



# Install Cisco NCS 1002

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This chapter describes the procedures to install Cisco NCS 1002.

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## Mount Brackets on NCS 1002 for ANSI or ETSI Rack

Use this procedure to:

- Mount 19-inch brackets on NCS 1002 for ANSI rack
- Mount 23-inch brackets on NCS 1002 for ANSI rack
- Mount 21-inch brackets on NCS 1002 for ETSI rack



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**Caution**

Use only the fastening hardware provided with NCS 1002 to prevent loosening, deterioration, and electromechanical corrosion of the hardware and joined material.

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**Note**

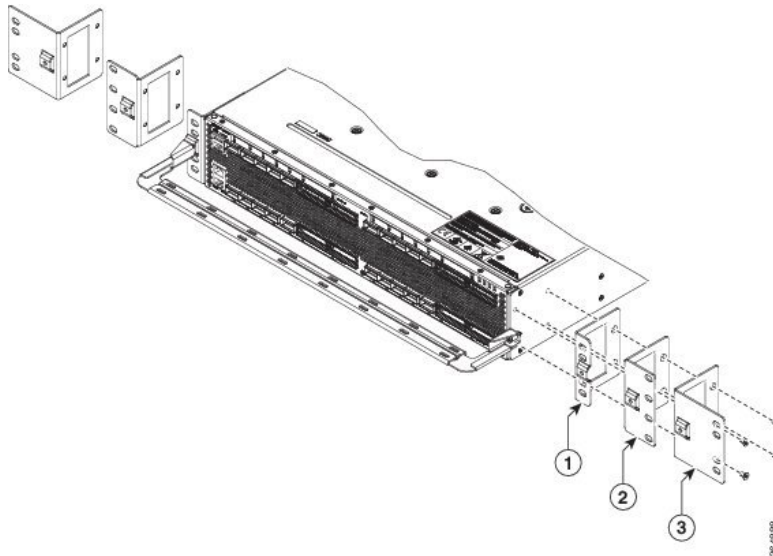
In a ANSI rack, NCS 1002 can be installed in the front or the middle position. In a ETSI rack, NCS 1002 can be installed only in the front position.

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## Procedure

- Step 1** Place the wider side of the mounting bracket flush against NCS 1002. The narrow side of the mounting bracket must be towards the front of the shelf.

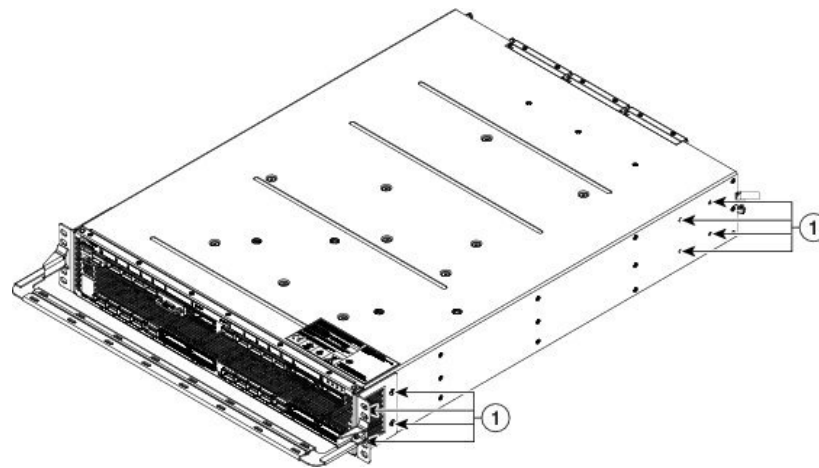
**Figure 1: Mounting Brackets on NCS 1002**



1	19-inch ANSI bracket
2	21-inch ETSI bracket
3	23-inch ANSI bracket

- Step 2** Align the mounting bracket screw holes against NCS 1002 screw holes.
- Step 3** Insert the M4 flat screws and tighten them to a torque value of 11.5 in-lbs (1.3 N-m).
- Step 4** Repeat Step 1 to Step 3 to mount the bracket on the opposite side.
- Step 5** Align the cable management bracket screw hole against the mount bracket screw hole.

Figure 2: Mounting the Cable Management Bracket



**Step 6** Insert the M4 screw and tighten it to a torque value of 6.5 in-lbs (0.75 N-m) .

**Note** The cable guide is made of thick metal. Therefore a lower torque value must be applied to tighten the cable guide screws to avoid breakage.

**Step 7** Repeat Step 5 and Step 6 to install the cable guide on the opposite side.

## Install NCS 1002 on a Rack



**Note** In a ANSI rack, NCS 1002 can be installed in the front or the middle position. In a ETSI rack, NCS 1002 can be installed only in the front position.

For a 4 post rack, install the two brackets to the rear together with the front brackets; For a 2 post rack, install the two brackets to the middle with the front brackets used to mount the cable management assembly.

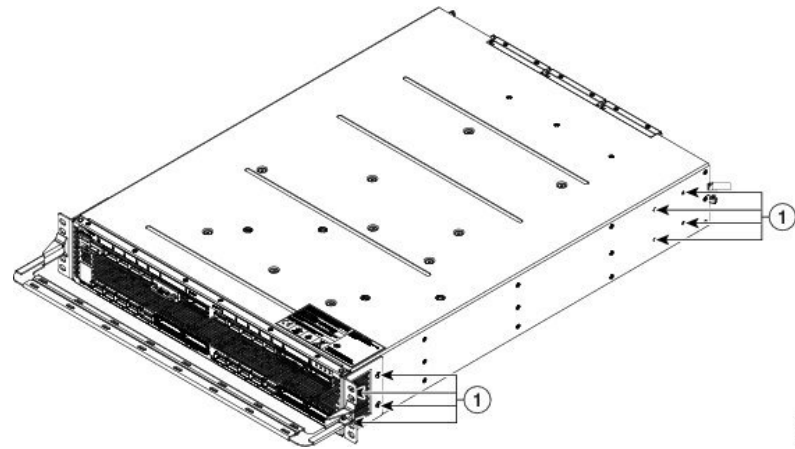
### Procedure

**Step 1** Verify that the proper fuse panel has been installed in the top mounting space. If the fuse panel is not present, install one according to local practices.

**Step 2** Ensure that NCS 1002 is mounted on the appropriate rack equipment:

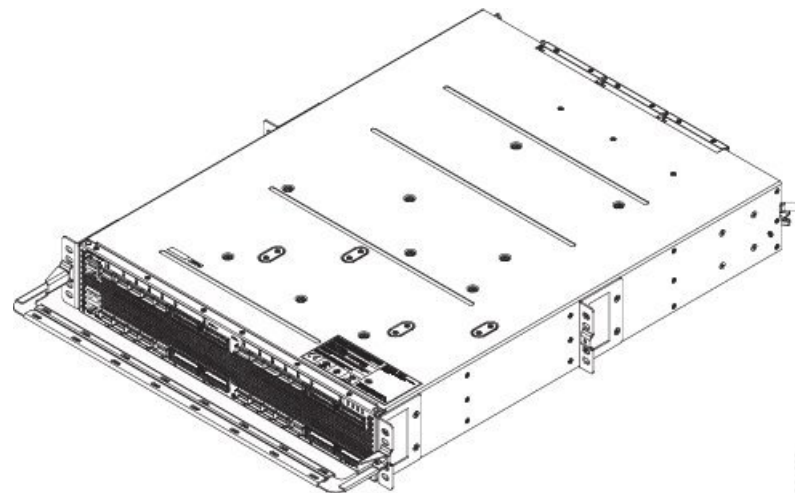
- 19 inches (482.6 mm) or 23 inches (584.2 mm) for ANSI racks
- 600 x 600-mm (23.6 x 23.6-inch) or 600 x 300-mm (23.6 x 11.8-inch) for ETSI racks

Figure 3: Mounting NCS 1002 in a Four Post Rack



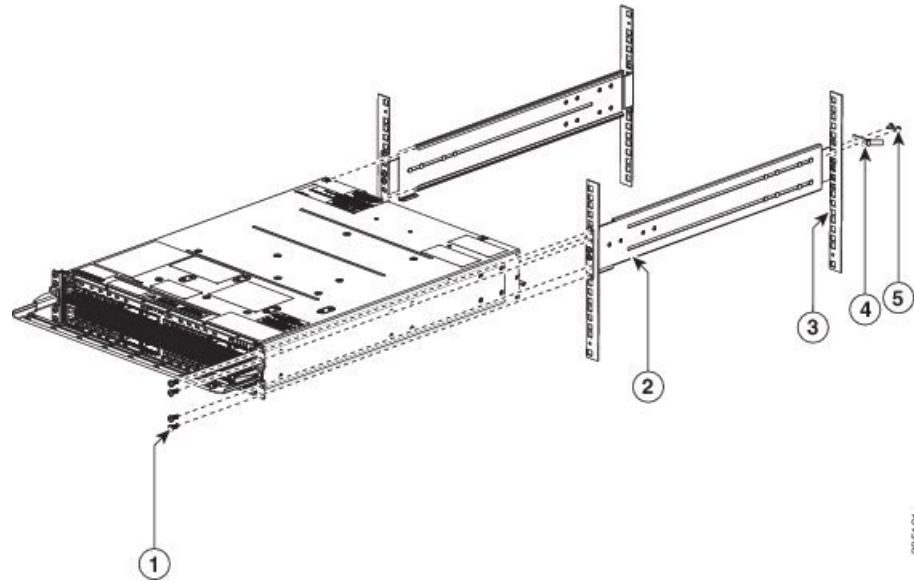
1	Screws
---	--------

Figure 4: Mounting NCS 1002 in a Two Post Rack



- Step 3** Lift NCS 1002 to the desired position in the rack.
- Step 4** Align the screw holes on the mounting brackets with the mounting holes in the rack.
- Step 5** Using the Phillips Dynamometric screwdriver, install one mounting screw in each side of the assembly:
- For ANSI rack, use 12-24 x 3/4 pan-head Phillips mounting screws and tighten it to a torque value of 22 in-lbs (2.5 Nm)
  - For ETSI rack, use M6 mounting screws and tighten it to a torque value of 22 in-lbs (2.5 Nm)
- Step 6** When NCS 1002 is secured to the rack, install the remaining two mounting screws on either side of NCS 1002.
- Step 7** Mount NCS 1002 with sliding rails.

Figure 5: Mounting NCS 1002 with Sliding Rails



1	M5 screws
2	Sliding rails
3	Rack post
4	Ground lug
5	M4 screws

The following caution label is displayed on the sliding rails.

**Caution** The sliding rail must be used only for first chassis positioning. The chassis must be fixed with screws on the front side. Read Installation Guide.

- Mount part of the sliding rails on NCS 1002.
- Mount the other part of the sliding rails on the rack.
- Insert NCS 1002 inside the rack.
- Lock NCS 1002 inside the rack with front screws.
- Connect the ground lug.

# Ground NCS 1002

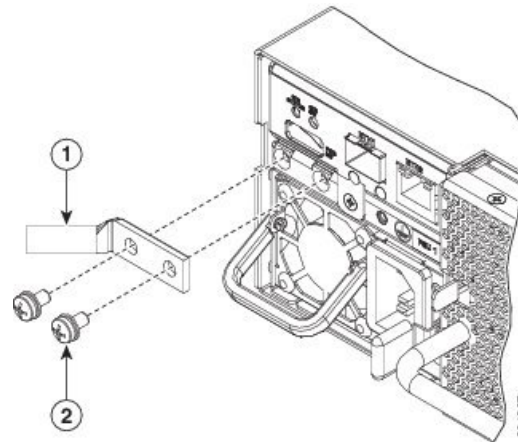


**Caution** When terminating the frame ground, do not use soldering lug connectors, screwless (push-in) connectors, quick connect connectors, or other friction-fit connectors.

## Procedure

- Step 1** Verify that the office ground cable is connected to the top of the rack and the office ground, according to local site practice.
- Step 2** Remove any paint and other nonconductive coatings from the surfaces between the shelf ground and bay frame ground point. Clean the mating surfaces and apply appropriate antioxidant compound to the bare conductors.
- Step 3** Attach one end of the shelf ground cable (#6 AWG cable) to the ground point on the rear of NCS 1002 using the specified dual-hole lug connector.

*Figure 6: NCS 1002 Ground Lug*



1	Ground lug
2	Screw

- Step 4** Tighten the M4 pan-head screw to torque value of 11.5 in-lbs (1.3 N-m).
- Step 5** Attach the other end of the shelf ground cable to the bay frame using a dual-hole lug connector according to the equipment rack frame specifications.

## Connect AC Power to NCS 1002



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**Caution** NCS 1002 relies on the protective devices in the building installation to protect against short circuit, overcurrent, and ground faults. Ensure that the protective devices comply with local and national electrical codes.

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The voltage rating value for AC power ranges either between 200 V to 240 V or between 100 V to 115 V depending on the standards in various countries.



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**Caution** When the input voltage is 110 V, you cannot provision slice 2 and 3 as they are not detected. In this state, alarms are raised for slices 2 and 3.

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**Note** A dual pole breaker is needed for the installation. The rating of the dual pole breaker is 15A.

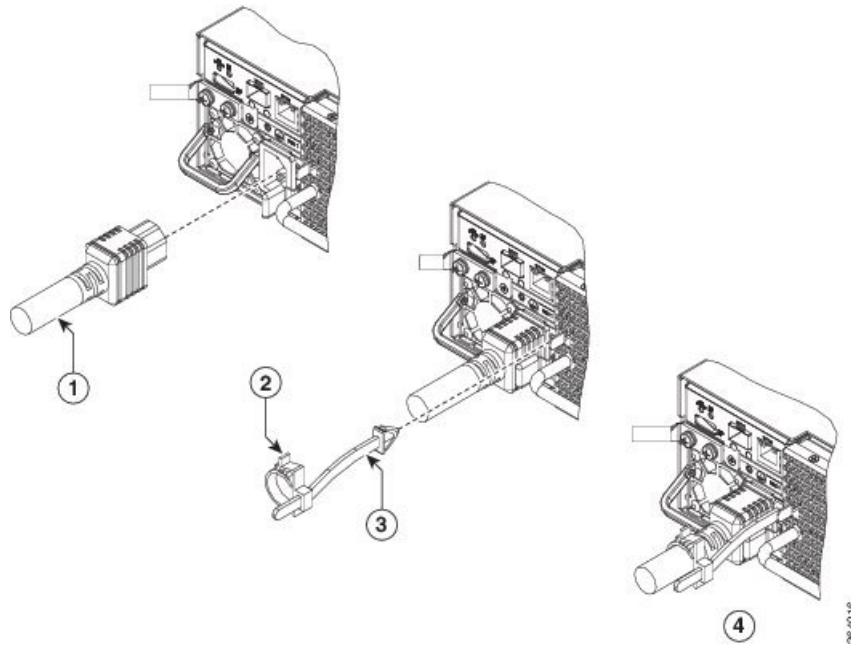
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### Procedure

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- Step 1** Verify that the AC cable is installed in the correct AC source panel. Ensure that either the fuse is removed or the circuit breaker is in the off position and locked out.  
For an AC power supply, fuse or breaker rating must not exceed 15A.
- Step 2** Attach the AC power cable to the cable connector in the AC power module.
- Step 3** Close the cable clamp to secure the power cable.

Figure 7: Connecting AC Power



1	AC Power Cord
2	Cable Clamp
3	Tie Mount
4	Final Assembly

**Step 4** Ensure that the lockout device is removed if installed and turn on the circuit breaker(s) to the shelf. Verify that the Green LED on the PSU is on.

## Connect DC Power to NCS 1002

This feature is supported from IOS XR Release 6.0.1.



**Caution** NCS 1002 relies on the protective devices in the building installation to protect against short circuit, overcurrent, and ground faults. Ensure that the protective devices comply with local and national electrical codes.



**Note** The voltage rating value for DC power ranges between -40 VDC to -72 VDC at 55A.



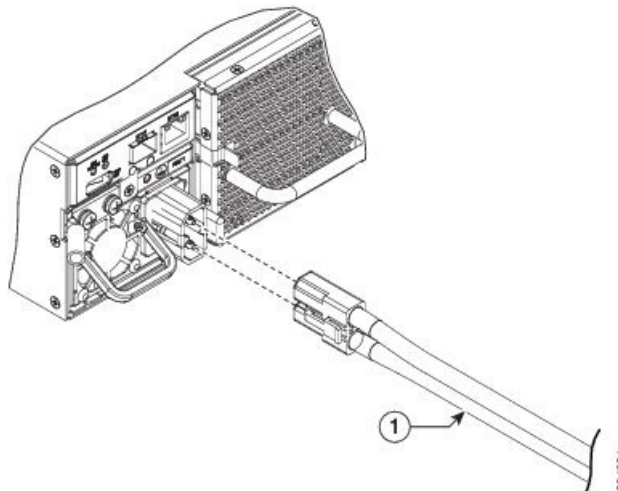


**Note** A dual pole breaker is needed for the installation. The rating of the dual pole breaker is 60A.

### Procedure

- Step 1** Verify that the correct fuse panel is installed in the top mounting space.  
For a 48 VDC power supply, the fuse rating must not exceed 60 A.
- Step 2** Measure and cut the cables as needed to reach NCS 1002 from the fuse panel.
- Step 3** Dress the power according to local practice.
- Step 4** Connect the office battery and return cables according to the fuse panel engineering specifications.
- Step 5** Insert the DC connector into the DC receptacle on the power supply.

*Figure 8: Connecting DC Power*



1	DC Power Cord
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- Step 6** Ensure that either the fuse is inserted or the circuit breaker is in the ON position. Verify that the Green LED on the PSU is on.

## Verify AC and DC Power Parameters

### Before you begin

DC or AC power module must be connected to the NCS 1002.

## Procedure

- Step 1** Use the `show hw-module fpd` command to display information about the current FPD image version of the power modules.

```
sysadmin-vm:0_RP0# show hw-module fpd
Sat May 7 04:39:44.125 UTC
```

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					Run	Programd
0/0	NCS1002	0.0	CTRL_BKP_LOW	NOT READY	0.00	0.00
0/0	NCS1002	0.1	CTRL_BKP_UP	B CURRENT		1.22
0/0	NCS1002	0.0	CTRL_FPGA_LOW	NOT READY	0.00	0.00
0/0	NCS1002	0.1	CTRL_FPGA_UP	CURRENT	1.22	1.22
0/RP0	NCS1K-CNTLR-K9	0.1	BIOS_Backup	BS CURRENT	13.10	13.10
0/RP0	NCS1K-CNTLR-K9	0.1	BIOS_Primary	S NEED UPGD		0.28
0/RP0	NCS1K-CNTLR-K9	0.1	Daisy_Duke_BKP	BS CURRENT		0.15
0/RP0	NCS1K-CNTLR-K9	0.1	Daisy_Duke_FPGA	S CURRENT	0.15	0.15
<b>0/PM0</b>	<b>NCS1K-2KW-DC</b>	<b>0.0</b>	<b>PO-PrimCU</b>	<b>CURRENT</b>	<b>1.10</b>	<b>0.00</b>
0/PM1	NCS1K-2KW-AC	0.0	PO-PrimCU	CURRENT	4.00	4.00

- Step 2** Use the `show environment power` command to view the power details of the AC and DC power modules.

```
sysadmin-vm:0_RP0# show environment power
Sat May 7 04:39:52.146 UTC
```

```
CHASSIS LEVEL POWER INFO: 0
```

```

Total output power capacity (N + 1) : 2000W + 2000W
Total output power required : 975W
Total power input : 226W
Total power output : 164W

```

### Power Group 0:

Power	Supply	-----Input----		-----Output---		Status
Module	Type	Volts	Amps	Volts	Amps	
0/PM0	2kW-DC	50.1	1.3	12.1	3.4	OK
<b>Total of Power Group 0:</b>		<b>65W/</b>	<b>1.3A</b>	<b>41W/</b>	<b>3.4A</b>	

### Power Group 1:

Power	Supply	-----Input----		-----Output---		Status
Module	Type	Volts	Amps	Volts	Amps	
0/PM1	2kW-AC	229.5	0.7	12.0	10.2	OK
<b>Total of Power Group 1:</b>		<b>161W/</b>	<b>0.7A</b>	<b>122W/</b>	<b>10.2A</b>	

Location	Card Type	Power Allocated Watts	Power Used Watts	Status
0/0	NCS1002	820	-	ON
0/RP0	NCS1K-CNTLR-K9	35	-	ON
0/FT0	-	40	-	RESERVED
0/FT1	-	40	-	RESERVED

```
0/FT2          NCS1K-FTA          40          -          ON
```

In the example below, 110 VDC is used.

```
sysadmin-vm:0_RP0# show environment power
Fri Apr 29 00:22:14.501 UTC
```

```
=====
CHASSIS LEVEL POWER INFO: 0
=====
```

```
Total output power capacity (N + 1) : 1000W + 0W
Total output power required          : 565W
Total power input                     : 66W
Total power output                    : 78W
```

```
Power Group 0:
```

```
=====
Power      Supply      -----Input-----      -----Output---      Status
Module     Type                Volts      Amps      Volts      Amps
=====
0/PM0      2kW-AC              0.0        0.0        12.1       0.0      FAILED or NO PWR
```

```
Total of Power Group 0:          0W/ 0.0A          0W/ 0.0A
```

```
Power Group 1:
```

```
=====
Power      Supply      -----Input-----      -----Output---      Status
Module     Type                Volts      Amps      Volts      Amps
=====
0/PM1      2kW-AC             110.0       0.6       12.0       6.5      OK
```

```
Total of Power Group 1:          66W/ 0.6A          78W/ 6.5A
```

```
=====
Location   Card Type                Power      Power      Status
           Type                    Allocated  Used
           Type                    Watts       Watts
=====
0/0        NCS1002                  820        -          ON
0/RP0     NCS1K-CNTRLR-K9         35         -          ON
0/FT0     NCS1K-FTA                40         -          ON
0/FT1     NCS1K-FTA                40         -          ON
0/FT2     NCS1K-FTA                40         -          ON
```

**Step 3** Use the **show environment temperatures** command to view the temperature values of the AC and DC power modules.

```
sysadmin-vm:0_RP0# show environment temperatures
Sat May 7 04:39:58.690 UTC
```

```
=====
Location  TEMPERATURE                Value  Crit Major Minor Minor Major Crit
Sensor   Sensor                    (deg C) (Lo) (Lo) (Lo) (Hi) (Hi) (Hi)
=====
0/0
! Down-Inlet Temperature      0     -10   0    10   55   55   75
! Down-Remote Inlet Temp     0     -10   0    10   45   45   65
! Down-Outlet Temperature    0     -10   0    10   65   65   85
Up-Inlet Temperature         26    -10   0    10   55   55   75
Up-Remote Inlet Temp         26    -10   0    10   45   45   65
Up-Outlet Temperature        28    -10   0    10   65   65   85
0/RP0
Thermistor 1                  28    -10   0    0    55   55   85
Thermistor 2                  27    -10   0    0    55   55   85
Hot Spot Temperature          27    -10   0    0    55   55   85
```

<b>0/PM0</b>								
Inlet Temperature	28	-10	-5	0	77	80	81	
Outlet Temperature	32	-10	-5	0	95	100	105	
Heat Sink Temperature	30	-10	-5	0	95	100	105	
<b>0/PM1</b>								
Inlet Temperature	27	-10	-5	0	70	74	78	
Outlet Temperature	30	-10	-5	0	80	84	88	
Heat Sink Temperature	29	-10	-5	0	89	93	97	

In the above example, 0/PM0 denotes the DC power module and 0/PM1 denotes the AC power module.

**Step 4** Use the **show environment fan** command to view the fan speed of the AC and DC power modules.

```

sysadmin-vm:0_RP0# show environment fan
Mon Aug  8 06:06:53.559 UTC
=====
Location          FRU Type          Fan speed (rpm)
-----
0/FT0             NCS1K-FTA         4680
0/FT1             NCS1K-FTA         4800
0/FT2             NCS1K-FTA         4800

0/PM0             NCS1K-2KW-DC     9408

0/PM1             NCS1K-2KW-AC     9664

```

## Power Supply Switch

A power supply switch on the rear side is used to completely shut down NCS 1002. The switch is set to ON by default. The switch is protected against accidental activation. A screw driver must be used to activate the switch. When the power supply switch is activated, the following happens.

- Both the power supplies are stopped.
- The PSU LEDs indicate Green (power input is available) and Blinking (system is ready but power supply is disabled).

If NCS 1002 does not boot even after connecting the power supply cables and supplying power, check the status of LEDs on the PSU modules. If the PSU LEDs indicate Green Blinking, the power supply switch is set to OFF. Set the switch to ON and ensure PSU LEDs indicate Green Solid.

## Connect to the Console Ports

The system console port is an RJ-45 receptacle for connecting a data terminal to perform the initial configuration of NCS 1002. The console ports requires a straight-through RJ-45 cable.

Follow this procedure to connect a data terminal to the console ports.

## Procedure

- Step 1** Set your terminal to these operational values: 115200 bps, 8 data bits, no parity, 1 stop bit (115200 8N1).
- Step 2** Power off the data terminal.
- Step 3** Attach the terminal end of the cable to the interface port on the data terminal.
- Step 4** Attach the other end of the cable to the console port.
- Step 5** Power on the data terminal.

*Table 1: RJ-45 Straight-through Cable Pin-outs*

RJ-45 Pin	Signal
1	—
2	—
3	Tx
4	Ground (GND)
5	GND
6	Rx
7	—
8	—

## Connect to the Management Port

To connect cables to the RP management ports, attach Category 5 UTP cables directly to the MGT LAN 0 and MGT LAN 1 RJ-45 receptacles.

You can use the following RP management ports from R6.1.1:

- ETH0 port—Attach Category 5 UTP cables directly to the MGT LAN 0 and MGT LAN 1 RJ-45 receptacles.
- ETH1 port—Connect an SFP to the port.

You can verify the software mapping of the above management ports using the **show ip interface** command:

- MgmtEth0/RP0/CPU0/0 specifies ETH0
- MgmtEth0/RP0/CPU0/1 specifies ETH1

To connect cables to the ETH0 RP management port:

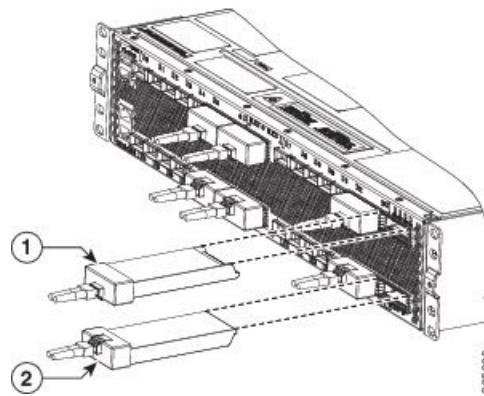
## Procedure

- 
- Step 1** Plug the cable directly into the RJ-45 receptacle.
- Step 2** Connect the network end of your RJ-45 cable to a switch, hub, repeater, or other external equipment.
- 

# Orientation of CFP2 and QSFP Pluggables

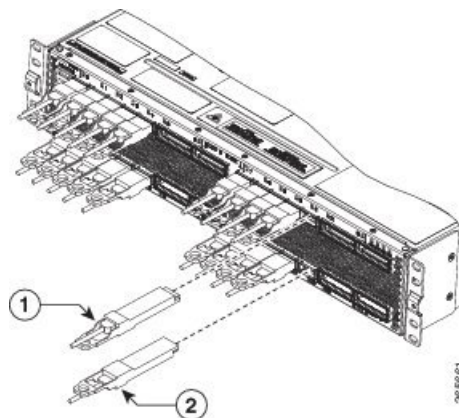
When CFP2 and QSFP pluggables are inserted into the ports of NCS 1002, the orientation varies depending on insertion into upper cage (slices 0 and 1) or lower cage (slices 2 and 3). If the pluggable does not slide easily into the port slot, the orientation might be incorrect. Reorient the pluggable, if necessary.

**Figure 9: CFP2 Orientation**



- |   |  |
|---|--|
| 1 | Reversed insertion in the upper cage for CFP2 pluggables |
| 2 | Straight insertion in the lower cage for CFP2 pluggables |

**Figure 10: QSFP Orientation**



- |   |  |
|---|--|
| 1 | Reversed insertion in the upper cage for QSFP pluggables |
|---|--|

2	Straight insertion in the lower cage for QSFP pluggables
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## Verify NCS 1002 Installation

- Verify that NCS 1002 is installed in a rack and properly grounded. See [Install NCS 1002 on a Rack, on page 3](#) and [Ground NCS 1002, on page 6](#).
- Verify that the power supply cable is connected through the breaker. See [Connect AC Power to NCS 1002, on page 7](#) and [Connect DC Power to NCS 1002, on page 8](#).
- Power on NCS 1002. Verify that the console port works by checking the prompt on the CLI.
- Verify that the Status LED is Green and Attention LED is Off.
- Verify that the LED on the two power supply units is Green.

## Related Information

For more information on Cisco NCS 1002 including specifications, see the [data sheet](#).

