Cisco Nexus 3400 Hardware Installation Guide

First Published: 2018-11-01

Last Modified: 2019-02-17

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Preface

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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

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Regulatory Compliance Guides

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

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C H A P T E R 1

Overview

Overview of the Cisco Nexus 34180YC Switch

The Cisco Nexus 34180YC (N3K-C34180YC) is a 1 rack unit (RU) switch with 48 10- or 25-Gigabit SFP28 ports, 6 40- or 100-Gigabit QSFP28 ports, 2 management ports, 1 console port, and 1 USB port. This switch supports both port-side exhaust and port-side intake airflow schemes. The switch requires one AC, DC, or HVAC/HVDC power supply for operations, but it can have a second power supply for redundancy.

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

Figure 1: Fan-Side View of the Cisco Nexus 34180YC Chassis
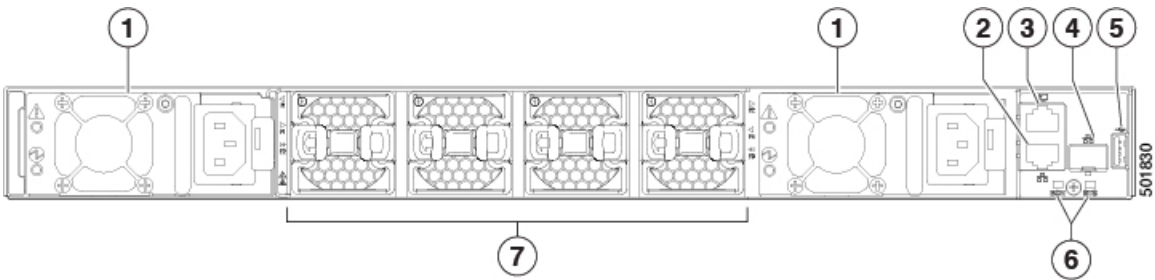
1	AC or DC power supply (1 or 2)	5	USB port (1)
2	Management port (RJ-45)	6	Beacon (BCN) and Status (STS) LEDs
3	Console port (RS-232)	7	Fan modules (4)
4	Management port (SFP)		

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

Figure 2: Port-Side View of the Cisco Nexus 34180YC Chassis
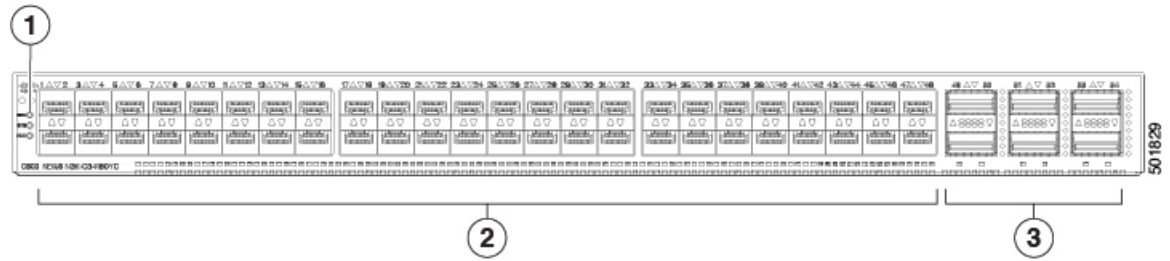
1	Beacon (BCN), Status (STS), and Environment (ENV) LEDs	3	40/100-Gigabit QSFP28 ports (6)
2	10/25-Gigabit SFP28 ports (48)		

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

Figure 3: Side View of the Cisco Nexus 34180YC Chassis
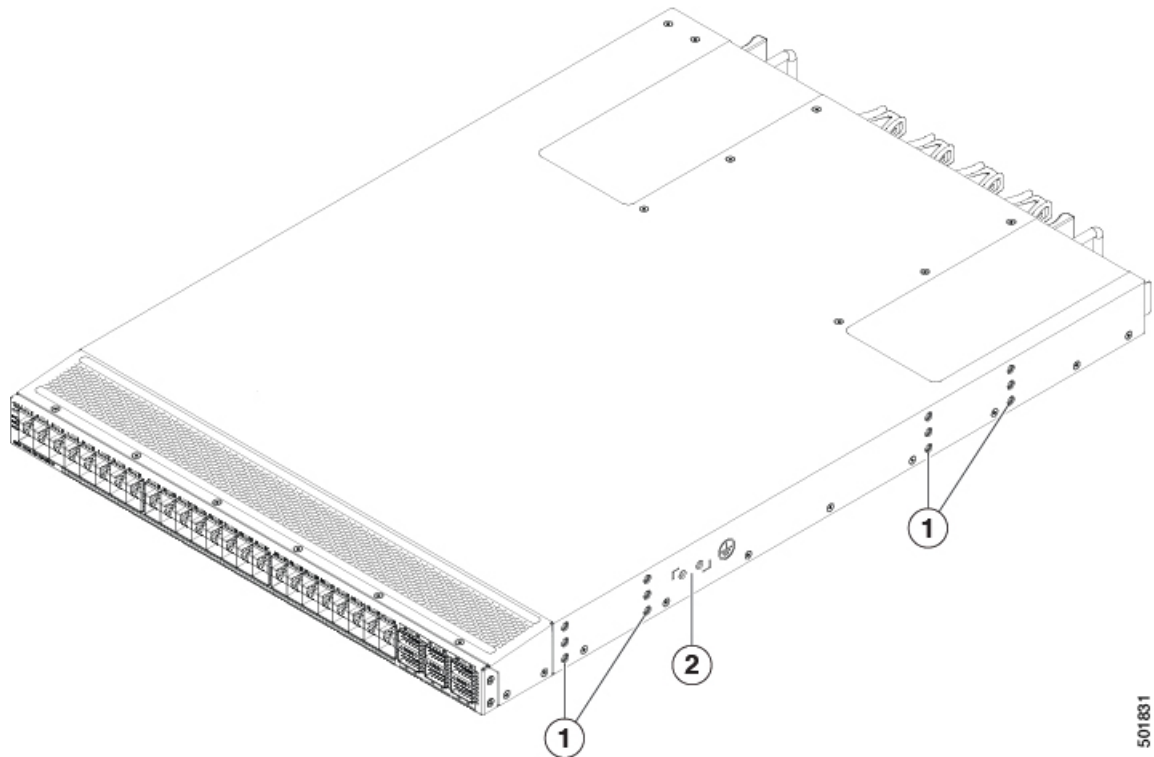
1	Screw holes for mounting brackets	2	Grounding pad

Overview of the Cisco Nexus 3464C Switch

The Cisco Nexus 3464C (N3K-C3464C) is a 2 rack unit (RU) switch with 64 100-Gigabit SFP28 ports, 2 10-Gigabit QSFP28 ports, 2 management ports, 1 console port, and 1 USB port. This switch supports both port-side exhaust and port-side intake airflow schemes. The switch requires one AC or HVAC/HVDC power supply for operation, but it can have a second power supply for redundancy.

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

Figure 4: Fan-Side View of the Cisco Nexus 3464C Chassis
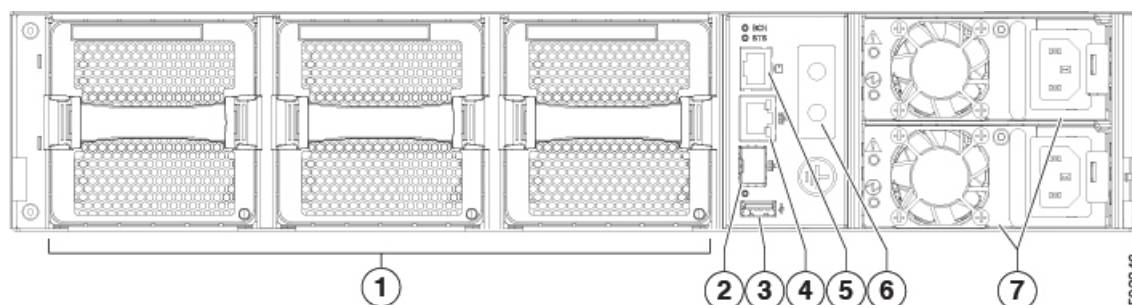
1	Fan modules (3)	2	Management port (SFP)
3	USB port (1)	4	Management port (RJ-45)
5	Console port (RS-232)	6	Grounding pad
7	Power supply (1 or 2)		

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

Figure 5: Port-Side View of the Cisco Nexus 3464C Chassis
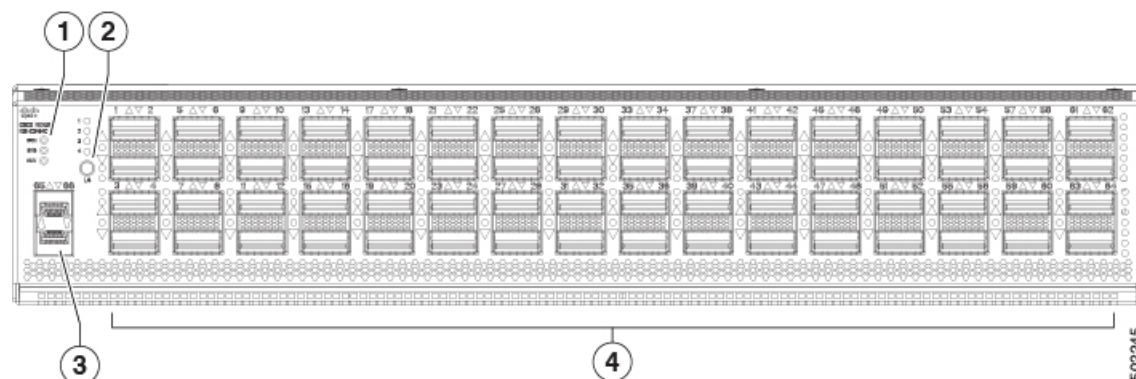
1	Beacon (BCN), Status (STS), and Environment (ENV) LEDs	2	Lane select button

3	10-Gigabit QSFP28 ports (2)	4	100-Gigabit SFP28 ports (64)

The following figure shows the side chassis features that you use when installing the chassis.

Figure 6: Side View of the Cisco Nexus 3464C Chassis
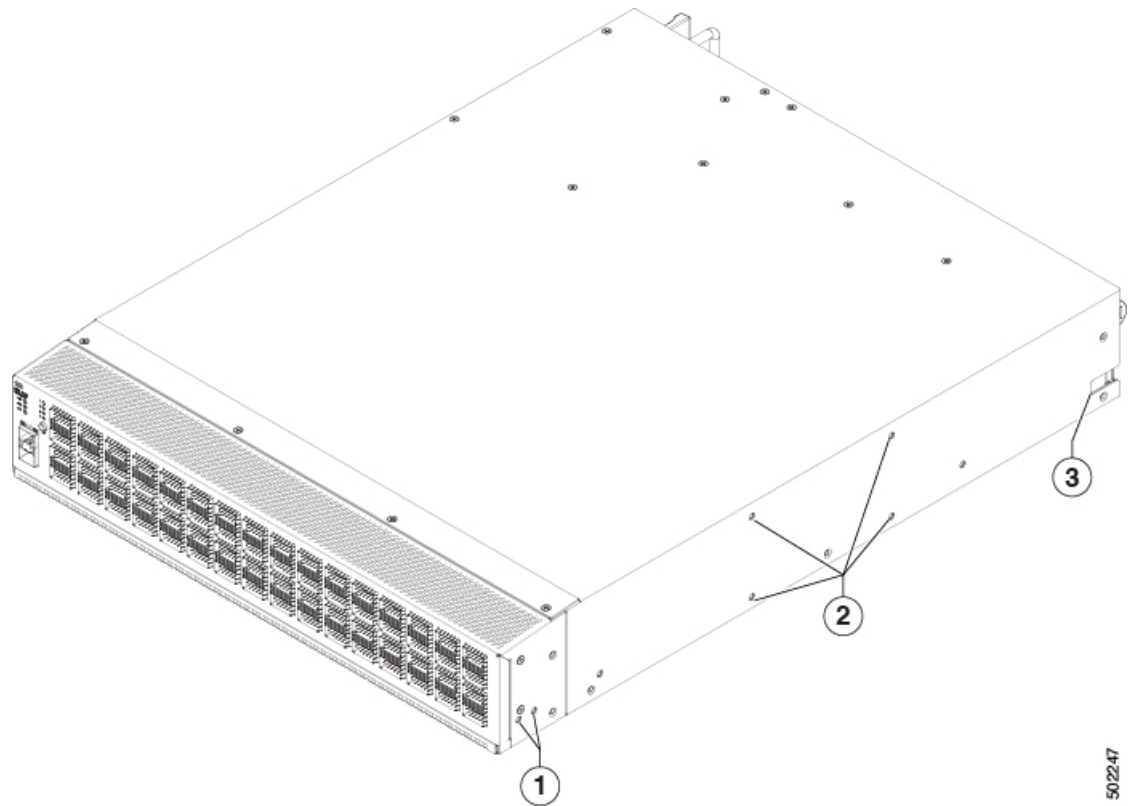
1	Screw holes for front mounting brackets (four-post rack installations)	2	Screw holes for center-mount bracket (two-post rack installations)
3	Notch on both sides of the chassis for locking the power supply end of the chassis to the bottom support rails (four-post rack installations).		

Preparing the Site

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

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 by skilled, instructed or qualified personnel.

Warning   **Statement 1030**—Equipment Installation

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

Installation Options with Rack-Mount Kits, Racks, and Cabinets

The rack-mount kit enables you to install the switch into racks of varying depths. You can position the switch with easy access to either the port connections or the fan and power supply modules.

You can install the switch using the following 1 (RU) rack-mount options:

- Rack-mount kit (NXK-ACC-KIT-1RU) which you can order from Cisco. This option offers you easy installation, greater stability, increased weight capacity, added accessibility, and improved removability with front and rear removal.

- Rack-mount kit (N3K-C3064-ACC-KIT) which you can order from Cisco.

You can install the switch using the following 2 (RU) rack-mount options:

- Rack-mount kit (NXK-ACC-RMK-2RU) which you can order from Cisco. This option offers you easy installation, greater stability, increased weight capacity, added accessibility, and improved removability with front and rear removal.

- Rack-mount kit (N9K-C9300-RMK) which you can order from Cisco.

You can install the switch in the following types of racks:

- Open EIA rack

- Perforated EIA cabinet

The rack or cabinet that you use must meet the requirements listed the in General Requirements and Guidelines for Cabinets and Racks, on page 51 section.

Note   You are responsible for verifying that your rack and rack-mount hardware comply with the guidelines that are described in this doc.

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 or red 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.

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Warning   **Statement 1005**—Circuit Breaker

When AC or HVAC power supply is used:

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective devices is rated not greater than 20A (North America), 16A (Europe), and 13A (UK).

When HVDC power supply is used:

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective devices is rated not greater than 10A.

• 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

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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   For duel direction airflow switches, 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.

Installing the Switch Using the NXK-ACC-KIT-1RU Rack-Mount Kit

To install the switch, you must attach front and rear mounting brackets to the switch, install slider rails on the rear of the rack, slide the switch onto the slider rails, and secure the switch to the front of the rack. Typically, the front of the rack is the side easiest to access for maintenance.

Note   You must supply the eight 10-32 or 12-24 screws required to mount the slider rails and switch to the rack.

Before you begin

- You have inspected the switch shipment to ensure that you have everything ordered.

- Make sure that the switch rack-mount kit includes the following parts:

- Front rack-mount brackets (2)

- Rear rack-mount brackets (2)

- Slider rails (2)

- M4 x 0.7 x 8-mm Phillips countersink screws (12)

- The rack is installed and secured to its location.

Step 1   Install two front rack-mount brackets and the two rear rack-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 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 front rack-mount bracket and the rear rack-mount bracket so that its screw holes are aligned to the screw holes on the side of the chassis.

    Note   You can align the holes in the rack-mount bracket to the holes on the side of the chassis (see the two ways to mount these brackets on a typical chassis, in 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).
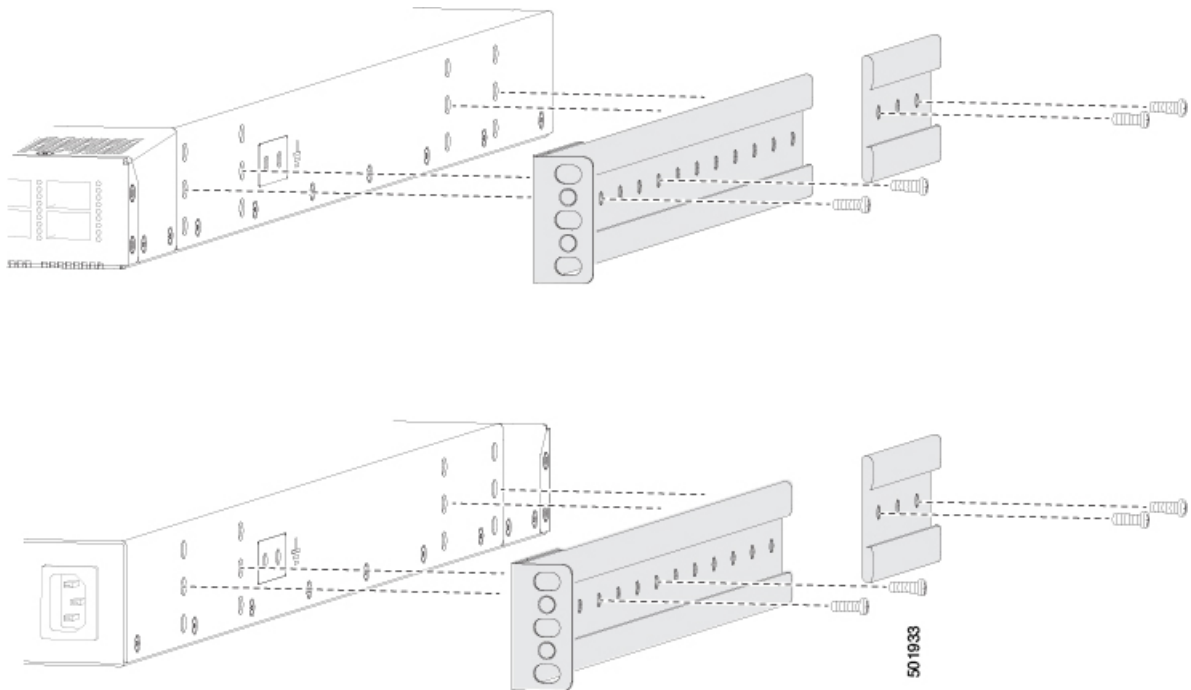
c)   Secure the front-mount bracket and the back-mount bracket to the chassis using four M4 screws and tighten each screw to 12 in-lb (1.36 N·m) of torque.

d) Repeat Step 1 for the other front rack-mount bracket and the other back-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.

Note Depending on the chassis depth, the back rack-mount bracket may not fit. In that case the back rack-mount bracket is not needed.

Step 2 If you are not installing the chassis into a grounded rack, you must attach a customer-supplied grounding wire to the chassis as explained in the Grounding the Chassis, on page 34 section. If you are installing the chassis into a grounded rack, you can skip this step.

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 will have the slider rails.

b) Position a slider rail at the desired level on the back side of the rack and use 12-24 screws or 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.

c) Repeat Step 3 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, you should 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).

b) Align the two rear rack-mount guides on either side of the switch with the slider rails installed in the rack. Slide the rack-mount guides onto the slider rails, and then gently slide the switch all the way into the rack until the front rack-mount brackets come in contact with two rack or cabinet posts.

c) Holding the chassis level, insert screws (12-24 or 10-32, depending on the rack type) in each of the two front rack-mount brackets (using a total of six screws) and into the cage nuts or threaded holes in the vertical rack-mounting rails (see the following figure).
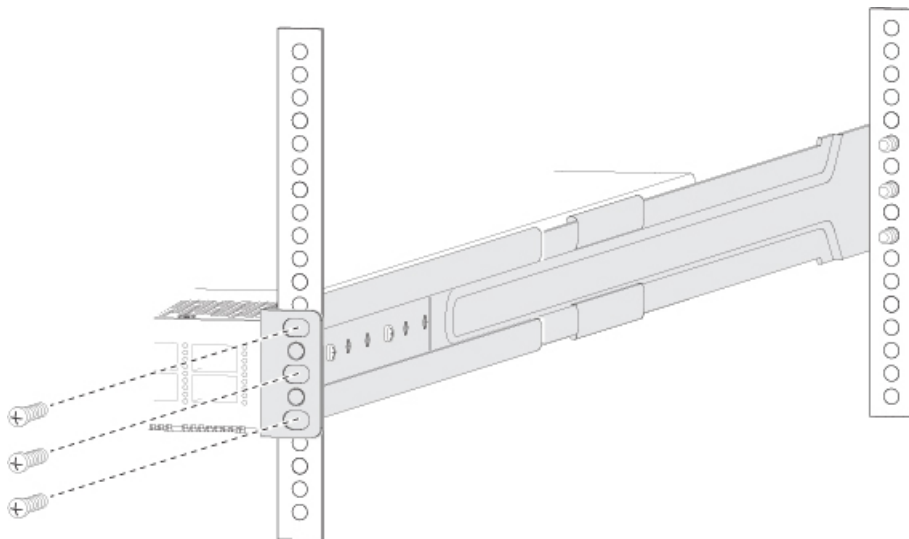
d) Tighten the 10-32 screws to 20 in-lb (2.26 N·m) or tighten the 12-24 screws to 30 in-lb (3.39 N·m).

Step 5   If you attached a grounding wire to the chassis grounding pad, connect the other end of the wire to the facility ground.

Installing the Switch Using the N3K-C3064-ACC-KIT Rack-Mount Kit

To install the switch, you must attach front and rear mounting brackets to the switch, install slider rails on the rear of the rack, slide the switch onto the slider rails, and secure the switch to the front of the rack. Typically, the front of the rack is the side easiest to access for maintenance.

Note   You must supply the eight 10-32 or 12-24 screws required to mount the slider rails and switch to the rack.

Before you begin

- You have inspected the switch shipment to ensure that you have everything ordered.

- Make sure that the switch rack-mount kit includes the following parts:

    - Front rack-mount brackets (2)

    - Rear rack-mount brackets (2)

    - Slider rails (2)

    - M4 x 0.7 x 8-mm Phillips countersink screws (12)

- The rack is installed and secured to its location.

Step 1   Install 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 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 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 two ways to mount these brackets on a typical chassis, in 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).
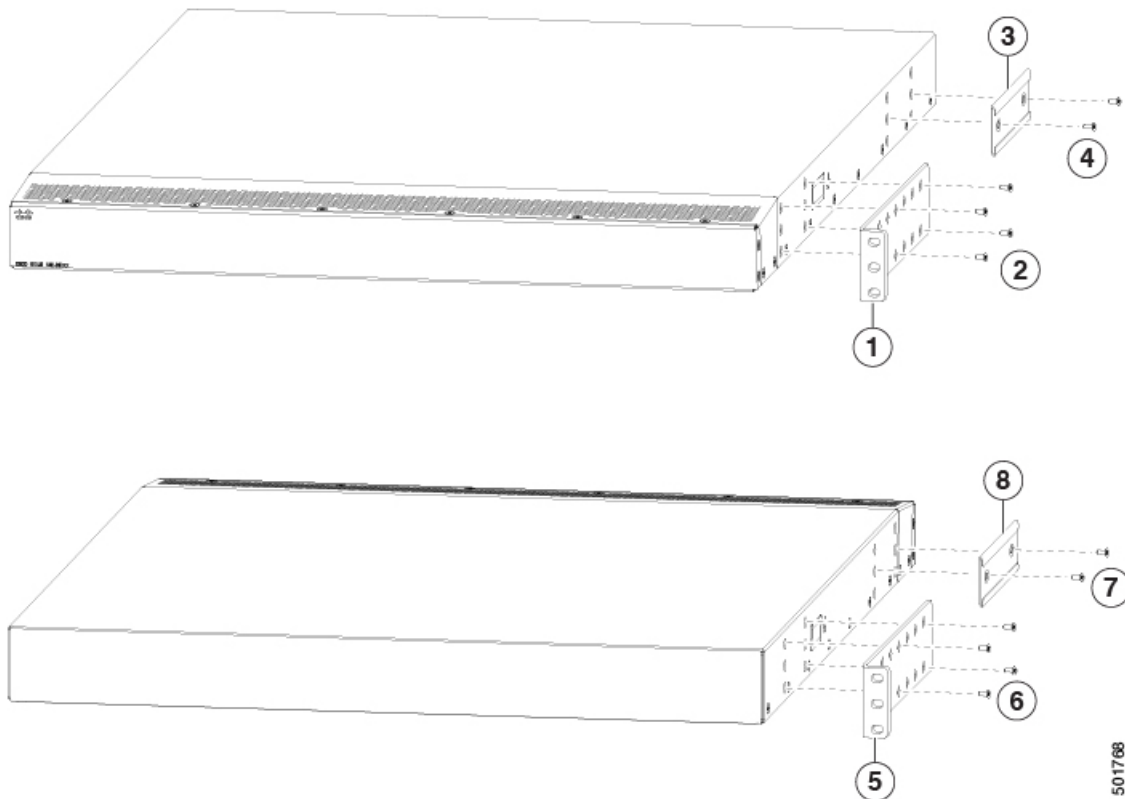
1	Front rack-mount bracket aligned to the port end of the chassis	5	Front rack-mount bracket aligned to the module end of the chassis
2	Four M4 screws used to attach the bracket to the chassis	6	Four M4 screws used to attach the bracket to the chassis
3	Rear rack-mount guide aligned to the module end of the chassis	7	Two M4 screws used to attach the bracket to the chassis
4	Two M4 screws used to attach the bracket to the chassis	8	Rear rack-mount guide aligned to the port end of the chassis

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 Step 1 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 Step 2 for the other rear rack-mount bracket on the other side of the switch.

Step 3 If you are not installing the chassis into a grounded rack, you must attach a customer-supplied grounding wire to the chassis as explained in the Grounding the Chassis, on page 34 section.. If you are installing the chassis into a grounded rack, you can skip this step.

Step 4 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 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.
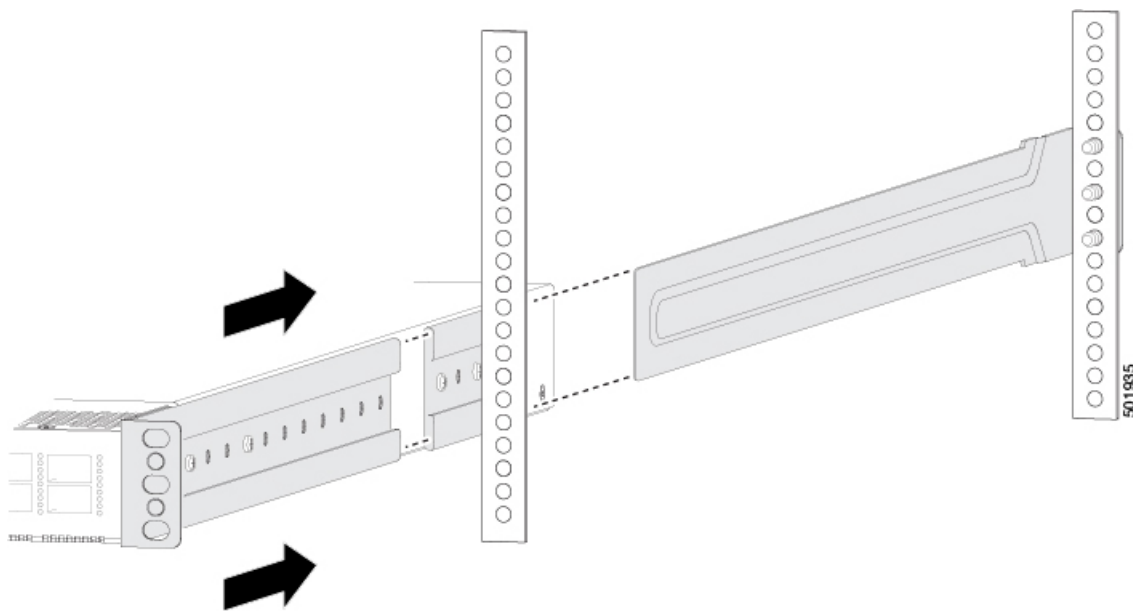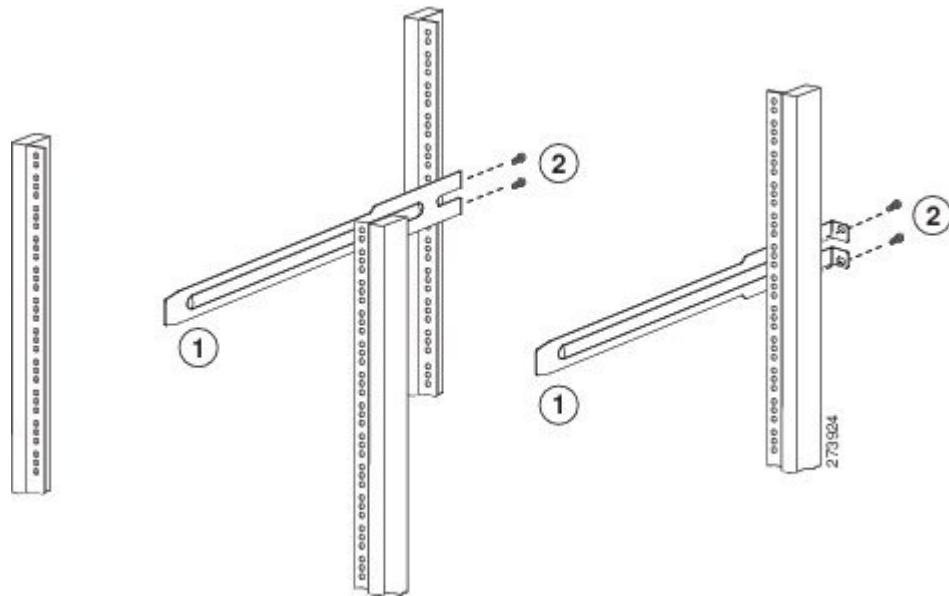

1	Slider rail with screw holes aligned to screw holes in rack	2	Two customer-supplied 12-24 or 10-32 screws used to attach each slider rail to the rack

c) Repeat Step 3 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, you should use a level tool, tape measure, or carefully count the screw holes in the vertical mounting rails.

Step 5 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).
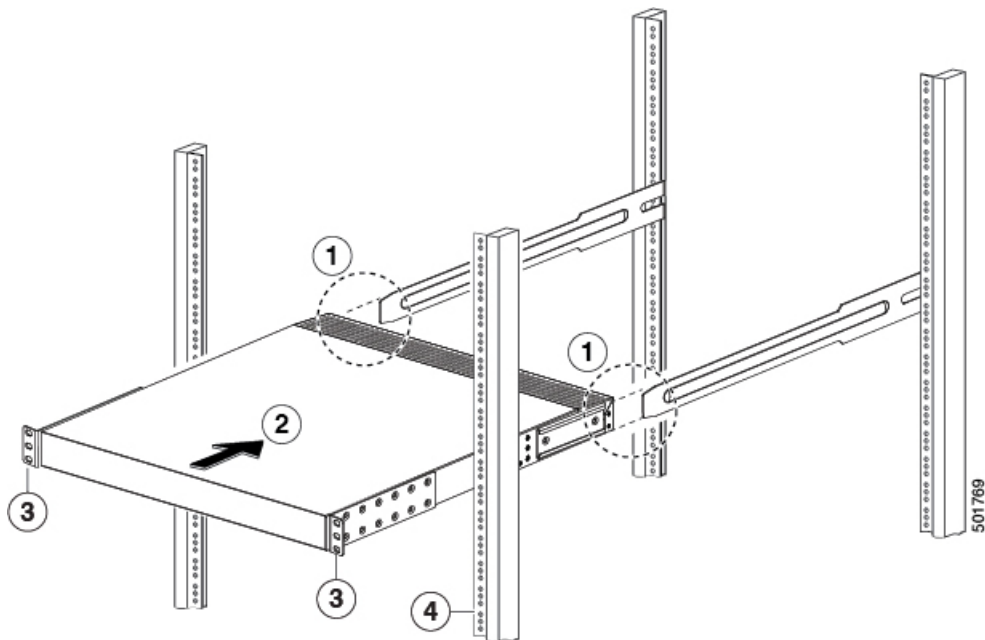
1	Align the two rear rack-mount bracket guides with the slider rails installed in the rack.	3	Front-mount brackets.
2	Slide the rack-mount guides onto the slider rails until the front rack-mount brackets come in contact with the front rack-mount rails.	4	Mounting rails on rack or cabinet posts.

b) Align the two rear rack-mount guides on either side of the switch with the slider rails installed in the rack. Slide the rack-mount guides onto the slider rails, and then gently slide the switch all the way into the rack until the front rack-mount brackets come in contact with two rack or cabinet posts.

c) Holding the chassis level, insert two screws (12-24 or 10-32, 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).
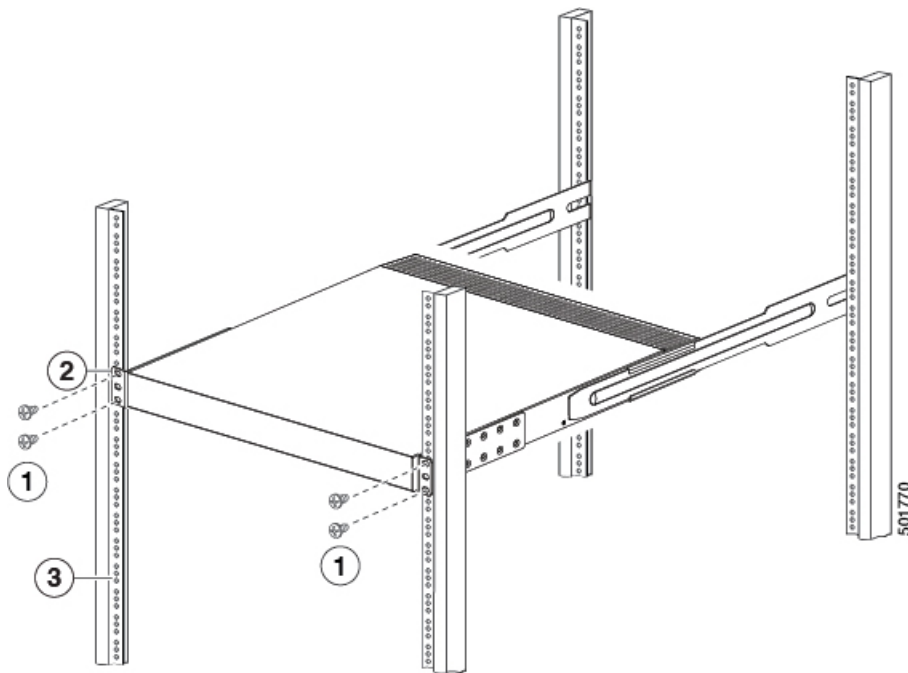
1	Fasten the chassis to the front of the rack with two 12-24 or 10-32 screws on each side.	3	Mounting rails on rack or cabinet posts.
2	Front-mount bracket.		

    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).

Step 6 If you attached a grounding wire to the chassis grounding pad, connect the other end of the wire to the facility ground.

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.
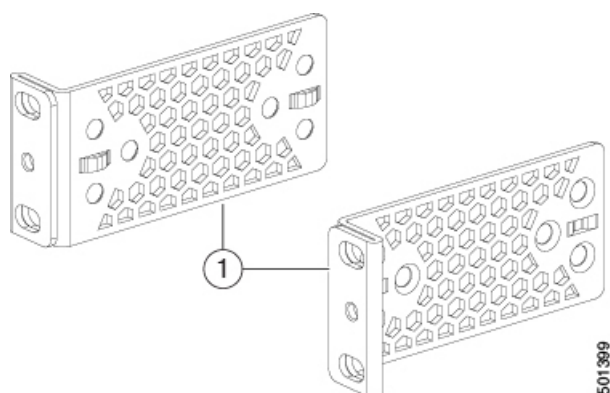
1	19-inch brackets (C3850-RACK-KIT=)		

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.
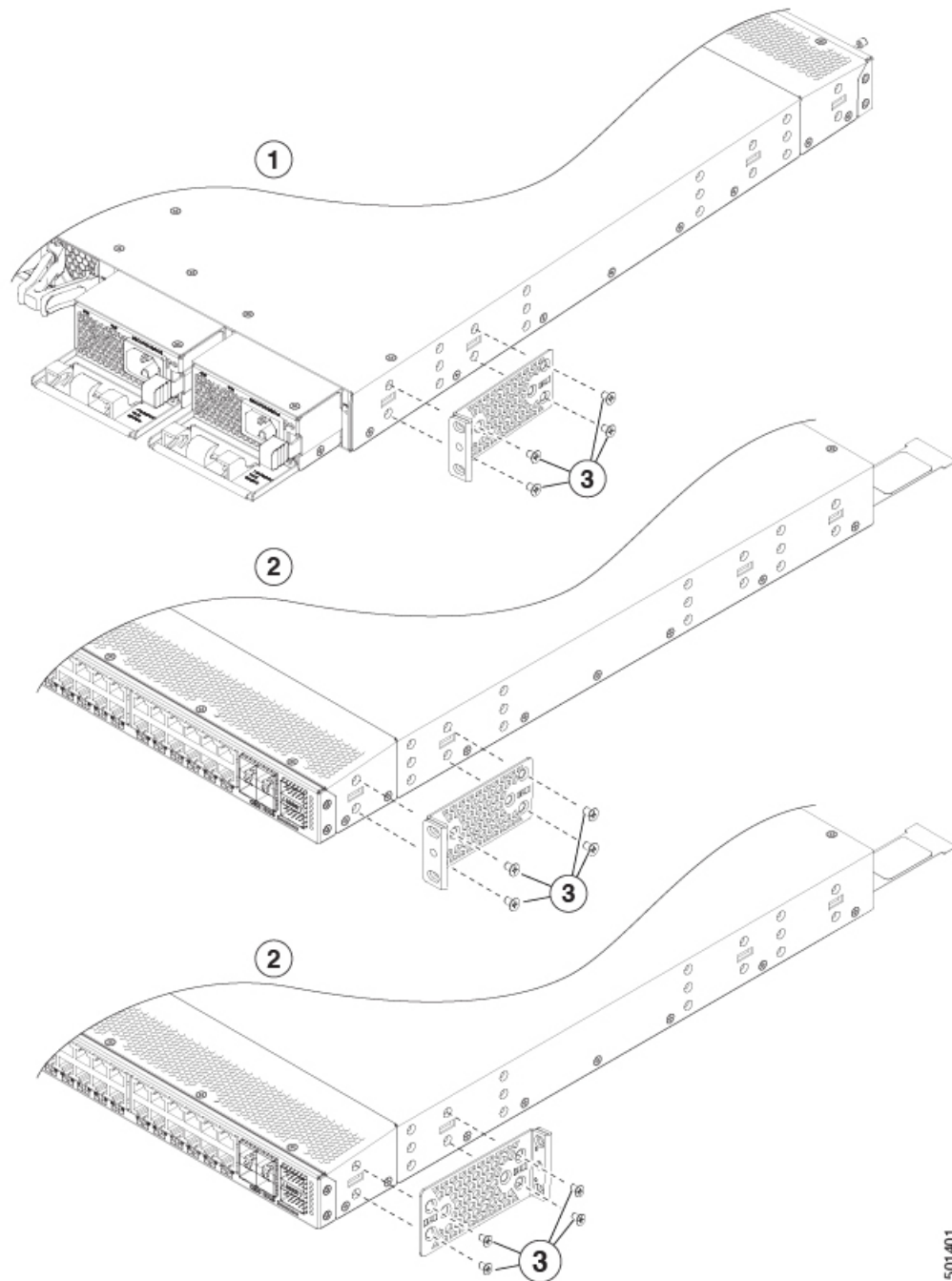
1	Rear-mounting position	3	Number-8 Phillips flat-head screws (4 each bracket)
2	Front-mounting position		

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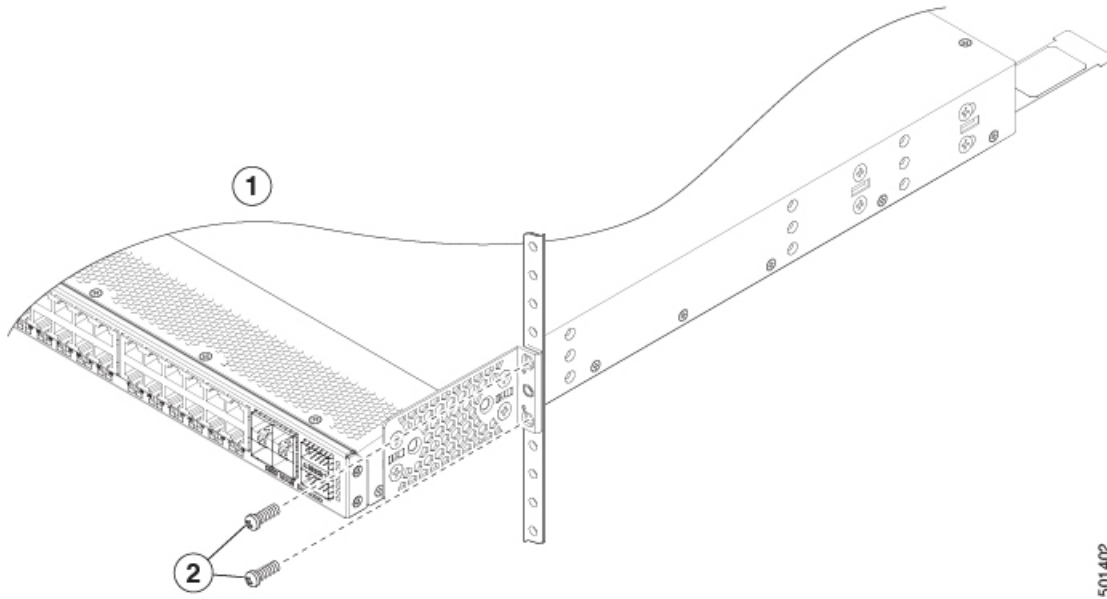
1	Front-mounting position	2	M4 screws (2 each side)

Installing a 2 (RU) Chassis in a Four-Post Rack

Before you install the chassis, be sure that the rack is fully secured to the data center floor.

Installing the Switch using the NXK-ACC-RMK-2RU Rack-mount Kit

To install the switch, you must attach mounting brackets to the rack, install slider rails on the rear of the rack, slide the switch onto the slider rails, install the retainer brackets, and secure the switch to the rack with the retainer clips. Typically, the front of the rack is the side easiest to access for maintenance.

Note   You must supply the eight 10-32 or 12-24 screws required to mount the slider rails and switch to the rack.

Before you begin

• You have inspected the switch shipment to ensure that you have everything ordered.

• Make sure that the switch rack-mount kit includes the following parts:

  • Rack-mount brackets (2)

  • Rack-mount retainer brackets (2)

- Rack-mount slider rails (2)

- Rack-mount retainer clips (2)

- Phillips countersink screws (8)

- Flat head screws (4)

- The rack is installed and secured to its location.

Step 1   Install two rack-mount brackets to the rack 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 modules with burgundy coloring), position the front-mount brackets so that the switch ports will be in the cold aisle.

- If the switch has port-side exhaust modules (fan modules with blue coloring), position the front-mount brackets so that the switch fan and power supply modules will be in the cold aisle.

b)   Position a front-mount bracket so that it aligns to the desired position in the rack and secure the bracket with 12-24 screws or 10-32 screws, depending on the rack thread type (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..
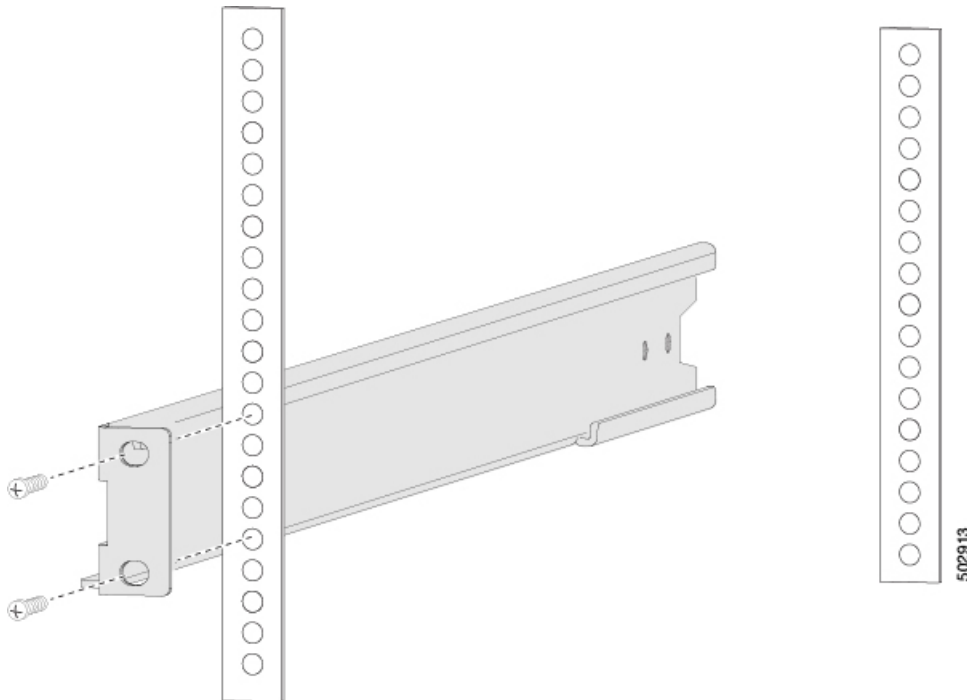

c)   Repeat Step 1 for the other front rack-mount bracket on the other side of the rack and be sure to position that bracket horizontally to the same level as first bracket.

Step 2   If you are not installing the chassis into a grounded rack, you must attach a customer-supplied grounding wire to the chassis as explained in Grounding the Chassis, on page 34. If you are installing the chassis into a grounded rack, you can skip this step.

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 will have the slider rails.

b) Position a slider rail at the desired level on the back side of the rack and slide it into the front-mount bracket already installed and secure with 12-24 screws or 10-32 screws, depending on the rack thread type (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.

c) Repeat Step 3 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, you should 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:
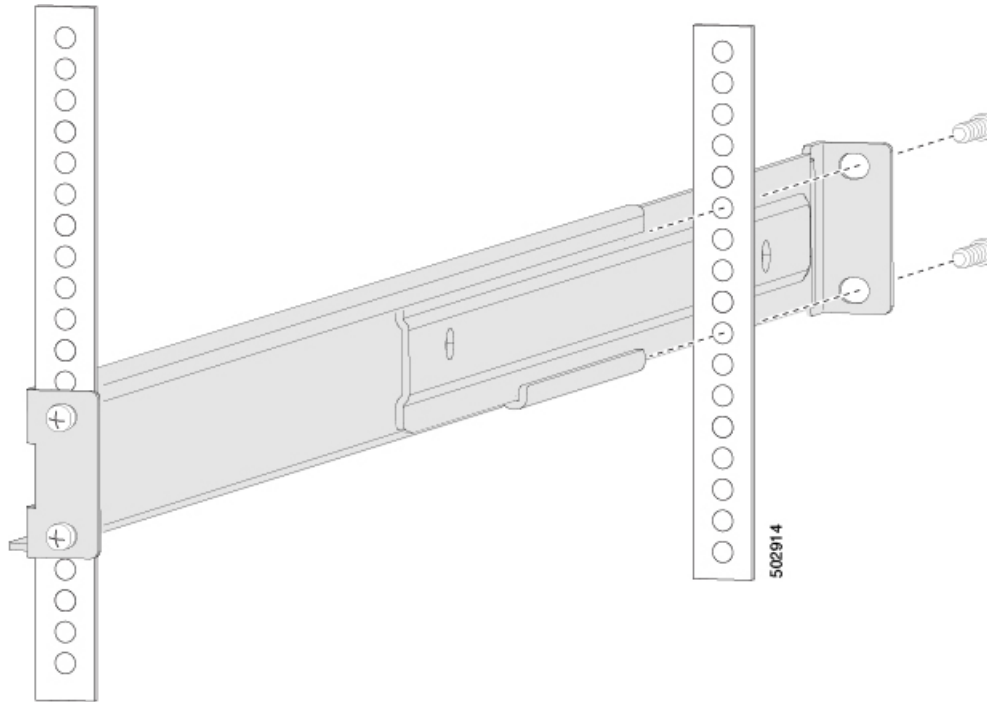
a) Holding the switch with both hands, position the switch onto the rack-mount brackets and carefully slide the chassis into the rack (see the following figure).
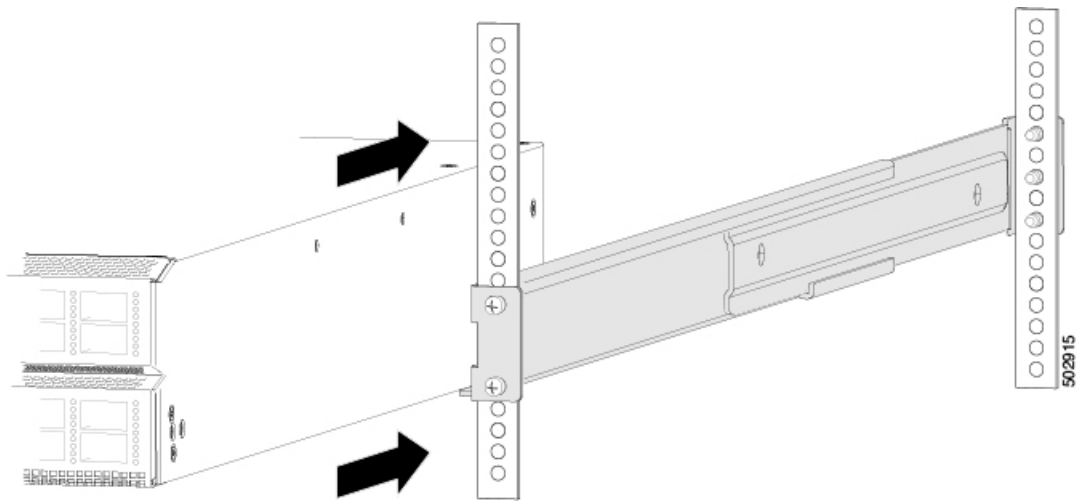
Step 5   Insert the rack-mount retainer brackets

    a) Align the retainer brackets to the front of the chassis, being careful not to damage anything on the front of the chassis (see the following figure).

    b) Repeat Step 5 to attach the other retainer bracket on other side of the chassis.
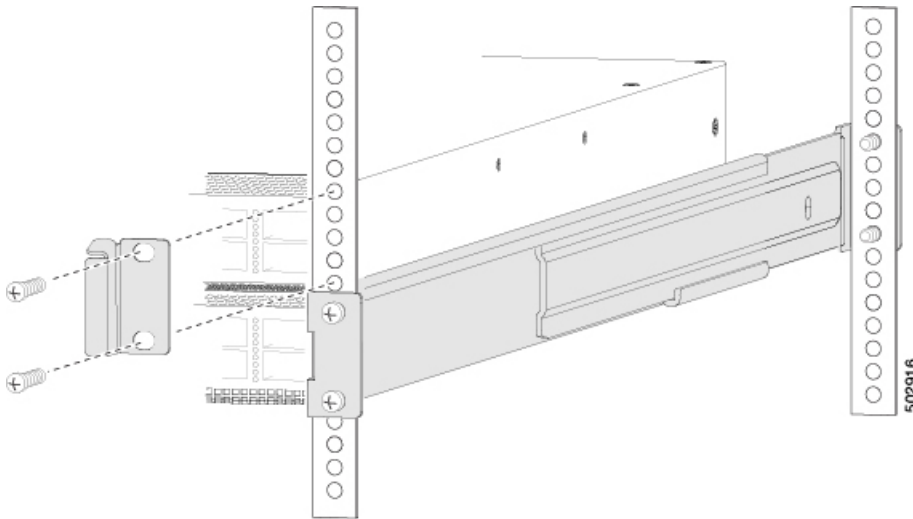
    c) Tighten the 10-32 screws to 20 in-lb (2.26 N·m) or tighten the 12-24 screws to 30 in-lb (3.39 N·m).

Step 6   Insert the retainer clip to hold the chassis in place.

    a) Align the retainer clip to the inside of the back of the slider rail. Make sure to hook the flange to the cutout on the bracket and align the screw holes (see the following figure).

    b) Attach the screws to secure the retainer clip (see the following figure).

    c) Repeat Step 6 to attach the other retainer clip on the other side of the chassis.
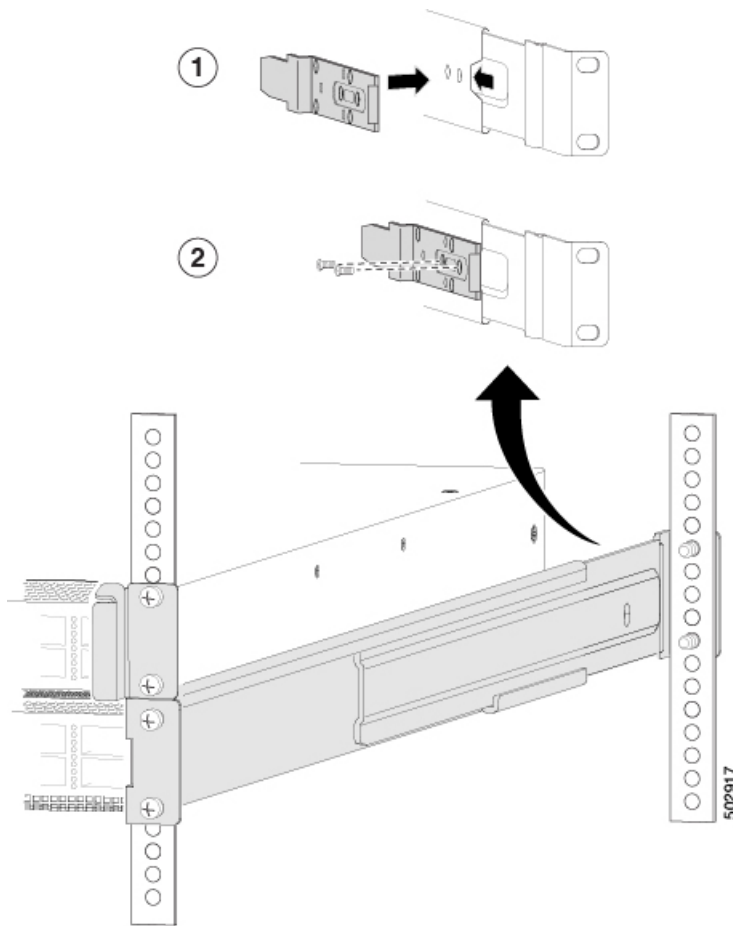
**Step 7**   If you attached a grounding wire to the chassis grounding pad, connect the other end of the wire to the facility ground.

Installing the Switch using the N9K-C9300-RMK Rack-mount Kit

Attaching the Bottom-Support Rails to the Rack

The switch chassis that you are installing ships with two adjustable bottom-support rails that you can attach to a four-post rack to hold the chassis. Each of these bottom-support rails has two pieces—one that slides into the other so that you can adjust them to fit racks with front and rear mounting posts that are spaced less than 36 inches (91 cm). On each bottom-support rail, the rail half that slides into the other rail includes a chassis stop that fits into the module end of the chassis. Depending on direction of the chassis airflow, you need to position the rail half with the chassis stop so that the fan and power supply modules end up in the appropriate aisle as follows:

- Port-side intake (burgundy coloring for fan modules) airflow requires that the bottom-support rail with the chassis stop be located on the hot aisle side of the rack.

- Port-side exhaust (blue coloring for fan modules) airflow requires that the bottom-support rail with the chassis stop be located on the cold aisle side of the rack.

⚠

Warning   **Statement 1074**—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Before you begin

Before you can install the bottom support rails for the chassis, you must do the following:

- Verify that a four-post rack or cabinet is installed.

- If any other devices are stored in the rack or cabinet, verify that the heavier switches are installed below lighter switches.

- Verify that the bottom-support rails kit is included in the switch accessory kit.

- Verify that you have 8 screws for attaching the bottom support brackets to the racks (typically M6 x 10 mm screws or the screw appropriate for the vertical mounting rails on the rack.

⚠

Warning   **Statement 1006**—Chassis Warning for Rack-Mounting and Servicing

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:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- 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.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Step 1   Look at the fan and power supply modules installed in the chassis to determine how you must position the bottom-support rails on the rack.

- If the fan modules have blue coloring (port-side exhaust modules), you must position the bottom support rails so that the chassis stop is positioned by the cold aisle.

- If the fan modules have burgundy (port-side intake modules), you must position the bottom support rails so that the chassis stop is positioned by the hot aisle.

Step 2   Separate the two sliders that make up one bottom-support rail and position the half with the chassis stop by the appropriate aisle for the fan and power supply modules. Also make sure that there is at least 1 rack unit open above the bottom-support rails so that you can easily install the chassis.

Step 3   Use two customer-supplied screws (typically M6 x 10 mm screws) to attach the bottom-support rail half to the vertical mounting rails on the rack post. Tighten each screw to the appropriate torque setting for the screws (for M6 x 10 mm screws, use 40 in. lbs [4.5 N·m] of torque).

Step 4   Slide the other half of the bottom-support rail onto the attached half of the rail set and use two customer supplied screws (typically M6 x 10 mm screws) to secure that portion to the vertical mounting rails on the rack. Tighten each screw to the appropriate torque setting for the screws (for M6 x 10 mm screws, use 40 in. lbs [4.5 N·m] of torque).

Figure 7: Positioning an Expanding Bottom-Support Rail Set
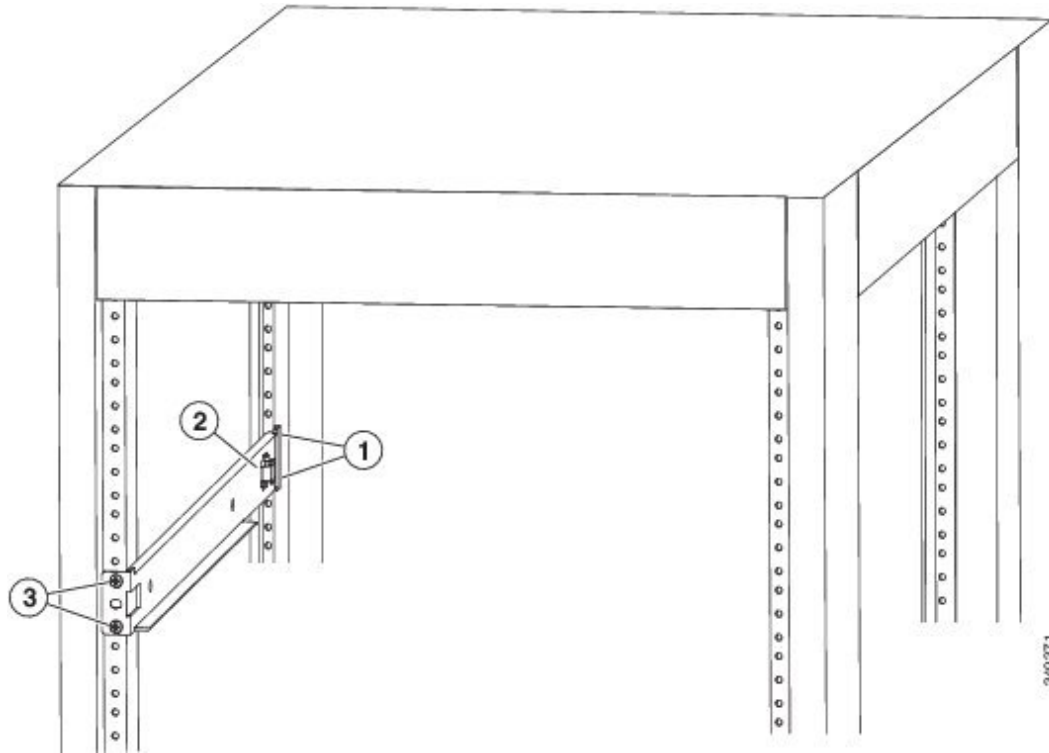
1	2 screws holding one end of the bottom-support bracket to the rear of the rack	3	2 screws holding the front end of the bottom-support bracket to the front side of the rack
2	Chassis stop on the expanding bottom-support bracket		

Step 5   Repeat Steps 2 and 3 to attach the other expanding bottom-support rails to the other side of the rack.

Note   Check the two installed bottom support rails to be sure that both have their chassis stops by the same aisle (either both by the hot aisle or both by the cold aisle) and that both rails are level and level with each other. If they are not level, adjust the higher rail down to the level of the lower rail.

What to do next

You are ready to install two front-mount brackets on the chassis.

Attaching Front-Mount Brackets to the Chassis

You need to attach a right-angled bracket to each side of the chassis. This bracket holds the chassis in place on a four-post rack.

Before you begin

- You must have the following tools and equipment:
    - Manual Phillips-head torque screwdriver
    - Front-mount brackets (2) and screws (4) (found inside the switch accessory kit)

Step 1 Align the two holes in one side of one of two front-mount brackets to two holes on the left or right side of the chassis (see the following figure).

Be sure that the other side of the bracket is facing toward the front (port end) of the chassis.
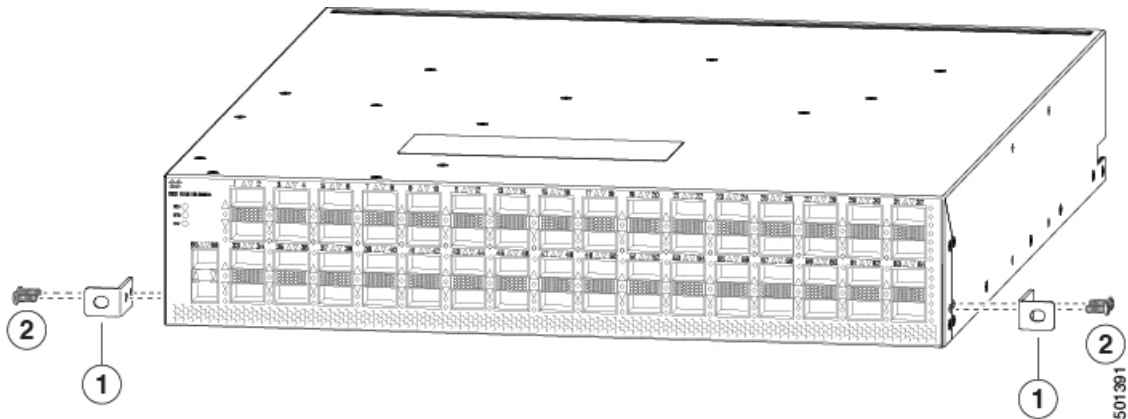
| 1 | Front-mount bracket with two screw holes aligned to two screw holes in the chassis and one screw hole facing the front (port side) of the chassis. | 2 | Two M4 x 6 mm screws used to fasten the bracket to the chassis. |

Step 2 Use two M4 x 6 mm screws to attach the bracket to the chassis. Tighten each screw to 11 to 15 in-lb (1.2 to 1.7 N·m).

Step 3 Repeat Steps 1 and 2 to attach the second center-mount bracket to the other side of the chassis.

What to do next

You are ready to mount the chassis to the four-post rack.

Installing the Chassis in a Four-Post Rack

You need to slide the chassis onto the bottom-support rails so that the power supply end locks onto the chassis stops at the end of the rails and so that the front-mount brackets on the chassis come into contact with the front-mount rails on the rack.

⚠️

Warning **Statement 1074**—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

⚠️

Warning **Statement 1032**—Lifting the Chassis

To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.

Before you begin

- Make sure that the four-post rack is properly installed and secured to the concrete subfloor.

- Make sure that the bottom-support rails are installed so that the fan modules will be in the appropriate aisle as follows:

    - Burgundy (port-side intake airflow) fan modules are positioned in a hot aisle (the chassis stop on the bottom-support rails is positioned by the hot aisle).

    - Blue colored (port-side exhaust airflow) fan modules are positioned in a cold aisle (the chassis stop on the bottom-support rails is positioned by the cold aisle).

- Make sure that two front-mount brackets are securely fastened to the sides of the chassis at the port end.

- Make sure that you have two customer-supplied rack-mount screws (M6 x 10 mm or appropriate screw for the vertical mounting rails on the rack).

⚠️

Warning **Statement 1006**—Chassis Warning for Rack-Mounting and Servicing

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:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- 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.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Step 1 Slide the power supply end of the chassis onto the bottom-support rails that are installed on the rack.

Be sure that the sides of the chassis by the power supplies clips into the chassis stops on the bottom-support rails and the front-mount brackets come in contact with the rack (see the following figure).

Note   If the bottom-support rails are extended a long distance, they can bend outwards slightly when you install the chassis and the chassis stops at the far end of the rails might not fit into the end of the chassis. If this happens, press the side rails toward the sides of the chassis so that the chassis stops can go inside the chassis and hold it in place on the rack.

1	Slide the power-supply end of the chassis onto the bottom-support rails so that the chassis locks onto the chassis stops at the end of the rails.	3	Receiving hole on each side of the chassis for the chassis stops on the bottom-support rails.
2	Chassis stops for holding the chassis (positioned by the aisle required for the fan and power supply modules).	4	Customer-supplied rack-mount screw (M6 x 10 mm screw or other screw appropriate for the rack) used to secure each side of the chassis to the rack.

Step 2   Use a customer-supplied rack-mount screw (an M6 x 10 mm screw or other appropriate screw for the rack) to attach each of the two mounting brackets on the chassis to the rack and tighten each screw to the appropriate torque setting for the screw (for M6 x 10 mm screws, use 40 in-lbs [4.5 N·m] of torque).

Installing a 2 (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.

You need to attach a right-angled bracket to each side of the chassis. This bracket centers the chassis and secures it in place on a two-post rack.

Position the chassis near the top of the rack with the power supply and fan modules in the appropriate aisle for their required airflow. If the fan modules have a blue coloring for port-side exhaust airflow, then you must position the modules by the cold aisle. If the fan modules have a burgundy coloring for port-side intake airflow, you must position the modules by the hot aisle.

Warning   **Statement 1006**—Chassis Warning for Rack-Mounting and Servicing

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:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- 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.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Before you begin

- You must separately order the center-mount brackets if you are installing the chassis in a two-post rack. These brackets do not ship with the chassis unless you specifically order them.

- You must have the following tools and equipment:

    - Manual Phillips-head torque screwdriver

    - Center-mount bracket kit

    - Make sure that you have six customer-supplied rack-mount screws (typically M6 x 10 mm or the appropriate screw for the vertical mounting rails on the rack).

    - You have at least two people to install the chassis.

SUMMARY STEPS

1. Align one of the two center-mount brackets on the left or right side of the chassis and be sure that the angled portion is facing the front of the chassis (see the following figure).
2. Use four M4 x 8 mm screws to attach the bracket to the chassis. Tighten each screw to 11 to 15 in-lb (1.2 to 1.7 N·m).
3. Repeat Steps 1 and 2 to attach the second center-mount bracket to the other side of the chassis.
4. Use one person to position the chassis so that it is near the top of the rack with the fan and power supply modules in the appropriate aisle and the center-mount bracket has its screw holes aligned to screw holes on the two-post rack.

5. Use the second person to secure the three customer-supplied rack-mount screws (typically M6 x 10 mm or other appropriate screws for the rack) on each center-mount bracket to attach the chassis to the rack. Tighten each screw to the appropriate torque setting for the screws (for M6 x 10 mm screws, use 40 in-lbs [4.5 N·m] of torque).

DETAILED STEPS

Step 1   Align one of the two center-mount brackets on the left or right side of the chassis and be sure that the angled portion is facing the front of the chassis (see the following figure).

Be sure to align four of the screw holes on the larger side of the bracket with the four screw holes near the center of the left or right side of the chassis.
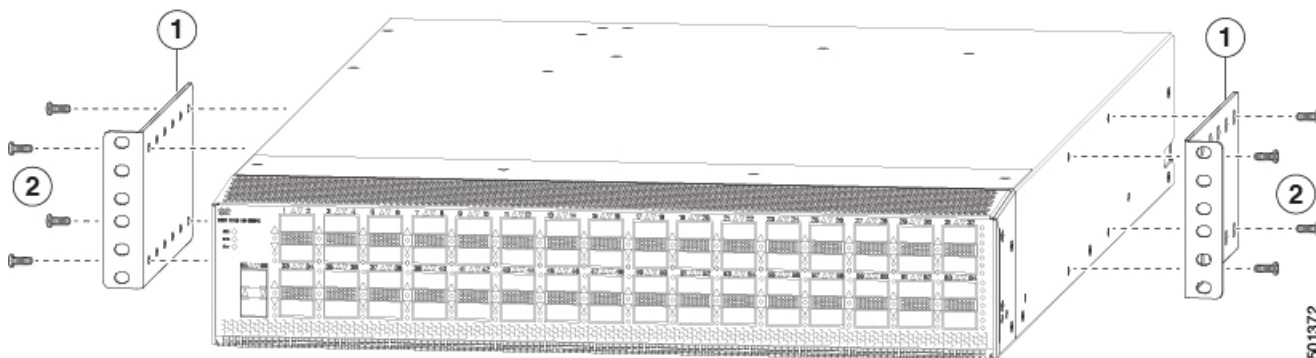
1	Center-mount bracket with its larger side facing the chassis and the longer side facing the front (port side) of the chassis. Align four screw holes in the bracket to four screw holes in the side of the chassis.	2	Four M4 x 8 mm screws used to fasten the bracket to the chassis.

Step 2   Use four M4 x 8 mm screws to attach the bracket to the chassis. Tighten each screw to 11 to 15 in-lb (1.2 to 1.7 N·m).

Step 3   Repeat Steps 1 and 2 to attach the second center-mount bracket to the other side of the chassis.

Step 4   Use one person to position the chassis so that it is near the top of the rack with the fan and power supply modules in the appropriate aisle and the center-mount bracket has its screw holes aligned to screw holes on the two-post rack.

If these modules have a blue coloring for port-side exhaust airflow, then you must position the modules by the cold aisle. If the modules have a burgundy coloring for port-side intake airflow, you must position the modules by the hot aisle.
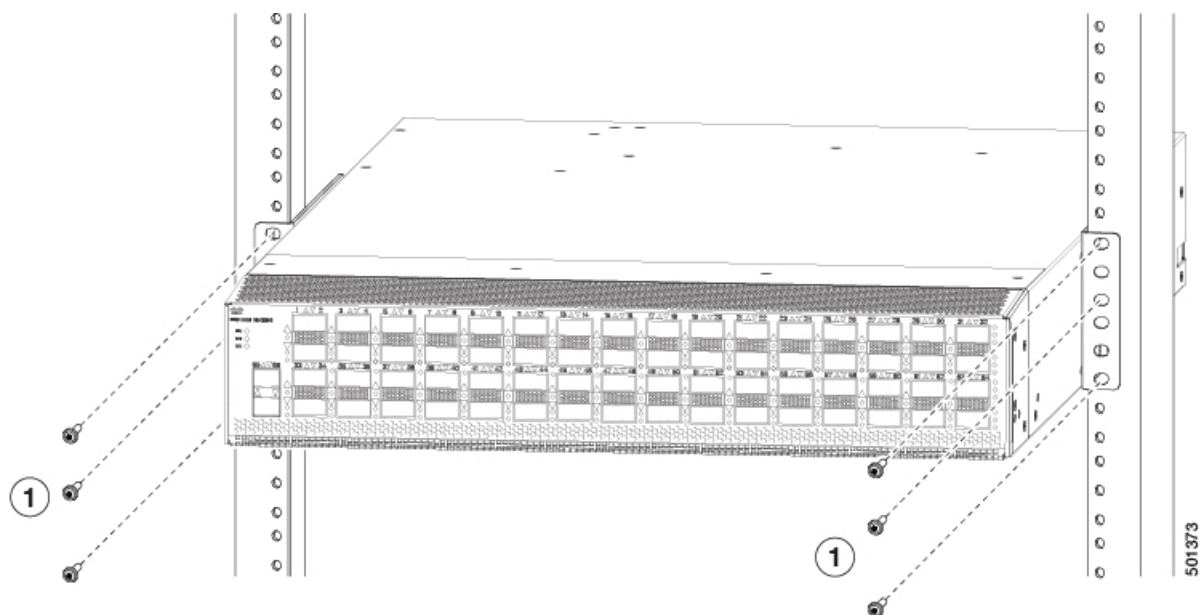
1	Three customer-supplied screws (typically M6 x 10 mm screws or the appropriate screws for the rack) to hold each side of the chassis to the two-post rack.		

Step 5 Use the second person to secure the three customer-supplied rack-mount screws (typically M6 x 10 mm or other appropriate screws for the rack) on each center-mount bracket to attach the chassis to the rack. Tighten each screw to the appropriate torque setting for the screws (for M6 x 10 mm screws, use 40 in-lbs [4.5 N·m] of torque).

Grounding the Chassis

The switch chassis is automatically grounded when you properly install the switch in a grounded rack with metal-to-metal connections between the switch and rack.

You can also ground the chassis, which is required if the rack is not grounded, by attaching a customer-supplied grounding cable. Attach the cable to the chassis grounding pad and the facility ground.

Warning **Statement 1024**—Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, 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

To reduce risk of electric shock, 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.

Step 1   Use a wire-stripping tool to remove approximately 0.75 inch (19 mm) of the covering from the end of the grounding wire. We recommend 6-AWG wire for the U.S. installations.

Step 2   Insert the stripped end of the grounding wire into the open end of the grounding lug. Use a crimping tool to crimp the lug to the wire, see 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.
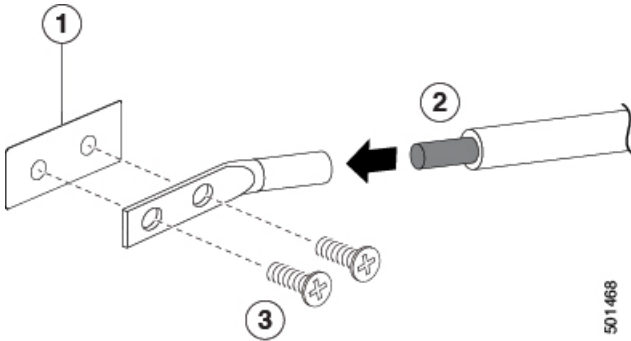
1	Chassis grounding pad	3	2 M4 screws are used to secure the grounding lug to the chassis
2	Grounding cable, with 0.75 in. (19 mm) of insulation that is stripped from one end, which is inserted into the grounding lug and crimped in place		

Step 3   Secure the grounding lug to the chassis grounding pad with two M4 screws, see the previous figure. Tighten the screws to 11 to 15 in-lb (1.24 to 1.69 N·m) of torque.

Step 4   Prepare the other end of the grounding wire and connect it to the facility ground.

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 HVAC/HVDC power supplies, connect those power supplies to a power source as follows:

    a) Using the recommended high voltage power cable for your country or region, connect the Anderson Power Saf-D-Grid connector on the power cable to the power receptacle on the power supply. Make sure that the connector clicks when fully pushed into the receptacle.

    b) Connect the other end of the power cable to a power source.

- When connecting to an HVAC power source, insert the C14 or LS-25 plug in a receptacle for the HVAC power source.

- When connecting to an HVDC power source, do the following:

    1. Verify that the power is turned off at a circuit breaker for the power source terminals.

    2. Remove the nuts from each of the terminal posts for the power supply.

    3. Place the power cable negative-wire terminal ring on the negative terminal for the power source and secure them with a terminal nut.

    4. Place the power cable positive-wire terminal ring on the positive terminal for the power source and secure them with a terminal nut.

    5. Place the power cable ground-wire terminal ring on the ground terminal for the power source and secure them with a terminal nut.

    6. If there is a safety cover for the power source terminals, place and secure it over the terminals to avoid an electrical shock hazard.

    7. Turn on the power at the power source circuit breaker.

Step 3   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 4   Listen for the fans; they should begin operating when the power cable is plugged in.

Step 5   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

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

Note 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.

⚠️

Caution   The console port can be used to connect to a modem. If you do not connect it to a modem, connect it either before powering the switch on or after the switch has completed the boot process.

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 the Management Interface

Before you begin

To prevent an IP address conflict, you must complete the initial configuration and establish an IP address for the switch.

Step 1   Connect the appropriate modular cable to on the switch.

Step 2   Connect the other end of the cable to the switch, hub, or router.

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.

Step 1 Attach an ESD-preventive wrist strap and follow its instructions for use.

Step 2 Remove the dust cover from the port cage.

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

Step 4 Insert the transceiver into the port as follows:

- If the transceiver has a Mylar tab latch, position the transceiver with the tab on the bottom, and then gently insert the transceiver into the port until it clicks into place.

- If the transceiver has a bale clasp latch, position the transceiver with the clasp on the bottom, close the clasp by pushing it up over the transceiver, and then gently insert the transceiver into the port until it clicks into place.

Caution If the transceiver does not install easily, ensure that it is correctly positioned and the tab or clasp are in the correct position before continuing.

Installing QSFP+ Transceivers

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

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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

Note	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. Contamination increases attenuation (loss of light) 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 the fiber-optic connection cleaning procedures for your site.

- 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.

Replacing Modules

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.

Warning

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 a 2 (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.

> **Warning**   **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   Remove the fan module that you are replacing as follows:

    a) Loosen the captive screws on the fan module by turning them counterclockwise, using a flat-blade or number 1 Phillips screwdriver if required.

    b) Grasp the captive screws of the fan module and pull it outward.

    c) Pull the fan module clear of the chassis and set it on an antistatic surface or repack it in packing materials.

Step 2   Install the replacement fan module as follows:

a) Hold the fan module with the sheet metal flange holding the connector on the bottom.

b) Place the fan module into the front chassis cavity so it rests on the chassis, and then push the fan module into the chassis as far as it can go until the captive screw makes contact with the chassis.

c) Tighten the captive screw.

d) Listen for the fans if the device is powered on. You should immediately hear them operating. If you do not hear them, ensure that the fan module is inserted completely in the chassis and the faceplate is flush with the outside surface of the chassis.

e) Verify that the LED is green. If the LED is not green, one or more fans are faulty. If this problem occurs, contact your customer service representative for a replacement part.

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).

APPENDIX B

System Specifications

- Environmental Specifications, on page 53
- Switch Dimensions, on page 53
- AC Power Cable Specifications, on page 54
- DC Power Cable Specifications, on page 54
- HVDC Power Cable Specifications, on page 55

Environmental Specifications

Environment		Specification
Temperature	Ambient operating temperature	32 to 104°F (0 to 40°C)
	Ambient nonoperating	–40 to 158°F (–40 to 70°C)
Humidity	Ambient operating humidity	10 to 85%
	Ambient nonoperating	5 to 95%
Altitude	Ambient operating altitude	0 to 10,000 feet (0 to 3050 m)
	Ambient nonoperating	–1000 to 30,000 feet (–304 to 15,150 m)

Switch Dimensions

Switch Component	Width	Depth	Height
Cisco Nexus 34180YC chassis	17.3 inches (43.9 cm)	25.7 inches (65.2 cm)	1.72 inches (4.37 cm) (1 RU)
Cisco Nexus 3464C chassis	17.4 inches (44.1 cm)	22.5 inches (57.1 cm)	3.38 inches (8.6 cm) (2 RU)

AC Power Cable Specifications

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

DC Power Cable Specifications

Power Supply	Power Cord	Cord Set Description
All except Argentina, Brazil, and Japan	NO-POWER-CORD	No power cord included with switch

Note   For N2200-PDC-350W-B or N2200-PDC-400W DC power supplies

The terminal block used (2-position) accepts wire sizes 22AWG-14AWG.

For the maximum input current of approximately 15A, a 18AWG wire meets minimum requirements. 16AWG adds some margin, and is recommended.

There is no earth ground connection on this input terminal block, thus the earth grounding is provided by the system being grounded.

HVDC Power Cable Specifications

Type	Power Cord Part Number	Cord Set Description
HVDC	CAB-HVDC-3T-2M	6.6-foot (2.0 m) cable with Saf-D-Grid and three terminal connectors

HVDC Power Cable Specifications

LEDs

Chassis LEDs

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

Component	LED	Status	Description
Chassis (front and back)	Beacon (BCN)	Flashing blue	The operator has activated this LED to identify this switch in the chassis.
	Identification (ID)	On (blue)	Identifies the chassis receiving the beacon signal.
	Management (MGMT)	Left side Off	This port has no physical link.
		Solid on (green)	This port has a physical link.
		Right side Off	This port has no activity.
		Blinking (green)	This port has activity.
	Port	Customer defined states	Green and amber LED used to indicate customer-defined status for each port.
		Off	This port is not in use. This port is unusable during breakout.
	Status (STS)	Solid on (green)	All diagnostics pass. The module is operational.
		Off	The module is not receiving power.
		On (amber)	

Component	LED	Status	Description
			The module is booting or running diagnostics.
			The switch is overheating. The temperature threshold has been exceeded by a small value during environmental monitoring.
		Blinking (amber)	The switch has overheated. The temperature threshold has been exceeded by a large value during environmental monitoring.
			If the module fails during initial reset, the LED continues to blink and the module does not come online.
			The module has a runtime failure and is brought offline.

Fan LEDs

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

LEDs

Power Supply LEDs

Component	LED	Status	Description
Fan	Status	Solid on (green)	All diagnostics pass. The module is operational.
		Off	The module is not receiving power.
		Solid on (amber)	The module is booting or running diagnostics.
		Blinking (amber)	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.

Power Supply LEDs

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

Component	LED	Status	Description
Power supply	OK (green)	Solid on	Power supply is on and okay.
		Blinking	3.3 voltage standby (VSB) is on but the power supply unit is not powering the other modules.
		Off	No power to the power supply.
	FAULT (amber)	Solid on	Power supply failure, overvoltage, overcurrent, or overheating.
		Blinking	Power is present, 3.3 VSB on, and the power supply is off. PSU fan rotor is not functioning normally.
		Off	Operating normally.

Spare Parts Table

- Spares Support Table, on page 62

Spares Support Table

Product	Chassis Height (Rack Units)	Power Supply Options	Fan Options	Accessory Kits
Nexus 34180YC	1 RU	AC port-side intake (NXA-PAC-650W-PI) AC port-side exhaust (NXA-PAC-650W-PE) HVAC/HVDC dual-direction airflow (N9K-PUV-1200W) DC port-side exhaust (NXA-PDC-930W-PE) DC port-side intake (NXA-PDC-930W-PI) 930W-DC PSU is supported in redundancy mode if 3.5W QSFP+ modules or Passive QSFP cables are used & the system is used in 40C ambient temp or less; for other optics or higher ambient temps, 930W-DC is supported with 2 PSU's in non-redundancy mode only.	Port-side exhaust (NXA-FAN-30CFM-F) Port-side intake (NXA-FAN-30CFM-B) [1]	Accessory kit (N9K-C9300-ACK) Rack mount kit (NXK-ACC-KIT-1RU) Filler blank module (N2200-P-BLNK)
Nexus 3464C	2 RU	AC port-side exhaust (NXA-PAC-1200W-PE) AC port-side intake (NXA-PAC-1200W-PI) HVAC/HVDC dual-direction (N9K-PUV-1200W)	Port-side exhaust (NXA-FAN-160CFM-PE) Port-side intake (NXA-FAN-160CFM-PI)	Accessory kit (N9K-C9300-ACK) Rack mount kit (N9K-C9300-RMK)

[1] **Note** *Table 1: Fan Speeds for this Switch*

	Port-Side Intake Fan Speed %	**Port-Side Exhaust Fan Speed %**
Typical/Minimum	50%	50%
Maximum	100%	100%