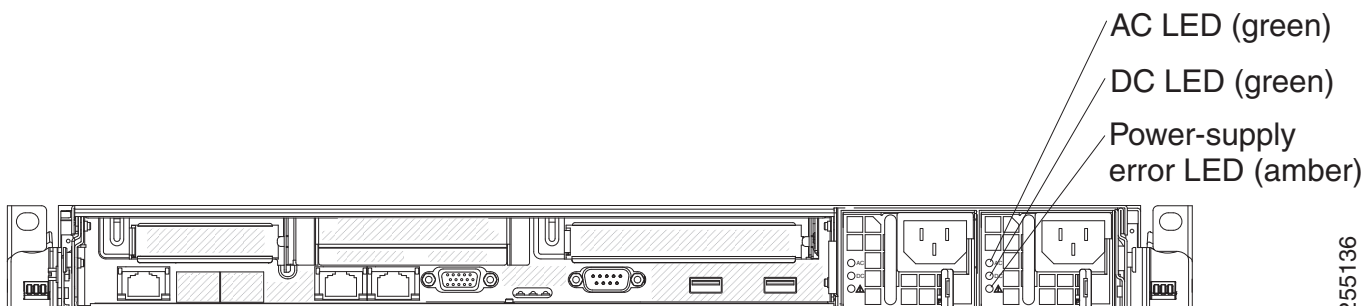
- **Ethernet activity LEDs:** When these LEDs are lit, they indicate that the NCS appliance is transmitting to or receiving signals from the Ethernet LAN that is connected to the Ethernet port.
- **Ethernet link LEDs:** When these LEDs are lit, they indicate that there is an active link connection on the 10BASE-T, 100BASE-TX, or 1000BASE-TX interface for the Ethernet port.
- **AC power LED:** Each hot-swap power supply has an AC power LED and a DC power LED. When the AC power LED is lit, it indicates that sufficient power is coming into the power supply through the power cord. During typical operation, both the AC and DC power LEDs are lit.
- **IN OK power LED:** Each hot-swap DC power supply has an IN OK power LED and an OUT OK power LED. When the IN OK power LED is lit, it indicates that sufficient power is coming into the power supply through the power cord. During typical operation, both the IN OK and OUT OK power LEDs are lit.

- **DC power LED:** Each hot-swap power supply has a DC power LED and an AC power LED. When the DC power LED is lit, it indicates that the power supply is supplying adequate DC power to the system. During typical operation, both the AC and DC power LEDs are lit.
- **OUT OK power LED:** Each hot-swap DC power supply has an IN OK power LED and an OUT OK power LED. When the OUT OK power LED is lit, it indicates that the power supply is supplying adequate dc power to the system. During typical operation, both the IN OK and OUT OK power LEDs are lit.
- **System-error LED:** When this LED is lit, it indicates that a system error has occurred. An LED on the light path diagnostics panel is also lit to help isolate the error.
- **Power-on LED:** When this LED is lit and not flashing, it indicates that the NCS appliance is turned on. The states of the power-on LED are as follows:
 - **Off:** Power is not present, or the power supply or the LED itself has failed.
 - **Flashing rapidly (4 times per second):** The NCS appliance is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 20 to 40 seconds.
 - **Flashing slowly (once per second):** The NCS appliance is turned off and is ready to be turned on. You can press the power-control button to turn on the NCS appliance.
 - **Lit:** The NCS appliance is turned on.
 - **Fading on and off:** The NCS appliance is in a reduced-power state. To wake the NCS appliance, press the power-control button.
- **System-locator LED:** Use this LED to visually locate the NCS appliance among other servers. You can use the *Integrated Management Module User's Guide* to light this LED remotely.

Power-supply LEDs

Figure 1-8 shows the location of the power-supply LEDs on the rear of the Cisco Prime Network Control System appliance. See Table 1-4 for additional information about solving power-supply problems.

Figure 1-8 Location of Cisco Prime Network Control System Appliance Power Supply LEDs



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Table 1-4 describes the problems that are indicated by various combinations of the power-supply LEDs on an AC power supply and suggested actions to correct the detected problems.

Table 1-4 Cisco Prime Network Control System Appliance AC Power Supply Troubleshooting

AC power-supply LEDs			Description	Action	Notes
AC	DC	Error (!)			
On	On	Off	Normal operation	–	–
Off	Off	Off	No AC power to the NCS appliance or a problem with the AC power source.	<ol style="list-style-type: none"> 1. Check the AP power to the NCS appliance. 2. Make sure that the power cord is connected to a functioning power source. 3. Restart the NCS appliance. If the error remains, check the power supply LEDs. 4. Replace the power supply. 	This is a normal condition when no AC power is present.
Off	Off	On	No AC power to the NCS appliance or a problem with the AC power source and the power supply had detected an internal problem.	<ol style="list-style-type: none"> 1. Make sure that the power cord is connected to a functioning power source. 2. Replace the power supply. 	This happens only when a second power supply is providing power to the NCS appliance.
Off	On	Off	Faulty power supply	Replace the power supply.	–
Off	On	On	Faulty power supply	Replace the power supply.	–
On	Off	Off	Power supply not fully seated, faulty system board, or faulty power supply	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. If this action does not resolve the problem, replace the power supply. If replacing the power supply does not resolve the issue, contact Cisco TAC for assistance. 	Typically indicates a power supply is not fully seated.
On	Off	On	Faulty power supply	Replace the power supply.	–
On	On	On	Power supply is faulty but still operational	Replace the power supply.	–

Cisco Prime Network Control System Appliance Power Features

Specific steps to power-on the Cisco Prime Network Control System appliance are provided in [Powering On the Cisco Prime Network Control System Appliance](#), page 1-30.

When the NCS appliance is connected to an AC power source but is not turned on, the operating system does not run, and all core logic except for the service processor (the Integrated Management Module) is shut down; however, the NCS appliance can respond to requests to the service processor, such as a remote request to turn on the NCS appliance. The power-on LED flashes to indicate that the NCS appliance is connected to power but is not turned on.

Turning on the Cisco Prime Network Control System Appliance

Approximately 5 seconds after the NCS appliance is connected to power, one or more fans might start running to provide cooling while the system is connected to power, and the power-on button LED will blink quickly. Approximately 20 to 40 seconds after the NCS appliance is connected to power, the power-control button becomes active (the power-on LED will blink slowly), and one or more fans might start running to provide cooling while the NCS appliance is connected to power. You can turn on the NCS appliance by pressing the power-control button.

If a power failure occurs while the NCS appliance is turned on, the system will restart automatically when power is restored.

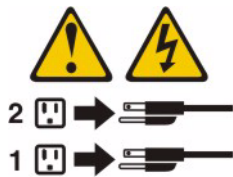
Turning off the Cisco Prime Network Control System Appliance

When you turn off the NCS appliance and leave it connected to power, it can respond to requests to the service processor, such as a remote request to turn on the NCS appliance. While the NCS appliance remains connected to power, one or more fans might continue to run. To remove all power from the NCS appliance, you must disconnect it from the power source.



Caution

The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

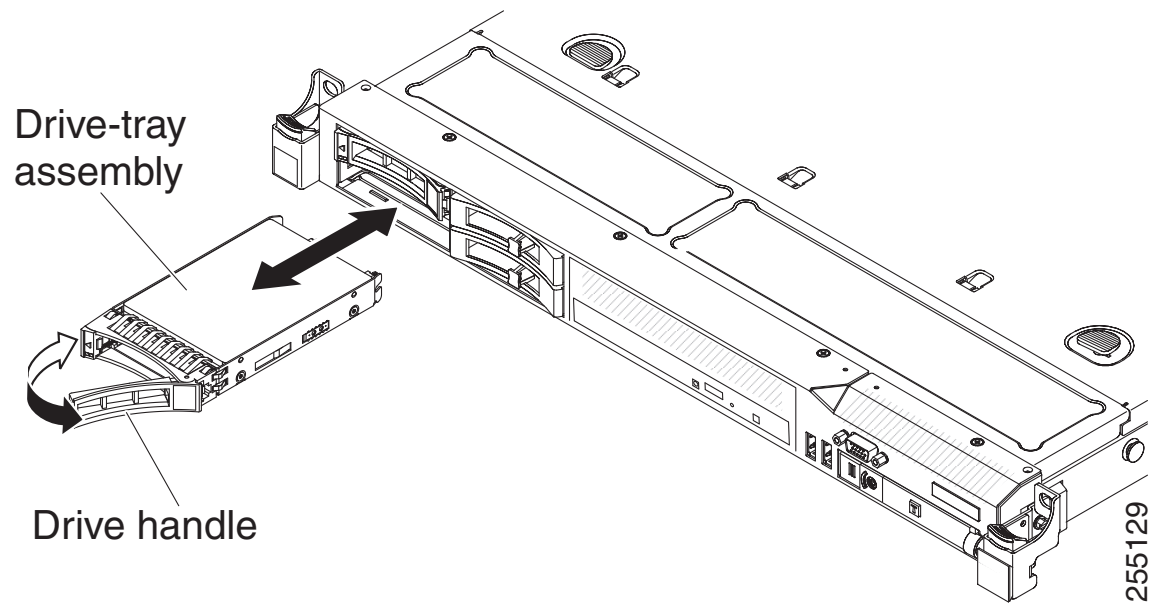


The integrated management module (IMM) can turn off the NCS appliance as an automatic response to a critical system failure.

Replacing a Failed Hot-Swap Hard Disk Drive

To replace a 2.5-inch hot-swap SAS hard disk drive, perform the following steps.

You can order replacement hard disk drives from Cisco. The replacement part PID is AIR-SRVR-300GB-HD=.



-
- Step 1** Read the safety information in the [“General Warnings, Regulatory and Safety”](#) section on page viii.
- Step 2** Touch the static-protective package that contains the drive to any unpainted metal surface on the NCS appliance; then, remove the drive from the package and place it on a static-protective surface.
- Step 3** Ensure that the drive you are replacing has failed before pulling it out of the drive slot. Press on the tray handle to unlock the drive. Pull on the tray handle to remove the drive.
- Step 4** Install the hard disk drive in the drive bay as follows:
- Make sure that the tray handle is in the open (unlocked) position.
 - Align the drive assembly with the guide rails in the bay.
 - Gently push the drive assembly into the bay until the drive stops.
 - Rotate the tray handle to the closed (locked) position.
 - Check the hard disk drive status LED to verify that the hard disk drive is operating correctly. If the amber hard disk drive status LED for a drive is lit continuously, that drive is faulty and must be replaced. If the green hard disk drive activity LED is flashing, the drive is being accessed.
-

Replacing a Hot-Swap AC Power Supply

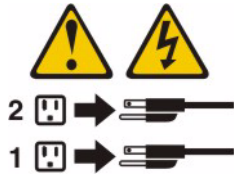
This section describes the type of AC power supply that the NCS appliance supports and other information that you must consider when you replace a failed power supply:

- The Cisco Prime Network Control System appliance comes with two 675-watt hot-swap 12-volt output power supplies that connect to power supply bays 1 and 2. The input voltage is 110 VAC or 220 VAC auto-sensing.
- Power supply 1 is the default/primary power supply. If power supply 1 fails, you must replace the power supply immediately.

- You can order replacement power supplies from Cisco. The replacement part PID is AIR-SRVR-PWR=.
- These power supplies are designed for parallel operation. In the event of a power-supply failure, the redundant power supply continues to power the system.

**Caution**

The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

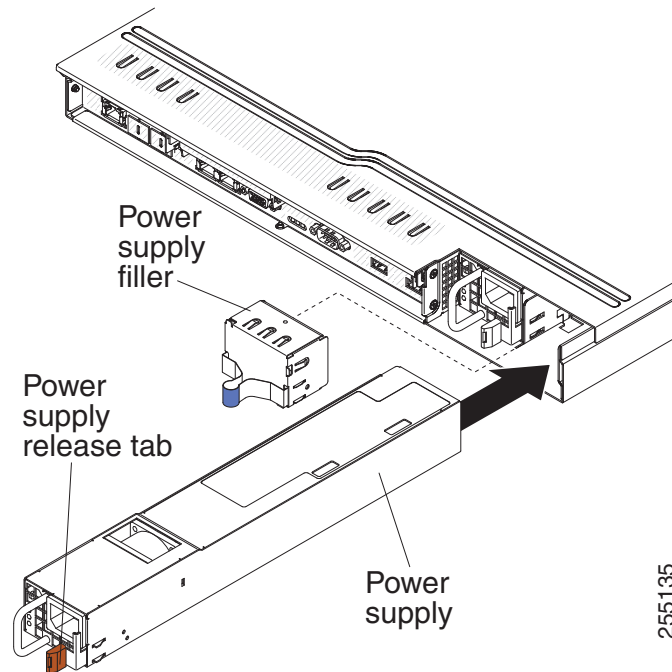
**Caution**

Never remove the cover on a power supply or any part that has the following label attached. Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.



To install a hot-swap power supply, perform the following steps.

- Step 1** Read the safety information in the [“General Warnings, Regulatory and Safety”](#) section on page viii.
- Step 2** Touch the static-protective package that contains the hot-swap power supply to any unpainted metal surface on the NCS appliance; then, remove the power supply from the package and place it on a static-protective surface.
- Step 3** Remove the failed power supply first. Grasp the handle on the rear of the power supply and slide the power supply out from the chassis.



- Step 4** Grasp the handle on the rear of the power supply and slide the power supply forward into the power-supply bay until it clicks. Make sure that the power supply connects firmly into the power-supply connector.
- Step 5** Route the power cord through the handle so that it does not accidentally become unplugged.
- Step 6** Connect the power cord for the new power supply to the power-cord connector on the power supply.
- Step 7** Connect the other end of the power cord to a properly grounded electrical outlet.
- Step 8** Make sure that the AC power LED and the DC power LED on the AC power supply are lit, indicating that the power supply is operating correctly. The two green LEDs are to the right of the power-cord connector.

Connecting the Cables

Figure 1-9 shows the locations of the input and output connectors on the front of the NCS appliance.

Figure 1-9 Front of Cisco Prime Network Control System Appliance

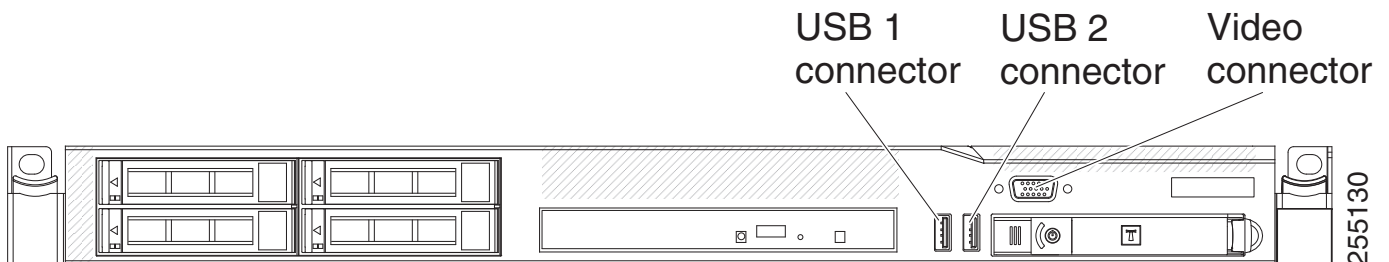
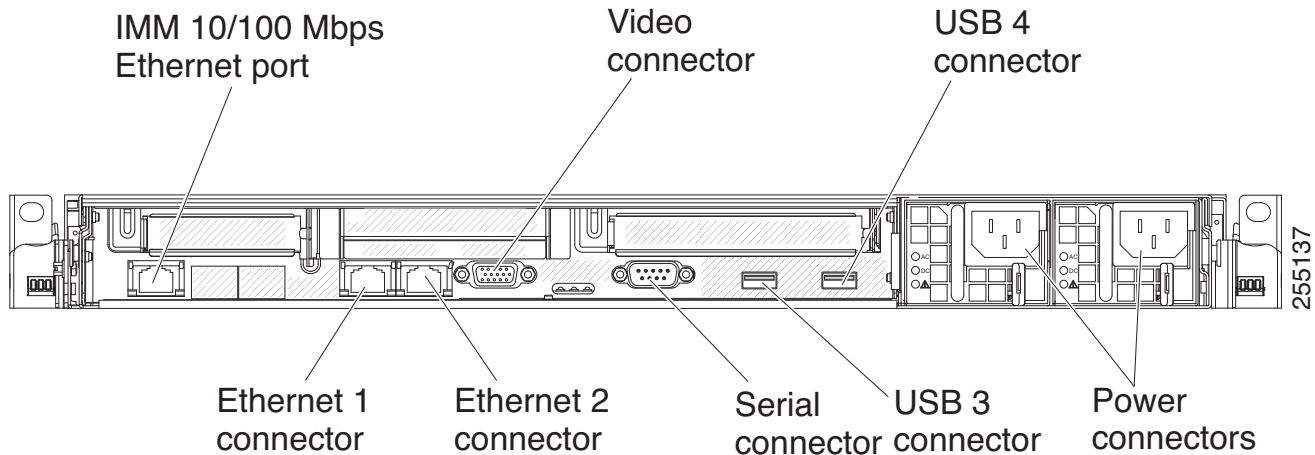


Figure 1-10 shows the locations of the input and output connectors on the rear of the NCS appliance.

Figure 1-10 Rear of Cisco Prime Network Control System Appliance



Connecting and Using the CLI Console

For initial system configuration, use the command-line interface (CLI) console. The CLI console connects to the NCS appliance back-panel DB9 console port. [Figure 1-5 on page 1-22](#) shows the console port on the back panel of the NCS appliance. Back panel components are described in [Rear Panel Components, page 1-22](#).

Use the following terminal emulator settings for the CLI console session:

- 9600 baud
- 8 data bits
- no flow control
- 1 stop bit
- no parity

Powering On the Cisco Prime Network Control System Appliance

When you apply AC power to an NCS appliance, the bootup script initializes the operating system and its stored configurations. You are prompted to enter a user ID and password and enter key configuration details.

To power on the NCS appliance, perform the following steps.

-
- Step 1** Plug an AC power cord into the back of the two power supplies ([Figure 1-5 on page 1-22](#)). If only one power supply is connected to a power source, the system will still function correctly but the monitoring components of the NCS appliance will detect the absence of the second power supply. The NCS appliance will raise an internal alarm, and a failure will be shown on the Administration > Appliance page. Connect the other end to a grounded 100 to 240 VAC 50/60 Hz electrical outlet.
- The end of the power cord that plugs into the NCS appliance conforms with the IEC 320 standard.
- Step 2** Use the front-panel Power On/Standby button, located in the operator information panel, to turn the NCS appliance on ([Figure 1-2 on page 1-17](#)).
- Step 3** At the login prompt, enter the NCS appliance operating user ID and password.
- The user ID and password are case sensitive.
- You are now logged into the NCS appliance operating system.
- Continue to the [“Configuring the Cisco Prime Network Control System Appliance” section on page 1-31](#).
-

Configuring the Cisco Prime Network Control System Appliance

Minimal configuration is performed for the Cisco Prime Network Control System appliance as part of installation using the console. All configuration beyond the initial setup using the automatic installation is performed from the CLI after setup or from the NCS appliance GUI. For details on automatic installation, refer to the [“Automatic Installation Script” section on page 1-31](#). The example installation shown in this section shows the two possible paths the setup may take: one for the HA primary machine and one for the HA secondary machine.

Automatic Installation Script

-
- Step 1** When the appliance powers on for the first time, you will see the setup prompt. Enter **setup** at the prompt.
- ```

Please type 'setup' to configure the appliance

localhost.localdomain login: setup

...
```
- Step 2** You will be prompted by a series of system prompts to set up the NCS appliance. Enter the desired values at the system prompts.
- ```
Press 'Ctrl-C' to abort setup

The hostname should be a unique name that can identify the device on the network. The hostname should start with a letter, end with a letter or number, and contain only letters, numbers, and dashes.

Enter hostname []: myNCS
Enter IP address[]: 1.2.3.4
Enter IP default netmask[]: 255.255.255.0
Enter IP default gateway[]: 1.2.3.1
```

Enter DNS information. Enter a domain name for the network domain to which this device belongs. The domain name should start with a letter, and it should end with a valid domain name suffix such as .com. It must contain only letters, numbers, dashes, and dots.

```
Enter default DNS domain[]: mydomain.com
Enter primary nameserver[]: 1.2.3.2
Add/Edit another nameserver? Y/N : N
```

Enter NTP server information.



Note The NCS appliance and its associated controllers must be mapped to the same NTP server. An NTP server is required to automatically synchronize time between the controllers, the NCS appliance, and the mobility services engine.



Note A list of available time zones is provided in [Appendix A](#).

```
Enter primary NTP server[time.nist.gov]:
Add/Edit secondary NTP server? Y/N : N
Enter system timezone[UTC]: US/Pacific
Enter username[admin]:
Enter password:
Enter password again:
Bringing up network interface...
Pinging the gateway...
Pinging the primary nameserver...
Do not use 'Ctrl-C' from this point on...
Appliance is configured
Installing applications...
Installing NCS ...
*****
* Cisco Prime Network Control System Setup *
*****
Enter "^" to return to previous question.
```

HA Primary Machine

```
*****
* High Availability Role Selection *
*****
Will this server be used as a Secondary for HA? (yes/no) [no]:

*****
* Web Interface Root Password Selection *
*****
Enter root password:
Enter root password again:

*****
* FTP Password Selection *
*****
Enter ftp password:
Enter ftp password again:

*****
* Summary *
*****
Server will not be a Secondary
Root Password is set.
```



```
Ftp Password is set.
Apply these settings? (y/n)n
```

HA Secondary Machine

```
*****
* High Availability Role Selection *
*****
Will this server be used as a Secondary for HA? (yes/no)[no]:yes

*****
* Web Interface Root Password Selection *
*****
Enter root password:
Enter root password again:

*****
* FTP Password Selection *
*****
Enter ftp password:
Enter ftp password again:

*****
* Summary *
*****
Server will not be a Secondary
Root Password is set.
Ftp Password is set.
Apply these settings? (y/n)y
Settings Applied.

Application bundle (NCS) installed successfully

=== Initial Setup for Application: NCS ===

Running database cloning script...
Running database creation script...
Setting limits.conf file...
Turning on ipmi service...
Setting up NCS service...
Generating configuration...
Rebooting...
```

Logging in to the NCS Appliance

After the system reboots, perform the following steps to log in to the Cisco Prime Network Control System appliance.

Step 1 Log into the NCS server via Web browser as root user.

- Login URL: **https://hostname**
- username: **root**
- password: *********

The root password is the Web password that was configured during setup. The root password can be changed after logging into the NCS via browser login.

Exporting Data from the Cisco Wireless Controller System

If you are migrating from a version of the Cisco Wireless Controller System (WCS) to the Cisco Prime Network Control System, perform the following steps to export data from the Cisco Wireless Controller System (WCS).

**Note**

The current zip tool can handle zip files of up to only 4G in size. If the WCS database file is larger than 10G, it is highly possible that the zip file size will be larger than 4G. Please request a patch if you have this issue.

- Step 1** Stop the existing WCS.
- Step 2** Execute the **cd** command to the *bin* directory.
- Step 3** Run the export using one of the following commands, depending on your operating system. Provide the path and export file name as prompted.
- In Linux: **export.sh all /data/wcs.zip**
 - In Windows: **export.bat all c:/wcs.zip**
-

Importing WCS data to the Cisco Prime Network Control System

NCS supports data migration from WCS release 7.0.164.3 only. For additional details and steps about migrating data from WCS to NCS, see the *Cisco Prime NCS Prime Configuration Guide*, Chapter 4: Performing Maintenance Operations, under the section “Performing NCS operations: Upgrading WCS to NCS” at the following URL:

http://www.cisco.com/en/US/products/ps11686/tsd_products_support_series_home.html

Configuring an NTP Server

You can configure NTP servers to set up the time and date of the NCS appliance.

**Note**

You are automatically prompted to enable NTP and enter NTP server IP addresses as part of the automatic installation script. For more details on the automatic installation script, refer to the “Configuring the Cisco Prime Network Control System Appliance” section on page 1-31.

**Note**

For more information on the NTP configuration, consult the Linux configuration guide.

During appliance setup, you were prompted to add an NTP server. Once the NCS appliance is up, the following command will allow you to change the NTP server configuration.

```
admin# configure
Enter configuration commands, one per line. End with CNTL/Z.
admin(config)# ntp ?
    server Specify NTP server(s) to use

admin(config)# ntp server ?
    <WORD> NTP server, IP or HOSTNAME (Max Size - 255)

admin(config)# ntp server 1.2.3.4 ?
    <WORD> NTP server, IP or HOSTNAME (Max Size - 255)
    <cr> Carriage return.

admin(config)# ntp server 1.2.3.4 1.2.3.5 ?
    <WORD> NTP server, IP or HOSTNAME (Max Size - 255)
    <cr> Carriage return.

admin(config)# ntp server 1.2.3.4 1.2.3.5 1.2.3.6 ?
    <cr> Carriage return.

admin(config)# ntp server 1.2.3.4 1.2.3.5 1.2.3.6
```

Verifying the Cisco Prime Network Control System Appliance Software State

You can verify the NCS appliance software state at any time. In the NCS appliance CLI interface, enter the **ncs status** command.

If the NCS appliance is running, the command output looks like this example:

```
admin# ncs status
Health Monitor Server is running.
Reporting Server is Success
Ftp Server is Success
Database server is running
Tftp Server is Success
Matlab Server is Success
NMS Server is running.

admin#
```

If the NCS appliance is not running, the command output looks like the following example:

```
NCS Platform is down
```

Manually Stopping Cisco Prime Network Control System Appliance Software

The NCS appliance software automatically runs after initial configuration and after each reboot.

To manually stop and restart the software, perform the following steps :

Step 1 To stop the software, enter the following command:

```
ncs stop
```

Step 2 To check status, enter the following command:

```
ncs status
```

Step 3 To start the software, enter the following command:

```
ncs start
```

Emergency Recovery

Downloading and Burning the Recovery ISO Image to DVD

In an emergency situation, such as corrupted software, downgrade to an older release, or restoring a problematic appliance, perform the following steps to download and burn the desired recovery ISO image to DVD.

Step 1 The recovery ISO is available through Cisco TAC. Contact Cisco TAC to obtain the recovery ISO image file.

Step 2 Download the recovery ISO image file.

Step 3 Burn the recovery ISO image file to a DVD.

Installing Recovery Image



Warning

The following procedure will completely reinstall the appliance and all data on the appliance will be removed. You must copy any data or files that you would like to keep from the appliance before performing this procedure.

Step 1 Reboot the NCS appliance with the recovery ISO DVD inserted. The Cisco Prime Network Control System Welcome screen appears.

```
ISOLINUX 3.11 2005-09-02 Copyright (C) 1994-2005 H. Peter Anvin
```

```
Welcome to Cisco Prime Network Control System
```

```
To boot from hard disk, press <Enter>.
```

```
Available boot options:
```

```
[1] Network Control System Installation (Keyboard/Monitor)
[2] Network Control System Installation (Serial Console)
```

```
[3] Recover administrator password. (Keyboard/Monitor)
[4] Recover administrator password. (Serial Console)
<Enter> Boot existing OS from Hard Disk.
```

Enter boot option and press <return>.

boot:

Step 2 Select the desired install option, 1 or 2, depending on how you are connected to the appliance.

The installation will take approximately 30 minutes. After the ISO image is installed, the NCS appliance reboots. When the reboot completes, the following prompt will appear and the appliance will be wiped clean.

```
*****
Please type 'setup' to configure the appliance
*****
```

Recovering a Lost Admin Password

If you lose or forget the admin password for NCS appliance, follow these steps.

Step 1 Reboot the NCS appliance with the ISO DVD inserted. The Cisco Prime Network Control System Welcome screen appears.

```
ISOLINUX 3.11 2005-09-02 Copyright (C) 1994-2005 H. Peter Anvin
```

```
Welcome to Cisco Prime Network Control System
```

To boot from hard disk, press <Enter>.

Available boot options:

```
[1] Network Control System Installation (Keyboard/Monitor)
[2] Network Control System Installation (Serial Console)
[3] Recover administrator password. (Keyboard/Monitor)
[4] Recover administrator password. (Serial Console)
<Enter> Boot existing OS from Hard Disk.
```

Enter boot option and press <return>.

boot:

Step 2 Select the desired recovery option, 3 or 4, depending on how you are connected to the appliance.
