

Cisco Nexus 3550-T Hardware Installation Guide

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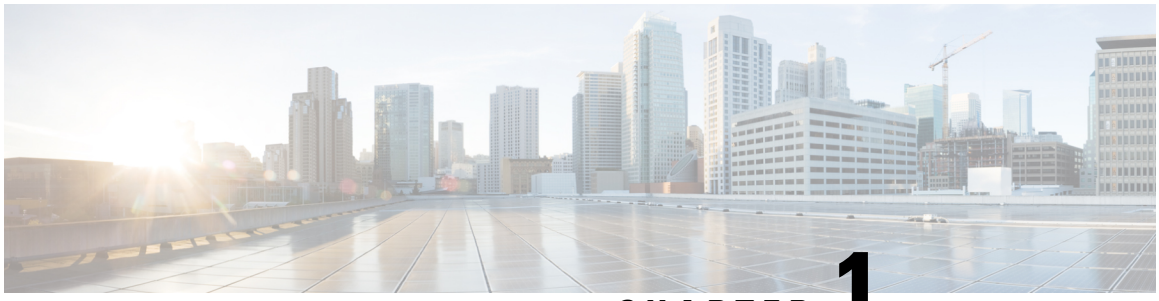
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CHAPTER 1

Overview

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- Hardware Architecture of the Cisco Nexus 3550-T Switches, on page 2

Overview of the Cisco Nexus 3550-T Switches

The Cisco Nexus 3550-T Programmable Switch Platform is a powerful top-of-rack Ethernet switch and application platform with a unique low-latency design. It offers comprehensive layer 2 and layer 3 switching capabilities. The device is built around a flexible FPGA device, offering long term feature enhancements, upgrades, and fixes, as well as a complete firmware development environment for custom applications.

Figure 1: The Cisco Nexus 3550-T Triton



The hardware platform specifications of the Nexus 3550-T are as follows:

- 1RU 48 port SFP28 (Small Form-factor Pluggable 28) configuration (backwards compatible with SFP+ and SFP).
- Dual redundant, hot-swap PSUs and dual hot-swap fans.
- Build using a Xilinx Virtex Ultrascale Plus VU35P Field Programmable Gate Array (FPGA) with a “-3” speed grade. The chip has 8GB of High Bandwidth Memory (HBM) on board.
- x86-based management processor with 100MB/s/1GB/s (RJ45) and 1GB (SFP+) based management ports.
- Hardware (electronics) supporting 25G speeds to the FPGA.

Ease of Management

The Cisco Nexus 3550-T Programmable Network Platform features a console port, a Micro USB port, and a 1G RJ45 port, which can be used as management interfaces. The Cisco Nexus 3550-T Platform uses a Command Line Interface (CLI) designed to address the needs of low-latency FPGA configurations.

The Cisco Nexus 3550-T Programmable Network Platform includes standard enterprise manageability and deployment capability features such as automatic configuration (via DHCP), SNMP, TACACS+ authentication, on-board Python programmability, BASH shell access, and time-series logging.

Please refer https://www.cisco.com/c/en/us/td/docs/dcn/nexus3550/3550-t/sw/101x/configuration/cisco-nexus-3550t-configuration-guide.html to learn more.

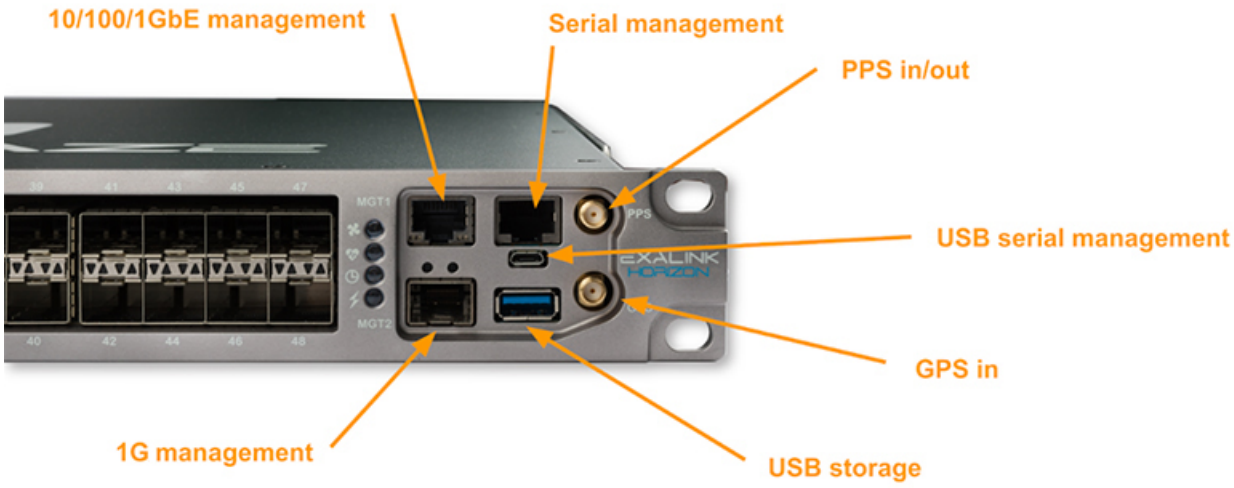
Hardware Architecture of the Cisco Nexus 3550-T Switches

The FPGA in the Cisco Nexus 3550-T is a Xilinx Virtex UltraScale+ HBM xcvu35p-fsvh2892-3-e.

The x86 processor in the Nexus 3550-T platform is an Intel Atom C3708 SoC, built into a third-party System on Module (SoM). The CPU features 8 cores, running at 1.7Ghz with 16MB of cache. There is 16GB of DDR4 Memory on the SoM, and the system boots from an M.2 NVMe SSD drive, with 128GB of non-volatile storage. There is a spare (unpopulated) M.2 drive bay available.

A block diagram of the Nexus 3550-T platform is given below.

Figure 2: Cisco Nexus 3550-T Hardware Architecture



Features

The Cisco Nexus 3550-T Programmable Network Platform has a fixed form factor that is built around a dynamically reconfigurable FPGA (Field Programmable Gate Array) and provides 48 ports along with an x86 (Intel® Atom® processor with 8 cores up to 1.7 GHz)–management CPU. See the following table for details on the speed that is supported on the ports:

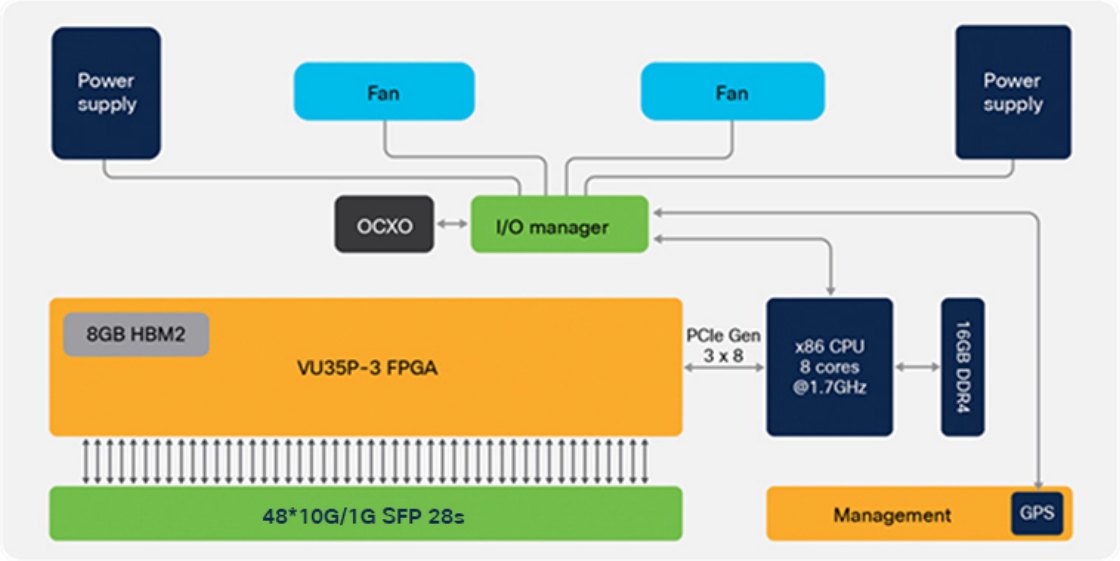
Table 1: Port speed table

Release	Port speed
10.6(3)F	First 40 ports support 25G; rest are disabled.

Release	Port speed
10.2(3v)	All 48 ports support 1G/10G.
10.2(3t)	All 48 ports support 10G.

All 48 ports are directly connected to Xilinx Virtex UltraScale Plus VU35P FPGA with a “-3” speed grade. The FPGA has 8GB of High Bandwidth Memory (HBM) on board. The Cisco Nexus 3550-T hardware architecture diagram is shown in Figure 2 below.

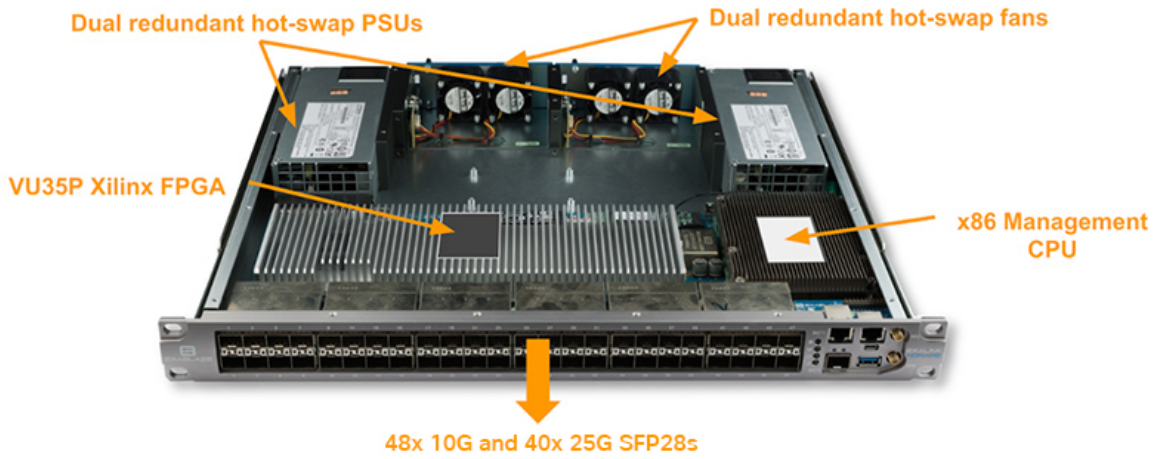
Figure 3: Cisco Nexus 3550-T Programmable Network Platform Data Sheet



Cisco Nexus 3550-T Programmable Network Platform hardware architecture

The Cisco Nexus 3550-T platform has a Xilinx Virtex Ultrascale Plus FPGA (XCVU35P-3e), 48 SFP ports (See Table 1) and an Intel Atom CPU. A firmware development kit is available from Cisco, enabling users with FPGA development capability to implement custom FPGA functionality in the XCVU35P-3e FPGA of the Cisco Nexus 3550-T.

Figure 4: The Cisco Nexus 3550-T Programmable Switch Platform Architecture



The FPGA module can run host of multiple firmware personalities. Currently, the following firmware versions are available:

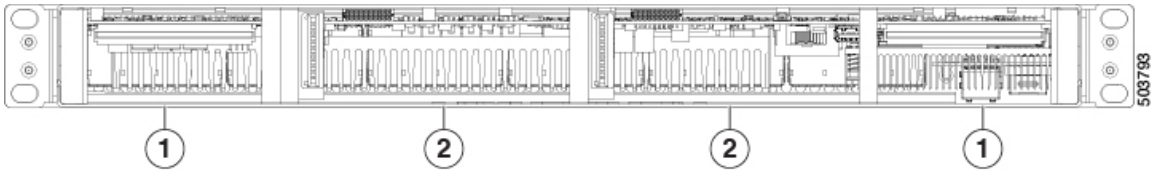
- **10G Layer 3 switch firmware:** With this firmware, the device operates as a 48-port 1/10G ultra low latency layer 3 switch.
- **25G Layer 3 firmware with 40 ports:** With this firmware, the device operates as a 40-port 25G ultra low latency layer 3 switch.

Initial 10G Layer 3 Switch Features

- Standard management interfaces: SNMP / TACACS+ / Syslog / JSON-RPC API
- Layer 2 switching features: MAC learning, VLAN tagging/trunking, LLDP, IGMP & STP
- Layer 3 switching features: IP routing, BGP, OSPF, and PIM
- Layer 4 switching features: Static NAT/PAT

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

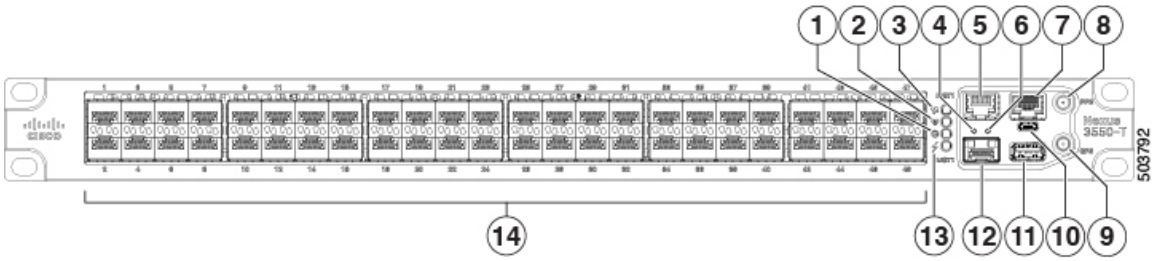
Figure 5: Fan-Side View of the Cisco Nexus 3550-T Chassis



1	Fan modules (1 and 1)	2	AC power supply (2 and 2)

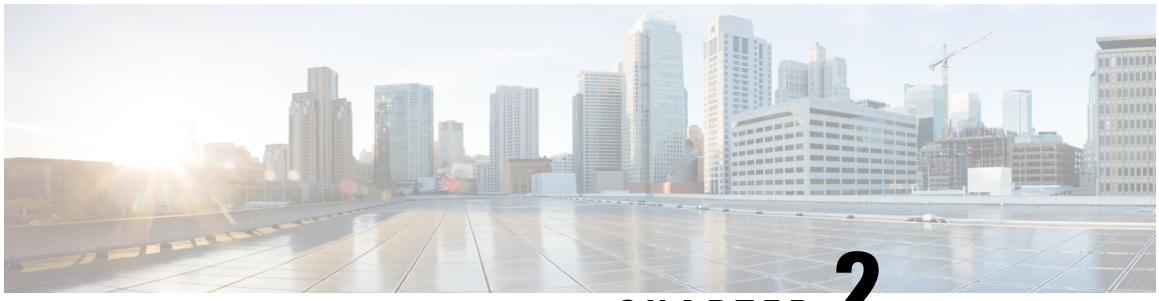
The following figure shows the port-side chassis features that you use when installing the chassis or replacing its modules.

Figure 6: Port-Side View of the Cisco Nexus 3550-T Chassis



1	Management, Console, and USB ports	2	48 fixed small form-factor pluggable (SFP+) ports

Please refer https://www.cisco.com/c/en/us/td/docs/dcn/nexus3550/3550-t/sw/101x/configuration/cisco-nexus-3550t-configuration-guide.html to learn more.



CHAPTER 2

Preparing the Site

- Temperature Requirement, on page 7
- Humidity Requirement, on page 7
- Altitude Requirements, on page 7
- Dust and Contaminants, on page 7

Temperature Requirement

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

Humidity Requirement

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

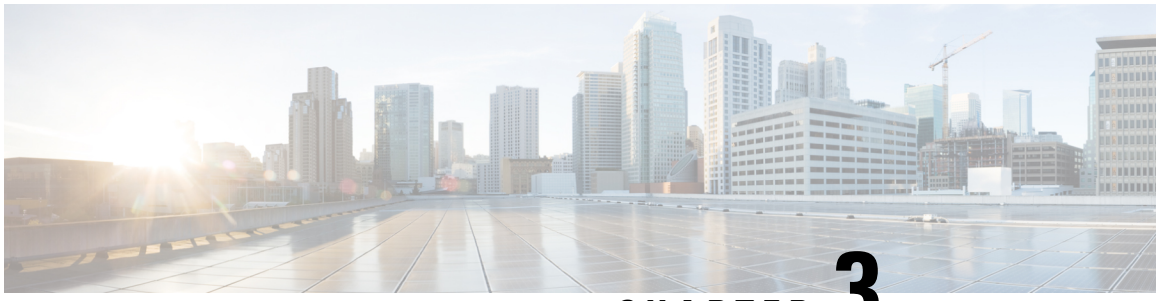
Buildings cooled with air conditioning during warm months and warmed during cold months usually maintain an acceptable level of humidity. However, if the site is unusually humid, use a dehumidifier to maintain the required humidity level.

Altitude Requirements

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

Dust and Contaminants

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



CHAPTER 3

Installing the Chassis

- Safety, on page 9
- Installation Options with Rack-Mount Kits, Racks, and Cabinets, on page 12
- Preparing to Install the Chassis, on page 12
- Unpacking and Inspecting the Chassis, on page 15
- Mount the Cisco Nexus 3550-T Programmable Switch Platform, on page 16
- Mount the Cisco Nexus 3550-T Programmable Switch Platform with Rear Support Rails, on page 16
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Safety

Before you install, operate, or service the switch, see the *Regulatory, Compliance, and Safety Information for the Cisco Nexus 3550-T Triton* 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



Warning **Statement 1017—**Restricted Area

This unit is intended for installation in restricted access areas. A restricted access area can be accessed by skilled, instructed, or qualified personnel.

Warning **Statement 1030—**Equipment Installation

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

Personnel	Only a skilled person or an instructed person should be allowed to install, replace, or service this equipment.
Environment	1. **Access**This unit is intended for installation in restricted access areas. A restricted access area can only be accessed by skilled, instructed or qualified personnel. 2. **GPS**To reduce the risk of electric shock, the shield of the coaxial cable must be connected to the building earth. **Caution** Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (e.g. U.S.: NFPA 70, National Electrical Code, Article 810, Canada: Canadian Electrical Code, Section 54). 3. **Ambient temperature** Make sure the ambient temperature does not exceed the maximum ambient temperature allowed for the Cisco Nexus 3550-T Programmable Switch Platform (104F, 40C). If installed in a closed or multi-unit rack assembly, the ambient temperature of the rack during operation will be greater than room ambient. 4. **Air flow**Install the Nexus 3550-T in the rack in a way that provides sufficient air flow for safe operation. 5. **Mechanical loading**Mount the Nexus 3550-T in the rack with a mechanical load that is evenly distributed and not excessive. 6. **Circuit overloading**Ensure that no overloading of the circuits occurs which might affect overcurrent protection and supply wiring. The ratings are provided on the unit. 7. **Earthing** Ensure that the rack-mounted equipment is earthed reliably. Consider using supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Power	Check that your Nexus 3550-T is rated to be used with the mains power in your country.Total Nexus 3550-T rating: • 90-264V AC @ 6A max, 47/63 Hz
Before servicing	Disconnect the two power supply cables before servicing.
Power cables	Ensure the Nexus 3550-T uses mains power cables approved in the country of operation
Warning **Clock battery**	The Nexus 3550-T has a battery-powered real-time clock circuit. There is a danger of explosion if the battery is replaced incorrectly.Replace only with CR2032 type coin cells.Discard used batteries according to the manufacturer's instructions.
Caution **Laser safety**	SFP modules used in the Nexus 3550-T can be a CLASS 1 LASER PRODUCT. Invisible laser radiation may be emitted from the aperture of an SFP module when the fiber cables are disconnected.Do not stare into the open aperture of an SFP module and avoid exposure to laser radiation when a fiber cable is disconnected from an SFP module.
Caution **21 CFR 1040**	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.Conforme à la norme 21 CFR 1040.10 et 1040.11, sauf conformité avec la norme IEC 60825-1 Ed. 3., comme décrit dans l'avis relatif au laser no. 56, daté du 8 mai 2019.
	To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.
	This equipment must be grounded. To reduce the risk of electric shock, the power cord, plug or combination must be connected to a properly grounded electrode, outlet or terminal. Verification of the protective earthing of the socket outlet should be carried out by a skilled person.
Warning **Warranty void if opened**	**Do not open the case of the Nexus 3550-T**The warranty of the Nexus 3550-T will be void if the case is opened.
Warning **FCC Compliance**	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Fiber type and Core diameter (µm)	Wavelength (nm)	Max. Power (mW)	Beam divergence (rad)
SM 11	1200 – 1400	39 - 50	0.1 - 0.11

Fiber type and Core diameter (µm)	Wavelength (nm)	Max. Power (mW)	Beam divergence (rad)
MM 62.5	1200 – 1400	150	0.18 NA
MM 50	1200 – 1400	135	0.17 NA
SM 11	1400 – 1600	112 - 145	0.11 - 0.13

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

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

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

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

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

- Open EIA rack
- Perforated EIA cabinet

The rack or cabinet that you use must meet the requirements listed the in General Requirements and Guidelines for Cabinets and Racks, on page 25 section.

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

Preparing to Install the Chassis

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

The installation site meets the following requirements:

- Environmental requirements for temperature, humidity, altitude, and air particulates.
- Cabinet or rack is installed and meets the requirements for the switch.

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

- The rack is positioned so that you can install the switch with its cold air intakes positioned in a cold aisle.

  If the fan and power supply modules are burgundy or red colored, you must install the chassis with its port side in a cold aisle. If the modules are blue colored, you must be able install the chassis with the fan modules in a cold aisle.

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

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

- Site power meets the switch requirements. If you are using n+n redundancy, you must have two power sources within reach of the switch when it is installed in the cabinet or rack.

  If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

Caution Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco Nexus 3550-T switches. These switches can have substantial current draw fluctuations because of fluctuating data traffic patterns.

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

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

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. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

20 A

Package Contents

The Nexus 3550-T box should contain the following items:

- Nexus 3550-T box

- Nexus 3550-T Chassis
- Rackmount kit
  - 8x M6 rack-mounting nuts
  - 8x M6 rack-mounting bolts
  - 8x M6 rack-mounting washers
- 2x IEC power leads
- 1x Serial port adapter cable
- 2x Mounting extension rails

Already installed should also be:

- 2x Power supply modules
- 2x Fan modules



Note The power supplies have an arrow on the exhaust fan that points in the direction of airflow. Fan modules are colored red for port-side intake and blue for port-side exhaust.

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

You have the following equipment in addition to the switch and the kits shipped with the switch:

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

Unpacking and Inspecting the Chassis

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

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

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

To inspect the switch, follow these steps:

Procedure

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

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

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

Step 3 For duel direction airflow switches, check to be sure that all of the fan and power supply modules have the same airflow direction.

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

Mount the Cisco Nexus 3550-T Programmable Switch Platform

Since the power supplies and fans add significant weight to the Nexus 3550-T, We recommend that the system is rack mounted *prior* to installing them.

Note You will require two people to complete the installation.

To mount the Nexus 3550-T, perform the following steps:

1. Clip the supplied-mounting nuts into the rack as shown, noting the gap of one notch between the nuts.
2. One person holds the Nexus 3550-T, aligning the front panel of the Nexus 3550-T with the nuts.
3. The second person affixes the washers and bolts to each of the four mounting holds on the front panel of the Nexus 3550-T, securely fastening them to the nuts.

Mount the Cisco Nexus 3550-T Programmable Switch Platform with Rear Support Rails

The Nexus 3550-T ships with rear support rails. You can add these rails to provide extra structural support for the rack system.

To mount the Nexus 3550-T with rear support rails, perform the following steps:

1. 1. Fasten the rear rails at the desired height.

Figure 7: Attaching the right hand side rail.

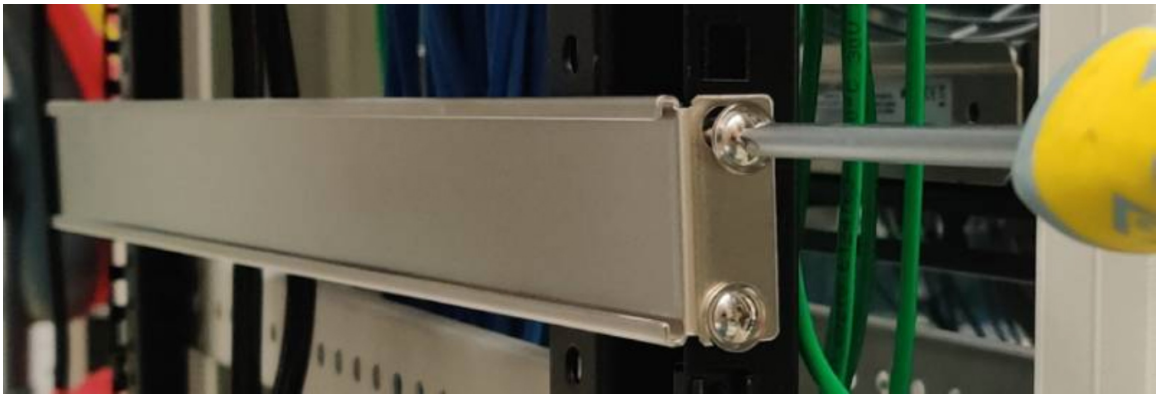


Figure 8: Attaching the left hand side rail.



2. Lift the Nexus 3550-T to the desired height and align the installed rails with the rail mounting holes on the rear of the Nexus 3550-T.
3. Slowly rack the Nexus 3550-T by sliding back onto the rails, until the front is flush with the rack.
4. Fasten the Nexus 3550-T onto the rack as per the method for installing the front mount bolts. Due to the Nexus 3550-T's weight, the installation might be easier with the aid of another person.

Figure 9: Fasten the Nexus 3550-T in the normal manner.

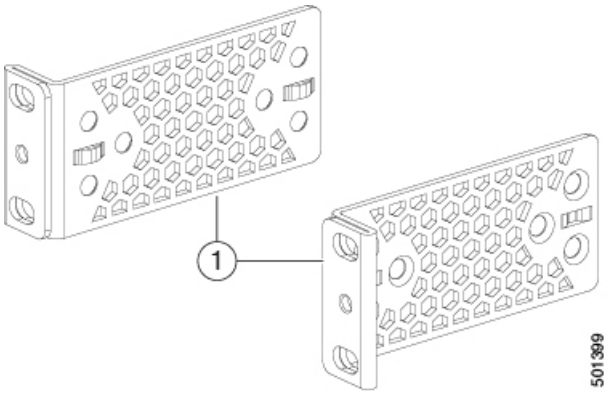


Installing a 1 (RU) Chassis in a Two-Post Rack

This section describes the rack installation for the Cisco Nexus 3550-T switch into a two-post rack.

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

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



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

SUMMARY STEPS

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

DETAILED STEPS

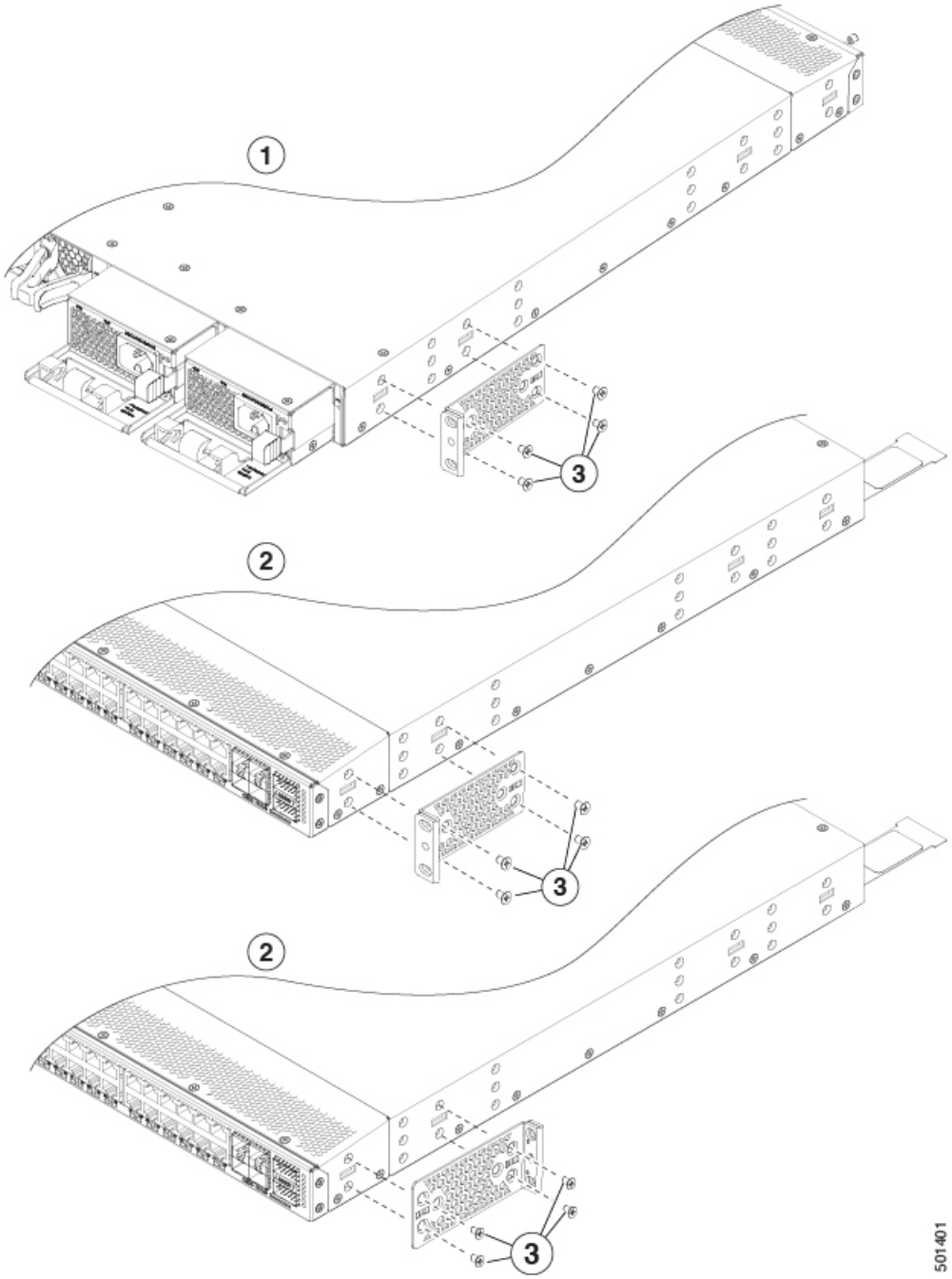
Procedure

Step 1 Install the brackets to a typical switch.

a) Determine which end of the chassis is to be located in the cold aisle as follows:

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

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



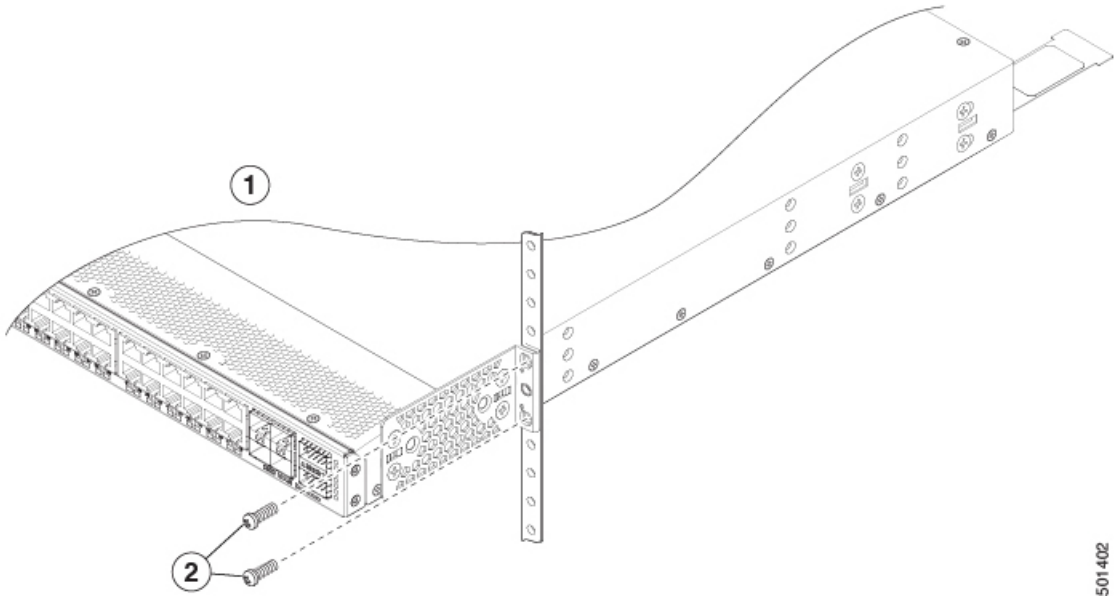
1	Rear-mounting position	
2	Front-mounting position	
3	Number-8 Philips flat-head screws (4 each bracket)	

c) Secure the bracket to the chassis using four Number-8 Philips flat-head screws and tighten each screw to 12 in-lb (1.36 N·m) of torque.

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

Step 2 Install the chassis into the rack.

a) Use two M4 screws to attach the brackets to the rack.



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

Grounding the Chassis

The 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 An electrical conducting path shall exist between the product chassis and the metal surface of the enclosure or rack in which it is mounted or to a grounding conductor. Electrical continuity shall be provided by using thread-forming type mounting screws that remove any paint or non-conductive coatings and establish a metal-to-metal contact. Any paint or other non-conductive coatings shall be removed on the surfaces between the mounting hardware and the enclosure or rack. The surfaces shall be cleaned and an antioxidant applied before installation.

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

Warning **Statement 1024—**Ground Conductor

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

Warning **Statement 1046—**Installing or Replacing the Unit

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

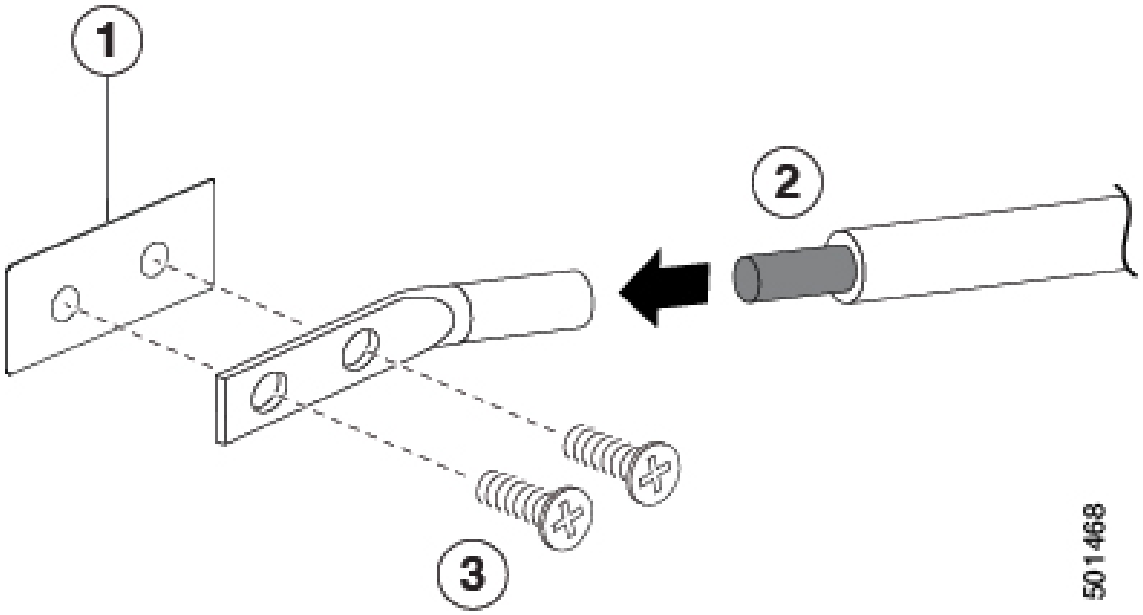
Before you begin

Before you can ground the chassis, you must have a connection to the earth ground for the data center building.

Procedure

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

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



1	Chassis grounding pad	3	2 M4 screws are used to secure the grounding lug to the chassis

2	Grounding cable, with 0.75 in. (19 mm) of insulation that is stripped from one end, which is inserted into the grounding lug and crimped in place

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

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

Starting the Switch

To power up the switch, follow these steps:

Before you begin

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

Procedure

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

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

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

a) Using the recommended high voltage power cable for your country or region, connect the Anderson Power Saf-D-Grid connector on the power cable to the power receptacle on the power supply. Make sure that the connector clicks when fully pushed into the receptacle.
b) Connect the other end of the power cable to a power source.
    - When connecting to an HVAC power source, insert the C14 or LS-25 plug in a receptacle for the HVAC power source.

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

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

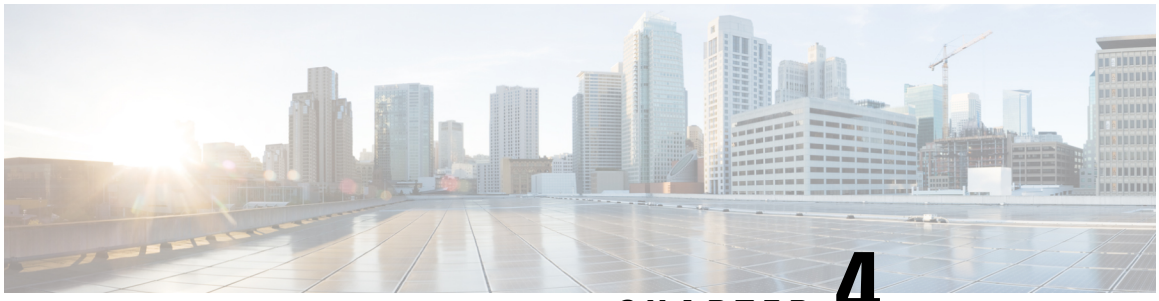
- Power supply LED—lit and green

If not green, try removing the module part way from its slot and reinstalling it.

- Fan LED—lit and green

  If not green, try removing the module part way from its slot and reinstalling it.

- System Status LED—lit and green (if this LED is orange or red, then one or more environmental monitors is reporting a problem.)
- Link LEDs for the Ethernet connector—Off



CHAPTER 4

Rack Specifications

- General Requirements and Guidelines for Cabinets and Racks, on page 25
- About Requirements for Perforated Cabinets, on page 26
- About Requirements for Open Racks, on page 26

General Requirements and Guidelines for Cabinets and Racks

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

- Standard 19-inch (48.3 cm) four-post EIA cabinet or rack.
- Mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992). See below.

The cabinet or rack must also meet the following requirements:

- The minimum vertical rack space per Cisco Nexus 3000 Series switch chassis must be one RU (rack units), equal to 1.75 inches (4.4 cm).
- The width between the rack-mounting rails must be at least 17.75 inches (45.0 cm) if the rear of the device is not attached to the rack. For four-post EIA racks, this measurement is the distance between the two front rails.

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

- The minimum spacing for the bend radius for fiber-optic cables should have the front-mounting rails of the cabinet offset from the front door by a minimum of 3 inches (7.6 cm).
- The distance between the outside face of the front mounting rail and the outside face of the back mounting rail should be 23.0 to 30.0 inches (58.4 to 76.2 cm) to allow for rear-bracket installation.
- A minimum of 2.5 inches (6.4 cm) of clear space should exist between the side edge of the chassis and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of chassis air intake or exhaust vents.

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

About Requirements for Perforated Cabinets

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

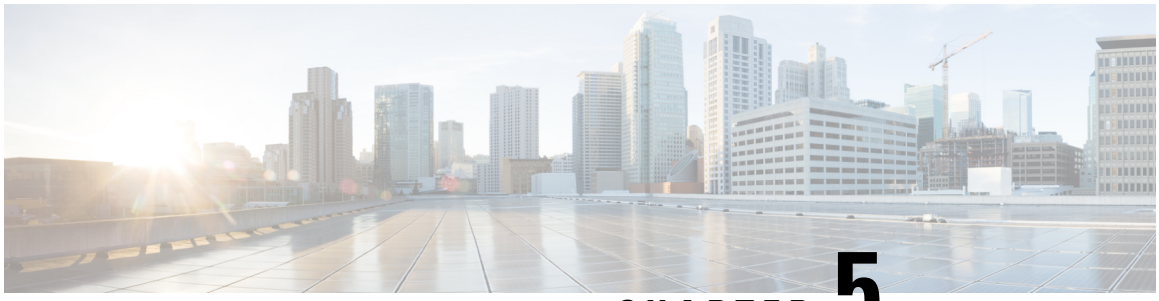
- The front and rear doors must have at least a 60-percent open area perforation pattern, with at least 15 square inches (96.8 square cm) of open area per rack unit of door height.
- The roof should be perforated with at least a 20-percent open area.
- The cabinet floor should be open or perforated to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

The Cisco R Series rack conforms to these requirements.

About Requirements for Open Racks

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

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



CHAPTER 5

Connecting the Switch to the Network

- Preparing for Network Connections, on page 27
- Connecting to a Console, on page 27
- Connecting the Management Interface, on page 29
- Connecting Interface Ports to Other Devices, on page 29
- Maintaining Transceivers and Optical Cables, on page 32

Preparing for Network Connections

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

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

Connecting to a Console

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

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

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

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

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

Before you begin

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

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

Procedure

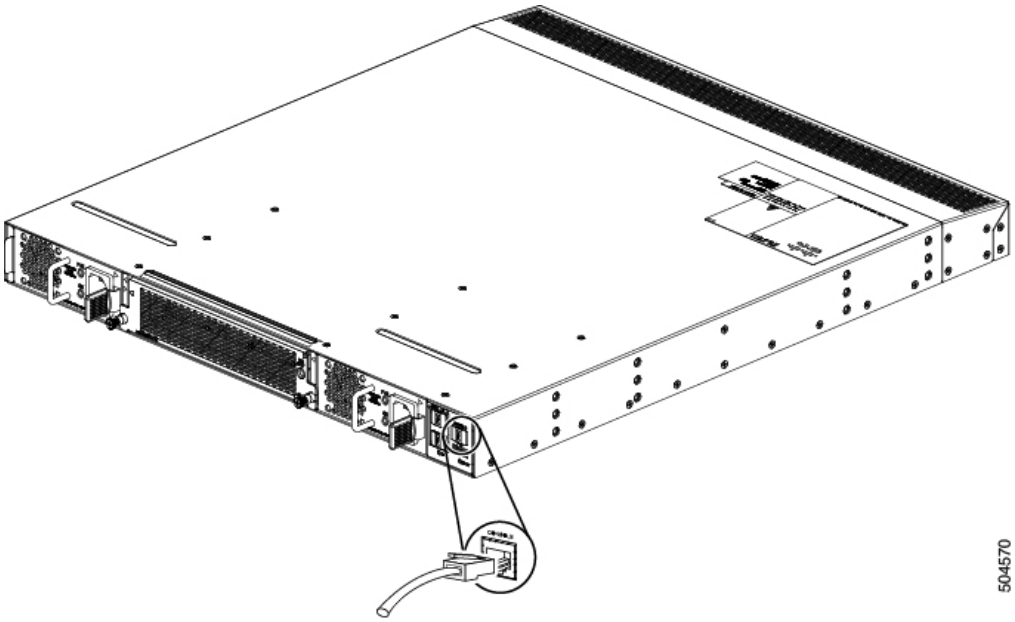
Step 1 Configure the terminal emulator program to match each of the following default port characteristics:

- 115200 baud
- 8 data bits
- 1 stop bit
- No parity

Step 2 Connect the RJ-45 connector of the console cable to the console port.

Step 3 Connect the RJ-45 connector of the console cable to the console port as shown in the following figure:

Figure 10: Connecting a Console Cable to the Switch



Step 4 Connect the DB-9 connector on the other end of the cable to the computer serial port.

What to do next

You are ready to configure the switch.

Connecting the Management Interface

To create a management connection to the switch, you must connect a management port on the switch to an external hub, switch, or router.

To create a management connection to the switch, you must connect one of the two management ports on the switch to an external hub, switch, or router.

Before you begin

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

Procedure

Step 1 Connect the appropriate modular cable to the management portone of the two management ports on the switch.

Note
Connect to only one management port. The switch does not support your use of two management ports.

- To connect the management port to an Ethernet switch port or hub, insert the RJ-45 connector for a modular, straight-through UTP cable into the management port.
- To connect to a router, insert the connector on a crossover cable into the management port.
- To connect one of the two management ports to an Ethernet switch port or hub, insert the RJ-45 connector (used for shorter connections) straight-through UTP cable into the appropriate management port.
- To connect to a router, insert the RJ-45 connector on a crossover cable into the appropriate management port.

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

Connecting Interface Ports to Other Devices

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

Note One of the three rows of downlink ports is upside down to optimize connections. When removing a transceiver from the upside-down row, without a pull-tab, you need to insert a standard (flat) screwdriver to press the release tab to free it from the port.

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

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

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

Warning **Statement 1051—**Laser Radiation

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

Installing SFP+ and SFP Transceivers

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

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

Procedure

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

Step 2 Remove the dust cover from the port cage.

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

Step 4 Insert the transceiver into the port as follows:

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

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

Installing SFP+ and SFP Optical Cables

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

Procedure

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

Step 2 Remove the dust cover from the connector on the cable.

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

Step 4 Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place.

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

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

For instructions on verifying connectivity, see the appropriate Cisco Nexus 3550-T Configuration Guide.

Maintaining Transceivers and Optical Cables

Transceivers and fiber-optic cables must be kept clean and dust free to maintain high signal accuracy and prevent damage to the connectors. Contamination increases attenuation (loss of light) and should be below 0.35 dB.

Consider the following maintenance guidelines:

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



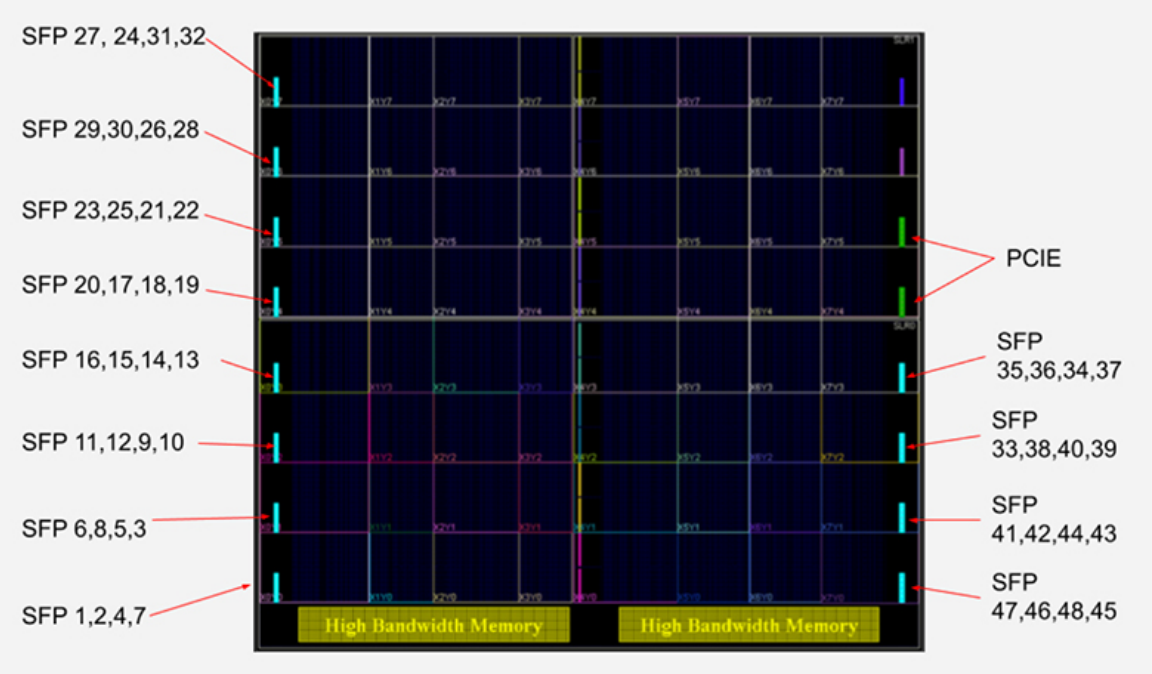
Note If cable length is more than 5 meters, Auto Negotiation is not supported.

Connecting to Transceivers

The XCVU35P-3e FPGA has 56 28Gbps capable transceivers. 48 of them are directly connected the SFP ports. The remaining 8 transceivers are connected to the Intel Atom CPU through a PCI Express (PCIe) interface.

The following diagram shows where the transceivers used for Ethernet and PCIe are located in the FPGA.

Figure 11: The Cisco Nexus 3550-T FPGA transceiver layout

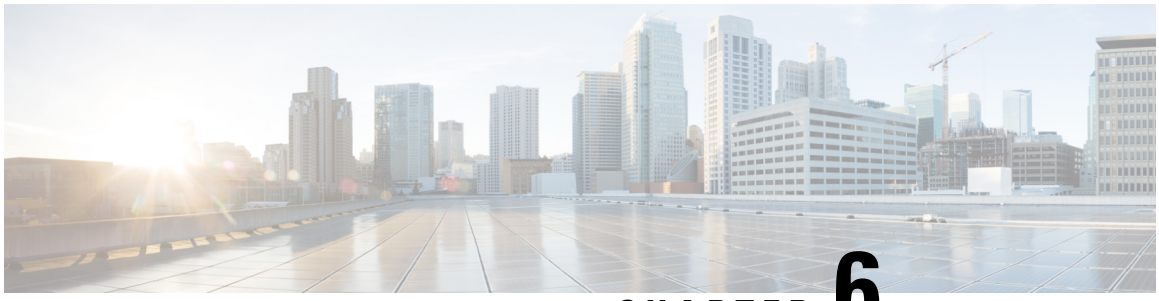


Connecting Interface Ports to Other Devices

There is a high speed PCIe interface between the Atom x86 CPU and FPGA module, which is capable of approximately 50Gb/s when configured in Gen3 x8 mode. Please refer to the *UltraScale+ Device Integrated Block for PCI Express* PG-213.

High-Bandwidth Memory

There is 8 GB of High-Bandwidth Memory (HBM2) integrated in the FPGA for applications requiring high density and high bandwidth (up to 460 GB/s). For access, use the AMD Integrated Memory Interface HBM IP. Please refer to the *AXI High Bandwidth Memory Controller v1.0* https://docs.amd.com/r/en-US/pg276-axi-hbm/Introduction for more information.



CHAPTER 6

Management Setup

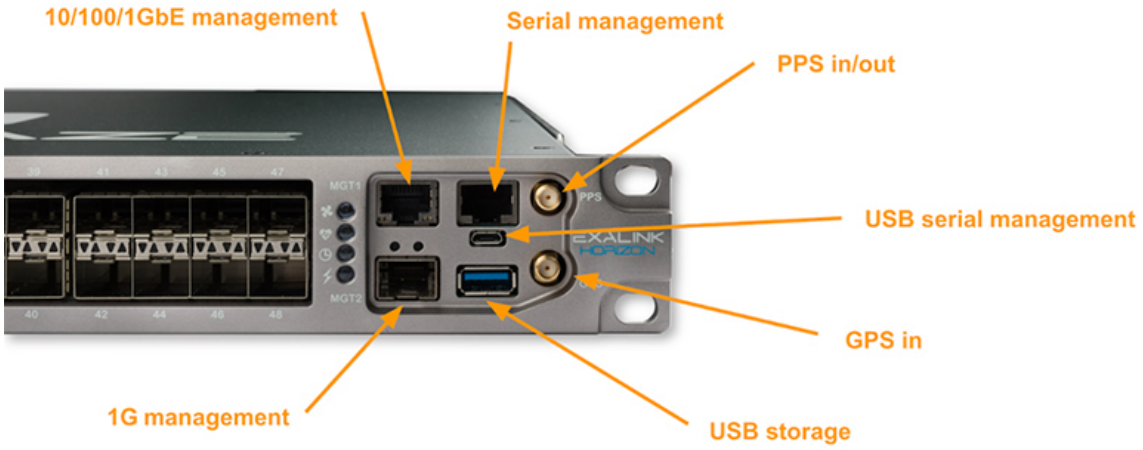
• Management Setup, on page 35

Management Setup

The Cisco Nexus 3550-T Programmable Switch Platform features a console port, a Micro USB port, and a 1Gb RJ45 port, all of which can be used as management interfaces.

The factory default setting of the Nexus 3550-T has one user: `admin` defined with the password: `admin`

Refer to the image below for details on the connectors and indicators.



Console Port

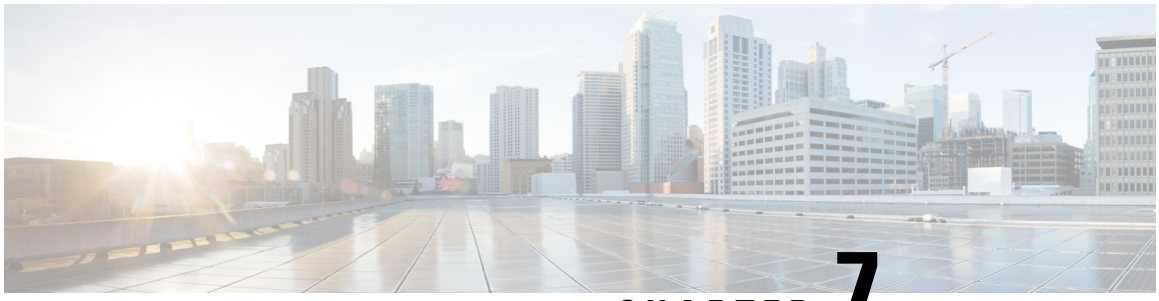
The console port uses an industry standard RJ45 connector commonly used for connecting to network devices via a serial port.

The serial port parameters are 115200 8N1, that is 115200 baud, 8 data bits, no parity and 1 stop bit.

Micro USB Port

The Micro USB port may also be used as a management interface. Connecting a Micro USB cable will allow hosts to connect via this port as if they were connecting over serial.

Management Setup



CHAPTER 7

Rebooting

- Rebooting a Switch, on page 37

Rebooting a Switch

You can reboot or reload the switch by using the **reload** command without any options.

Note If you use the **reload** command, be sure to save the running configuration first by using the **copy running-config startup-config** command.

Procedure

Step 1 Use the **configure terminal** command to enter the global configuration mode.

Example:

```
switch# configure terminal
switch(config)#
```

Step 2 Use the **copy running-config startup-config** command to save the running configuration.

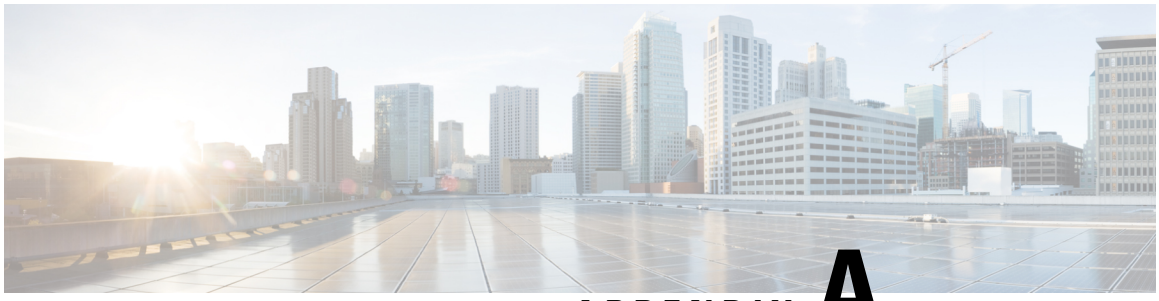
Example:

```
switch(config)# copy running-config startup-config
```

Step 3 Use the **reload** command to reload the switch.

Example:

```
switch(config)# reload
```



APPENDIX A

Spare Parts Table

- Spares Support Table, on page 39

Spares Support Table

Table 2: Cisco Nexus 3550-T, Release 10.1(2t) Switches

Product ID	Description
N35-T-48X	Cisco Nexus 3550-T switch features a console port, a Micro USB port, and a 1G RJ45 port, which can be used as management interfaces.

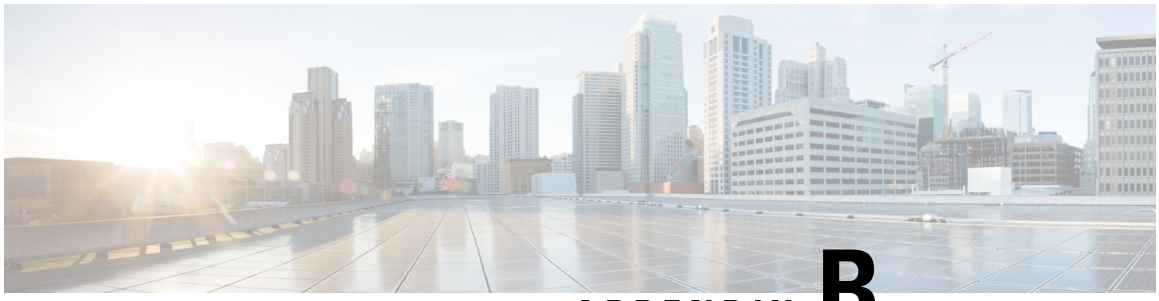
Table 3: Cisco Nexus 3550-T, Release 10.1(2t)Triton Fan Trays and Power Supplies

Product ID	Description
N35-T-FAN-PE	Fan module with port-side exhaust airflow
N35-T-FAN-PI	Fan module with port-side intake airflow
N35-T-PAC-PI	Cisco Nexus 2000 or 3000 400W AC power supply, forward airflow (port side intake)
N35-T-PAC-PE	Cisco Nexus 2000 or 3000 400W AC power supply, forward airflow (port side exhaust)

Table 4: Cisco Nexus 3550-T, Release 10.1(2t) Power Cords

Product ID	Description	Country
CP-PWR-CORD-AU N35-T-48X	Standard Power Cord	Australia
CAB-AC-10A-BRZ	Power Cord 10A NBR 14136 plug 3 pins	Brazil

Product ID	Description	Country
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, 8.2-Ft	North America
CAB-ACC	AC Power Cord, C13, NEMA 5-15P, 2.1m	
CAB-C13-C14-2M	Standard Power Cable, 240 Volts, 0.02 Pounds, Length: 6.6 ft., Connectors: 1 x power IEC 320 EN 60320 C13	
CAB-N35-AC-EU	AC Power Supply Cord	Europe
CP-PWR-CORD-UK	Cisco CP-PWR-CORD-UK Transformer Power Cord, Cisco VOIP phones	United Kingdom
CAB-IND-10A	Standard Power Cord, Second End Connector Type: IEC 320 EN 60320 C13, Current Rating: 10 A	India
CAB-C13-C14-3M-IN	This is a 10ft C13 to C14 18AWG 100-250V power cable that can be used to extend the lengths of 3-pin devices that utilize a shrouded power connector.	
CAB-3P-JPN	Standard AC Power Supply Cord Nema 5-15P to C13. Length: 6 Feet/19.6 Meters	Japan
CAB-C13-C14-2M-JP	Power cable - IEC 60320 C13 to IEC 60320 C14 - 6.6 ft	
CP-PWR-CORD-SA	AC Power Supply Cord	South Africa
CP-PWR-CORD-TW	AC Power Supply Cord	Taiwan



APPENDIX B

LEDs

- Chassis LEDs, on page 41
- Fan LEDs, on page 42
- Power Supply LEDs, on page 43

Chassis LEDs

Management Ports and Indicators

Several device-management indicators and connectors are available on the right hand side of the front panel of the Cisco Nexus 3550-T Programmable Switch Platform.

The various status indicators indicate the device status as follows:

Fan Status

- Green if all fan modules are operating correctly.
- Red if a fault is detected in one or more fan modules.

System Status

- Green if the management software has no errors.
- Red if the management software experiences an error.

Time sync Status

- Currently not used.

Power Supply Status

- Green if both power supply modules are operating correctly.
- Red if a fault is detected in one or more power supply modules.

This table provides information about chassis LEDs for Cisco Nexus 3550-T switches.

Component	LED		Description
Chassis (front and back)	Management (MGMT)		This port has no physical link.
			This port has a physical link.
			This port has no activity.
			This port has activity.
	Port		Green and amber LED used to indicate customer-defined status for each port.
			This port is not in use. This port is unusable during breakout.
	Status (STS)		All diagnostics pass. The module is operational.
			The module is not receiving power.
			The module is booting or running diagnostics. The switch is overheating. The temperature threshold has been exceeded by a small value during environmental monitoring.
			The switch has overheated. The temperature threshold has been exceeded by a large value during environmental monitoring. If the module fails during initial reset, the LED continues to blink and the module does not come online. The module has a runtime failure and is brought offline.

Fan LEDs

This table provides information about fan LEDs for Cisco Nexus 3550-T switches.

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

Power Supply LEDs

Power Supply Ports and Indicators

This table provides information about power supply LEDs for Cisco Nexus 3550-T switches.

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