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• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

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CONTENTS

Trademarks  7

PREFACE

Preface  v
  Audience  v
  Related Documentation  v

CHAPTER 1

Overview  1
  Overview of the Cisco Nexus 3548-10G, 3548-10GX, and 3524 Switches  1

CHAPTER 2

Preparing the Site  3
  Temperature Requirement  3
  Humidity Requirement  3
  Altitude Requirements  3
  Dust and Contaminants  3

CHAPTER 3

Installing the Chassis  5
  Safety  5
  Preparing to Install the Chassis  6
  Unpacking and Inspecting the Chassis  8
  Installing a 1 (RU) Chassis in a Four-post Rack  8
  Installing a 1 (RU) Chassis in a Two-post Rack  12
  Grounding the Chassis  15
  Starting the Switch  17

CHAPTER 4

Connecting the Switch to the Network  19
  Preparing for Network Connections  19
Preface

• Audience, on page v
• Related Documentation, on page v

Audience

This publication is for hardware installers and network administrators who install, configure, and maintain Cisco Nexus switches.

Related Documentation

Release Notes
Release Notes for the Cisco Nexus 3000 Series switches.

Transceiver Compatibility
Transceiver Modules Compatibility Information

Regulatory Compliance Guides
Regulatory, Compliance, and Safety Information for the Cisco Nexus 3000 and 9000 Series switches.
Overview

Overview of the Cisco Nexus 3548-10G, 3548-10GX, and 3524 Switches

The Cisco Nexus 3548P-10G (N3K-C3548P-10G), 3548P-10GX (N3K-C3548P-10GX), and 3548P-XL (N3K-C3548P-XL) are 1 rack unit (RU) switches with 48 fixed 1- and 10-Gigabit Ethernet small form-factor pluggable (SFP+) ports, 1 fixed 10/100/1000 management port (the Cisco Nexus 3548P-10G also has 1 disabled management port, but there are no plans to enable this port at any future date), 1 console port, and 1 (Cisco Nexus 3548P-10G) or 2 (Cisco Nexus 3548P-10GX) USB ports. This switch supports both port-side exhaust and port-side intake airflow schemes. The switch requires one AC or DC power supply for operations, but it can have a second power supply for redundancy.

The Cisco Nexus 3524P (N3K-C3524P-10G) is a Cisco Nexus 3548 switch but with only 24 ports enabled and can be upgraded to use all 48 ports. It is the lowest entry point for main-stream top-of-rack (TOR) data center deployments which offers wire-rate Layer 2 and Layer 3 switching with a comprehensive feature set, including Algo Boost technology, and ultra-low latency.

The following figure shows the fan-side chassis features that you use when installing the chassis or replacing its modules.
The following figures show the port-side chassis features that you use when installing the chassis or replacing its modules.

**Figure 1: Fan-Side View of the Cisco Nexus 3548P-10G, 3548P-10GX, and 3524 Chassis**

<table>
<thead>
<tr>
<th>1</th>
<th>AC or DC power supply (1 or 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Fan modules (4)</td>
</tr>
</tbody>
</table>

**Figure 2: Port-Side View of the Cisco Nexus 3548P-10G, 3548P-10GX, and 3524 Chassis**

<table>
<thead>
<tr>
<th>1</th>
<th>Management, Console, and USB ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>48 fixed small form-factor pluggable (SFP+) ports</td>
</tr>
</tbody>
</table>
Preparing the Site

- Temperature Requirement, on page 3
- Humidity Requirement, on page 3
- Altitude Requirements, on page 3
- Dust and Contaminants, on page 3

Temperature Requirement

This switch is rated to operate at 32 to 104°F (0 to 40°C). It can be stored at -40 to 158°F (-40 to 70°C).

Humidity Requirement

This switch is rated to operate at 8- to 80-percent relative humidity with 10-percent gradation per hour. It can be stored in an environment that has 5- to 95-percent relative humidity.

Buildings cooled with air conditioning during warm months and warmed during cold months usually maintain an acceptable level of humidity. However, if the site is unusually humid, use a dehumidifier to maintain the required humidity level.

Altitude Requirements

High-altitude (low-pressure) conditions outside of 0 to 10,000 feet (0 to 3050 m) can reduce the cooling efficiency and cause electrical problems.

Dust and Contaminants

To prevent contaminant buildup and increased internal chassis temperatures, make sure that the operating environment is as clean as possible and free of dust and other contaminants. Do not permit smoking, food, or drinks near the switch.
CHAPTER 3

Installing the Chassis

- Safety, on page 5
- Preparing to Install the Chassis, on page 6
- Unpacking and Inspecting the Chassis, on page 8
- Installing a 1 (RU) Chassis in a Four-post Rack, on page 8
- Installing a 1 (RU) Chassis in a Two-post Rack, on page 12
- Grounding the Chassis, on page 15
- Starting the Switch, on page 17

Safety

Before you install, operate, or service the switch, see the Regulatory, Compliance, and Safety Information for the Cisco Nexus 3000 and 9000 Series for important Safety Information.

---

**Warning**

**Statement 1071**—Warning Definition

**IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

---

**Warning**

**Statement 1017**—Restricted Area

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.

---

**Warning**

**Statement 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
Preparing to Install the Chassis

Before you can install the switch, you must verify the following:

- The installation site meets the following requirements as stated in Chapter 2:
  - Environmental requirements for temperature, humidity, altitude, and air particulates.
  - Cabinet or rack is installed and meets the requirements for the switch.

  **Note**  
  Jumper power cords are available for use in a cabinet.

- The rack is positioned so that you can install the switch with its cold air intakes positioned in a cold aisle.
  
  If the fan and power supply modules are burgundy colored, you must install the chassis with its port side in a cold aisle. If the modules are blue colored, you must be able install the chassis with the fan modules in a cold aisle.

- Earth ground connection is close to the switch. You must be able to easily connect the switch directly to an earth ground or indirectly through a grounded rack.

  **Warning**  
  High leakage current. Earth connection essential before connecting to power supply.

- Site power meets the switch requirements. If you are using n+n redundancy, you must have two power sources within reach of the switch when it is installed in the cabinet or rack.
  
  If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

  **Caution**  
  Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco Nexus 3000 Series switches. These switches can have substantial current draw fluctuations because of fluctuating data traffic patterns.

  Ensure that circuits are sized according to local and national codes. For North America, the power supply requires a 15-A or 20-A circuit.

  **Caution**  
  To prevent loss of input power, ensure the total maximum loads on the circuits supplying power to the switch are within the current ratings for the wiring and breakers.
**Warning**

**Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective devices is rated not greater than (see the table below).

<table>
<thead>
<tr>
<th>DC Power Supply PID</th>
<th>N3500 Chassis PID</th>
<th>Power Supply Current</th>
<th>Circuit Breaker Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2200-PDC-400W</td>
<td>N3K-C3548XXX-10G</td>
<td>15-8A</td>
<td>20A</td>
</tr>
<tr>
<td>NXA-PDC-500W</td>
<td>N3K-C3548XXX-10GX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NXA-PDC-500W-B</td>
<td>N3K-C3524XXX-10G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NXA-PHV-500W</td>
<td>N3K-C3548XXX-10G</td>
<td>3A</td>
<td>5A</td>
</tr>
<tr>
<td></td>
<td>N3K-C3548XXX-10GX</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N3K-C3524XXX-10G</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- There is adequate clearance around the rack to install the switch and to allow for unimpeded airflow.

- You have the following equipment in addition to the switch and the kits shipped with the switch:
  - Eight customer-supplied 12-24 or 10-32 screws (required for attaching slider rails and mounting bracket to the mounting rails)
  - Number 1 and number 2 Phillips screwdrivers with torque capability
  - 3/16-inch flat-blade screwdriver
  - Tape measure and level
  - ESD wrist strap or other grounding device (wrist strap can be found in the accessory kit)
  - Antistatic surface large enough to place the switch
  - Grounding cable (6 AWG recommended), sized according to local and national installation requirements; the required length depends on the proximity of the switch to proper grounding facilities
  - Crimping tool large enough to accommodate the girth of the grounding lug
  - Wire stripping tool
Unpacking and Inspecting the Chassis

⚠️ Caution
When handling switch components, such as fan or power supply modules, wear a grounded ESD strap and handle the modules by their carrier edges only. To ground the ESD strap, make sure that it is attached to an earth ground, a grounded chassis, or a grounded rack.

🔍 Tip
Keep the shipping container in case the chassis requires shipping in the future.

📝 Note
The switch is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately.

To inspect the switch, follow these steps:

**Step 1**
Compare the shipment to the equipment list provided by your customer service representative and verify that you have received all items.

**Step 2**
Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:

- Invoice number of shipper (see the packing slip)
- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation
- Photos of the damaged shipping containers and damaged product

**Step 3**
Check to be sure that all of the fan and power supply modules have the same airflow direction.

- Port-side intake airflow direction indicated with burgundy coloring
- Port-side exhaust airflow direction indicated with blue coloring

---

Installing a 1 (RU) Chassis in a Four-post Rack

This section describes the rack installation for the Cisco Nexus 3000 series switch into a four-post rack.

**Step 1**
Install the two front-mount brackets to the switch as follows:
a) Determine which end of the chassis is to be located in the cold aisle as follows:
   
   - If the switch has port-side intake modules (fan and AC power supply modules with burgundy coloring and DC power supply modules with green coloring), position the module so that its ports will be in the cold aisle.
   
   - If the switch has port-side exhaust modules (fan and AC power supply modules with blue coloring), position the module so that its fan and power supply modules will be in the cold aisle.

b) Position a front-mount bracket so that four of its screw holes are aligned to the screw holes on the side of the chassis.

   **Note** You can align any four of the holes in the front rack-mount bracket to four of the six screw holes on the side of the chassis (see the following figure). The holes that you use depend on the requirements of your rack and the amount of clearance required for interface cables (3 inches [7.6 mm] minimum) and module handles (1 inch [2.5 mm] minimum).

   **Figure 3: Two Ways to Attach Rack-Mount Brackets and Guides on the Switch**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front rack-mount bracket aligned to the port connections end of the chassis</td>
</tr>
<tr>
<td>2</td>
<td>4 M4 screws used to attach the bracket to the chassis</td>
</tr>
<tr>
<td>3</td>
<td>Rear rack-mount guide aligned to the port connection end of the chassis</td>
</tr>
<tr>
<td>4</td>
<td>2 M4 screws used to attach the bracket to the chassis</td>
</tr>
<tr>
<td>5</td>
<td>Front rack-mount bracket aligned to the module end of the chassis</td>
</tr>
<tr>
<td>6</td>
<td>4 M4 screws used to attach the bracket to the chassis</td>
</tr>
<tr>
<td>7</td>
<td>2 M4 screws used to attach the bracket to the chassis</td>
</tr>
<tr>
<td>8</td>
<td>Rear rack-mount guide aligned to the power supply and fan module end of the chassis</td>
</tr>
</tbody>
</table>

c) Secure the front-mount bracket to the chassis using four M4 screws and tighten each screw to 12 in-lb (1.36 N·m) of torque.

d) Repeat Steps 1a to 1c for the other front rack-mount bracket on the other side of the switch and be sure to position that bracket the same distance from the front of the switch.

**Step 2** Install the two rear rack-mount brackets on the chassis as follows:
a) Align the two screw holes on a rear rack-mount bracket to the middle two screw holes in the remaining six screw holes on a side of the chassis. If you are aligning the guide to holes that are near the port connections end of the chassis, see Callout 3 in the previous figure. Otherwise, see Callout 7 in the previous figure.
b) Attach the guide to the chassis using two M4 screws (see Callout 4 or 8 in the previous figure). Tighten the screws to 12 in-lb (1.36 N·m) of torque.
c) Repeat Steps 2a and 2b for the other rear rack-mount bracket on the other side of the switch.

**Step 3**

Install the slider rails on the rack or cabinet as follows:

a) Determine which two posts of the rack or cabinet you should use for the slider rails. Of the four vertical posts in the rack or cabinet, two will be used for the front mount brackets attached to the easiest accessed end of the chassis, and the other two posts (back side of rack) will have the slider rails.
b) Position a slider rail at the desired level on the back side of the rack and use two 12-24 screws or two 10-32 screws, depending on the rack thread type, to attach the rails to the rack (see the following figure). Tighten 12-24 screws to 30 in-lb (3.39 N·m) of torque and tighten 10-32 screws to 20 in-lb (2.26 N·m) of torque.

*Figure 4: Installing the Slider Rails*

| 1 | Slider rail with screw holes aligned to screw holes in rack |
| 2 | Two customer-supplied 12-24 or 10-32 screws used to attach each slider rail to the rack |

c) Repeat Steps 3a and 3b to attach the other slider rail to the other side of the rack.

To make sure that the slider rails are at the same level, use a level tool, tape measure, or carefully count the screw holes in the vertical mounting rails.

**Step 4**

Insert the switch into the rack and attach it as follows:

a) Holding the switch with both hands, position the two rear rack-mount brackets on the switch between the rack or cabinet posts that do not have slider rails attached to them (see the following figure).
Align the 2 rear rack-mount bracket guides with the slider rails installed in the rack.

Slide the rack-mount guides onto the slider rails until the front rack-mount brackets come in contact with the front rack-mount rails.

Holding the chassis level, insert two screws (10-32 or 12-24, depending on the rack type) in each of the two front rack-mount brackets (using a total of four screws) and into the cage nuts or threaded holes in the vertical rack-mounting rails (see the following figure).
Installing a 1 (RU) Chassis in a Two-post Rack

This section describes the rack installation for the Cisco Nexus 3000 series switch into a two-post rack.

To install a switch, you must attach mounting brackets to the switch and secure the switch to the rack. Installation in racks other than 19-inch racks requires a bracket kit not included with the switch.

The following figure shows the standard 19-inch mounting brackets.

---

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fasten the chassis to the front of the rack with two 10-32 or 12-24 screws on each side.</td>
</tr>
<tr>
<td>2</td>
<td>Front-mount bracket.</td>
</tr>
<tr>
<td>3</td>
<td>Mounting rails on rack or cabinet posts.</td>
</tr>
</tbody>
</table>

---

d) Tighten the 10-32 screws to 20 in-lb (2.26 N·m) or tighten the 12-24 screws to 30 in-lb (3.39 N·m).
SUMMARY STEPS

1. Install the brackets to a typical switch.
2. Install the chassis into the rack.

DETAILED STEPS

Step 1 Install the brackets to a typical switch.
   a) Determine which end of the chassis is to be located in the cold aisle as follows:
      • If the switch has port-side intake modules (fan modules with burgundy coloring), position the switch so that its ports will be in the cold aisle.
      • If the switch has port-side exhaust modules (fan modules with blue coloring), position the switch so that its fan and power supply modules will be in the cold aisle.
   b) Position the bracket so that four of its screw holes are aligned to the screw holes on the side of the chassis.
c) Secure the bracket to the chassis using four Number-8 Phillips flat-head screws and tighten each screw to 12 in-lb (1.36 N·m) of torque.

d) Repeat previous step for the other front rack-mount bracket on the other side of the switch and be sure to position that bracket the same distance from the front of the switch.
Step 2  Install the chassis into the rack.
   a) Use two M4 screws to attach the brackets to the rack.

| 1 | Front-mounting position | 2 | M4 screws (2 each side) |

Grounding the Chassis

The location of the grounding pad on each switch can be found in the Overview section.

The switch is grounded when you connect the chassis and the power supplies to the earth ground in the following ways:

- You connect the chassis (at its grounding pad) to the data center ground. If the rack is fully-bonded and grounded, you can ground the switch by connecting it to the rack.

Note  The chassis ground connection is active even when the power supply modules have not been grounded or connected to the switch.
Statement 1024—Ground Conductor

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Warning

Statement 1046—Installing or Replacing the Unit

When installing or replacing the unit, the ground connection must always be made first and disconnected last.

Before you begin

Before you can ground the chassis, you must have a connection to the earth ground for the data center building. If you installed the switch chassis into a bonded rack (see the rack manufacturer's instructions for more information) that now has a connection to the data center earth ground, you can ground the chassis by installing it into the rack. Otherwise, you must connect the chassis grounding pad directly to the data center ground.

Step 1

Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding wire.

Step 2

Insert the stripped end of the grounding wire into the open end of the grounding lug, and use a crimping tool to crimp the lug to the wire (see Callout 2 in the following figure). Verify that the ground wire is securely attached to the grounding lug by attempting to pull the wire out of the crimped lug.

Figure 7: Grounding the Chassis

Step 3

Secure the grounding lug to the chassis grounding pad with two M4 screws (see Callouts 1 and 3 in the previous figure), and tighten the screws to 12 in lb (1.36 N·m) of torque.
Step 4  Prepare the other end of the grounding wire and connect it to an appropriate grounding point in your site to ensure an adequate earth ground for the switch. If the rack is fully bonded and grounded, connect the grounding wire as explained in the documentation provided by the vendor for the rack.

Starting the Switch

To power up the switch, follow these steps:

Before you begin

- Verify that the switch is fully installed and secured to a rack.
- Verify that the switch is adequately grounded to the facility earth ground or to a grounded rack.
- Verify that all of the fan and power supply modules are installed in the chassis. If the chassis has only one power supply, there must be a blank module (N2200-P-BLNK) in the open power supply slot to maintain the designed airflow.
- If you are using a DC power source, verify that the circuit is shut off at a circuit breaker.

Step 1  If the switch has AC power supplies, connect those power supplies to an AC power source as follows:

a) Verify that the AC power source is turned off at the circuit breaker.
b) Plug the power cable into the power receptacle on the power supply.
c) Attach the other end of the power cable to the AC power source.
d) Turn on the power at the circuit breaker.
e) Verify that the power supply is functioning by making sure that the OK LED turns green and the FAULT LED is off.

Step 2  If the switch has DC power supplies, connect those power supplies to a DC power source as follows:

a) Verify that the DC power source is turned off at the circuit breaker.
b) Remove the clear plastic safety cover that prevents you from touching the negative (-) and positive (+) terminals on the power supply.
c) Connect a negative cable from the power source to the left (-) terminal on the power supply.
d) Connect a positive cable from the power source to the right (+) terminal on the power supply.
e) Clip on the clear plastic safety cover over the power supply terminals to prevent accidental touching of these terminals.
f) Turn on the power at the circuit breaker.
g) Verify that the power supply is functioning by making sure that the OK LED turns green and the FAULT LED is off.

Step 3  Listen for the fans; they should begin operating when the power cable is plugged in.

Step 4  After the switch boots, verify that the following LEDs are on:

- Power supply LED—lit and green
  If not green, try removing the module part way from its slot and reinstalling it.
- Fan LED—lit and green
  If not green, try removing the module part way from its slot and reinstalling it.
• System Status LED—lit and green (if this LED is orange or red, then one or more environmental monitors is reporting a problem.)

• Link LEDs for the Ethernet connector—Off
Connecting the Switch to the Network

• Preparing for Network Connections, on page 19
• Connecting to a Console, on page 19
• Connecting the Management Interface, on page 20
• Connecting Interface Ports to Other Devices, on page 20
• Maintaining Transceivers and Optical Cables, on page 23

Preparing for Network Connections

When preparing your site for network connections to your switch, consider the following for each type of interface and gather all the required equipment before connecting the ports:

• Cabling required for each interface type
• Distance limitations for each signal type
• Additional interface equipment required

Connecting to a Console

You can connect the switch to a console to perform the following functions:

• Configuring the switch using the CLI
• Monitoring network statistics and errors
• Configuring SNMP agent parameters
• Downloading software updates

We recommend that you use this port to create a local management connection to set the IP address and other initial configuration settings before connecting the switch to the network for the first time.

The console port on the switch is an RS-232 port with an RJ-45 interface. This is an asynchronous (async) serial port; any device connected to this port must be capable of asynchronous transmission.
Connecting the Management Interface

**Before you begin**

Before you connect the switch to a console, ensure that you have the following:

- Computer terminal that supports VT100 terminal emulation. The terminal emulation software (such as HyperTerminal or Procomm Plus) makes communication between the switch and a computer possible during setup and configuration.

**Step 1** Configure the terminal emulator program to match each of the following default port characteristics:
  - 9600 baud
  - 8 data bits
  - 1 stop bit
  - No parity

**Step 2** Connect the DB-9 connector on the other end of the cable to the computer serial port.

**What to do next**

You are ready to configure the switch.

Connecting Interface Ports to Other Devices

After you perform the initial configuration for the switch and create a management connection, you are ready to connect the interface ports on the switch to other devices. Depending on the types of interface ports on the
switch, you will need to use interface cables with QSFP+, SFP+, or SFP transceivers or RJ-45 connectors to connect the switch to other devices.

The transceivers used with many fiber-optic cables come separated from their cables. To prevent damage to the fiber-optic cables and their transceivers, we recommend that you keep these transceivers disconnected from their fiber-optic cables when installing the transceiver in the interface port. Before removing a transceiver for a fiber-optic cable, you must remove the cable from the transceiver.

To maximize the effectiveness and life of your transceivers and optical cables, do the following:

- Wear an ESD-preventative wrist strap that is connected to an earth ground whenever handling transceivers. The switch is typically grounded during installation and provides an ESD port to which you can connect your wrist strap.
- Do not remove and insert a transceiver more often than is necessary. Repeated removals and insertions can shorten its useful life.
- Keep the transceivers and fiber-optic cables clean and dust free to maintain high signal accuracy and to prevent damage to the connectors. Attenuation (loss of light) is increased by contamination and should be kept below 0.35 dB.
- Clean these parts before installation to prevent dust from scratching the fiber-optic cable ends.
- Clean the connectors regularly; the required frequency of cleaning depends upon the environment. In addition, clean connectors if they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques can be effective; refer to your site's fiber-optic connection cleaning procedures.
- Do not touch the ends of connectors. Touching the ends can leave fingerprints and cause other contamination.
- Inspect routinely for dust and damage. If you suspect damage, clean and then inspect fiber ends under a microscope to determine if damage has occurred.

---

**Warning**

**Statement 1051—Laser Radiation**

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

---

**Installing SFP+ and SFP Transceivers**

**Note**

Excessively removing and installing an SFP or SFP+ transceiver can shorten its life. Unless it is absolutely necessary, do not remove and insert SFP or SFP+ transceivers. To prevent damage to an optical cable and transceiver, we recommend that you disconnect cables before installing or removing transceivers.

**Note**

If you cannot install the cable into the transceiver, insert or leave the dust plug in the cable end of the transceiver.
Installing QSFP+ Transceivers

The QSFP+ transceiver module can have either a bail-clasp latch or a pull-tab latch.

Caution

The QSFP+ transceiver module is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling QSFP+ transceiver modules or coming into contact with system modules.

Step 1
Attach an ESD wrist strap to yourself and a properly grounded point on the chassis or the rack. Follow its instructions for use.

Step 2
Remove the QSFP+ transceiver module from its protective packaging.

Step 3
Remove the dust cover from the port end of the transceiver.

Step 4
Check the label on the QSFP+ transceiver module body to verify that you have the correct model for your network.

Step 5
For optical QSFP+ transceivers, remove the optical bore dust plug and set it aside.

Step 6
For transceivers equipped with a bail-clasp latch, do the following:
   a) Keep the bail-clasp aligned in a vertical position.
   b) Align the QSFP+ transceiver in front of the module's transceiver socket opening and carefully slide the QSFP+ transceiver into the socket until the transceiver makes contact with the socket electrical connector.

Step 7
For QSFP+ transceivers equipped with a pull-tab, do the following:
   a) Hold the transceiver so that the identifier label is on the top.
   b) Align the QSFP+ transceiver in front of the module's transceiver socket opening and carefully slide the QSFP+ transceiver into the socket until the transceiver makes contact with the socket electrical connector.
Installing SFP+ and SFP Optical Cables

To prevent damage to an optical cable and transceiver, disconnect cables before installing or removing transceivers.

Step 1  Attach an ESD-preventive wrist strap and follow its instructions for use.
Step 2  Remove the dust cover from the connector on the cable.
Step 3  Remove the dust cover from the cable end of the transceiver.
Step 4  Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place.

Caution  If the cable does not install easily, ensure that it is correctly positioned before continuing.

Note  If you cannot install the cable into the transceiver, insert or leave the dust plug in the cable end of the transceiver.

For instructions on verifying connectivity, see the appropriate Cisco Nexus Series configuration guide.

Maintaining Transceivers and Optical Cables

Transceivers and fiber-optic cables must be kept clean and dust free to maintain high signal accuracy and prevent damage to the connectors. Attenuation (loss of light) is increased by contamination and should be below 0.35 dB.

Consider the following maintenance guidelines:

- Transceivers are static sensitive. To prevent ESD damage, wear an ESD-preventative wrist strap that is connected to the grounded chassis.
- Do not remove and insert a transceiver more often than is necessary. Repeated removals and insertions can shorten its useful life.
- Keep all optical connections covered when not in use. Clean them before using to prevent dust from scratching the fiber-optic cable ends.
- Do not touch the ends of connectors. Touching the ends can leave fingerprints and cause other contamination.
- Clean the connectors regularly; the required frequency of cleaning depends upon the environment. In addition, clean connectors if they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques can be effective; refer to your site's fiber-optic connection cleaning procedures.
- Inspect routinely for dust and damage. If you suspect damage, clean and then inspect fiber ends under a microscope to determine if damage has occurred.
Connecting the Switch to the Network

Maintaining Transceivers and Optical Cables
Replacing Modules

- Replacing a 1 (RU) Fan Module, on page 25
- Replacing an AC Power Supply, on page 26
- Replacing a DC Power Supply, on page 27

Replacing a 1 (RU) Fan Module

The fan module is designed to be removed and replaced while the system is operating without causing an electrical hazard or damage to the system if the replacement is performed within one minute.

If you do not have the appropriate replacement fan module, leave the original fan module in its slot to preserve the designed airflow for the switch until you have the replacement fan module. The module number can be found on the chassis.

---

**Statement 263—Fan Warning**

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

---

**Before you begin**

- Verify that you have an ESD wrist strap or other device to prevent ESD damage for components that you touch.
- Verify that you have an antistatic surface or bag for placing the fan module that you remove from the chassis.
- Verify that the replacement fan module has the correct direction of airflow (it has the same coloring as the other fan and power supply modules in the same chassis).

---

**Step 1**

Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.

You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

**Step 2**

Remove the fan module that you are replacing as follows:
a) On the fan module that you are removing, press the two sides of the fan module handle next to where it connects to the fan module and pull on the handles enough to unseat the module from its connectors.
b) Holding the handle, pull the module out of the chassis and set it on an antistatic surface or in a antistatic bag.

Caution: Do not touch the electrical connectors on the back side of the module and prevent anything else from coming into contact with and damaging the connectors.

Step 3 Install the replacement fan module as follows:
a) Holding the fan module by its handle, align the back of the fan module (the side with the electrical connectors) to the open fan slot in the chassis.
b) Slide the fan module into the slot until it clicks in place.
c) Verify that the Status (STS) LED turns on and becomes green.

Replacing an AC Power Supply

You can replace an AC power supply during operations so long as there is another power supply installed and operating during the replacement. The switch requires only one power supply for operations, so you can hot swap the redundant power supply during operations. If there is only one power supply installed in the chassis, you can replace it by installing the new power supply in the open power supply slot before removing the other power supply. The module number can be found on the chassis.

Before you begin
- Verify that you have an ESD wrist strap or other device to prevent ESD damage to the components that you touch.
- Verify that you have an antistatic surface or bag for placing the power supply module that you remove from the chassis.
- Verify that the replacement power supply module has the correct direction of airflow (it has the same coloring as the other fan and power supply modules in the same chassis). Otherwise the switch can overheat and shut down.

Step 1 Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.

You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

Step 2 Remove the power supply as follows:
a) Pull the power cord out from the power receptacle on the power supply to be removed and verify that the OK LED turns off.
b) Remove the power supply from the chassis by pushing and holding its thumb latch to the left and pulling the power supply part way out of the chassis.
c) Place your other hand under the power supply to support it while you slide it out of the chassis.

Either place the power supply on an antistatic surface or pack it in its packing materials.
d) If the power supply slot is to remain empty, install a blank power supply filler panel (part number N2200-P-BLNK).
Step 3  Install the replacement power supply as follows:
   a) Holding the replacement power supply with one hand underneath the module and the other hand holding the handle, align the back end of the power supply (the end with the electrical connections) to the open power supply slot and slide the power supply all the way into the slot until it clicks into place.
   b) Test the installation by trying to pull the power supply out of the slot without using the release latch.
      If the power supply does not move out of place, it is secured in the slot. If the power supply moves, press it all the way into the slot until it clicks in place.

Step 4  Connect the new power supply to an AC power source as follows:
   a) Attach the power cable to the electrical outlet on the front of the power supply.
   b) Connect the other end of the power cable to an AC power source.
      • For no power redundancy, connect one power supply to one power source.
      • For n+1 redundancy, connect two power supplies to one or two power sources.
      • For n+n redundancy, connect each of two power supplies to a different power source.
   Note  Depending on the outlet receptacle on your power distribution unit, you might need the optional jumper cable to connect the switch to your outlet receptacle.
   c) Verify that the power supply is operational by checking that the power supply OK LED is green.

Replacing a DC Power Supply

You can replace a DC power supply during operations so long as there is another power supply installed and operating during the replacement. The switch requires only one power supply for operations, so you can hot swap the redundant power supply during operations. If there is only one power supply installed in the chassis, you can replace it by installing the new power supply in the open power supply slot and making it operational before removing the other power supply. The module number can be found on the chassis.

Warning  Statement 1034—Backplane Voltage
Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

Before you begin
   • Verify that you have an ESD wrist strap or other device to prevent ESD damage to the components that you touch.
   • Verify that you have an antistatic surface or antistatic bag for placing the power supply module that you remove from the chassis.
   • Verify that the replacement power supply module has the same direction of airflow as the other modules in the same chassis. Otherwise the switch can overheat and shut down.
   • Verify that the circuit breaker for the DC power source is turned off.
Step 1  
Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.
You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

Step 2  
Verify that the DC power source is turned off at a circuit breaker.

Step 3  
Remove the DC power supply that needs to be replaced as follows:
 a) Turn off the circuit breaker for the power source to the power supply that you are replacing.
    Verify that the OK LED turns off.
 b) Unclip and remove the clear plastic cover that prevents access to the positive and negative terminals on the DC power supply.
 c) Unfasten the positive power cable from the right terminal.
 d) Unfasten the negative power cable from the left terminal.
 e) Replace the clear plastic cover that prevents access to the terminals.
 f) Press the thumb latch to disengage the power supply from the chassis and use the handle to pull it part way out of the chassis.
 g) Place your other hand under the power supply to support it while you slide it out of the chassis. Place the power supply on an antistatic surface.
 h) If the power supply bay is to remain empty, install a blank power supply filler panel (N2200-P-BLNK).

Step 4  
Install the replacement DC power supply as follows:
 a) Hold the replacement power supply by the handle and position it so that the thumb latch is on the right, and then slide it all the way into the power supply bay (the thumb latch will click), ensuring that the power supply is fully seated in the bay.
 b) If there is a clear plastic cover that prevents your access to the terminals, unclip it and remove it from the chassis.
 c) Fasten the negative cable to the left terminal.
 d) Fasten the positive cable to the right terminal.
 e) Clip the clear plastic cover over the terminals to prevent accidental touching of the terminals.
 f) Turn on the power at the circuit breaker.
 g) Verify the power supply operation by checking that the OK LED is green.
Rack Specifications

General Requirements and Guidelines for Cabinets and Racks

The cabinet or rack must have all of the following characteristics:

• Standard 19-inch (48.3 cm) four-post EIA cabinet or rack.

• Mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992). See below.

The cabinet or rack must also meet the following requirements:

• The minimum vertical rack space per Cisco Nexus 3000 Series switch chassis must be one RU (rack units), equal to 1.75 inches (4.4 cm).

• The width between the rack-mounting rails must be at least 17.75 inches (45.0 cm) if the rear of the device is not attached to the rack. For four-post EIA racks, this measurement is the distance between the two front rails.

Four-post EIA cabinets (perforated or solid-walled) must meet the following requirements:

• The minimum spacing for the bend radius for fiber-optic cables should have the front-mounting rails of the cabinet offset from the front door by a minimum of 3 inches (7.6 cm).

• The distance between the outside face of the front mounting rail and the outside face of the back mounting rail should be 23.0 to 30.0 inches (58.4 to 76.2 cm) to allow for rear-bracket installation.

• A minimum of 2.5 inches (6.4 cm) of clear space should exist between the side edge of the chassis and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of chassis air intake or exhaust vents.

Note

To help with cable management, consider planning additional space in the rack or cabinet above and below the chassis to make it easier to route all of the fiber optic or copper cables through the rack.
About Requirements for Perforated Cabinets

A perforated cabinet has perforations in its front and rear doors and side walls. In addition to the requirements listed in the “General Requirements for Cabinets and Racks” section, perforated cabinets must meet the following requirements:

- The front and rear doors must have at least a 60-percent open area perforation pattern, with at least 15 square inches (96.8 square cm) of open area per rack unit of door height.
- The roof should be perforated with at least a 20-percent open area.
- The cabinet floor should be open or perforated to enhance cooling.

The Cisco R Series rack conforms to these requirements.

About Requirements for Open Racks

In addition to the requirements listed in the “General Requirements for Cabinets and Racks” section on page A-1, if you are mounting the chassis in an open rack (no side panels or doors), ensure that the rack meets the following requirements:

- The minimum vertical rack space per chassis must be two rack units (RU), equal to 3.47 inches (8.8 cm).
- The horizontal distance between the chassis and any adjacent chassis should be 6 inches (15.2 cm), and the distance between the chassis air vents and any walls should be 2.5 inches (6.4 cm).
System Specifications

- Environmental Specifications, on page 31
- Switch Dimensions, on page 31
- AC Power Cable Specifications, on page 32
- DC Power Cable Specifications, on page 33
- HVDC Power Cable Specifications, on page 33

Environmental Specifications

<table>
<thead>
<tr>
<th>Environment</th>
<th>Specification</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Ambient operating temperature</td>
<td>32 to 104°F (0 to 40°C)</td>
</tr>
<tr>
<td></td>
<td>Ambient nonoperating</td>
<td>−40 to 158°F (−40 to 70°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>Ambient operating temperature</td>
<td>10 to 85%</td>
</tr>
<tr>
<td></td>
<td>Ambient nonoperating</td>
<td>5 to 95%</td>
</tr>
<tr>
<td>Altitude</td>
<td>Ambient operating temperature</td>
<td>0 to 10,000 feet (0 to 3050 m)</td>
</tr>
<tr>
<td></td>
<td>Ambient nonoperating</td>
<td>−1000 to 30,000 feet (−304 to 15,150 m)</td>
</tr>
</tbody>
</table>

Switch Dimensions

<table>
<thead>
<tr>
<th>Switch Component</th>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco Nexus 3548-10G</td>
<td>17.3 inches (43.9 cm)</td>
<td>19.7 inches (50.04 cm)</td>
<td>1.72 inches (4.37 cm)</td>
</tr>
<tr>
<td>chassis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cisco Nexus 3548-10GX</td>
<td>17.3 inches (43.9 cm)</td>
<td>19.7 inches (50.04 cm)</td>
<td>1.72 inches (4.37 cm)</td>
</tr>
<tr>
<td>chassis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cisco Nexus 3548P-XL</td>
<td>17.3 inches (43.9 cm)</td>
<td>19.7 inches (50.04 cm)</td>
<td>1.72 inches (4.37 cm)</td>
</tr>
<tr>
<td>chassis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch Component</td>
<td>Width</td>
<td>Depth</td>
<td>Height</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Cisco Nexus 3524 chassis</td>
<td>17.3 inches (43.9 cm)</td>
<td>19.7 inches (50.04 cm)</td>
<td>1.72 inches (4.37 cm)</td>
</tr>
</tbody>
</table>

## AC Power Cable Specifications

<table>
<thead>
<tr>
<th>Cable</th>
<th>Description</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFS-250V-10A-AR (Argentina)</td>
<td>250 VAC 10 A, IRAM 2073 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-9K10A-AU (Australia)</td>
<td>250 VAC 10 A, 3112 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>SFS-250V-10A-CN (China)</td>
<td>250 VAC 10 A, GB 2009 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-9K10A-EU (Europe)</td>
<td>250 VAC 10 A, M 2511 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>SFS-250V-10A-ID (South Africa, United Arab Emirates, and India)</td>
<td>250 VAC 16 A, EL-208 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>SFS-250V-10A-IS (Israel)</td>
<td>250 VAC 10 A, SI-32 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-9K10A-IT (Italy)</td>
<td>250 VAC 10 A, CEI 23-16 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-9K10A-SW (Switzerland)</td>
<td>250 VAC 10 A, MP232 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-9K10A-UK (United Kingdom)</td>
<td>250 VAC 10 A, BS1363 plug (13-A fuse)</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-AC-250V/13A (North America)</td>
<td>250 VAC 13 A, NEMA L6-20 plug</td>
<td>6.6 feet (2.0 m)</td>
</tr>
<tr>
<td>CAB-N5K6A-NA (North America)</td>
<td>250 VAC 10 A, NEMA 6-15 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-9K2A-NA (North America)</td>
<td>125 VAC 13 A, NEMA 5-15 plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-C13-CBN</td>
<td>250 VAC 10 A, SS 10-A plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
<tr>
<td>CAB-C13-C14-2M</td>
<td>Cabinet Jumper Power Cord, 250 VAC 10 A, C13-C14 Connectors</td>
<td>6.6 feet (2 m)</td>
</tr>
<tr>
<td>CAB-C13-C14-AC</td>
<td>Cabinet Jumper Power Cord, 250 VAC 10 A, C13-C14 Connectors</td>
<td>9.8 feet (3 m)</td>
</tr>
<tr>
<td>CAB-C13-C14-JMPR</td>
<td>Cabinet Jumper Power Cord 250 VAC 13 A, C13-C14 Connectors</td>
<td>2.2 feet (0.7 m)</td>
</tr>
<tr>
<td>CAB-IND-10A</td>
<td>250 VAC 10 A, EL-208B plug</td>
<td>8.2 feet (2.5 m)</td>
</tr>
</tbody>
</table>
## DC Power Cable Specifications

### HVDC Power Cable Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Power Cord Part Number</th>
<th>Cord Set Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVDC</td>
<td>CAB-HVDC-3T-2M</td>
<td>6.6-foot (2.0 m) cable with Saf-D-Grid and three terminal connectors</td>
</tr>
</tbody>
</table>
LEDS

- Chassis LEDs, on page 35
- Fan LEDs, on page 37
- Power Supply LEDs, on page 37

Chassis LEDs

This table provides information about chassis LEDs for Cisco Nexus 3000 Series switches.
<table>
<thead>
<tr>
<th>Component</th>
<th>LED</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis (front and back)</td>
<td>Identification (ID)</td>
<td>On (blue)</td>
<td>Identifies the chassis receiving the beacon signal.</td>
</tr>
<tr>
<td></td>
<td>Status (STS)</td>
<td>Solid on (green)</td>
<td>All diagnostics pass. The module is operational.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The module is not receiving power.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On (amber)</td>
<td>The module is booting or running diagnostics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The switch is overheating. The temperature threshold has been exceeded by a small value during environmental monitoring.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking (amber)</td>
<td>The switch has overheated. The temperature threshold has been exceeded by a large value during environmental monitoring.</td>
</tr>
<tr>
<td>Port</td>
<td>Customer defined states</td>
<td>Off</td>
<td>Green and amber LED used to indicate customer-defined status for each port.</td>
</tr>
</tbody>
</table>

Cisco Nexus 3500 Hardware Installation Guide
### Fan LEDs

This table provides information about fan LEDs for Cisco Nexus 3000 Series switches.

<table>
<thead>
<tr>
<th>Component</th>
<th>LED</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan</td>
<td>Status</td>
<td>Solid on (green)</td>
<td>All diagnostics pass. The module is operational.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The module is not receiving power.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Solid on (amber)</td>
<td>The module is booting or running diagnostics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking (amber)</td>
<td>If the module fails during an initial reset, the LED continues to blink and the module does not come online. The module has a runtime failure and is brought offline.</td>
</tr>
</tbody>
</table>

### Power Supply LEDs

This table provides information about power supply LEDs for Cisco Nexus 3000 Series switches.
<table>
<thead>
<tr>
<th>Component</th>
<th>LED</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>OK (green)</td>
<td>Solid on</td>
<td>Power supply is on and okay.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking</td>
<td>3.3 voltage standby (VSB) is on but the power supply unit is not powering the other modules.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No power to the power supply.</td>
</tr>
<tr>
<td>Power supply</td>
<td>FAULT (amber)</td>
<td>Solid on</td>
<td>Power supply failure, overvoltage, overcurrent, or overheating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blinking</td>
<td>Power is present, 3.3 VSB on, and the power supply is off.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSU fan rotor is not functioning normally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Operating normally.</td>
</tr>
</tbody>
</table>
## Spare Parts Table

This table provides information about spare parts for the Cisco Nexus 3000 Series switches.

<table>
<thead>
<tr>
<th>Product</th>
<th>Chassis Height (Rack Units)</th>
<th>Power Supply Options</th>
<th>Fan Options</th>
<th>Accessory Kits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nexus 3548-10G, 3548-10GX, 3548P-XL, and 3524</td>
<td>1-RU</td>
<td>AC port-side exhaust (N2200-PAC-400W=)</td>
<td>Port-side exhaust (NXA-FAN400MB)</td>
<td>Accessory kit (N9K-C9300-ACK)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AC port-side intake (N2200-PAC-400W-B=)</td>
<td>Port-side intake (NXA-FAN400MB)</td>
<td>Rack mount kit (N3K-C3064-ACC-KIT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DC port-side exhaust (N2200-PDC-400W=)</td>
<td>DC port-side intake (N3K-PDC-350W-B=)</td>
<td>Filler blank module (N2200-P-BLNK)</td>
</tr>
</tbody>
</table>