Cisco N93108TC-FX3 Hardware Installation Guide for Nexus Hyperfabric

Cisco Nexus Hyperfabric
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1 Overview

Topics:

- Overview

Overview of the Cisco N93108TC-FX3 switch and its components.

Overview

This topic explains the hardware specifications and features of the Cisco N93108TC-FX3 switch, including its versatile port configurations, high-bandwidth capabilities, and user-replaceable components like fan modules and power supplies designed for efficient data center deployments.

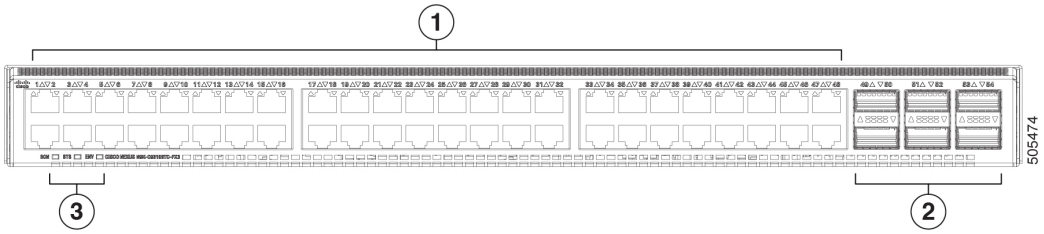
The Cisco N93108TC-FX3 switch is a 1-rack-unit (RU) switch that supports 2.16 terabits per second (Tbps) of bandwidth and 1.2 billion packets per second (Bpps). The 48 10GBASE-T downlink ports on the N93108TC-FX3 can be set to operate at 100 megabits per second (Mbps), 1 gigabit per second (Gbps), or 10 gigabits per second (Gbps). The uplink can support up to six ports operating at 40 Gbps or 100 Gbps, or a combination of 10 Gbps, 25 Gbps, 40 Gbps, and 100 Gbps for flexible data center deployment. The switch provides the following ports and capabilities.

- 48 ports supporting 100M, 1G, or 10GBASE-T (ports 1 through 48),
- 6 ports supporting 40-gigabit or 100-gigabit QSFP28 (ports 49 through 54),
- two management ports (one 10/100/1000BASE-T port and one SFP port),
- one console port (RS-232), and
- one USB port.

Operating system support

This switch supports the Cisco Nexus Hyperfabric operating system.

Figure 1: Cisco N93108TC-FX3 switch—Front view



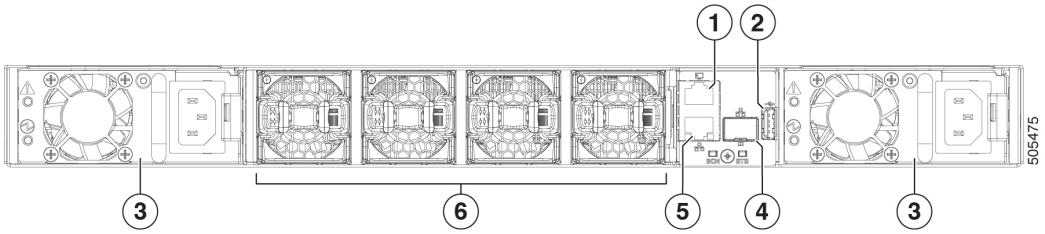
The table lists the components on the front panel of the chassis.

Table 1: Front view of the Cisco N93108TC-FX3 switch

Port	Description
1	48 100M/1G/10GBASE-T ports
2	6 40/100-Gigabit QSFP28 ports
3	BCN, STS, ENV LEDs

To determine which transceivers, adapters, and cables are supported by this switch, see the Cisco Transceiver Modules Compatibility Information document.

Figure 2: Cisco N93108TC-FX3—Rear view



The table lists the components on the rear view of the Cisco N93108TC-FX3 switch with power supplies and fan tray.

Table 2: Rear view of the Cisco N93108TC-FX3 switch

Port	Description
1	1 Console port
2	1 USB port
3	Power supply modules (1 or 2) AC power supplies are installed in slots numbered 1 (left) and 2 (right).
4	1 SFP optical management port.
5	1 RJ-45 copper management port.
6	Fan tray Four fan modules are installed in slots numbered from 1 to 4 (left to right)

This switch includes these user-replaceable components:

- Fan modules (four) with the following airflow choices:
  - Port-side exhaust fan module with blue coloring (NXA-SFAN-35CFM-PE)
  - Port-side intake fan module with burgundy coloring (NXA-SFAN-35CFM-PI)

> **Note**
>
> This switch will power down due to a fan-policy trigger if fewer than 3 fans are operational.

> **Note**
>
> Each fan module contains two rotors. If a rotor in any one fan module fails, the switch continues to function normally. If more than one rotor fails, the switch will issue a warning and power down within 2 minutes.

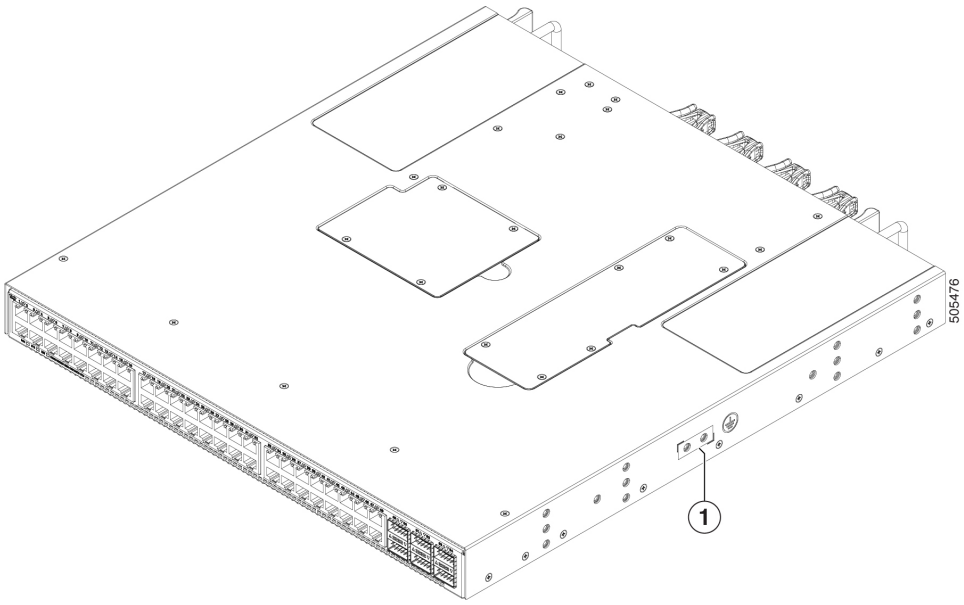
> **Note**
>
> This switch runs with +1 redundancy mode, so that if one fan fails, the switch can sustain operation. But if a second fan fails, this switch is not designed to sustain operation. Hence before waiting for major threshold temperature to be hit, the switch will power down due to **Powered-down due to fan policy trigger**.

- The switch includes two power supply modules—one for operations and one for redundancy (1+1)—with the following choices:
  - 500-W port-side intake AC power supply with burgundy coloring (NXA-PAC-500W-PI)
  - 500-W port-side exhaust AC power supply with blue coloring (NXA-PAC-500W-PE)
  - 1200-W port-side intake HVAC/HVDC dual-direction power supply with white coloring (N9K-PUV-1200W)
  - 930-W port-side intake DC power supply with burgundy coloring (NXA-PDC-930W-PI)
  - 930-W port-side exhaust DC power supply with blue coloring (NXA-PDC-930W-PE).

> **Note**
>
> All fan modules and power supplies must use the same airflow direction.

The figure illustrates the side view of the chassis.

Figure 3: Cisco N93108TC-FX3 switch—side view of the chassis



This table lists the components on the side view of the chassis.

Table 3: Side view of the Cisco N93108TC-FX3 switch

Port	Description
1	Grounding pad

Depending on whether you plan to position the ports in a hot or cold aisle, you can order the fan and power supply modules with port-side intake or port-side exhaust airflow. For port-side intake airflow, the fan and power supplies have burgundy coloring. For port-side exhaust airflow, the fan and power supplies have blue coloring.

The fan and power supply modules are field-replaceable. You can replace one module during operation if all other modules are installed and functioning. If only one power supply is installed, insert the replacement in the open slot before removing the original power supply.

Caution

If the switch has port-side intake airflow (burgundy coloring for fan modules), you must locate the ports in the cold aisle. If the switch has port-side exhaust airflow (blue coloring for fan modules), you must locate the ports in the hot aisle. The switch can overheat and shut down if you locate the air intake in a hot aisle.

2 Prepare the site

Topics:

- Temperature requirements
- Humidity requirements
- Altitude requirements
- Dust and particulate requirements
- Minimizing electromagnetic and radio frequency interference
- Shock and vibration requirements
- Preventing electrostatic discharge damage
- Ground requirements
- Plan for power requirements
- Airflow requirements
- Rack and cabinet requirements
- Clearance requirements
- Network Equipment-Building System (NEBS) Statements

Prepare the site to install your N93108TC-FX3 switch.

Temperature requirements

This section describes the required environmental temperature operating ranges for the Cisco N93108TC-FX3.

The operating temperature of the switch is 32° F to 104° F (0° C to 40° C) at 5000 feet (1524 meters) at sea level.

For every 1000 feet (300 meters) above sea level, the maximum temperature is reduced by 1° C.

The non-operating temperature of the switch is -40 to 158 degrees Fahrenheit (-40 to 70° C) at 3000 meters (9842 feet).

Overview of Module Temperatures

Built-in, automatic sensors monitor your switch at all times. Each module (supervisor, I/O, and fabric) has temperature sensors with two thresholds:

> **Note**
>
> For any major temperature alarms from the sensors, the switch powers down in two minutes. Power on the switch after fixing the temperature issue.

- Minor temperature threshold—If exceeded, a minor alarm occurs and these actions happen for all four sensors:
  - The system displays system messages.
  - The system sends Call Home alerts if those alerts are configured.
  - The system sends Simple Network Management Protocol (SNMP) notifications if those notifications are configured.
  - The system increases fan speed.
- Major temperature threshold—If exceeded, a major alarm occurs and these actions happen for all sensors:
  - The system displays system messages.
  - The system sends Call Home alerts if those alerts are configured.
  - The system sends Simple Network Management Protocol (SNMP) notifications if those notifications are configured.
  - The system increases fan speed.
  - If the major threshold is exceeded in a switching module, only that module is shut down.
  - If the major threshold is exceeded in an active supervisor module with HA-standby or standby present, only that supervisor module is shut down and the standby supervisor module takes over.
  - If you do not have a standby supervisor module in your switch, you have 2 minutes to decrease the temperature. During this interval, the software monitors the temperature every 5 seconds and continuously sends system messages every 10 seconds, as configured.

Humidity requirements

This topic explains the effects of high humidity on the Cisco N93108TC-FX3 switch, including potential moisture damage and corrosion, and specifies the acceptable operating and nonoperating humidity ranges.

High humidity can cause moisture to enter the switch. Moisture can cause corrosion of internal components. It can also degrade properties such as electrical resistance, thermal conductivity, physical strength, and size. The switch is rated to withstand from 5 to 95 percent (nonoperating) and 5 to 90 percent (operating) relative humidity.

Climate-controlled buildings usually maintain an acceptable level of humidity for the switch equipment. If the switch is located in an unusually humid location, use a dehumidifier to maintain the humidity within an acceptable range.

Altitude requirements

This topic explains the altitude requirements for operating the Cisco N93108TC-FX3 switch.

Altitude rating is 10,000 feet (3,048 meters).

For China, it is 6,562 feet (2000 meters).

Dust and particulate requirements

This topic explains how to keep your switch environment free of dust and particles.

Exhaust fans cool power supplies. System fans cool switches by drawing in air and exhausting it through various openings in the chassis. However, fans can introduce dust and other particles. These contaminants build up inside the switch, raising the internal chassis temperature. Dust and particles insulate components and interfere with the mechanical components of the switch. Maintain a clean operating environment to reduce the negative impact of dust and other particles.

In addition to keeping your environment free of dust and particles, use these precautions to avoid contamination of your switch:

- Do not smoke near the switch.
- Do not eat or drink near the switch.

Minimizing electromagnetic and radio frequency interference

This topic explains the effects of electromagnetic interference (EMI) and radio frequency interference (RFI) from the switch on nearby devices such as radios, televisions, and telephones, and outlines guidelines to reduce EMI and RFI.

Electromagnetic interference (EMI) and radio frequency interference (RFI) from the switch can adversely affect other devices, such as radio and television (TV) receivers. Radio frequencies emitted by the switch can interfere with cordless and low-power telephones. RFI from high-power telephones can cause spurious characters to appear on the switch monitor.

RFI is defined as any EMI with a frequency above 10 kilohertz (kHz). This type of interference travels from the switch to other devices through the power cable and power source or through the air as transmitted radio waves. The Federal Communications Commission (FCC) publishes specific regulations to limit the amount of EMI and RFI that are emitted by computing equipment. These switches comply with FCC regulations.

Reduce the possibility of EMI and RFI by following these guidelines.

- Cover all open expansion slots with a blank filler plate.
- Always use shielded cables with metal connector shells for attaching peripherals to the switch.

When wires are run for any significant distance in an electromagnetic field, interference can occur to the signals on the wires with these implications.

- Improper wiring can result in radio interference emanating from the building's wiring.

- Strong EMI from lightning or radio transmitters can damage signal drivers and receivers in the chassis and create electrical hazards by sending power surges through lines into equipment.

> **Note**
>
> To predict and prevent strong EMI, consult experts in radio frequency interference (RFI).
>
> If you use a twisted-pair cable with a good distribution of grounding conductors, the wiring is unlikely to emit radio interference. Copper cables should not be longer than the maximum distances for the media type.

> **Caution**
>
> If the wire length exceeds the recommended distance, or if wires pass between buildings, consider the risks associated with lightning strikes. The electromagnetic pulse that is caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded conductors to destroy electronic switches. Consult experts in electrical surge suppression and shielding if you have had similar problems in the past.

Shock and vibration requirements

This topic explains whether the switch will withstand shock and vibration.

The switch has been shock- and vibration-tested for operating ranges, handling, and earthquake standards.

Preventing electrostatic discharge damage

This topic explains why you must use and regularly test electrostatic discharge (ESD) preventive wrist straps to protect switch components from static electricity damage.

Many switch components can be damaged by static electricity. Failing to exercise proper ESD precautions can cause intermittent or complete component failures.To minimize ESD damage, always use an ESD-preventive wrist strap or ankle strap and ensure it makes adequent skin contact.

> **Note**
>
> Check the resistance value of the ESD-preventive strap periodically. The measurement should be 1–10 megohms. Before you perform any of the procedures in this guide, attach an ESD-preventive strap to your wrist and connect the leash to the chassis.

Ground requirements

This topic explains how to ground the switch to avoid voltage issues.

The switch is sensitive to variations in voltage that is supplied by the power sources. Overvoltage, undervoltage, and transients (spikes) can erase data from memory or cause components to fail. To protect against these types of problems, ensure that there is an earth-ground connection for the switch.

Connect the grounding pad on the switch directly to the earth-ground connection or to a fully bonded and grounded rack

When the chassis is properly installed in a grounded rack, the switch is grounded because it has metal-to-metal contact with the rack–free of paint, stain, dirt, or any other substances. Refer to the note to ensure proper conductivity between the rack and the switch is maintained.

Alternatively, ground the chassis by using a customer-supplied grounding cable that meets your local and national installation requirements. For U.S. installations, we recommend 6 AWG wire. Connect your grounding cable to the chassis with a grounding lug (provided in the switch accessory kit) and to the facility ground.

Note

Create an electrical conducting path between the product chassis and the metal surface of the enclosure, or rack in which it is mounted, or to a grounding conductor. Provide electrical continuity by using thread-forming type mounting screws that remove any paint or non-conductive coatings and establish a metal-to-metal contact. Remove any paint or other non-conductive coatings on the surfaces between the mounting hardware and the enclosure or rack. Clean the surfaces and apply an antioxidant before installation.

Plan for power requirements

This topic explains how to prepare power requirements for the Cisco N93108TC-FX3 switch.

The switch includes two power supplies that provide one-to-one redundancy and current sharing. Combination types include:

- Two 500-watt AC power supplies
- Two 1200-watt HVAC or HVDC power supplies
- Two 930-watt DC power supplies

Note

For 1+1 redundancy, you must use two power sources and connect each power supply to a separate power source.

Note

Some of the power supply modules have rating capabilities that exceed the switch requirements. When calculating your power requirements, use the switch requirements to determine the amount of power that is required for the power supplies.

To minimize the possibility of circuit failure, verify that each power source circuit that is used by the switch is dedicated to the switch.

Note

In any power redundancy mode, the total power is shared across the populated power supply units (PSUs). Multiple PSUs are always load-sharing regardless of the mode used. If a PSU has an active input power, the PSU provides a fraction of the total power to the system. This ensures that all active power supplies contribute to the power load, sharing it proportionally to maintain power redundancy.

Note

This Warning applies to low-voltage DC input application.

Note

Statement 1033– Safety Extra-Low Voltage (SELV)–IEC 60950/ES1-IEC 62368 DC Power Supply

To reduce the risk of electric shock, connect the unit only to a DC power source that complies with the Safety Extra-Low Voltage (SELV) requirements in IEC 60950 based safety standards or ES1 requirements in IEC 62368 based safety standards.

Note

We recommend 8-AWG wire for DC installations in the U.S.

Airflow requirements

This topic explains how to identify and configure the correct airflow direction for the Cisco N93108TC-FX3 switch.

The switch can be positioned with its ports facing either the front or the rear of the rack. The position depends on your cabling and maintenance requirements. Refer to the user-replaceable components in the *Overview* section to identify airflow options for your switch. Position the fan and power supply modules to move the coolant air from the cold aisle to the hot aisle in one of these methods.

- Port-side exhaust airflow–cool air enters the chassis through the fan and power supply modules in the cold aisle and exhausts through the port end of the chassis in the hot aisle.
- Port-side intake airflow–cool air enters the chassis through the port end in the cold aisle and exhausts through the fan and power supply modules in the hot aisle.
- Single-direction airflow–the direction of the installed fan modules determines the airflow.

The airflow direction of each fan and power supply module is identified by its coloring.

Note

To prevent the switch from overheating and shutting down, position the air intake for the switch in a cold aisle. The fan and power supply modules must have the same airflow direction. To change the airflow direction, shut down the switch before replacing the modules.

Rack and cabinet requirements

This topic explains the types of racks and cabinets suitable for installing your switch.

Install these types of racks or cabinets for your switch:

- standard perforated cabinets,
- solid-walled cabinets with a roof fan tray (bottom to top cooling), and
- standard open four-post Telco racks.

Work with your cabinet vendors to determine which of their cabinets meet these requirements, or consult the Cisco Technical Assistance Center (TAC) for recommendations.

- Use a standard 19 inches (48.3 cm), four-post Electronic Industries Alliance (EIA) cabinet or rack with mounting rails that conform to English universal hole spacing per Section 1 of the ANSI/EIA-310-D-1992 standard.
- The depth of a four-post rack must be 24 to 32 inches (61.0 to 81.3 cm) between the front and rear mounting rails for proper mounting of the bottom-support brackets or other mounting hardware.

Also, you must have power receptacles that are located within reach of the power cords that are used with the switch.

Warning

Statement 1048—Rack Stabilization

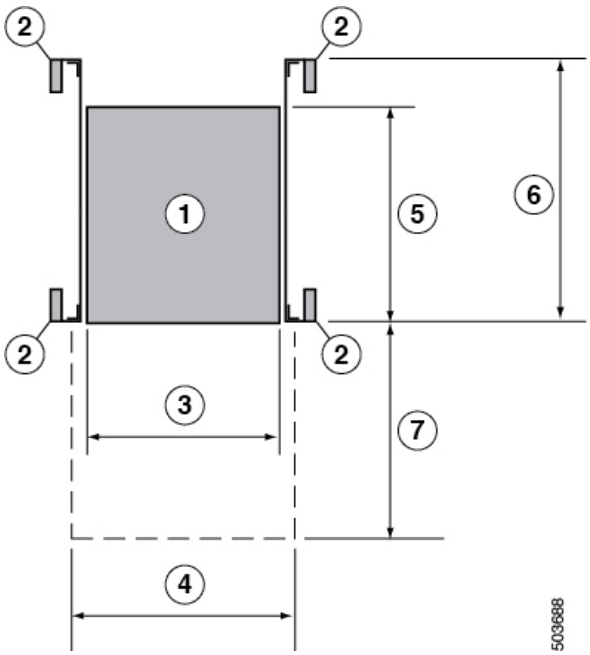
The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before installation or servicing. Failure to stabilize the rack can cause bodily injury.

Clearance requirements

This topic explains the required chassis clearances between the chassis and any other rack, device, or structure for installation, cable routing, airflow, and maintenance.

Ensure adequate clearance between the chassis and any other rack, device, or structure for proper installation, cable routing, airflow, and maintenance of the switch. The required clearances for installing this chassis in a four-post rack are illustrated in the figure.

Figure 4: Clearance requirements in a four-post rack



Note

Both the front and rear of the chassis must be open to both aisles for airflow.

This table lists the dimensions that are required when you install this chassis in a four-post rack.

Table 4: Dimensions required for chassis clearance in a four-post rack

Callout	Description
1	Chassis
2	Vertical rack-mount posts and rails
3	Chassis width 17.3 in (43.9 cm)
4	The width of the front clearance area equals the width of the chassis when two rack-mount brackets are attached 19.0 in (43.3 cm)
5	Depth of the chassis
6	Maximum extension of the bottom-support rails 36.0 in (91.0 cm)
7	The depth of the front clearance area is equal to the depth of the chassis.

Network Equipment-Building System (NEBS) Statements

This topic explains the NEBS statements for safety, spatial and environmental design that are applicable to the Cisco N93108TC-FX3 switches.

NEBS describes the environment of a typical United States Regional Bell Operating Company (RBOC) central office. NEBS is the most common set of safety, spatial, and environmental design standards applied to telecommunications equipment in the United States. It is not a legal or regulatory requirement, but rather an industry requirement.

These NEBS statements apply to the Cisco N93108TC-FX3. switches.

Note

Statement 7001—ESD Mitigation

This equipment may be ESD sensitive. Always use an ESD ankle or wrist strap before handling equipment. Connect the equipment end of the ESD strap to an unfinished surface of the equipment chassis or to the ESD jack on the equipment if provided.

Warning

Statement 7003 –Shielded Cable Shielded Cable Requirements for Intrabuilding Lightning Surge

The intrabuilding port(s) of the equipment or subassembly must use shielded intrabuilding cabling/wiring that is grounded at both ends.

The following port(s) are considered intrabuilding ports on this equipment:

RJ-45 Management Ethernet Port

Note

Statement 7004— Special Accessories Required to Comply with GR-1089 Emission and Immunity Requirements

To comply with the emission and immunity requirements of GR-1089, shielded cables are required for the following ports:

Copper RJ-45 Ethernet Management port

Warning

Statement 7005—Intrabuilding Lightning Surge and AC Power Fault

The intrabuilding port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the outside plant (OSP) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

This statement applies to the intrabuilding ports listed below:

RJ-45 Ethernet Management port

Warning

Statement 7012–Equipment Interfacing with AC Power Ports

Connect this equipment to AC mains that are provided with a surge protective device (SPD) at the service equipment that complies with NFPA 70, the National Electrical Code (NEC).

Note

Statement 7013–Equipment Grounding Systems–Common Bonding Network (CBN)

This equipment is suitable for installations using the CBN.

Note

Statement 7015–Equipment Bonding and Grounding

When you use thread-forming screws to bond equipment to its mounting metalwork, remove any paint and nonconductive coatings and clean the joining surfaces. Apply an antioxidant compound before joining the surfaces between the equipment and mounting metalwork.

Note

Statement 7016 –Battery Return Conductor

Treat the battery return conductor of this equipment as DC-I.

Note

Statement 7018–System Recover Time

The equipment is designed to boot up in less than 30 minutes provided the neighboring devices are fully operational.

Note

Statement 8015–Installation Location Network Telecommunications Facilities

This equipment is suitable for installation in network telecommunications facilities.

Note

Statement 8016–Installation Location Where the National Electric Code (NEC) Applies

This equipment is suitable for installation in locations where the NEC applies.

Warning

Statement 1056–Unterminated Fiber Cable

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments, for example, eye loupes, magnifiers, and microscopes, within a distance of 100 mm, may pose an eye hazard.

Warning

Statement 1255–Laser Compliance Statement

Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.

3 Install the chassis

Topics:

- Safety
- Install options with rack-mount kits
- Airflow considerations
- Installation guidelines
- Unpack and inspect a new switch
- Procure tools and equipment
- Install the chassis in a four-post rack using the NXK-ACC-KIT-1RU rack-mount kit
- Install the chassis in a four-post rack using the NXK-ACC-KIT2-2RU rack-mount kit
- Ground the chassis
- Start the switch prerequisites

Describes the safety warnings, how to install, rack-mount, and start the switch.

Safety

This topic explains the safety warnings to adhere to before you install the switch.

Before you install, operate, or service the switch, see the *Regulatory, Compliance, and Safety Information for the Cisco N93108TC-FX3 Switch* content for important Safety Information.

Warning

Statement 1071 –Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number provided at the end of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS

Note

Statement 1089–Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

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.

Note

Statement 407–Japanese Safety Instruction

You are strongly advised to read the safety instruction before using the product.

https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html

When installing the product, use the provided or designated connection cables/power cables/AC adapters.

〈製品使用における安全上の注意〉

www.cisco.com/web/JP/techdoc/index.html

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Warning

Statement 1017–Restricted Area

This unit is intended for installation in restricted access areas. Only skilled, instructed, or qualified personnel can access a restricted access area.

Warning

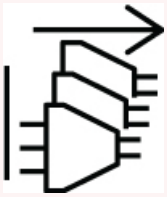
Statement 1091–Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

Warning

Statement 1028–More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning

Statement 1003—Power Disconnection

To reduce risk of electric shock or personal injury, disconnect power before removing or replacing components or performing upgrades.

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.

If your unit has modules, secure them with the provided screws.

Warning

Statement 1022—Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

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 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.

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.

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.

Note

For AC input application, please refer to the statement below:

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 20A (North America), 16A (Europe), and 13A (UK).

Note

For DC input application, please refer to the statement below:

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 40A for the regular DC power supplies.

Warning

Statement 1033–Safety Extra-Low Voltage (SELV)–IEC 60950/ES1-IEC 62368 DC Power Supply

To reduce the risk of electric shock, connect the unit only to a DC power source that complies with the Safety Extra-Low Voltage (SELV) requirements in IEC 60950 based safety standards or ES1 requirements in IEC 62368 based safety standards.

Install options with rack-mount kits

This topic explains how the rack-mount kit enables flexible switch installation in racks of varying depths, ensuring accessible ports and modules.

The rack-mount kit enables you to install the switch into racks of varying depths. Position the switch so that you can easily access either the port connections or the fan and power supply modules.

You can install the switch using these rack-mount options.

- Rack-mount kit (NXK-ACC-KIT-1RU), which you can order from Cisco: this option offers easy installation, greater stability, increased weight capacity, added accessibility, and improved removability with both front and rear removal.
- Rack-mount kit (N3K-C3064-ACC-KIT), which you can order from Cisco.

Your rack or cabinet must meet the requirements listed in the General requirements for cabinets and racks on page 64 section.

Note

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

Airflow considerations

This topic explains how to identify the correct airflow configuration for your switch by verifying the color-coded fan and power supply modules.

The switch comes with fan and power supply modules that have either port-side intake or port-side exhaust airflow for cooling the switch. If you are positioning the port end of the switch in a cold aisle, verify that the switch has port-side

intake fan modules with burgundy coloring. If you are positioning the fan and power supply modules in a cold aisle, use port-side exhaust fan modules with blue coloring. All fan modules must have the same direction of airflow.

Installation guidelines

This topic explains the essential installation guidelines for the switch, including requirements for proper clearance, airflow configuration, grounding, and power. It provides instructions on positioning the switch within a rack to ensure optimal cooling and reliable operation in your data center environment.

When installing the switch, adhere to these guidelines:

- Ensure that there is adequate clearance space around the switch for both servicing and airflow.
- Ensure that you position the switch in a rack so it takes in cold air from the cold aisle and exhausts air to the hot aisle. If the fan modules are blue, the switch uses port-side exhaust airflow, and the module side should face the cold aisle. If the fan modules are burgundy, the switch uses port-side intake airflow, and the port side should face the cold aisle.
- Ensure that the chassis can be adequately grounded. If the switch is not in a grounded rack, connect the system ground on the chassis directly to an earth ground.
- Ensure that the site power meets the power requirements for the switch. If available, you can use an uninterruptible power supply (UPS) to help protect against power failures.

> ⚠ **Caution**
>
> Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with the switch, which can have substantial current draw fluctuations because of fluctuating data traffic patterns.

Ensure that circuits are sized according to local and national codes. Typically, this requires one or both of these options: AC power supplies typically require at least a 15 A or 20 A AC circuit, 100 to 240 VAC, and a frequency of 50 to 60 Hz.

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.

Note

For AC input application, refer to the AC circuit breaker statement.

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 20 A (North America), 16 A (Europe), and 13 A (UK).

Unpack and inspect a new switch

Learn how to properly unpack, inspect, and handle a new switch chassis.

Before you install a new chassis, unpack and inspect it to be sure that you have all the items that you ordered. Verify that the switch was not damaged during shipment. If anything is damaged or missing, contact your customer representative immediately.

Follow these steps to unpack and inspect the switch.

Caution

When you handle the chassis or its components, always follow ESD protocol to prevent damage. The protocol includes wearing an ESD wrist strap. To ground the strap, attach it directly to an earth ground or to a grounded rack or grounded chassis (there must be a metal-to-metal connection to the earth ground).

Tip

Do not discard the shipping container when you unpack the switch. Flatten the shipping cartons and store them. Keep the shipping container to use again if you move or ship the system in the future.

Procedure

1. Compare the shipment to the equipment list from your customer service representative and verify that you have received all ordered items.

   The shipment should include:

   - Switch chassis, and
   - Switch accessory kit.

2. Check the contents of the shipping box for damage.
3. If you notice any discrepancies or damage, send this information to your customer service representative by email:
   - Invoice number of the shipper (see packing slip),
   - Model and serial number of the missing or damaged unit, and
   - Description of the problem and how it affects the installation.

Procure tools and equipment

This topic explains how to procure the essential tools and equipment required for installing the chassis.

Obtain the necessary tools and equipment for installing the chassis:

- Number one and number two Phillips screwdrivers with torque capability to rack-mount the chassis,
- Three-sixteenths-inch flat-blade screwdriver,
- Tape measure and level,
- Electrostatic discharge (ESD) wrist strap or other grounding device,
- Antistatic mat or antistatic foam,
- Crimping tool for lug,

- Wire stripping tool,
- Sixteen M4 screws to fix brackets, and
- Two M4 screws to fix a ground lug.

Install the chassis in a four-post rack using the NXK-ACC-KIT-1RU rack-mount kit

This topic explains how to prepare for chassis installation by ensuring the rack is securely fastened to the data center floor and reviewing the items included in the rack-mount kit.

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

This table lists the items contained in the NXK-ACC-KIT-1RU rack-mount kit.

Note

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

Table 5: Contents in the rack-mount kit

Quantity	Part Description
2	Front rack-mount brackets
10 - 12	M4 x 0.7 x 8 mm Phillips countersink screws
2	Rear rack-mount brackets
2	Slider rails

Rack-mount the chassis in a four-post rack

Learn how to install rack-mount brackets, guides, and guide rails on your switch in a four-post rack.

To install the switch, perform these steps: 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.

Procedure

1. Install two front rack-mount brackets and the two rear rack-mount brackets to the switch.
   a) Determine which end of the chassis is to be located in the cold aisle.

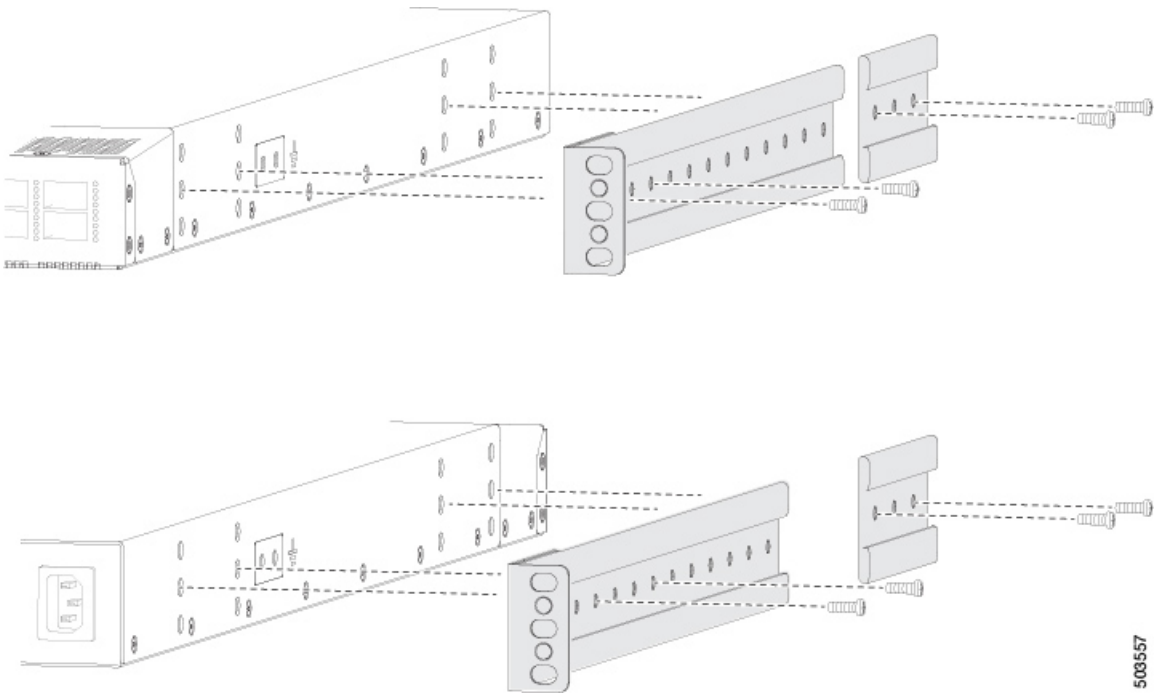
      If the switch has port-side intake modules (fan modules and power modules with burgundy coloring), position the switch so that the ports are in the cold aisle.

      If the switch has port-side exhaust modules (fan modules with blue coloring), position the switch so that its fan and power supply modules are 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**
>
> 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 the 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 5: Front and Rear Rack Mount Brackets on the side of chassis



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

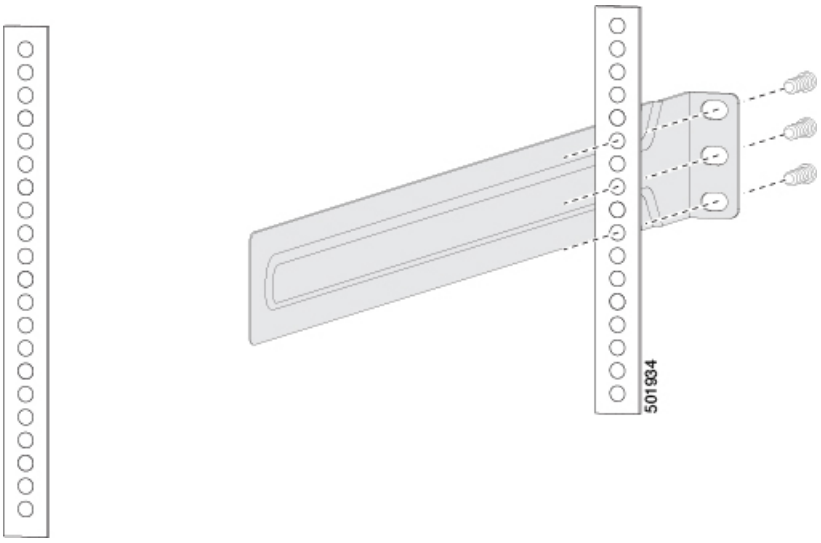
d) Repeat Step 1 for the other front rack-mount bracket and the other back-mount bracket on the other side of the switch. Be sure to position that bracket the same distance from the front of the switch.

> **Note**
>
> Depending on the chassis depth, the back rack-mount bracket may not fit. In that case, you do not need the back rack-mount bracket.

2. If you are not installing the chassis into a grounded rack, attach a customer-supplied grounding wire to the chassis as explained in the Ground the chassis on page 43 section. If you are installing the chassis into a grounded rack, skip this step.
3. Install the slider rails on the rack or cabinet.
   a) Determine which two posts of the rack or cabinet you should use for the slider rails. Two of the four vertical posts in the rack or cabinet will support the front-mount brackets attached to the end of the chassis that is easiest to access. The other two posts will support the slider rails.

b) Position a slider rail at the desired level on the back side of the rack. Use 12-24 screws or 10-32 screws, depending on the rack thread type. To attach the rails to the rack, see the figure. Tighten 12-24 screws to 30 in-lb (3.39 N·m) of torque. Tighten 10-32 screws to 20 in-lb (2.26 N·m) of torque.

Figure 6: Slider rail on the rack



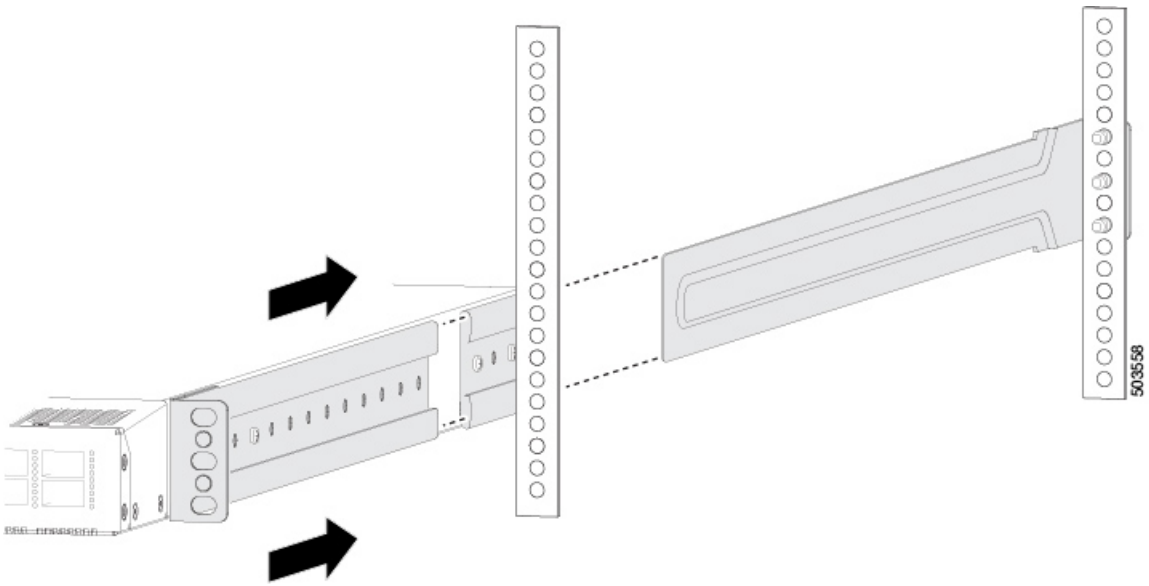
c) Repeat Step 3 to attach the other slider rail to the other side of the rack.

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.

4. Insert the switch into the rack and attach it.

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 figure).

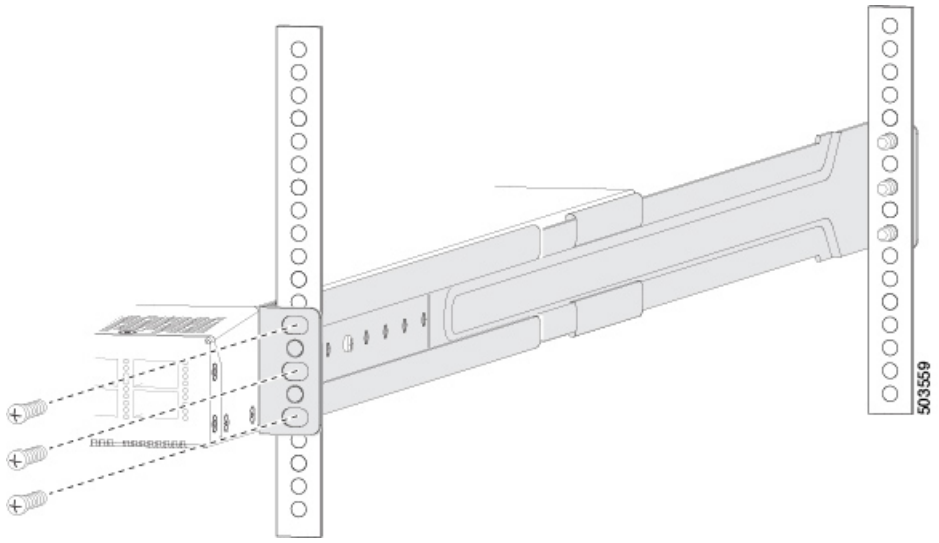
Figure 7: Position of the two rear rack-mount brackets



b) Align the two rack-mount guides on each side of the switch with the guide rails installed in the rack. Slide the rack-mount guides onto the guide rails. 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) While 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 six screws) and into the cage nuts or threaded holes in the vertical rack-mounting rail (see the figure).

Figure 8: Location of the screws on the front rack-mount brackets



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).

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

Install the chassis in a four-post rack using the NXK-ACC-KIT2-2RU rack-mount kit

This topic explains how to prepare for chassis installation by ensuring the rack is securely fastened to the data center floor and reviewing the items included in the rack-mount kit.

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

This table lists the items contained in the NXK-ACC-KIT2-2RU rack-mount kit.

Table 6: Contents in the rack-mount kit

Quantity	Part Description
2	Rack-mount inner rails
12	Flat head screws
2	Rack-mount outer rails

Rack-mount the chassis in a four-post rack

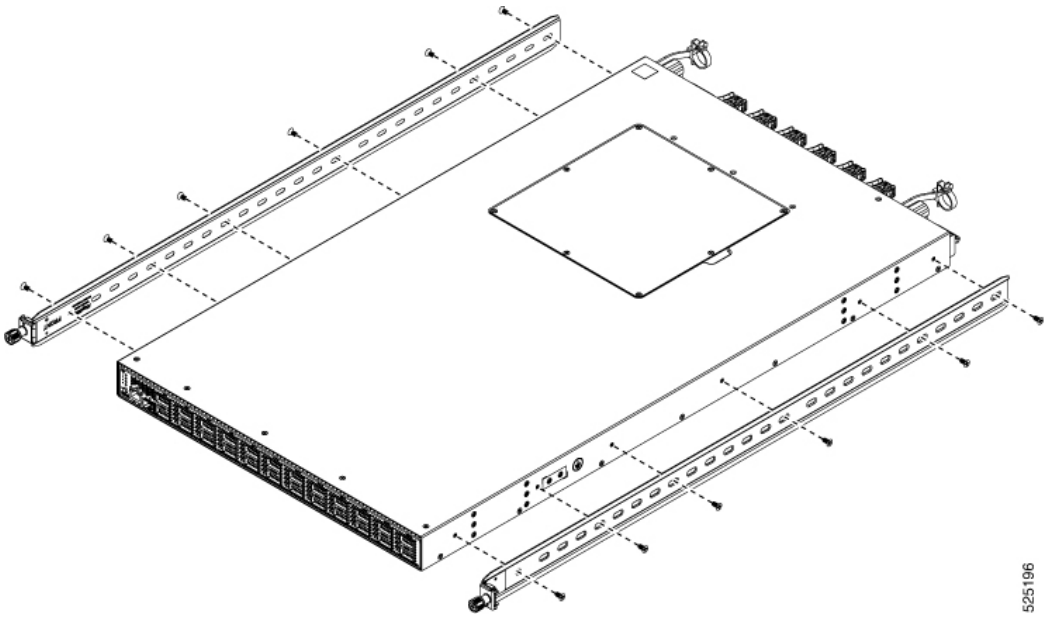
Learn how to install rack-mount brackets, guides, and guide rails on your switch in a two-post rack.

To install the switch, perform these steps: install inner rails to the chassis, attach the outer rails to the rack, slide the switch onto the outer rails, and secure the switch to the rack with the retainer screws. Typically, the front of the rack is the side easiest to access for maintenance.

Procedure

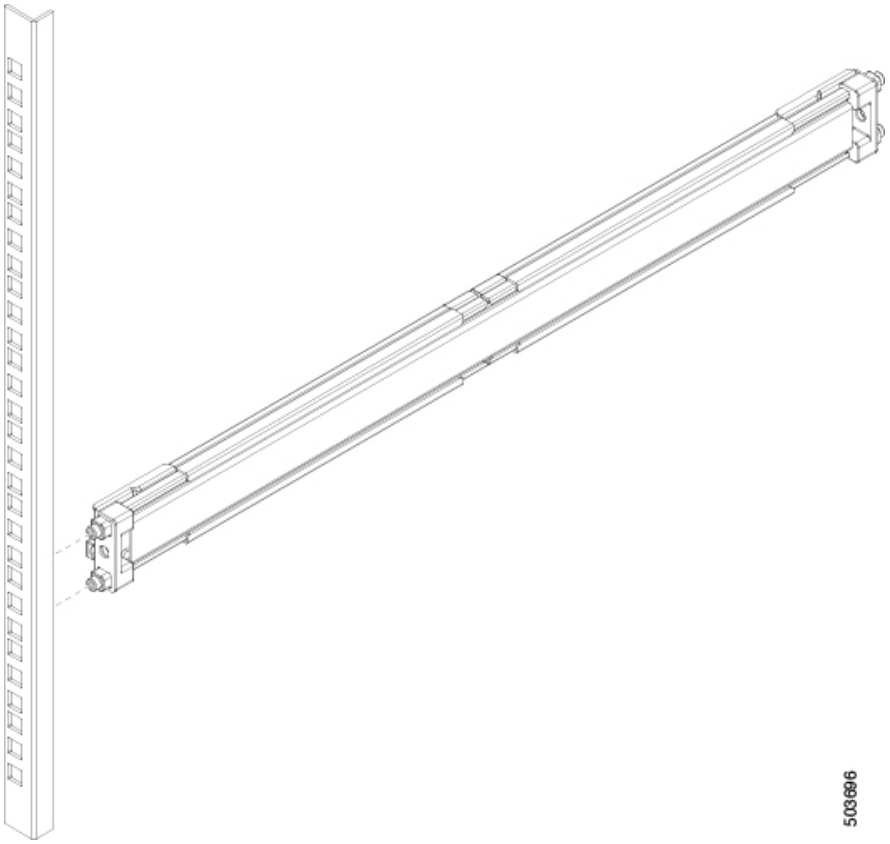
1. Install the two inner rails to the sides of the chassis using flat head screws.

   Figure 9: Position of two inner rails to the sides of the chassis



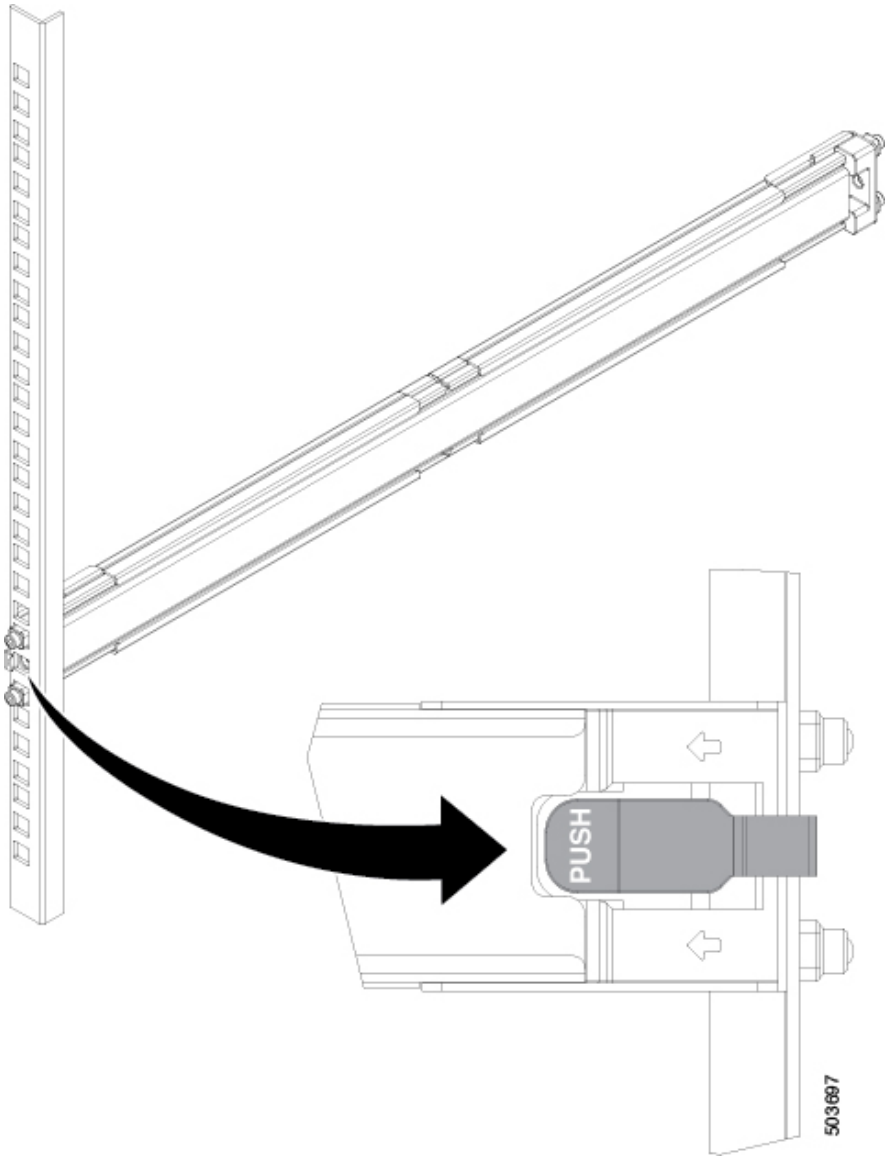
2. Install the two outer rails to the front posts of the rack by aligning the rails to the post holes.

   Figure 10: Install two outer rails to the front posts



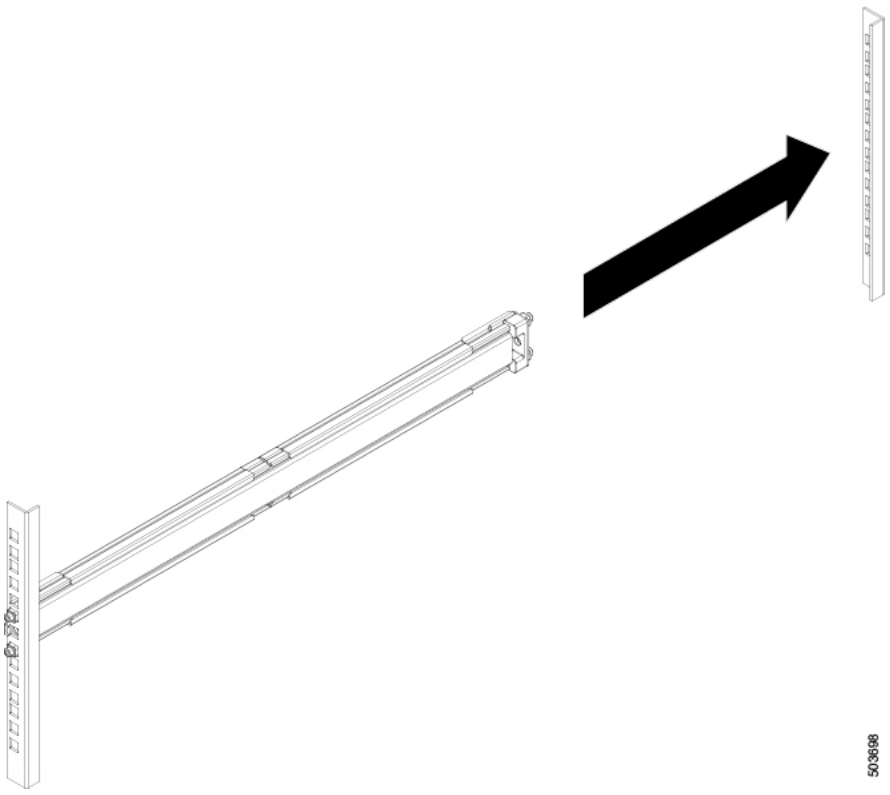
3. Fasten the two outer rails to the front posts of the rack by pushing the latch into place.

Figure 11: Fasten two outer rails to the front posts



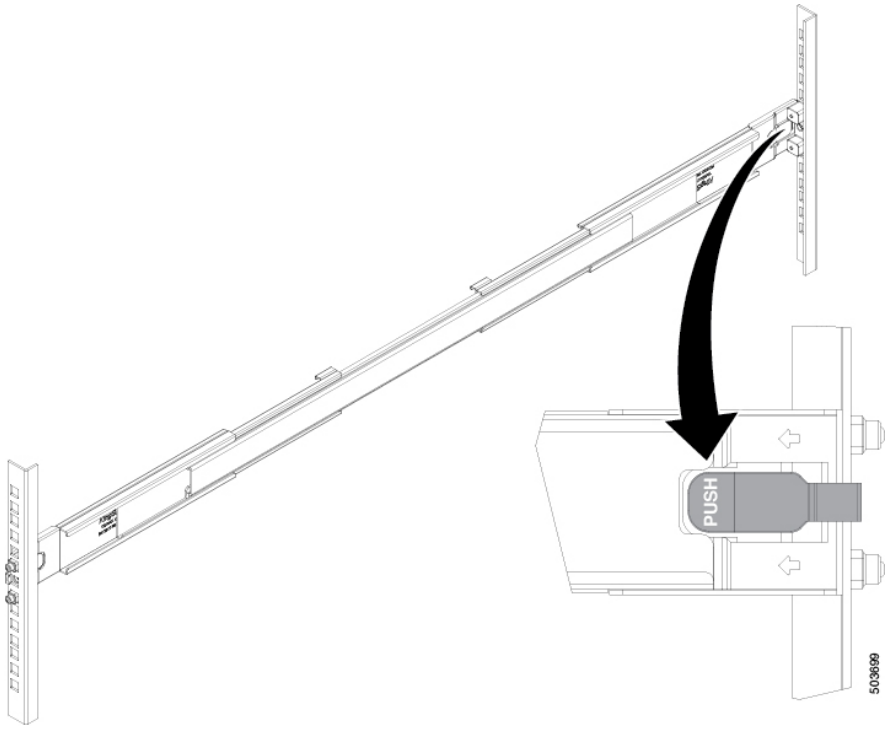
4. Install the two outer rails to the back posts of the rack by extending them into place.

Figure 12: Install two outer rails to back posts of rack



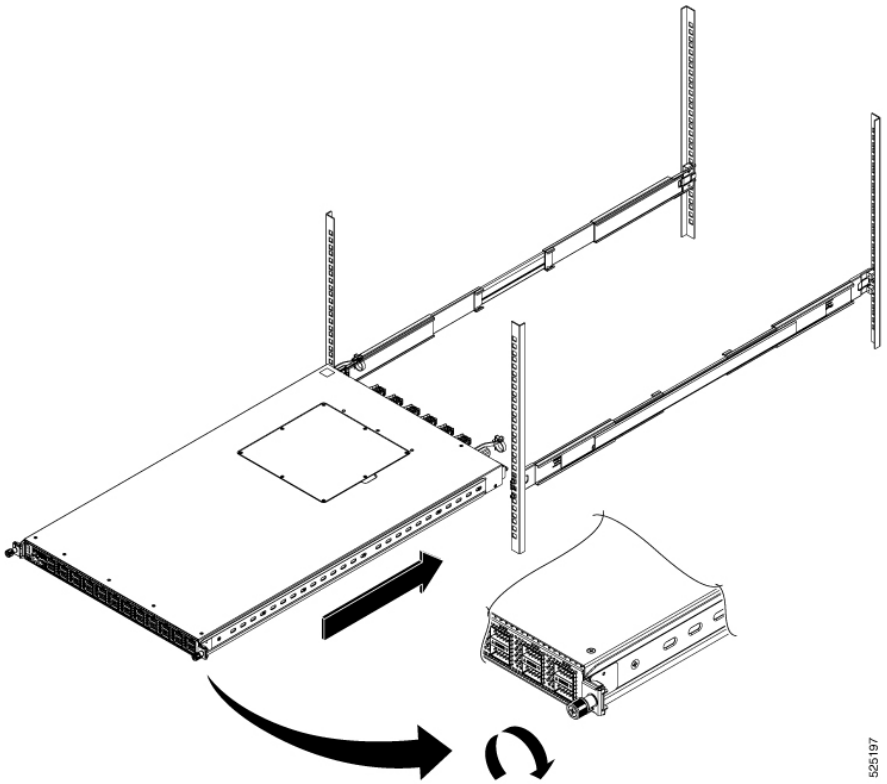
5. Fasten the two outer rails to the back posts of the rack by pushing the latch into place.

Figure 13: Fasten outer rails to the back posts of rack



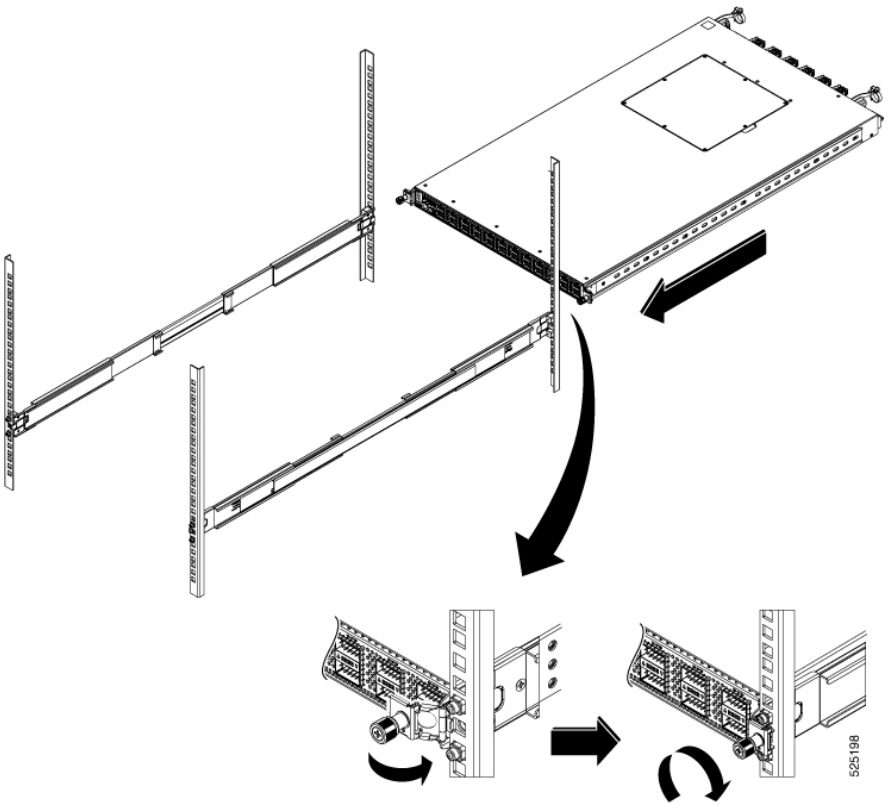
6. If installing from the front of the rack, slide the chassis into the rack by aligning the inner rails into the outer rails and sliding the chassis back until the front panel is flush with the front of the rack. Then secure the retainer screws on the inner rails into the rack.

Figure 14: Install chassis from front of rack



7. If installing from the back of the rack, slide the chassis into the rack by aligning the inner rails into the outer rails, and sliding the chassis forward until the front panel is flush with the front of the rack. Next, slide the retainer screws out to align with the rack, and then secure the thumb screws on the inner rails into the rack.

Figure 15: Install chassis from back of rack



Ground the chassis

Learn how to properly ground the switch 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.

> **Note**
>
> Provide an electrical conducting path between the product chassis and the metal surface of the enclosure or rack or to a grounding conductor. To ensure electrical continuity, use thread-forming type mounting screws that remove any paint or non-conductive coatings and establish metal-to-metal contact.
>
> Remove paint or other nonconductive coatings from surfaces between mounting hardware and the enclosure or rack. Clean the surfaces and apply an antioxidant before installation.

If you are using LVDC power supplies, ground the rack. If you are using AC or HVDC power supplies, the power cord for the AC power supplies provides grounding for the chassis. For supplemental grounding or bonding, attach a customer-supplied grounding cable to the chassis ground pad.

Ground the chassis. If you are using a two-post rack, attach a customer-supplied grounding cable. Attach the cable to the chassis grounding pad and the facility ground. If you are using a four-post rack, ensure that the chassis is grounded through the rack mount system or the power cable (AC or HVDC).

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

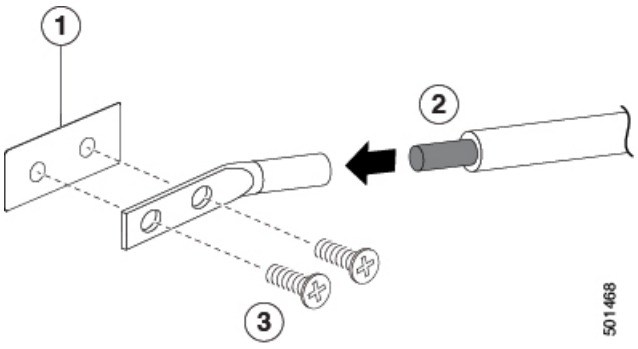
To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

Before you can ground the chassis, verify that the earth ground contact has a solid connection to the data center building.

Procedure

1. Use a wire-stripping tool to remove approximately 0.75 inch (19 mm) of the covering from the end of the grounding wire. For installations in the United States, use 6 AWG wire.
2. Insert the stripped end of the grounding wire into the open end of the grounding lug. Crimp the lug to the wire using a crimping tool. Refer to the figure. Verify that the ground wire is securely attached to the grounding lug by attempting to pull the wire out of the crimped lug (tug test).

Figure 16: Parts required to ground the chassis



This table lists the parts required to properly ground the chassis to a rack.

Table 7: Parts required to ground the chassis

Callout	Description
1	Chassis grounding pad
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.

Callout	Description
3	2 M4 screws secure the grounding lug to the chassis.

3. Secure the grounding lug to the chassis grounding pad with two M4 screws. Refer to the figure. Tighten the screws to a torque of 11 to 15 in-lb (1.24 to 1.69 N·m).
4. Prepare the other end of the grounding wire, and connect it to the facility ground.

Start the switch prerequisites

This topic explains the prerequisites before you start the switch.

Before you start the switch, ensure you follow these prerequistes:

- The switch must be installed and secured to a rack or cabinet.
- The switch must be adequately grounded.
- The rack must be positioned close to the dedicated power source. This proximity ensures that you can connect the switch to the power source using the designated power cables.
- You have the designated power cables for the power supplies that you are connecting to the dedicated power sources.

> **Note**
>
> Depending on the outlet receptacle on your AC power distribution unit, you might need an optional jumper power cord to connect the switch to your outlet receptacle.

- The switch is not connected to the network (this includes any management or interface connections).
- The fan and power supply modules are fully secured in their chassis slots.

Start the switch

Learn how to start the switch to verify that it is booting up without issues.

Start the switch by connecting it to its dedicated power source. If *n*+*n* redundancy is required, connect each power supply in a switch to a different power source.

> **Note**
>
> This equipment is designed to boot up in less than 30 minutes, dependent on its neighboring devices being fully up and running.

Procedure

1. For the AC power supply, complete these actions.

a) Using the recommended AC power cable for your country or region, connect one end to the AC power supply.
b) Connect the other end of the power cable to the AC power source.

2. For any HVAC or HVDC power supply, connect it to a power source as described:
   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. Confirm that the connector clicks when it is 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 plug in a receptacle for the HVAC power source.
      - When connecting to an HVDC power source, perform the following steps.
        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 source.
        3. Place the power cable ground-wire terminal ring on the ground terminal for the power source and secure them with a terminal nut.
        4. Place the power cable negative-wire terminal ring on the negative terminal for the power source and secure them with a terminal nut.
        5. Place the power cable positive-wire terminal ring on the positive 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.
        7. Turn on the power at the power source circuit breaker.

3. For any LVDC power supply, perform these steps.
   a) Turn off the circuit breaker for the power source.
   b) When using an LV DC power supply that does not use a lug, connect the supplied wiring harness to the source, or connect the user-supplied wires to the LV DC power source.
   c) When using an LV DC power supply that does not use a lug, connect the attached plug of the supplied wiring harness to the power supply, or attach the lugs of the user-supplied wires to the power supply.
   d) If there is a safety cover for the power source terminals, place and secure it over the terminals.
   e) Turn on the power at the circuit breaker for the DC power source.
4. Verify that the power supply LED is on and green.
5. Listen for the fans; they should begin operating when the power supply is powered.
6. After the switch boots, verify that these LEDs are lit:
   - On the fan modules, the Status (STA or STS) LED is green.

     If a fan module Status LED is not green, try reinstalling the fan module.
   - After initialization, the switch chassis Status (labeled as STA or STS) LED is green.

7. Verify that the system software has booted and the switch has initialized without error messages.

   When you access the switch for the first time, a setup utility automatically launches and guides you through the basic configuration. For instructions on how to configure the switch and check module connectivity, see the appropriate Cisco N9000 Series Configuration Guides.

4 Connect the switch to the network

Topics:

- Overview of network connections
- Connect a console to the switch
- Create the initial switch configuration to Nexus Hyperfabric cloud service
- Set up the management interface
- Connect interface ports to other devices
- Maintain transceivers and optical cables

Connect your N93108TC-FX3 to the network.

Overview of network connections

This topic explains how to connect the switch to your network, including an overview of supported connection types and guidance for proper cabling and port selection to ensure optimal performance.

After you install the switch in a rack and power it up, make these network connections:

- Console connection: use this direct-local management connection to initially configure the switch. First connect the console to configure the switch and determine its IP address. You will need the IP address for the other connections.
- Management connection: after you complete the initial configuration using a console, make this connection to manage all future switch configurations.
- Uplink and downlink interface connections: these are connections to hosts and servers in the network.

Each of these connection types is explained in its own section.

Note

When running cables in overhead or subfloor cable trays, we strongly recommend that you locate power cables and other potential noise sources as far away as practical from network cabling that terminates on Cisco equipment. In situations where long parallel cable runs cannot be separated by at least 3.3 feet (1 meter), we recommend that you shield any potential noise sources by housing them in a grounded metallic conduit.

Connect a console to the switch

Connect a console terminal to your switch's serial port for initial configuration.

Create a local management connection through a console terminal before you make a network management connection for the switch or connect it to the network. Then configure an IP address for the switch. Perform these functions using the console. After you set up the management interface, you can perform each function through it.

- Configure the switch using the command-line interface (CLI).
- Monitor network statistics and errors.
- Configure Simple Network Management Protocol (SNMP) agent parameters.
- Download software updates.

Make this local management connection between the asynchronous serial port on a supervisor module and a console device capable of asynchronous transmission. A computer terminal typically serves as the console device. Use the console serial port on the supervisor modules.

Note

Ensure that the computer terminal supports VT100 terminal emulation before connecting the console port. The terminal emulation software enables communication between the switch and the computer during setup and configuration.

- The switch must be fully installed in its rack, connected to a power source, and grounded.

- The necessary cabling for the console, management, and network connections must be available.
  - An RJ-45 rollover cable is provided in the switch accessory kit.
  - Network cabling is routed to the location of the installed switch.

Procedure

1. Configure the console device to match these default port characteristics:
   - 9600 baud
   - eight data bits
   - one stop bit
   - No parity
2. Connect an RJ-45 rollover cable to the console port on the switch.

   This cable is in the accessory kit.
3. Route the RJ-45 rollover cable to the console or a modem.
4. Connect the other end of the RJ-45 rollover cable to the console or to a modem.

Create the initial switch configuration to Nexus Hyperfabric cloud service

This topic explains the requirements for initial switch configuration, including establishing connectivity to hyperfabric.cisco.com and connecting to the Nexus Hyperfabric cloud controller. It also outlines the process for changing the operating system from Nexus Hyperfabric to NX-OS on Cisco N9000-series switches.

To create the initial switch configuration, the switch must have connectivity to hyperfabric.cisco.com. To connect the switch to the Nexus Hyperfabric cloud controller, see the Connect the first switch to the Cisco Nexus Hyperfabric cloud service section in the *Cisco Nexus Hyperfabric–Getting Started* guide. If you want to change the operating system from Nexus Hyperfabric to NX-OS, see the Cisco Nexus Hyperfabric – Migrating the Operating System of Cisco N9000-Series Switches document.

Set up the management interface

Use this procedure to configure the management interface for your switch.

Before you begin, ensure the device is ready and the prerequisites are met:

- The switch must be powered on.
- The switch must be initially configured using a console.

The RJ-45 and/or SFP management ports provide out-of-band management, which enables you to use the command-line interface (CLI) to manage the switch by its IP address. Use one of these ports depending on the cable and connectors that you are using to connect the management interface to the network.

Procedure

1. Connect the management cable into the management port on the switch. For shorter connections, use a cable with RJ-45 connectors. For longer connections, use an optical cable with SFP transceivers (LH or SX type).

   Note

   Use only one of these management ports—the switch does not support the use of both management ports.

2. Connect the other end of the cable to a 10/100/1000 or SFP port on a network device.

Connect interface ports to other devices

This topic outlines how to connect switch ports using various transceivers, cables, and adapters while ensuring hardware compatibility.

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, use interface cables with QSFP28, QSFP+, SFP+, SFP transceivers, or RJ-45 connectors to connect the switch to other devices.

Note

When using SFP+ or SFP transceivers in a QSFP+ or QSFP28 uplink port, install a QSFP-to-SFP adapter, such as the CVR-QSFP-SFP10G adapter, in the QSFP port and then install the SFP+ or SFP transceiver. The switch automatically sets the port speed to the speed of the installed transceiver.

If the transceivers that you are using can be separated from their optical cables, install the transceivers without their cables before inserting the cables into the transceivers. This action prolongs the life of both the transceiver and the cables. When removing transceivers from the switch, remove the optical cable first and then remove the transceiver.

To determine which transceivers, adapters, and cables are supported by this switch, see the Cisco Transceiver Modules Compatibility Information document.

Maintain transceivers and optical cables

This topic explains how to maintain transceivers and fiber-optic cables through proper cleaning, handling, and ESD protection practices.

To maintain high signal accuracy and prevent connector damage, keep transceivers and fiber-optic cables clean and free of dust. Contamination increases attenuation (loss of light). Levels should remain below 0.35 decibel (dB).

Consider these 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 frequently than 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 additional contamination.
- Clean the connectors regularly. Determine the cleaning frequency based on the environment. Additionally, clean connectors if they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques are 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.

Note

When you need to remove a fiber-optic transceiver, first remove the fiber-optic cable from the transceiver **before** you remove the transceiver from the port.

5 Replace components

Topics:

- Replace a fan module
- Replace a power supply module
- Connect a power cable to an NXA-PDC-930W power supply

Guides users on how to replace and reinsert the FRUs in the switch.

Replace a fan module

Learn how to replace a fan module by ensuring the new module matches the existing airflow direction.

You can replace a fan module while the switch is operating, as long as you perform the replacement within one minute. If you cannot perform the replacement within one minute, leave the original fan module in the chassis to maintain the designed airflow. Wait until you have the replacement fan module on hand and can complete the replacement.

> ⚠ **Caution**
>
> If you are replacing a module during operations, verify the replacement fan module has the correct direction of airflow. This means that it has the **same airflow direction** as the other modules in the chassis. Also, verify that the airflow direction takes in air from a cold aisle and exhausts air to a hot aisle. Otherwise, the switch can overheat and shut down.
>
> If you need to change the airflow direction of all the modules in the chassis, shut down the switch first. Then, replace all the fan and power supply modules with ones using the desired airflow direction. During operations, ensure that all modules have the same direction of airflow.

Remove a fan module

Use this procedure to safely remove a fan module from the chassis by pressing the handle sides together to unseat the unit, while keeping objects away from the spinning fans and avoiding contact with the electrical connectors.

> ⚠ **Caution**
>
> 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.

Procedure

1. Press the two sides of the fan module handle together on the fan module you are removing, and pull the handles to unseat it from its connectors.
2. While holding the handle, pull the module out of the chassis.

   > ⚠ **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.

Install a fan module

Learn how to install a new fan module by aligning it with an open slot and sliding it into the chassis until it clicks, ensuring the airflow direction matches existing modules and the status LED turns green.

Before you install a fan module, ensure that these conditions are met.

- A fan slot must be open and ready for the new fan module to be installed.
- If the switch is operating, have a new fan module nearby so you can install it within one minute after removing the original fan module.
- The new fan module must have the **same airflow direction** as the other fan and power supply modules installed in the switch.

Procedure

1. Hold 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.
2. Slide the fan module into the slot until it clicks in place.
3. Verify that the Status (STS) LED turns on and becomes green.

Replace a power supply module

This topic introduces the essential requirements for replacing switch power supplies, including the need to maintain consistent power source types and airflow directions for operational continuity.

The switch requires two power supplies for redundancy. One power supply provides the necessary power for operation. You can replace the other power supply during operation if the new power supply has the same airflow direction as the other modules in the chassis.

Replace a power supply with another supported power supply that has the same power source type as the other installed power supply. Additionally, the airflow direction of the power supply must match or conform to the airflow direction of the installed fan modules. To determine the airflow direction used by the switch, refer to the coloring of the fan modules.

Remove an AC power supply

Use this procedure to remove an AC power supply by disconnecting the power cable, releasing the thumb latch, and supporting the module as you slide it out of the chassis.

Before you remove an AC power supply, ensure that these conditions are met.

- If you need to replace a power supply during operations, ensure that another functioning power supply provides power to the switch. If the switch has only one power supply and you need to replace it, first install the new power supply in the open slot and power it up, then remove the original power supply.
- Ensure that the chassis is grounded. For grounding instructions, see Ground the chassis on page 43.

Procedure

1. Disconnect the power cord from the power receptacle on the power supply to be removed. Verify that the LED turns off.

> **Note**
>
> The LED might be amber, which indicates that the input power has been disconnected.

2. 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.
3. 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 packaging materials.

Remove an HVAC or HVDC power supply

Use this procedure to safely remove an HVAC/HVDC power supply by disconnecting the cable, pressing the release latch, and supporting the module while sliding it out of the chassis. Be careful to avoid touching the electrical connectors on the back of the module during the removal process.

You can remove one power supply while the other provides power to the switch.

To disconnect the power supply from its power cables, shut off the power from the power source and disconnect the connector for the power cables.

Procedure

1. To remove the power cable from the power supply, press the tab of the Anderson Power SAF-D-Grid connector, then pull the cable and connector out.

   Verify that the LEDs turn off on the power supply that you are removing.
2. While pressing the release latch toward the power supply handle, grasp the power supply handle.
3. To support the power supply, place your other hand under it while sliding it out of the chassis.

> **Caution**
>
> Do not touch the electrical connectors on the back side of the module. Prevent anything else from coming into contact with or damaging the connectors.

Remove a DC power supply

Use this procedure to remove a DC power supply by turning off the power feed, disconnecting the power cable, and sliding the module out of the bay while pressing the release latch.

You can remove one power supply while the other one provides power to the switch.

To disconnect the power supply from its cables, shut off power at the source. Then, disconnect the connector for the cables.

Procedure

1. Turn off the circuit breaker for the power feed to the power supply that you are replacing.

   Verify that the LEDs turn off on the power supply that you are removing.

2. Press the latch on the Cisco supplied power cord and remove the cable from the power supply.

   Use the supplied cable to connect the power supply to external power sources.

3. Grasp the power supply handle while pressing the release latch towards the power supply handle.
4. Pull the power supply out of the bay.

Install an AC power supply

Use this procedure to install an AC power supply by sliding it into the chassis slot until it clicks, then connecting the power cable and verifying the status LED is green. Before proceeding with installation, ensure the new module matches the required airflow for the switch and power source type.

Before you install an AC power supply module, ensure that these conditions are met.

- The power supply that you install must have the same airflow direction as the fan trays installed in the same switch. It must use the same type of power source as the other power supply installed in the same switch. (Do not mix AC and DC power supplies in the same switch.)

  > **Note**
  >
  > If the power supply that you are replacing has a different color handle than the replacement power supply, verify that it has or will have the same airflow direction as the other modules in the switch.

- An AC power source must be within reach of the power cable used with the replacement power supply. If you use **n+n** power redundancy, each power supply in the chassis must have a separate power source. Otherwise, only one power source is required.
- Ensure that the chassis with the replacement module has a proper ground connection. Typically, the chassis is grounded by its metal to metal connection with a grounded rack. If you need to ground the chassis, see Ground the chassis on page 43.

You can replace one power supply while the other one provides power to the switch.

Procedure

1. Hold the replacement power supply with one hand underneath the module and the other hand holding the handle. Turn the power supply so that its release latch is on the side. Align the back end of the power supply (the end with the electrical connections) to the open power supply slot. Carefully slide the power supply all the way into the slot until it clicks into place.

> **Note**
>
> If the power supply does not fit into the open slot, turn the module over, before sliding it carefully into the open slot.

2. 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, it is secured in the slot. If the power supply moves, carefully press it all the way into the slot until it clicks into place.

3. Attach the power cable to the electrical inlet on the front of the power supply.
4. Verify that the other end of the power cable is attached to the appropriate power source for the power supply.
5. Verify that the power supply is operational by making sure that the power supply LED is green.

Install an HVAC/HVDC power supply

Use this procedure to install an HVAC/HVDC power supply by sliding the module into the chassis slot until it clicks, securing the power cable connector, and verifying that the status LED becomes green.

Before you install an HVAC or HVDC power supply , ensure that these conditions are met.

- If you are using n+n power redundancy, there must be a separate power source for each power supply installed in the chassis. Power sources must be of the same type. Do not mix AC and DC power sources for the same switch. Otherwise, only one power source is required.
- There must be an ground connection to the chassis where you are installing the replacement module. Typically, the chassis is grounded by its metal to metal connection to a grounded rack. If you need to ground this chassis by another means, see Ground the chassis on page 43.

You can replace one power supply while the other one provides power to the switch.

> **Note**
>
> If the power supply that you are replacing has a different color handle than the replacement power supply, verify that it has or will have the same airflow direction as the other modules in the switch.

Procedure

1. Holding the replacement power supply with one hand under the module and the other hand holding the handle, turn the power supply so the release latch is positioned on the side. Align the back end of the power supply (the end with the electrical connections) to the open power supply slot. Carefully slide the power supply all the way into the slot until it clicks into place.

> **Note**
>
> If the power supply does not fit into the open slot, turn the module over. Slide it into the open slot.

2. Test the installation by attempting 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, carefully press it all the way into the slot until it clicks into place.
3. Insert the power supply cord Anderson SAF-D-Grid connector into the power supply inlet. Ensure the connector is locked. Gently tug on the cord near the connector to ensure the locking tab is engaged.
4. Verify that the other end of the power cable is connected to the appropriate power source for the power supply.
5. If using an HVDC power source, turn on the circuit breaker for the DC power source connected to the power supply.
6. Verify that the power supply is operational by making sure that the power supply LED is green.

Install a DC power supply

Use this procedure to install a DC power supply by ensuring proper grounding and airflow compatibility before sliding the module into the slot. Once installed, turn on the circuit breaker and verify that the power supply LED is green to confirm it is operational.

Before you install a DC power supply, ensure that these conditions are met.

- The circuit breaker for the DC power source for the power supply must be turned off.
- The power supply that you are installing must be capable of using the same airflow direction as the fan trays installed in the same switch.
- A DC power source must be within reach of the power cable that will be used with the replacement power supply. If you are using n+n power redundancy, there must be a separate power source for each power supply installed in the chassis. Otherwise, only one power source is required.
- There must be an earth-ground connection to the chassis that you are installing the replacement module. Typically, the chassis is grounded by its metal-to-metal connection to a grounded rack. If you need to ground this chassis by another means, see Ground the chassis on page 43.
- All DC power supplies have reverse polarity protection. When you inadvertently connect the input power (+) to the DC PSU's – terminal and the input power – to the DC PSU's (+) terminal, the PSU will not be damaged and will operate fine after the input power feeds are correctly wired.

You can replace one power supply while the other one provides power to the switch.

Procedure

1. Place one hand under the module and the other on the handle. Turn the power supply so the release latch is positioned on the side. Align the back end of the power supply (the end with the electrical connections) to the open power supply slot. Slide the power supply into the slot until it clicks into place.

Note

If the power supply does not fit into the open slot, turn the module over. Slide it into the open slot.

2. Make sure the rack is properly grounded. This ensures that when you install the chassis, it will also be grounded.
3. Turn on the circuit breaker for the DC-power source connected to the power supply.
4. Verify the power supply is operational by confirming that the power supply LED is green.

Connect a power cable to an NXA-PDC-930W power supply

Use this procedure to connect the ground, negative, and positive DC power cables to a connector block for a 48 V DC power supply. After inserting the connector into the power supply, verify that all cables are properly attached to the source before turning on the circuit breaker.

You must turn off the circuit breaker for the DC power cables that you are connecting to prevent electrocution.

Note

The recommended wire gauge is 8 AWG. The minimum wire gauge is 10 AWG.

Warning

Statement 342–Before Connecting to System Power Supply

High touch/leakage current - Permanently connected protective earth ground is essential before connecting to system power supply.

Warning

Statement 1024–Ground Conductor

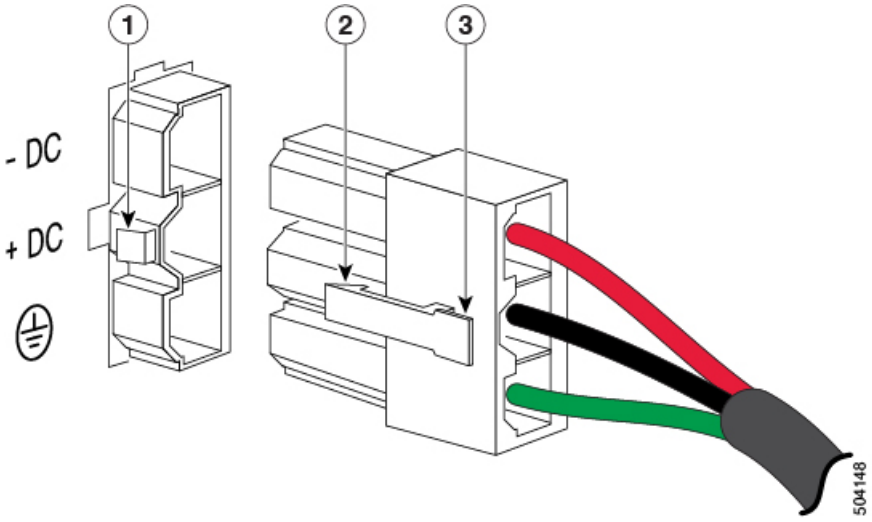
This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding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

Procedure

1. Verify that the circuit breaker for the power feed to the replacement power supply is turned off.

2. Position the connector according to the illustration.

Figure 17: Position of connector into power supply



The table lists the parts required to correctly position the connector in the power supply.

Callout	Description
1	Power supply clip
2	Connector clip
3	Connector clip release tab

3. Insert the connector into the power supply until the connector clip engages with the power supply clip and the connector is fully inserted.
4. Verify that the other ends of the cables are attached to the DC power source and ground.
5. Turn on the circuit breaker.
6. You are now ready to turn on the DC power source.

A Rack specifications

Topics:

- Overview of racks
- General requirements for cabinets and racks
- Requirements specific to standard open racks
- Requirements specific to perforated cabinets
- Cable management guidelines

Provides the requirements for the different types of racks and cabinets used for mounting the switch.

Overview of racks

This topic explains the environmental and structural requirements for installing a switch, including recommended cabinet types, temperature ranges, and the need to keep access paths clear of obstructions.

Install the switch in these types of cabinets and racks if the external ambient air temperature is between 32 and 104° F (0 and 40° C):

- Standard perforated cabinets
- Solid-walled cabinets with a roof fan tray (bottom to top cooling)
- Standard open racks

Note

- If you are using an enclosed cabinet, we recommend one of the thermally validated types, either standard perforated or solid-walled with a fan tray.
- We do not recommend using racks that have obstructions, such as power strips, because they could impair access to field-replaceable units (FRUs).

General requirements for cabinets and racks

This topic explains the essential physical requirements for installing a switch, including rack compatibility, vertical space specifications, and necessary rail spacing guidelines.

The cabinet or rack must meet these requirements:

Note

This switch rack-mount kit contains the rack mounting brackets for 19-inch rack. To install the chassis in a 23-inch rack or an ETSI rack, you need adapter plates to accommodate the 19-inch rack mount brackets.

- Standard 19-inch (48.3 cm) (two- or four-post EIA cabinet or rack, with mounting rails that conform to English universal hole spacing according to section 1 of ANSI/EIA-310-D-1992). For more information, see Requirements specific to perforated cabinets on page 65.

  The spacing between the posts of the rack must conform to EIA-310-D-1992 19-inch rack compatibility and be wide enough to accommodate the chassis.
- The minimum vertical rack space requirement per chassis is:
  - For a one RU (rack unit) switch, 1.75 inches (4.4 cm)
  - For a one and a half RU (rack unit) switch, 2.63 inches (6.68 cm)
  - For a two RU (rack unit) switch, 3.5 inches (8.8 cm)
  - For a three RU (rack unit) switch, 5.25 inches (13.3 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 these requirements:

- The minimum spacing for the bend radius for fiber-optic cables requires the front-mounting rails of the cabinet to be offset from the front door by at least 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.

Requirements specific to standard open racks

This topic explains the vertical space and wall clearance requirements for mounting in open racks.

If you are mounting the chassis in an open rack (no side panels or doors), ensure that the rack meets these requirements:

The minimum vertical rack space per chassis must be equal to the rack unit (RU) of the chassis. One rack unit is equal to 1.75 inches (4.4 centimeters).

The distance between the chassis air vents and any walls should be 2.5 inches (6.4 centimeters).

Requirements specific to perforated cabinets

This topic explains the requirements for perforated cabinets, including door, roof, and floor ventilation standards.

A perforated cabinet has perforations in its front and rear doors and side walls. Perforated cabinets must meet these 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 centimeters) 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.

Cable management guidelines

This topic explains the need for extra rack space to facilitate fiber and copper management.

To help with cable management, allow additional space in the rack. This extra space above and below the chassis makes routing all fiber optic and copper cables through the rack easier.

B System specifications

Topics:

- Environmental specifications
- Switch dimensions
- Switch and module weights and quantities
- Transceiver and cable specifications
- Switch power input requirements
- 500-W AC power supply specifications
- 1200-W HVAC/HVDC power supply specifications
- 930-W DC power supply specifications
- AC power cable specifications
- HVAC and HVDC power cables supported by ACI-Mode and NX-OS mode switches
- DC power cable specifications
- Regulatory standards compliance specifications

Requirements for environmental specifications, switch and module dimensions, and power supply specifications.

Environmental specifications

This topic explains the environmental specifications of the Cisco N93108TC-FX3 switch.

This table lists the temperature, humidity, and altitude specifications of the Cisco N93108TC-FX3 switch.

Table 8: Environmental specifications of the Cisco N93108TC-FX3 switch

Environment		Specification
Temperature	Ambient operating temperature	32 to 104° F (0 to 40° C)
	Ambient nonoperating	-40 to 158° F (-40 to 70° C)
Relative Humidity	Operating humidity	5 to 90%
	Nonoperating humidity	5 to 95%
Altitude	Altitude rating is 10,000 ft (3048 m). For China, it is 6,562 ft (2000 m).	

Switch dimensions

This topic explains the switch dimensions of the Cisco N93108TC-FX3 switch.

This table lists information about the size of the Cisco N93108TC-FX3 switch.

Table 9: Switch dimensions of the Cisco N93108TC-FX3 switch

Switch	Width	Depth	Height
Cisco N93108TC-FX3	17.3 inches (43.9 cm)	17.9 inches (45.7 cm)	1.72 inches (4.4 cm) (1 RU)

Switch and module weights and quantities

This topic explains the weight of the switch and FRUs, and the number of items shipped in a box.

This table provides the weight of the switch and the FRUs. It also specifies the quantity of each item shipped along with the switch.

Table 10: Switch and module weight and quantity

Component	Weight per Unit	Quantity
Cisco N93108TC-FX3 Chassis	15.8 lb (7.1 kg)	1
Fan Module	–	4modules
- Port-side exhaust (blue) (NXA-SFAN-35CFM-PE)	0.28 lb (0.13 kg)	
- Port-side intake (burgundy) (NXA-SFAN-35CFM-PI)		

Component	Weight per Unit	Quantity
Power supply module - 500-W AC port-side exhaust (blue) (NXA-PAC-500W-PE) - 500-W AC port-side intake (burgundy) (NXA-PAC-500W-PI) - 1200-W HVAC/HVDC dual-direction (white) (N9K-PUV-1200W) - 930-W DC port-side exhaust (blue) (NXA-PDC-930W-PE) - 930-W DC port-side intake (burgundy) (NXA-PDC-930W-PI)	– 2.42 lb (1.1 kg)	2 modules (1 for operations and 1 for redundancy)

Transceiver and cable specifications

This topics explains the transceiver specifications and installation information.

To see the transceiver specifications and installation information, see Cisco Transceiver Modules Compatibility Information.

Switch power input requirements

This topic provides information about the amount of power the switch consumes.

This table lists the typical amount of power that the switch consumes. It also lists the maximum amount of power that you must provision for the switch and power supply for peak conditions.

Note

Some power supplies have capabilities that are greater than the maximum power requirements for a switch. To determine the power consumption characteristics for the switch, use the typical and maximum requirements that are listed here.

Note

If you want to use optics that consume **5W or more power on all the 36 ports**, you must install 1100W power supplies..

Table 11: Power requirements of the Cisco N93108TC-FX3 switch

Switch	Typical Power Consumption (AC or DC)	Maximum Power Consumption (ACor DC)	Heat Dissipation Requirement
Cisco N93108TC-FX3 switch	420 W	464 W	1583 BTUs per hour

500-W AC power supply specifications

This topic explains the power specifications for the 500-W AC power supply module.

The table lists the specifications that apply to the NXA-PAC-500W power supplies.

Table 12: 500-W AC Power Supply specifications

Property	Specification
AC input voltage	Nominal range: 100 and 240 VAC (Range: 90-264 VAC)
AC input frequency	Nominal range: 50 to 60 Hz (Range: 47-63 Hz)
Maximum AC input current	5.7 A at 100 VAC
Maximum input volt-amperes	648 VA, (2.7 A at 240 VAC)
Maximum output power per power supply	500 W
Maximum inrush current	33 A (sub-cycle duration)
Maximum hold-up time	12 ms at 500 W
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum certified)
Form factor	RSP1

1200-W HVAC/HVDC power supply specifications

This topic explains the power specifications for the 1200-W HVAC/HVDC power supply module.

The table lists the specifications that apply to the N9K-PUV-1200W power supplies.

Table 13: 1200-W HVAC/HVDC Power Supply specifications

Property	Specification
Input voltage • AC (for 1230 W output) • DC (for 1230 W output)	• Nominal range: 100-240 VAC (Range: 90-264 VAC) • Nominal range: 200-277 VAC (Range: 180-305 VAC) • Nominal range: 240-380 VDC (Range: 1204-400 VDC)
AC input frequency	Nominal: 50 to 60 Hz (Range: 47-63 Hz)
Maximum AC input current	10 A at 100 VAC
Maximum inrush current	35 A (cold turn on) 70 A (hot turn on)

Property	Specification
Maximum output Watts	Per power supply
• For 200 to 277 VAC	• 1230 W
• For 192 to 400 VDC	• 1230 W
Power supply output voltage	Per power supply
• For 200 to 277 VAC	• 12 VDC at 100 A
• For 192 to 400 VDC	• 12 VDC at 100 A
Power supply standby voltage	12 V at 2.5 A
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum certified)
Form factor	RSP1

930-W DC power supply specifications

This topic explains the power specifications for the 930-W DC power supply module.

The table lists the specifications that apply to the NXA-PDC-930W power supplies.

Table 14: 930-W DC Power Supply specifications

Property	Specification
DC input voltage range	Nominal range: -48 to -72 VDC nominal (Range: -40 to -60 VDC)
Maximum DC input current	23 A at -48 VDC
Maximum output power per power supply	930 W
Maximum inrush current	35 A (sub-cycle duration)
Maximum hold-up time	8 ms at 930 W
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Greater than 92% at 50% load
Form factor	RSP1

AC power cable specifications

This topic explains the AC power cable specifications of the Cisco N93108TC-FX3 switch.

This table lists the AC power cables specifications that you can order and use with this switch.

Table 15: AC Power Cable Specifications

Location	Power Cord Part Number	Cord Set Description
	CAB-C13-C14-2M	Power Cord Jumper, C13-C14 Connectors, 6.6 feet (2.0 m)
	CAB-C13-CBN	Cabinet jumper power cord, 250 VAC, 10 A, C14-C13 connectors, 2.3 feet (0.7 m)
Argentina	CAB-250V-10A-AR	250 V, 10 A, 8.2 feet (2.5 m)
Australia	CAB-9K10A-AU	250 VAC, 10 A, 3112 plug, 8.2 feet (2.5 m)
Brazil	CAB-250V-10A-BR	250 V, 10 A, 6.9 feet (2.1 m)
European Union	CAB-9K10A-EU	250 VAC, 10 A, CEE 7/7 plug, 8.2 feet (2.5 m)
India	CAB-IND-10A	10 A, 8.2 feet (2.5 m)
India	CAB-C13-C14-2M-IN	Power Cord Jumper, C13-C14 Connectors, 6.6 feet (2.0 m)
India	CAB-C13-C14-3M-IN	Power Cord Jumper, C13-C14 Connectors, 9.8 feet (3.0 m)
Israel	CAB-250V-10A-IS	250 V, 10 A, 8.2 feet (2.5 m)
Italy	CAB-9K10A-IT	250 VAC, 10 A, CEI 23-16/VII plug, 8.2 feet (2.5 m)
Japan	CAB-C13-C14-2M-JP	Power Cord Jumper, C13-C14 Connectors, 6.6 feet (2.0 m)
North America	CAB-AC-L620-C13	NEMA L6-20-C13, 6.6 feet (2.0 m)
North America	CAB-N5K6A-NA	200/240V, 6A, 8.2 feet (2.5 m)
Peoples Republic of China	CAB-250V-10A-CN	250 V, 10 A, 8.2 feet (2.5 m)
South Africa	CAB-250V-10A-ID	250 V, 10 A, 8.2 feet (2.5 m)
Switzerland	CAB-9K10A-SW	250 VAC, 10 A, MP232 plug, 8.2 feet (2.5 m)
United Kingdom	CAB-9K10A-UK	250 VAC, 10 A, BS1363 plug (13 A fuse), 8.2 (2.5 m)
All except Argentina, Brazil, and Japan	NO-POWER-CORD	No power cord included with switch

HVAC and HVDC power cables supported by ACI-Mode and NX-OS mode switches

This topic explains the HVAC and HVDC power cables supported by ACI mode and NX-OS mode switches, detailing the available part numbers, descriptions, and voltage ratings.

This table lists the available HVAC and HVDC power cable part numbers, their descriptions, and their corresponding voltage specifications.

Table 16: HVAC and HVDC Power Cables Specifications

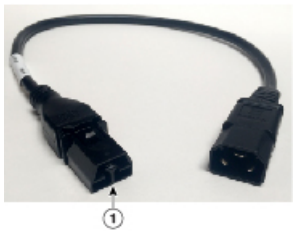
Part Number	Cord Set Description	Photo
CAB-HVAC-SD-0.6M	HVAC 2 ft (0.6 m) cable with Saf-D-Grid and SD connectors 277V AC	
CAB-HVAC-C14-2M	HVAC 6.6 ft (2.0 m) cable with Saf-D-Grid and C14 (use for up to 240 V) connector 250V AC	
CAB-HVAC-RT-0.6M	HVAC 2 ft (0.6 m) cable with Saf-D-Grid and RT connector 277V AC	
CAB-HVDC-3T-2M	HVDC 6.6 ft (2.0 m) cable with Saf-D-Grid and three terminal connectors 300V AC or 400V DC (+200 or -200 V DC)	
NO-POWER-CORD	All except Argentina, Brazil, and Japan No power cord included with the switch	Not applicable

Table 17: HVAC and HVDC Power Cables Callout Table

Callout	Description
1	Connect this end to the power supply unit.

DC power cable specifications

This topic explains the DC power cable specifications for the NXA-PDC-930W-PE/PI module.

This table lists the DC power cables specifications that you can order and use with this switch.

Table 18: DC Power Cable Specifications

Part ID Number	Description	Photo
NXA-PDC-930W-PE/PI	The 930W DC power supply (NXA-PDC-930W-PE/PI) is shipped with cable CAB-48DC-40A-8AWG.	

Regulatory standards compliance specifications

This topic explains the regulatory standards the switch must adhere to.

This table lists the regulatory standards compliance for the switch.

Table 19: Regulatory Standards Compliance: Safety and EMC

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC.
Safety	• CAN/CSA-C22.2 No. 60950-1 Second Edition • CAN/CSA-C22.2 No. 62368-1-19 Third Edition • ANSI/UL 60950-1 Second edition • IEC 62368-1 • EN 62368-1 • AS/NZS 62368-1 • GB4943 • UL 62368-1
EMC: Emissions	• 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR22 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A

Specification	Description
EMC: Immunity	• EN55024 • CISPR24 • EN300386 • KN 61000-4 series
RoHS	The product is RoH-6 compliant with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors.

C LEDs

Topics:

- Switch chassis LEDs
- Fan module LEDs
- Power supply LEDs

Details the status and meaning of the chassis, fan, and power supply LEDs.

Switch chassis LEDs

This topic describes the LED indicators and status meanings for the switch front panel components.

The BCN, STS, and ENV LEDs are located on the left side of the front of the switch. The port LEDs appear as triangles pointing up or down to the nearest port.

This table lists the LEDs and status states for the front panel.

Table 20: Front panel LEDs of the Cisco N93108TC-FX3 switch

LED	Color	Status
BCN	Flashing blue	The operator has activated this LED to identify this switch in the chassis.
	Off	This switch is not being identified.
STS	Green	The switch is operational.
	Flashing amber	The switch is booting up.
	Amber	Temperature exceeds the minor alarm threshold.
	Red	Temperature exceeds the major alarm threshold.
	Off	The switch is not receiving power.
ENV	Green	Fans and power supply modules are operational.
	Amber	At least one fan or power supply module is not operating.
(port)	Green	The port admin state is "Enabled," the SFP is present, and the interface is connected (that is, cabled and the link is up).
	Amber	Port admin state is "Disabled," or the SFP is absent, or both.
	Off	Port admin state is 'Enabled' and SFP is present, but interface is not connected.
(GPS)	Green	GPS interface provisioned and ports are turned on. ToD, 1PPS, 10MHz are all valid.
	Off	Either the interface is not provisioned, or the ports are not turned on. ToD, 1PPS, 10MHz are not valid.

Fan module LEDs

This topic describes the fan LED indicators and the operational status of the fan module.

This table lists the LED status of the fan module on the switch.

Table 21: Fan module LED status

Fan LED	Color	Status Description
Status	Green	Fans are operating normally.
	Red	The fan module is not operational (fan is probably not functional).
	OFF	Fan module is not receiving power.

Power supply LEDs

This topic describes the power supply LED indicators and their associated status for the module.

The power supply LEDs are located on the right portion of the power supply. This table lists the combinations of LED states indicated by color that signify the status for the module.

Table 22: Power supply LED status

LEDs	Status
Off	The power supply is not functioning due to lack of input or output power. The input voltage is below the acceptable operating range. There is no 12 V standby from a parallel power supply unit.
Solid Amber	Failure (no output)—possibly one of these conditions. • AC input below operating range, but 12 V standby power is being supplied from a parallel power supply unit, • Over voltage, • Over current, • Over temperature, or • OTP due to fan failure.
Blinking Amber (1 Hz)	Power supply is operating but a warning condition has occurred—possibly one of these conditions: • High temperature, • High power, or • Slow fan.
Blinking Green (2 Hz)	Input is present and its voltage is within the operating range. The power supply is in standby mode due to PSON_L=High.

LEDs	Status
Blinking Green (1 Hz)	The power supply is Bootloading (startup mode). **Note** This applies only to NXA-PDC-2KW-PI and NXA-PDC-2KW-PE power supplies.
Solid Green	The power supply provides a regulated 12 V main output and a 12 V standby output.

D Additional kits

Topics:

- Rack mount kit NXK-ACC-KIT-1RU
- Rack mount kit NXK-ACC-KIT2-2RU

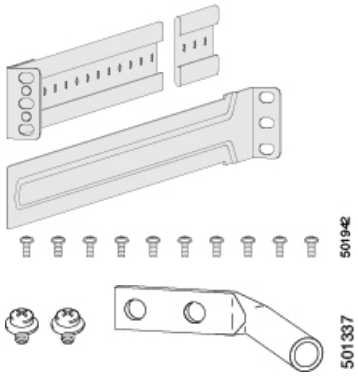
Details the rack mount-kits for N93108TC-FX3.

Rack mount kit NXK-ACC-KIT-1RU

This topic explains the contents included in the optional rack mount kit for 1-RU rack-mount kit.

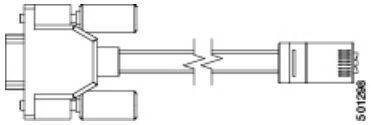
This table lists and illustrates the contents for the 1-RU rack-mount kit (NXK-ACC-KIT-1RU).

Table 23: NXK-ACC-KIT-1RU Rack Mount Kit contents

Illustration	Description	Quantity
	Rack-mount kit • Front brackets (2) • Rear brackets (2) • Slider rails (2) • M4 Phillips pan-head screws (10)	1
	Ground lug kit • Two-hole lug (1) • M4 x 8-mm Phillips pan-head screws (2)	1
Not applicable	EAC Compliance document	1
Not applicable	Hazardous substances list for customers in China	1

This table lists and illustrates the console cable (CAB-CONSOLE-RJ45) that can be ordered.

Table 24: Contents for CAB-CONSOLE-RJ45 cable

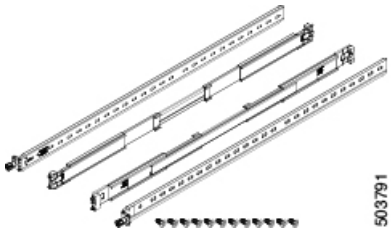
Illustration	Description	Quantity
	Console cable with DB-9F and RJ-45F connectors	1

Rack mount kit NXK-ACC-KIT2-2RU

This topic explains the contents included in the optional rack mount kit for 2-RU rack-mount kit.

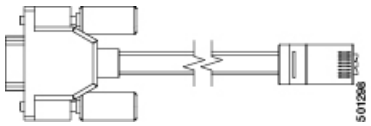
The table lists and illustrates the contents for the 2-RU rack-mount kit (NXK-ACC-KIT2-2RU).

Table 25: NXK-ACC-KIT2-2RU Rack Mount Kit contents

Illustration	Description	Quantity
	Rack-mount kit • Slider bracket (2) • Slider rails (2) • M4 x 7 mm mounting screws (12)	1
	Ground lug kit • Two-hole lug (1) • M4 x 8-mm Phillips pan-head screws (2)	1
Not applicable	EAC Compliance document	1
Not applicable	Hazardous substances list for customers in China	1

The table lists and illustrates the console cable (CAB-CONSOLE-RJ45) that can be ordered.

Table 26: Contents for CAB-CONSOLE-RJ45 cable

Illustration	Description	Quantity
	Console cable with DB-9F and RJ-45F connectors	1