Hardware Installation Guide for Cisco Catalyst 8300 Series Edge Platforms

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CONTENTS

CHAPTER 1

Overview

The Cisco Catalyst 8300 Series Edge Platforms are best-of-breed, 5G-ready, cloud edge platforms designed for accelerated services, multi-layer security, cloud-native agility, and edge intelligence to accelerate your journey to cloud.

Cisco Catalyst 8300 Series Edge Platforms with Cisco IOS XE SD-WAN Software deliver Cisco's secure, cloud-scale SD-WAN solution for the branch. The Cisco Catalyst 8300 Series Edge Platforms is built for high performance and integrated SD-WAN Services along with flexibility to deliver security and networking services together from the cloud or on premises. It provides higher WAN port density and a redundant power supply capability. The Cisco Catalyst 8300 Series Edge Platforms have a wide variety of interface options to choose from—ranging from lower and higher module density with backward compatibility to a variety of existing WAN, LAN, LTE, voice, and compute modules. Powered by Cisco IOS XE, fully programmable software architecture, and API support, these platforms can facilitate automation at scale to achieve zero-touch IT capability while migrating workloads to the cloud. The Cisco Catalyst 8300 Series Edge Platforms also come with Trustworthy Solutions 2.0 infrastructure that secures the platforms against threats and vulnerabilities with integrity verification and remediation of threats.

The Cisco Catalyst 8300 Series Edge Platforms are well suited for medium-sized and large enterprise branch offices for high WAN IPSec performance with integrated SD-WAN services.

Cisco Catalyst 8300 Series Edge Platforms target these use cases:

- Enterprise Branch office, Managed Service Provide CPE, Internet Gateway for DIA, SASE cloud platform with SD-WAN
- Next-generation of Software Defined (SD) Branch routing platforms

For more information on the features and specifications, refer to the Cisco Catalyst 8300 Series Edge Platforms datasheet.

Note   Sections in this documentation apply to all models of Cisco Catalyst 8300 Series Edge Platforms unless a reference to a specific model is made explicitly.

The support for the Hyperthreading (HT) for the data plane Packet Processing Engine is added on the following platforms:

- C8300-2N2S-4T2X
- C8300-2N2S-6T
- C8300-1N1S-4T2X

• C8300-1N1S-6T

This chapter contains the following sections:

Chassis Views

This section contains views of the Power Supply and I/O sides of the Cisco Catalyst 8300 Series Edge Platforms, showing the locations of power and signal interfaces, module slots, status indicators, and chassis identification labels:

Cisco Catalyst 8300 Series Edge Platforms are available in these models:

• C8300-1N1S-4T2X

• C8300-1N1S-6T

• C8300-2N2S-4T2X

• C8300-2N2S-6T

Note   N=Network Interface Modue, S=Services Module, and T=Gigabit Ethernet, X=Ten Gigabit

Figure 1: C8300-1N1S-4T2X|6T Chassis - I/O Side
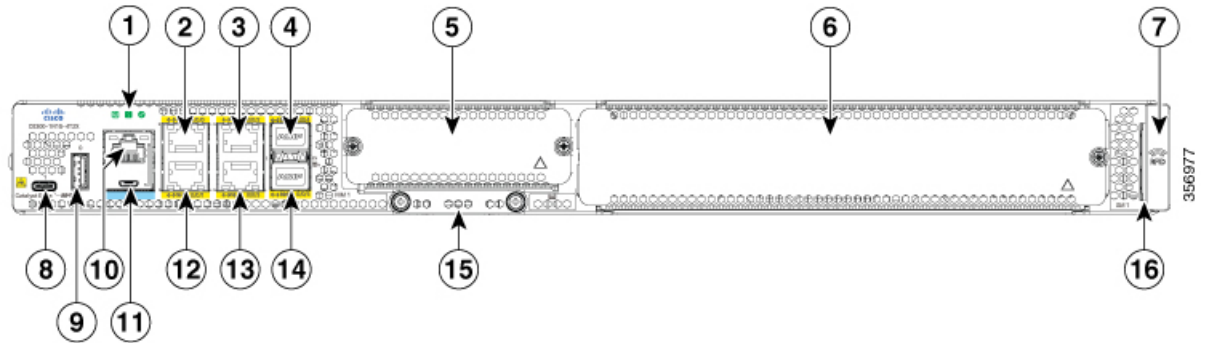
Table 1: I/O Side

1	LED	2	RJ-45 Gigabit Ethernet port (1G 0/0/0)
3	RJ-45 Gigabit Ethernet port (1G 0/0/2)	4	SFP+/10 Gigabit Ethernet port (10G 0/0/4) SFP/1 Gigabit Ethernet port (1G 0/0/4)
5	NIM Slot1	6	SM Slot1
7	RFID (Optional)	8	USB Type C (3.0) (USB 1)

9	USB Type A (3.0) (USB 0)	10	RJ-45 Console
11	Micro-USB Console	12	RJ-45 Gigabit Ethernet port (1G 0/0/1)
13	RJ-45 Gigabit Ethernet port (1G 0/0/3)	14	SFP+/10 Gigabit Ethernet port (10G 0/0/5) SFP/1 Gigabit Ethernet port (1G 0/0/5)
15	M.2 USB/NVMe storage	16	Device Label Tray

Figure 2: C8300-1N1S-4T2X|6T Chassis - PSU/Fan Tray Side
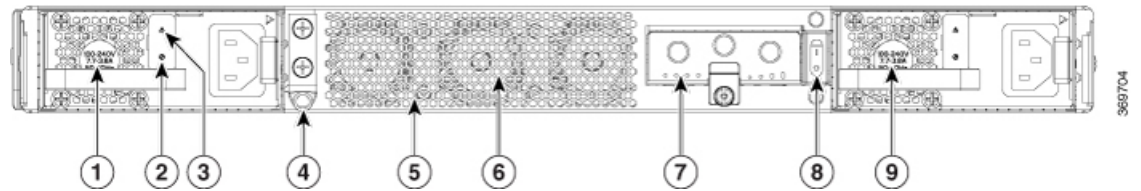
Table 2: PSU/Fan Tray Side

1	AC/DC power supply unit (PSU1)	2	Power, Preset, OK, LED
3	ALARM Fail LED	4	Ground lug
5	Fan tray vent	6	3-Internal Fan tray
7	PIM Slot 1	8	Power switch
9	AC/DC Power Supply Unit (PSU0)		

Figure 3: C8300-2N2S-4T2X|6T Chassis - I/O Side
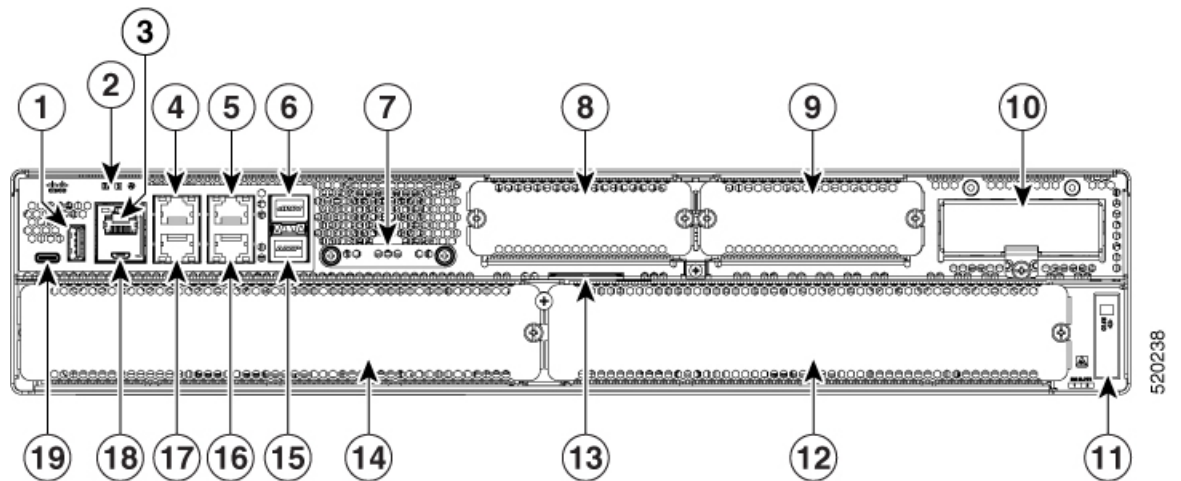
Table 3: I/O Side

1	USB Type A (3.0) (USB 0)	2	LED

3	RJ-45 Console	4	RJ-45 Gigabit Ethernet port (1G 0/0/0)
5	RJ-45 Gigabit Ethernet port (1G 0/0/2)	6	SFP+/10 Gigabit Ethernet port (10G 0/0/4) for C8300-2N2S-4T2X SFP/1 Gigabit Ethernet port (1G 0/0/4) for C8300-2N2S-6T
7	M.2 USB/NVMe storage	8	NIM Slot 1
9	NIM Slot 2	0	PIM Slot 1
1	RFID (Optional)	2	SM Slot 2
3	Device label tray	4	SM Slot 1
5	SFP+/10 Gigabit Ethernet port (10G 0/0/5) for C8300-2N2S-4T2X SFP/1 Gigabit Ethernet port (1G 0/0/5) for C8300-2N2S-6T	6	RJ-45 Gigabit Ethernet port (1G 0/0/3)
7	RJ-45 Gigabit Ethernet port (1G 0/0/1)	8	Micro-USB Console
9	USB Type C(3.0) (USB 1)		

Figure 4: C8300-2N2S-4T2X|6T Chassis - PSU/Fan Tray Side
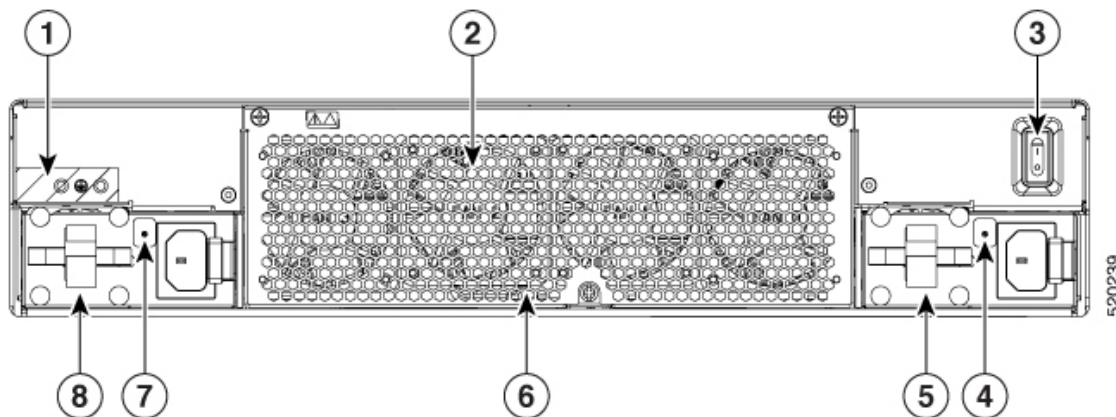
Table 4: PSU/Fan Tray Side

1	Ground Lug	2	FRU Fan tray
3	Power Switch	4	PSU0 Power LED
5	PSU0	6	POE Power Module 0/1, behind removable Fan tray
7	PSU1 Power LED	8	PSU1

For detailed information on LEDs, see the section on LED indicators.

Platform Summary

The figure below shows the internal view of Cisco Catalyst 8300 Series Edge Platforms with components and module locations.

Figure 5: Platform Summary of C8300-1N1S-4T2X|6T
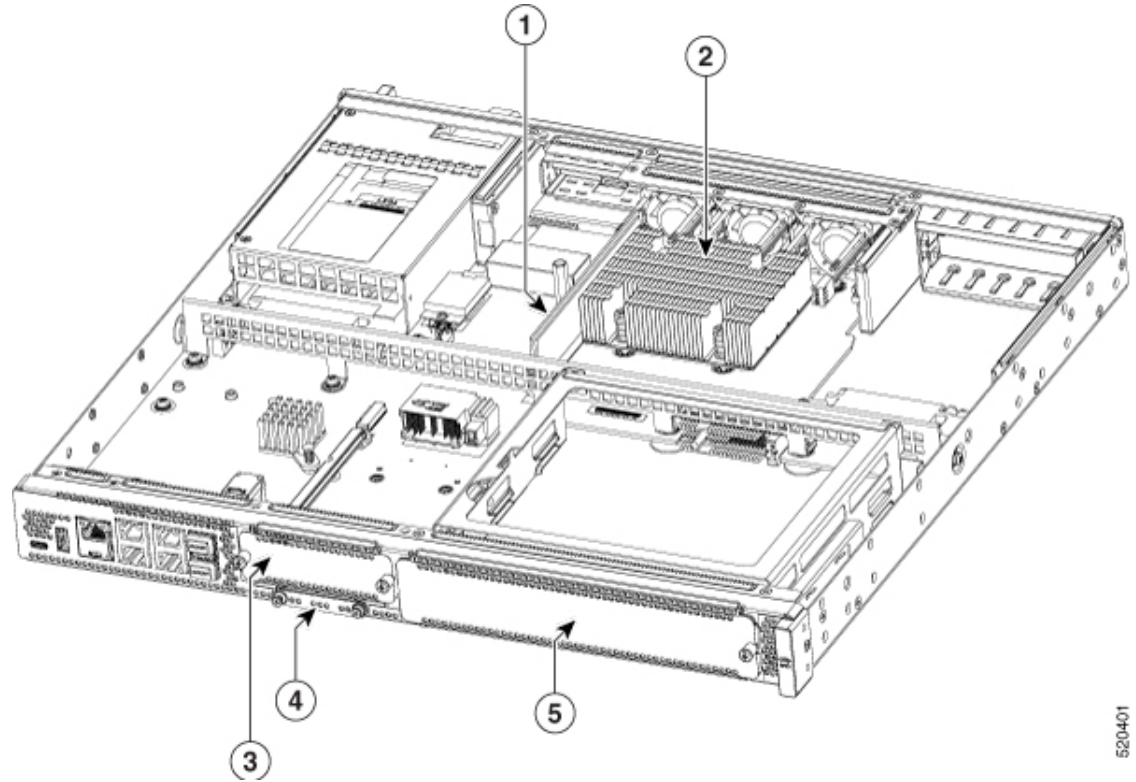
1	DIMM	2	CPU
3	NIM slot	4	M.2 card slot
5	SM		

Figure 6: Platform Summary of C8300-2N2S-4T2X|6T Chassis
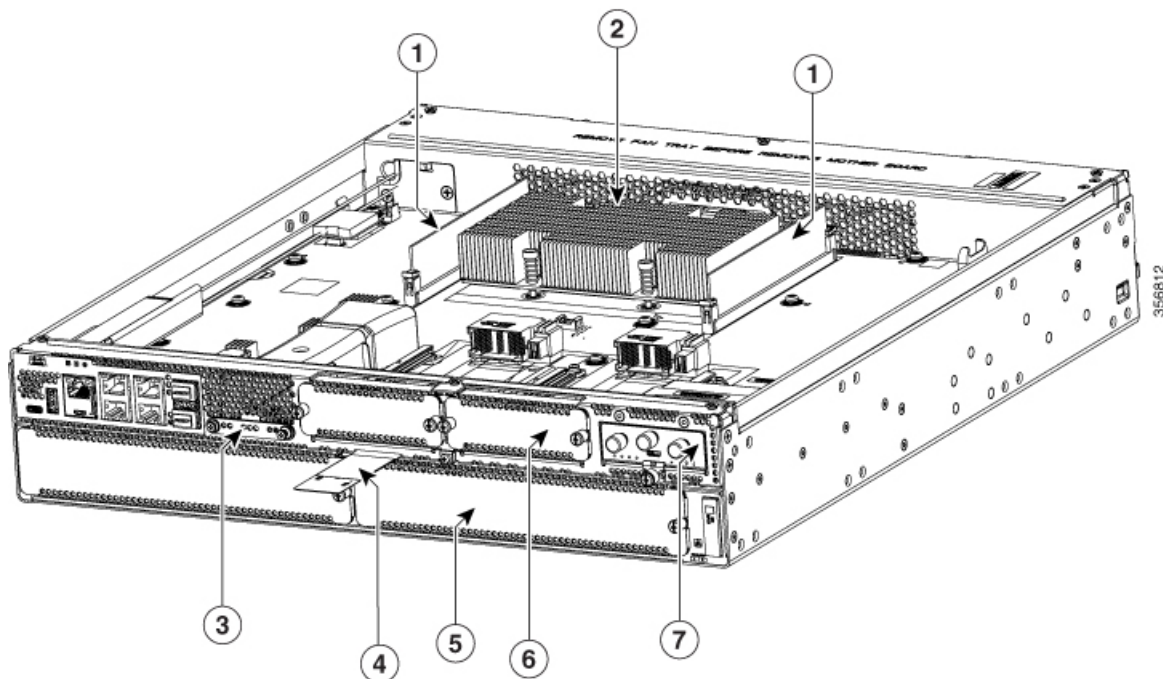
1	DIMMs	2	CPU
3	M.2 Card slot	4	Label tray
5	SM	6	NIM
7	PIM		

Locating Labels on Cisco Catalyst 8300 Series Edge Platforms

Use the Cisco Product Identification (CPI) tool to find labels on the platform. The tool provides detailed illustrations and descriptions of where labels are located on Cisco products. It includes the following features:

- A search option that allows browsing for models by using a tree-structured product hierarchy

- A search field on the final results page that makes it easier to look up multiple products

- End-of-sale products clearly identified in results lists

The tool streamlines the process of locating serial number labels and identifying products. Serial number information expedites the entitlement process and is required for access to support services.

Location of labels on Cisco Catalyst 8300 Series Edge Platforms

The figure below shows the location of the labels on the Cisco Catalyst 8300 Series Edge Platforms. Labels are located at the same location on all the Cisco Catalyst 8300 Series Edge Platforms

The Serial number (SN), Common language equipment identifier (CLEI), Top Assembly Number (TAN), Product ID (PID), PID version ID (VID), and Quick response (QR) code are printed on a label on the back of the platform or on a label tray located on the chassis.

Note   The RFID tags on the devices are pre-fitted and does not come with spare RFID tags.

Figure 7: Label Location on a C8300-1N1S-4T2X|6T

1	SN	2	CLEI
3	TAN	4	MAC
5	PIDVID	6	QR code
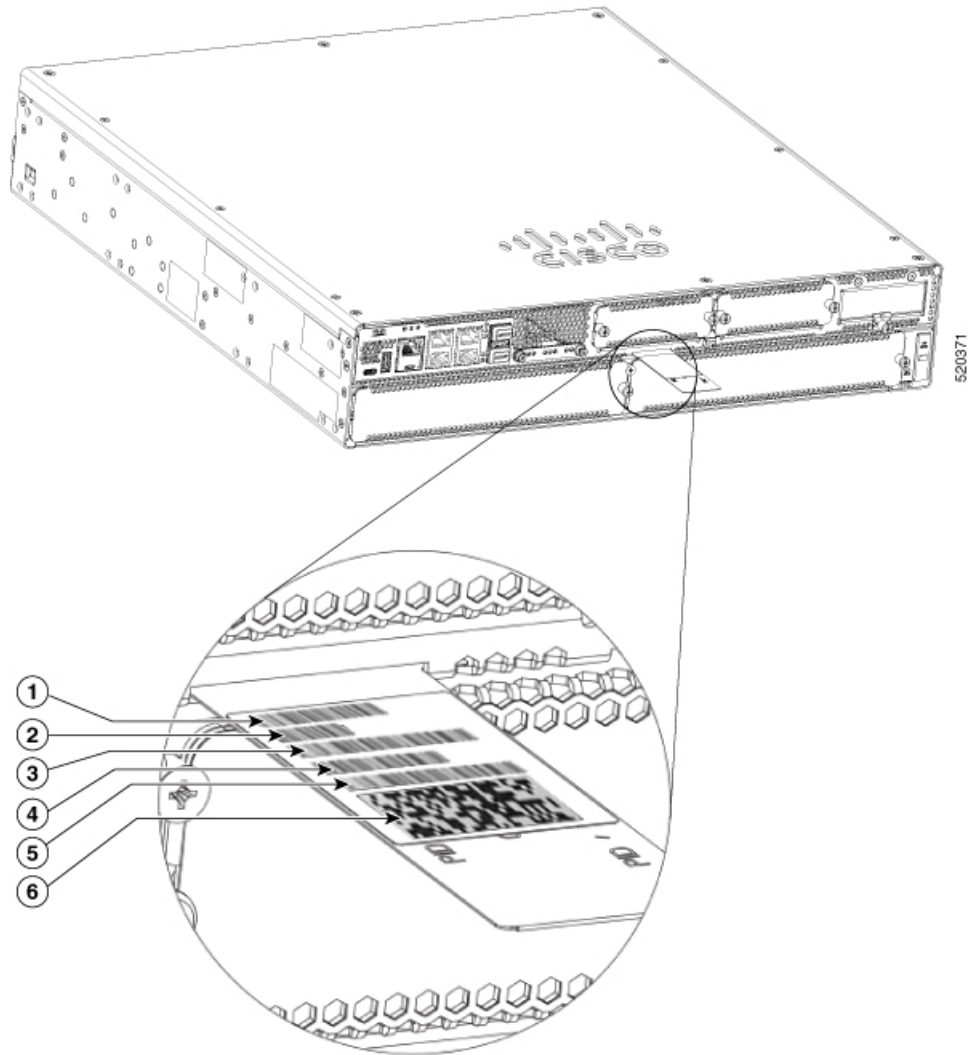
1	SN	2	CLEI
3	TAN	4	MAC
5	PIDVID	6	QR code

Locate Product Identification Details

Software License

The serial number (SN), product ID (PID), version ID (VID), and Common Language Equipment Identifier (CLEI) are printed on a label on the bottom of the device or on the label tray.

To obtain a software license, you need the unique device identifier (UDI) of the device where the license is to be installed.

The UDI has two main components:

- Product ID (PID)

- Serial number (SN)

The UDI can be viewed using the **show license udi** command in privileged Exec mode in Cisco Internet Operating System (IOS) software.

For additional information on the UDI, see the << >>document on cisco.com.

Hardware Features of Cisco Catalyst 8300 Series Edge Platforms

This section describes the hardware features of Cisco Catalyst 8300 Series Edge Platforms

Built-In Interface Ports

The Cisco Catalyst 8300 Series Edge Platforms have multiple 10/100/1000 front panel ports and Small Form Pluggables.

Warning
To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the Management Ethernet ports only to intra-building or unexposed wiring or cable. The intra-building cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building 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 in not sufficient protection in order to connect these interfaces metallically to OSP wiring.

GE or SFP Ports

The following GE and SFP ports are available on the Catalyst 8300 series edge platforms:

GE Ports

The GE RJ-45 copper interface ports support 10BASE-T, 100BASE-TX, and 1000BASE-T.

SFP Ports

The small-form-factor pluggable (SFP) ports support 1Gbps SFP modules.

SFP+ Ports

The enhanced small-form-factor pluggable (SFP) ports support 10 Gbps SFP+ modules.

Removable and Interchangeable Modules and Cards

Service Modules (SMs), Network Interface Modules (NIMs), Pluggable Interface Modules (PIMs) and M.2 USB/NVMe storage fit into external slots and can be removed or replaced without opening the chassis.

External Slots

- Service Modules

- Network Interface Modules

- Pluggable Interface Modules

- M.2 USB/NVMe storage

✎

Note   The LTE Pluggable Interface Module interfaces with the host CPU through the USB3.0 interface. The host then accesses the LTE related signals through the I2C interface of the pluggable module.

Internal Slots

- Memory

See the Cisco Catalyst 8300 Series Edge Platforms product page on cisco.com for a list of supported modules and interface cards.

Memory

Cisco Catalyst 8300 Series Edge Platforms contain DIMMs that store running configuration and routing tables, and are used for packet buffering by the network interfaces.

- Boot/NVRAM—Stores the bootstrap program (ROM monitor) and the configuration register. The boot/NVRAM is not serviceable.

- Internal memory—Internal bootflash memory

- Removable M.2 card—Available in 16GB (default), 32GB M.2 USB and 600GB M.2 NVMe SSD

- DRAM options

  - 1x 8GB DDR4 (default)

  - 1x 16GB DDR4 (upgrade)

  - 1x 32GB DDR4 (upgrade)

Power Supply

The Cisco Catalyst 8300 Series Edge Platforms support a variety of power supply configurations. These devices have power supplies that are field replaceable and externally accessible. The following table summarizes the power options:

Table 5: Field Replaceable Unit Power Options

Model	AC Input PSU	PSU with Integrated PoE	PoE Power Supply Converter	Dual, Hot Swap	DC Input PSU
C8300-1N1S-4T2X	Y	Y	N	Y	Y
C8300-1N1S-6T	Y	Y	N	Y	Y
C8300-2N2S-4T2X	Y	N**	Y	Y	Y
C8300-2N2S-6T	Y	N**	Y	Y	Y

Note **PoE with AC PSU+ a separate PoE adapter.

LEDs for Cisco Catalyst 8300 Series Edge Platforms

Table 6: LEDs Indicators

LED	Color	Description
Logo	Blue	**Cisco Logo LED** Off: The system is powered off Blue: The system is powered on
PWR	Green/Amber	**Power Supply Status** Off: The system is powered off Yellow: A Power Supply in the system is not functioning correctly Green: All installed PSUs are operating correctly
STATUS	Green/Amber/Red	**System Status** Red: The system is booting Red Blinking Red: The system has failed a hardware integrity error Yellow: Rommon has completed booting and system is at Rommon prompt or booting platform software. Green: Normal System Operation

LED	Color	Description
ENV	Green/Amber/Red	**Environmental Status** Off: Monitor is not active. Red: The system has detected a critical overcurrent event and may shut down. Blinking Yellow: One or more temperature sensors in the system are outside the acceptable range. Yellow: One or more fans in the system are outside the acceptable range. Green: All temperature sensors and fans in the system are within acceptable range.
USB CON	Green	**USB Console Active** Green indicates that the active console port is USB.
RJ-45 CON	Green/Yellow	**Serial Console Active** Green indicates that RJ-45 is the active console port.
SFP EN	Green	**SFP Enable LED** **SFP+ Enable LED** Off: Not present Green: The SFP is supported and no faults. Amber: The SFP is not supported or is in a faulty state
SFP LINK	Green	**SFP port 0/1 Link LED** Off: No Link (or not present) Green: Link established

Fans, Ventilation, and Airflow

Chassis Ventilation

The chassis temperature is regulated with internal fans. An onboard temperature sensor controls the fan speed. The fans are always on when the device is powered on. Under all conditions, the fans operate at the slowest

speed possible to conserve power and reduce noise. When necessary, the fans operate at higher speeds under conditions of higher ambient temperature and altitude.

Figure 9: Airflow of C8300-1N1S-4T2X|6T
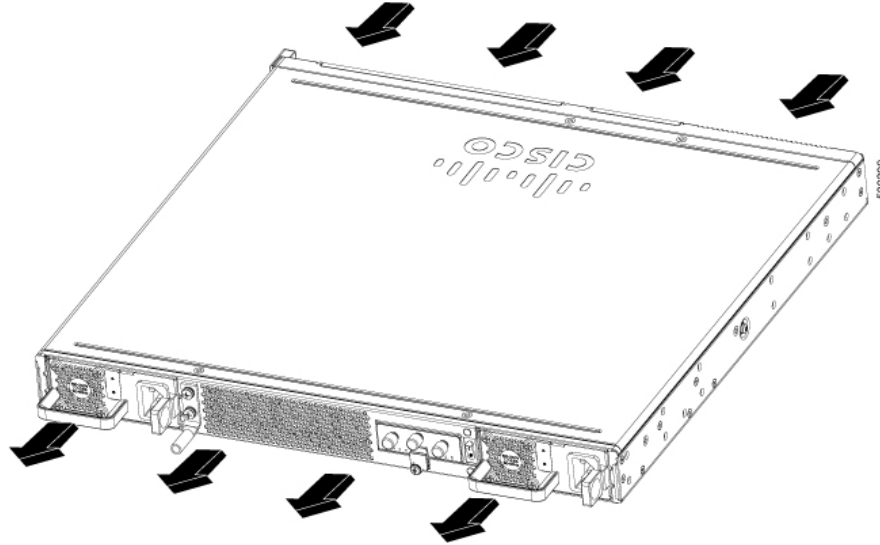
Figure 10: Airflow of C8300-2N2S-4T2X|6T
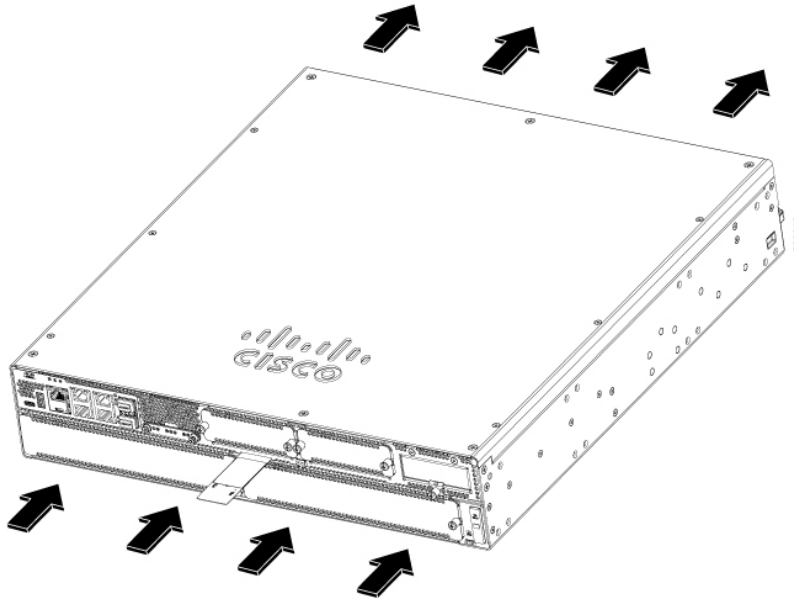
Slots, Subslots-Bay, Ports, and Interfaces

The Cisco Catalyst 8300 Series Edge Platforms support interface modules: Service Modules (SM) and Network Modules (NIMs) and Pluggable Interface Modules (PIMs).

Figure 11:
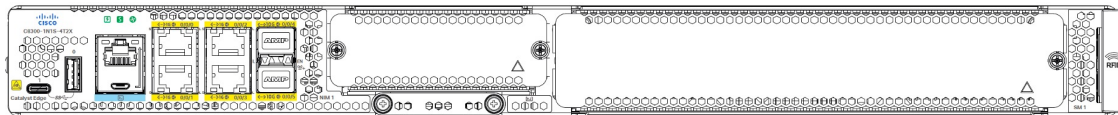
In all cases, the device designates its interfaces using a 3-tuple notation that lists the slot, bay, and port. The 3-tuple value is zero based. An example of a 3-tuple is 0/1/2. This refers to slot 0, the second bay in slot 0 (the first bay is 0 so the second bay is 1), and the third port in bay 1. See the following table for more examples.

Table 7: Slot, Subslot-Bay and Port Numbering

3-Tuple Example	Slot	Bay	Port
0/1/2	0	2nd	3rd
0/0/1	0	1st	2nd
1/1/1	1	2nd	2nd

- Slots and bays are numbered from the left to the right, and from the top to the bottom.

- The two USB ports are named USB0 and USB1. They do not have slot or bay numbers.

Note USB0 and USB1 can be used to insert flash drives.

Slot Numbering

Slots are numbered 0, 1, and 2.

About Slot 0

The following are the main features of Slot 0:

- Slot 0 is reserved for integrated ports and NIMs, it can be used for either SM or NIM.

- NIMs are designated by the number of the first slot that they occupy. A double-wide SM occupies two slots, but its designation is only the left-most slot number.

- The ten GE ports (or native interface ports) always reside in slot 0 and bay 0. The ports are called Gigabitethernet 0/0/0, Gigabitethernet 0/0/1, Gigabitethernet 0/0/2, and Gigabitethernet 0/0/3 (up to as many ports supported on the particular router).

Subslot and Bay Numbering

- Integrated devices, also known as integrated ports or FPGEs, and NIMs reside in a fixed section of bay 0.

- Motherboard NIMs bays start at bay 1 because the integrated devices and integrated NIMs take up bay 0.

CHAPTER 2

Prepare for Installation

This chapter provides preinstallation information, such as recommendations and requirements that must be met before installing your platform. Before you begin, inspect all items for shipping damage. If anything appears to be damaged or if you encounter problems installing or configuring your platform, contact customer service.

Standard Warning Statements

This section describes the warning definition and then lists core safety warnings grouped by topic.

Warning   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.

Note: SAVE THESE INSTRUCTIONS Statement 1071

General Safety Warnings

Warning   Read the installation instructions before you connect the system to its power source. Statement 1004

Warning	Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040

Warning	Installation of the equipment must comply with local and national electrical codes. Statement 1074

Warning	Power cable and AC adapter - When installing the product, please use the provided or designated connection cables/power cables/AC adaptors. Using any other cables or adapters could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of certified cables (that have the 'UL' shown on the code) for any other electrical devices than products designated by Cisco. The use of cables that are certified by Electrical Appliance and Material Safety Law (that have 'PSE' shown on the code) is not limited to Cisco-designated products. Statement 371

Warning	Only trained and qualified personnel should be allowed to install or replace this equipment. Statement 1030

Warning	This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than 20A. Statement 1005

Warning	This unit may have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

Warning	**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. Statement 1017

Warning	Use copper conductors only. Statement 1025

Warning	This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

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

Warning Class 1 laser product. Statement 1008

Warning Class 1 LED product. Statement 1027

Warning Class I and Class 1M Laser

Invisible Laser Radiation. Do not expose users of telescopic optics. Class 1/1M Laser Products. Statement 1055

Warning 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. Statement 1056

Warning 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. Statement 1032

Warning To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 40 degrees C. Statement 1047

Warning To reduce risk of electric shock and fire, a readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022

Warning Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029

⚠️ **Warning**	Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030
⚠️ **Warning**	This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028
⚠️ **Warning**	Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first. Statement 1026
⚠️ **Warning**	Before opening the unit, disconnect the telephone-network cables to avoid contact with telephone-network voltages. Statement 1041
⚠️ **Warning**	Do not use this product near water; for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool. Statement 1035
⚠️ **Warning**	Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Statement 1036
⚠️ **Warning**	No User-Serviceable Parts No serviceable parts inside. To avoid risk of electric shock, do not open. Statement 1073
⚠️ **Warning**	Hazardous network voltages may be present in interface ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, before servicing, disconnect cables from the following ports.
⚠️ **Warning**	Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning. Statement 1038
⚠️ **Warning**	To report a gas leak, do not use a telephone in the vicinity of the leak. Statement 1039

⚠

Warning Connect the Chassis to Earth Ground

To reduce the risk of electric shock, the chassis of this equipment needs to be connected to permanent earth ground during normal use. Statement 0445

⚠

Warning High touch/leakage current – Permanently connected protective earth ground is essential before connecting to Telecommunication Network. Statement 343

⚠

Warning Power Terminals, Replace Cover

Hazardous voltage or energy may be present on power terminals. To reduce the risk of electric shock, always replace cover when terminals are not in service and be sure uninsulated conductors are not accessible when cover is in place. Statement 1086

⚠

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

Skilled person/Qualified personnel is someone who have training or experience in the equipment technology and understand potential hazards when working with equipment. Statement 1089

⚠

Warning Only skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1090

⚠

Warning Only instructed person or skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1091

⚠

Warning This equipment is suitable for installations utilizing the insert CBN. Statement 7013

⚠

Warning This equipment is suitable for installation in network telecommunications facilities. Statement 8015

⚠

Warning This equipment is suitable for installation in locations where the NEC applies. Statement 8016

Safety Recommendations

Before installing, configuring, or maintaining the router, review the safety warnings listed in Regulatory Compliance and Safety Information for the Cisco 4000 Series ISR s guide that comes with your router.

Follow these guidelines to ensure general safety:

- Never attempt to lift an object that might be too heavy for you to lift by yourself.
- Keep the chassis area clear and dust-free during and after installation.
- If you remove the chassis cover, place it in a safe place.
- Keep tools and chassis components away from walk areas.
- Do not wear loose clothing that may get caught in the chassis. Fasten any tie or scarf and roll up sleeves.
- Wear safety glasses when working under conditions that might be hazardous to your eyes.
- Do not perform any action that may create a hazard to people or makes equipment unsafe.

Safety with Electricity

Warning This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

Warning Avoid Servicing Outdoor Connections During an Electrical Storm

Avoid using or servicing any equipment that has outdoor connections during an electrical storm. There may be a risk of electric shock from lightning. Statement 1088

Warning Installation Instructions

Read the installation instructions before using, installing or connecting the system to the power source. Statement 1004

Follow these guidelines when working on equipment powered by electricity:

- Locate the emergency power-off switch in the room in which you are working. If an electrical accident occurs, you can quickly turn off the power.

- Disconnect all power before doing the following:

    - Installing or removing a chassis

    - Working near power supplies

- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.

- Do not work alone if hazardous conditions exist

- Never assume that power is disconnected from a circuit. Always check

- Never open the enclosure of the internal power supply

- If an electrical accident occurs to another person, proceed as follows:

  - Use caution; do not become a victim yourself

  - Turn off power to the device

  - If possible, send another person to get medical aid. Otherwise, assess the condition of the victim and then call for help

  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action

In addition, use the following guidelines when working with any equipment that is disconnected from a power source but has telephone wiring or other network cabling connections:

- Never install telephone wiring during a lightning storm

- Never install telephone jacks in wet locations unless the jack is specifically designed for it

- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface

- Use caution when installing or modifying telephone lines

- Remove power cables from all installed power supplies before opening the chassis

Prevent Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It can occur if electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow these ESD prevention procedures when removing and replacing modules:

- Ensure that the router chassis is electrically connected to the ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to channel unwanted ESD voltages safely to ground. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the chassis.

⚠️

Caution   For the safety of your equipment, periodically check the resistance value of the anti-static strap. It should be between 1 and 10 megohms (Mohm).

General Site Requirements

This section describes the requirements your site must meet for the safe installation and operation of your router. Ensure that the site is properly prepared before beginning installation. If you are experiencing shutdowns or unusually high errors with your existing equipment, the guidelines provided in this section can also help you isolate the cause of failures and prevent future problems.

General Precautions

Observe the following general precautions when using and working with your Cisco Catalyst 8300 Series Edge Platforms:

- Keep your system components away from radiators and heat sources, and do not block cooling vents.

- Do not spill food or liquids on your system components, and never operate the product in a wet environment.

- Do not push any objects into the openings of your system components. Doing that can cause fire or electric shock by shorting out interior components.

- Position system cables and power supply cables carefully. Route system cables and the power supply cable and plug so that they cannot be stepped on or tripped over. Be sure that nothing else rests on your system component cables or power cable.

- Do not modify power cables or plugs. Consult a licensed electrician or your power company for electrical modifications at your site. Always follow your local and national wiring rules.

- If you turn off your system, wait at least 30 seconds before turning it on again to avoid system component damage.

Site Selection Guidelines

Cisco Catalyst 8300 Series Edge Platforms require specific environmental operating conditions. Temperature, humidity, altitude, and vibration can affect the performance and reliability of the router. The following sections provide specific information to help you plan for the proper operating environment.

Site Environmental Requirements

Environmental monitoring in the router protects the system and components from damage caused by excessive voltage and temperature conditions. To ensure normal operation and avoid unnecessary maintenance, plan and prepare your site configuration before installation. After installation, ensure the site maintains the required environmental characteristics.

Table 8: Router Environmental Tolerances

Environmental Characteristic	Minimum	Maximum
Steady State Operating	0° C	40° C (40° C at 10,000 feet)
Short Term **Note** Applies only to C8300-2N2S-4T2X|6T NEBS version	-5° C	(55° C at 6,000 feet)
Storage	–40° C	+70° C
Humidity operating (noncondensing)	10%	90%
Humidity nonoperating (noncondensing)	5%	95%

Environmental Characteristic	Minimum	Maximum
Altitude operating: over allowable temperature range (0 to 40° C)	–500 feet	10,000 feet
Altitude, nonoperating: over allowable temperature range	–500 feet	60,000 feet
Thermal shock non-operating with12 mins	–40° C	+70° C

Physical Characteristics

Be familiar with the physical characteristics of the Cisco Catalyst 8300 Series Edge Platforms to assist you in placing the system in the proper location.

For more information on the physical characteristics of Cisco Catalyst 8300 Series Edge Platforms, refer to the datasheet for the Cisco Catalyst 8300 Series Edge Platforms.

Rack Requirements

The Cisco Catalyst 8300 Series Edge Platforms include brackets for use with a 19-inch rack or, if specified in your order, optional larger brackets for use with a 23-inch rack.

The following information can help you plan your equipment rack configuration:

- Allow clearance around the rack for maintenance.

- Enclosed racks must have adequate ventilation. Ensure that the rack is not congested, because each device generates heat. An enclosed rack should have louvered sides and a fan to provide cooling air. Heat generated by equipment at the bottom of the rack can be drawn upward into the intake ports of the equipment above it.

- If the chassis is installed on slides, check the position of the chassis when it is seated in the rack.

Router Environmental Requirements

Cisco Catalyst 8300 Series Edge Platforms can be placed on a desktop or installed in a rack. The location of your router and the layout of your equipment rack or wiring room are extremely important considerations for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to both front and rear panels of the router.

When planning your site layout and equipment locations, refer to the General Site Requirements section. If you are currently experiencing shutdowns or an unusually high number of errors with your existing equipment, these precautions and recommendations may help you to isolate the cause of failure and prevent future problems.

- Ensure that the room where your router operates has adequate air circulation. Electrical equipment generates heat. Without adequate air circulation, ambient air temperature may not cool equipment to acceptable operating temperatures.

- Always follow the ESD-prevention procedures to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.

- Ensure that the chassis cover and module rear panels are secure. All empty network module slots, interface card slots, and power supply bays must have filler panels installed. The chassis is designed to allow cooling air to flow within it, through specially designed cooling slots. A chassis with uncovered openings permits air leaks, which may interrupt and reduce the flow of air across internal components.

- Baffles can help to isolate exhaust air from intake air. Baffles also help to draw cooling air through the chassis. The best placement of the baffles depends on the airflow patterns in the rack. You can find the best placement by experimenting with different configurations.

- When equipment installed in a rack (particularly in an enclosed rack) fails, try operating the equipment individually. Power off other equipment in the rack (and in adjacent racks) to allow the router under test maximum cooling air and clean power.

Power Guidelines and Requirements

Check the power at your site to ensure that you are receiving clean power (free of spikes and noise). Install a power conditioner if necessary.

The AC power supply includes the following features:

- Autoselects either 110 V or 220 V operation.

- All units include a 6-foot (1.8-meter) electrical power cord. (A label near the power inlet indicates the correct voltage, frequency [only AC-powered systems], and current draw for the unit.)

For additional information on the power requirements, refer to the Cisco Catalyst 8300 Series Edge Platforms datasheet.

Network Cabling Specifications

The following sections describe the cables required to install your Cisco Catalyst 8300 Series Edge Platforms:

Console Port Considerations

This device includes an asynchronous serial console port. You access to the device locally using a console terminal connected to the console port. This section discusses important cabling information that you must consider before connecting the device to a console terminal.

Flow control paces the transmission of data between a sending and a receiving device. Flow control ensures that the receiving device can absorb the data sent to it before the sending device sends more data. When the buffers on the receiving device are full, a message is sent to the sending device to suspend transmission until the data in the buffers is processed. Console terminals send data at speeds slower than the speeds modems do; therefore, the console port is ideally suited for use with console terminals.

Note   Cisco Catalyst 8300 Series Edge Platforms have both EIA/TIA-232 asynchronous (RJ-45) and USB 5-pin mini Type B, 2.0 compliant serial console ports. Shielded USB cables with properly terminated shields are recommended.

EIA/TIA-232

Depending on the cable and the adapter used, this port appears as a DTE or DCE device at the end of the cable. At a time, only one port can be used.

The default parameters for the console port are 9600 baud, 8 data bits, 1 stop bit, and no parity. The console port does not support hardware flow control.

For detailed information about installing a console terminal, see the "Connect to Console Terminal or Modem" section on page 3-22 .

For cable and port pinouts, see the Cisco Modular Access Router Cable Specifications document.

USB Serial Console

The USB serial console port connects directly to the USB connector of a PC. The console port does not support hardware flow control.

Note Cisco 4461 supports Mini-USB Type B serial port and Micro-USB Type B serial port

Note Always use shielded USB cables with a properly terminated shield.

The default parameters for the serial console port are 9600 baud, 8 data bits, no parity, and 1 stop bit.

For detailed information about installing a console terminal, see the "Connect to Console Terminal or Modem" section on page 3-22 .

For operation with a Microsoft Windows OS version older than Windows 7, the Cisco Windows USB console driver must be installed on a PC connected to the console port. If the driver is not installed, appropriate prompts guide you through a simple installation process.

For detailed information about installing the Cisco Windows USB Console Driver, see "Install Cisco Microsoft Windows USB Device Driver" section on page 3-24 .

No special drivers are needed for Mac OS X or Linux. At a time, only one console port can be active. When a cable is plugged into the USB console port, the RJ-45 port becomes inactive. Conversely, when the USB cable is removed from the USB port, the RJ-45 port becomes active.

Baud rates for the USB console port are 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps.

USB Console OS Compatibility

•
• Mac OS X version 10.5.4
• Redhat / Fedora Core 10 with kernel 2.6.27.5-117
• Ubuntu 8.10 with kernel 2.6.27-11
• Debian 5.0 with kernel 2.6
• Suse 11.1 with kernel 2.6.27.7-9

Note The Micro-USB type B serial port can be used as an alternative to the RJ-45 console port. For Windows operating systems earlier than Windows 7, you must install a Windows USB device driver before using the USB console port.

Prepare for Network Connections

When setting up your device, consider distance limitations and potential electromagnetic interference (EMI) as defined by the applicable local and international regulations.

Danger To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Statement 1021

Ethernet Connections

The IEEE has established the Ethernet IEEE 802.3 Standards. The devices support the following Ethernet implementations:

- 1000BASE-T—1000 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable. Supports the Ethernet maximum length of 328 feet (100 meters).

- 100BASE-T—100 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable. Supports the Ethernet maximum length of 328 feet (100 meters).

- 10BASE-T—10 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable. Supports the Ethernet maximum length of 328 feet (100 meters).

Required Tools and Equipment for Installation and Maintenance

Warning Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

Warning Instructed and Skilled Person Definitions

Instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment. Skilled person/Qualified personnelis someone who have training or experience in the equipment technology and understand potential hazards when working with equipment. Statement 1089

Warning Instructed and Skilled Person Definitions

Instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment. Skilled person/Qualified personnelis someone who have training or experience in the equipment technology and understand potential hazards when working with equipment. Statement 1090

Warning Instructed and Skilled Person Definitions

Instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment. Skilled person/Qualified personnelis someone who have training or experience in the equipment technology and understand potential hazards when working with equipment. Statement 1091

You need the following tools and equipment to install and upgrade the router and its components:

- ESD-preventive cord and wrist strap

- Number 2 Phillips screwdriver

- Phillips screwdrivers: small, 3/16-in. (4 to 5 mm) and medium, 1/4-in. (6 to 7 mm)

    - To install or remove modules

    - To remove the cover, if you are upgrading memory or other components

- Screws that fit your rack

- Wire crimper

- Wire for connecting the chassis to an earth ground:

    - AWG 6 (13 mm²) wire for NEBS-compliant chassis grounding

    - AWG 14 (2 mm²) or larger wire for NEC-compliant chassis grounding

    - AWG 18 (1 mm²) or larger wire for EN/IEC 60950-compliant chassis grounding

- For NEC-compliant grounding, an appropriate user-supplied ring terminal, with an inner diameter of 1/4 in. (5 to 7 mm)

In addition, depending on the type of modules you plan to use, you might need the following equipment to connect a port to an external network:

- Cables for connection to the WAN and LAN ports (dependent on configuration)

- Ethernet hub or PC with a network interface card for connection to an Ethernet (LAN) port.

- Console terminal (an ASCII terminal or a PC running HyperTerminal or similar terminal emulation software) configured for 9600 baud, 8 data bits, 1 stop bit, no flow control, and no parity.

- Modem for connection to the auxiliary port for remote administrative access (optional).

- Data service unit (DSU) or channel service unit/data service unit (CSU/DSU) as appropriate for serial interfaces.

- External CSU for any CT1/PRI modules without a built-in CSU.

C H A P T E R 3

Install and Connect

This chapter describes how to install and connect the Cisco Catalyst C8300 Series Edge Platforms to LAN, WAN, and Voice networks.

✎

Note   These routers are designed to boot up in less than 30 minutes, provided the neighboring devices are in fully operational state.

The following sections provide the technical details:

Safety Warnings

⚠

Warning   To comply with Class A emissions requirements- shielded management Ethernet, CON, and AUX cables on the router must be used.

⚠

Warning   To comply with the Class A emissions requirements shielded twisted pair T1/E1 cables must be used for SPA-8-Port Channelized T1/E1 SPA (SPA-8XCHT1/E1) on the router. EN55022/CISPR22 Statement

What You Need to Know

CLI Console Access

Use the USB or RJ-45 console port on the router to access the Cisco Internet Operating System (IOS-XE) and XE SD-WAN command line interface (CLI) on the router and perform configuration tasks. A terminal emulation program is required to establish communication between the router and a PC. See the Connect to a Console Terminal or Modem section in this document for instructions.

Note A Microsoft Windows USB driver must be installed before you establish physical connectivity between the router and the PC.

Software Licenses

To use all the features on the router, you must purchase a software package. For more information on software licenses, see the "Smart Licensing" section of the Software Configuration Guide for the Cisco Catalyst C8300 Series Edge Platforms.

Before You Begin

Before installing and connecting a Cisco Catalyst 8300 Series Edge Platforms, read the safety warnings and gather the following tools and equipment. For more information about the required tools and equipments, see the tools and equipment section.

Unpack the Device

Do not unpack the device until you are ready to install it. If the final installation site will not be ready for some time, keep the chassis in its shipping container to prevent accidental damage. When you are ready to install the chassis, proceed with unpacking it.

The chassis, accessory kit, publications, and any optional equipment you ordered may be shipped in more than one container. When you unpack the containers, check the packing list to ensure that you received all of the items on the list.

Install the Device

If you need to install Network Interface Modules (NIMs), Service Modules (SMs), Pluggable Interface Modules (PIMs), and Field-Replaceable Units (FRUs) on the C8300-1N1S-4T2X|6T and C8300-2N2S-4T2X|6T devices, you can install them either before or after you install the device. Ideally, you can install these modules when you have access to the I/O side of the device. Internal modules, memory cards and fan trays should be installed before rack-mounting the device.

You can install the device in one of the following ways:

- Set the chassis on a desktop

- Attach the chassis to the wall

- Mount the chassis on a rack

Note C8300-2N2S-4T2X|6T support only rack mount, does not support wall mount or desktop mount options.

Warning Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord that is in the chassis. Statement 1

Caution To prevent damage to the chassis, do not attempt to lift or tilt the chassis by holding it by the plastic panel on the front. Always hold the chassis by the sides of the metal body.

Mount the Chassis on a Desktop

Warning 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. Statement 1032

Step 1 Attach the elastomeric mount feet (label **1**) to the bottom of the device. The feet come with a pre-applied adhesive. Place the feet in the locations marked by a circle.

Step 2 You can place the device on a desktop, bench top, or shelf.

Figure 12:
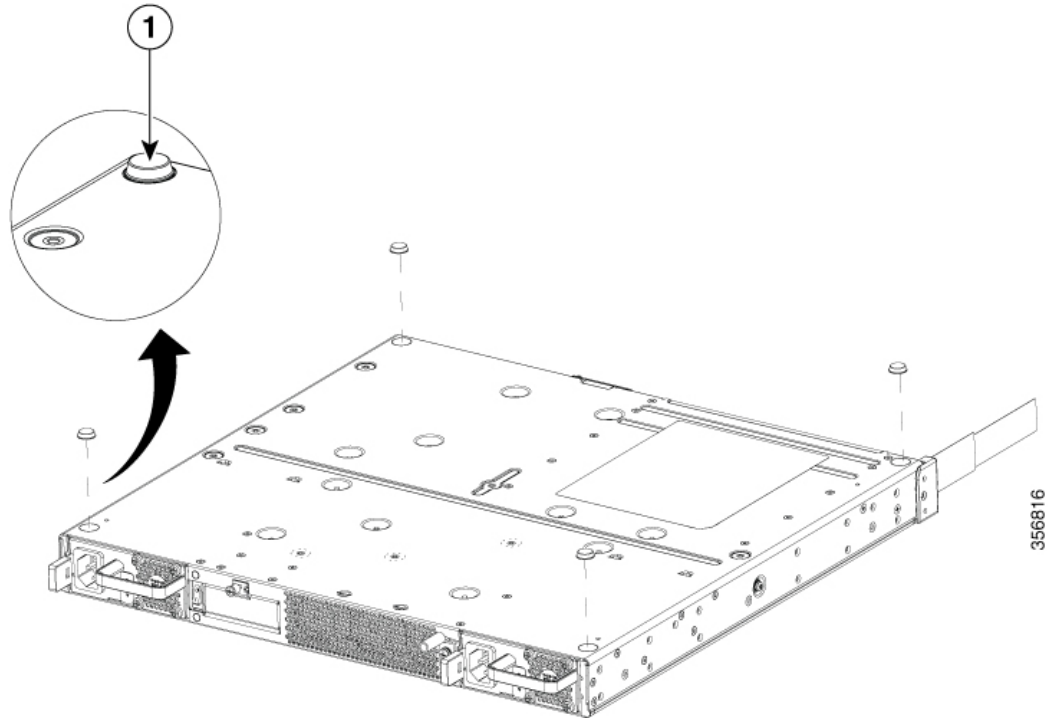
Note Do not set the chassis in an area where the high acoustic noise can be an issue.

Caution Do not place anything on top of the device that weighs more than 10 pounds (4.5 kg), and do not stack device on a desktop. Excessive distributed weight of more than 10 pounds, or pound point load of 10 pounds on top could damage the chassis.

Caution Your chassis installation must allow unrestricted airflow for chassis cooling. For placing the device on a desktop, keep at least 1 inch (2.54 cm) of clear space beside the cooling inlet and exhaust vents.

After the device is installed, you must connect the chassis to a reliable earth ground. For the chassis ground connection procedures, see the Chassis Grounding section.

Rack Mount the Chassis

Warning Supply Circuit

To reduce risk of electric shock and fire, take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018

⚠️

Warning   This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

⚠️

Warning   To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 40 degrees C. Statement 1047

C8300-1N1S-4T2X|6T and C8300-2N2S-4T2X|6T can be installed in a 19-inch (48.26-cm) EIA and a 23-inch (58.42-cm) Southwestern Bell Corporation (SBC) racks. The C8300-1N1S-4T2X|6T and C8300-2N2S-4T2X|6T can also be mounted in a 600-mm ETSI rack. Use the standard brackets shipped with the router for mounting the chassis in a 19-inch EIA rack; you can order optional larger brackets for mounting the chassis in a 23-inch SBC rack.

You can mount the devices in the following ways:

- Power Supply (PS) mounting—Brackets are attached at the PS side of the chassis with the front panel facing forward.

- Center-PS mounting—Brackets are attached in the centerof the chassis with the PS side facing forward.

- Center-I/O mounting—Brackets are attached in the center I/O side of the chassis with only the I/O side facing forward.

- I/O mounting—Brackets are attached at the I/O side of the chassis with the I/O side facing forward.

Attach the Rack-Mounting Brackets

⚠️

Caution   Do not over-torque the screws. The recommended torque is 15 to 18 inch-lbs (1.7 to 2.0 N-m).

⚠️

Caution   Your chassis installation must allow unrestricted airflow for chassis cooling.

Attach the mounting brackets to the chassis as shown in the below figure using the screws provided. Use a #2 Philips screwdriver.

To attach the rack-mounting brackets to the C8300-1N1S-4T2X|6T device, perform these steps:

Step 1   Select the depth location for the router in the equipment rack. I/O side flush; I/O side recessed for the RFID badge; middle mount from the I/O side; middle mount from the power supply side; or power supply side flush.

Step 2   Align the rack mount bracket with the mounting holes in the side of the device.

Step 3   Insert the #6-32 FHM screws. Use only the screws that are provided in the rack mount bracket kit.

Step 4   Tighten the screws to a torque value of 15 to 18 inch-lb. (1.7 to 2.0 N-m).

Figure 13: Install Brackets for I/O-Side Mounting (C8300-1N1S-4T2X|6T)
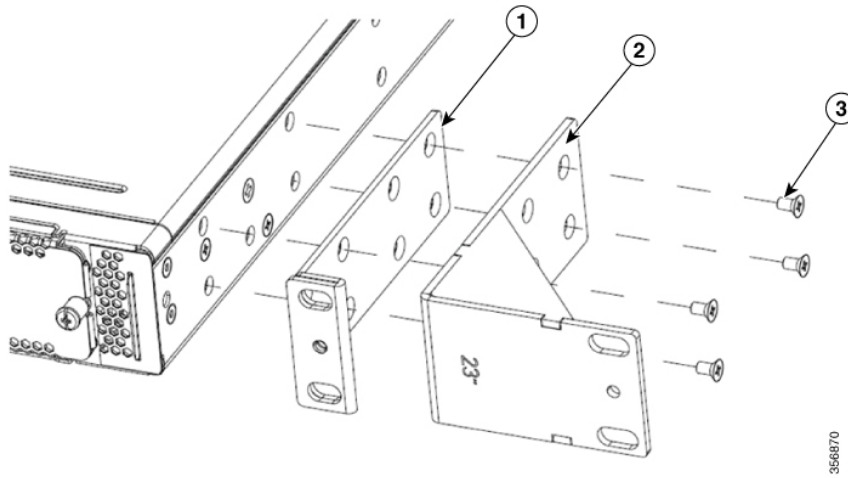
1	19-inch brackets
2	23-inch brackets
3	#6-32 PHMS

Figure 14: Rack Mount Bracket Mounting Positions
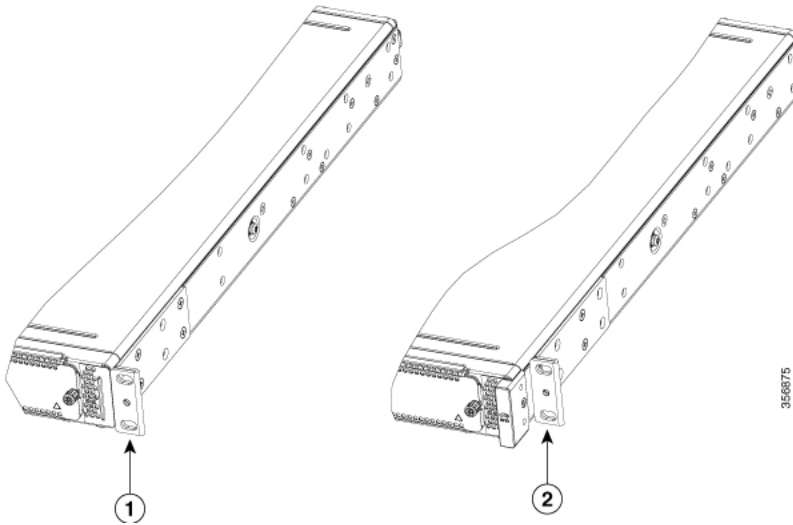
1	Flush with I/O side (No RFID)
2	I/O Side Recessed (for RFID)

Figure 15: Install Brackets for PS Mounting (C8300-1N1S-4T2X|6T)
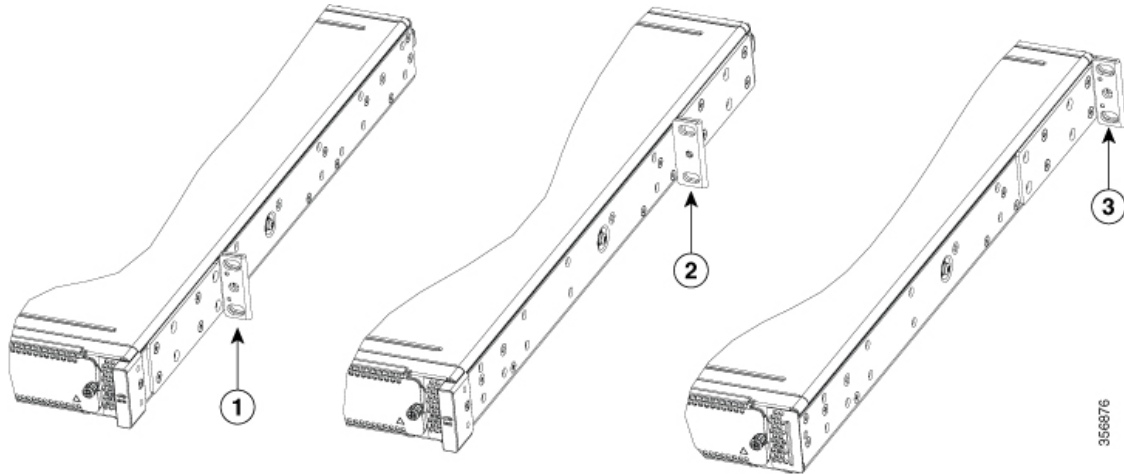
1	Mid-Mount from I/O Side
2	Mid-Mount from Power Supply Side
3	Power Supply Side Flush

To attach the rack-mounting brackets to a C8300-2N2S-4T2X|6T device, perform these steps:

Step 1 Select the depth location for the router in the equipment rack. I/O side flush; I/O side recessed for the RFID badge; middle mount from the I/O side; middle mount from the power supply side; or power supply side flush.

Step 2 Align the rack mount bracket with the mounting holes in the side of the device.

Step 3 Insert the #8-32 FHM screws. Use only the screws that are provided in the rack mount bracket kit.

Step 4 Tighten the screws to a torque value of 15 to 18 inch-lb. (1.7 to 2.0 N-m).

Figure 16: Install Brackets for I/O-Side Mounting (C8300-2N2S-4T2X|6T)
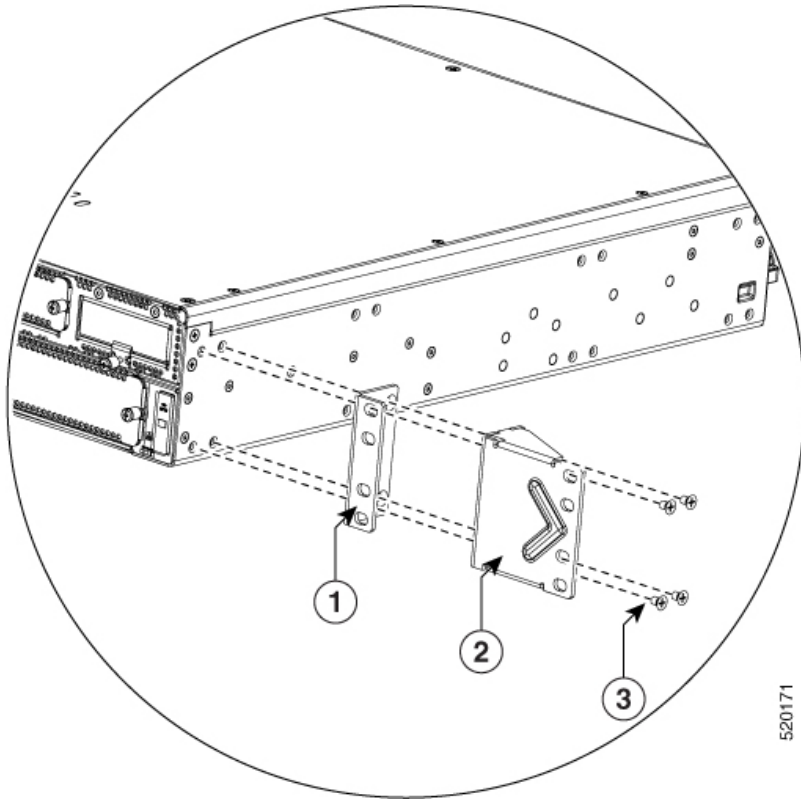
1	19-inch brackets
2	23-inch brackets
3	#8-32 FHM screw

Figure 17: Install Brackets for I/O Center Mounting (C8300-2N2S-4T2X|6T)
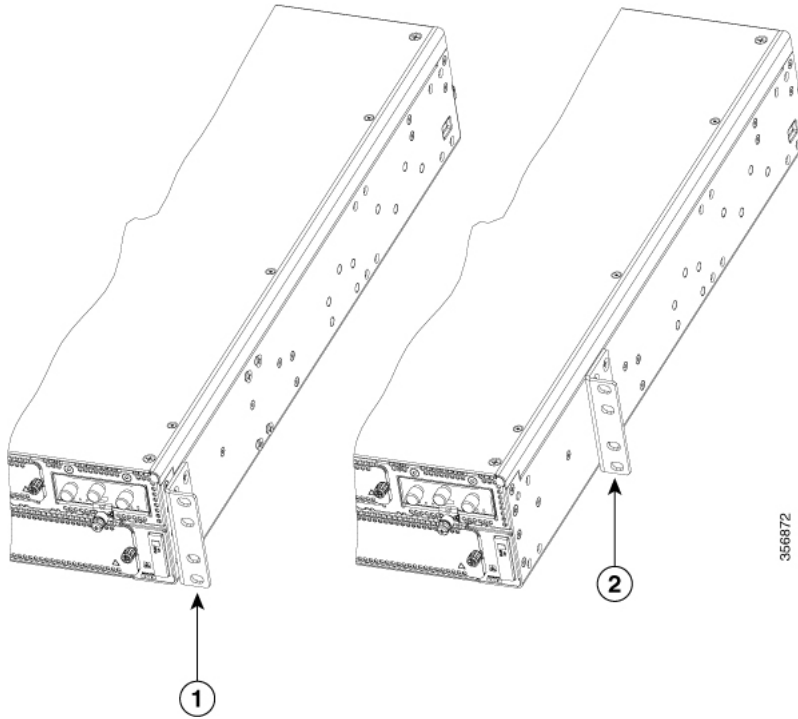
1	Flush with I/O Side
2	Mid-Mount from Power Supply Side

Figure 18: Install Brackets for PS Mounting (C8300-2N2S-4T2X|6T)
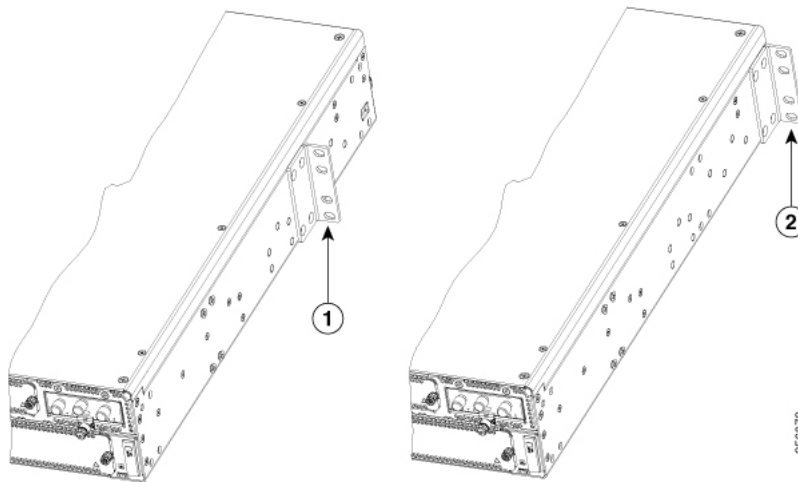
1	Mid-Mount from Power Supply Side

2	Power Supply Side Flush

Mount the Chassis on a Rack

After you attach the rack-mount brackets to the chassis, use screws to install the chassis onto the rack.

Note C8300-2N2S-4T2X supports only rack mount, does not support wall mount or desktop mount options.

Tip For both the 19-inch EIA brackets and the 23-inch brackets, start the lower pair of screws first, and rest the brackets on the lower screws while you insert the upper pair of screws.

Tip The screw slots in the brackets are spaced to line up with every *second* pair of screw holes in the rack. When the correct screw holes are used, the small threaded holes in the brackets line up with unused screw holes in the rack. If the small holes do not line up with the rack holes, you must raise or lower the brackets to the next rack hole.

Warning 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. Statement 1006.

Warning 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. Statement 1032

Figures below shows a typical rack mounting of a chassis in a rack.

Step1. Locate the desired position in the equipment rack.

Step2. Align the holes in the rack mount brackets with the mounting holes in the equipment frame.

Step3. Secure the device using mounting screws appropriate for your equipment frame. The rack mount brackets have been designed #12-24 PHM screws.

Step4. Tighten the screws to the appropriate torque value for your equipment

Figure 19: I/O Flush Mount, no RFID (C8300 1N1S-4T2X|6T)
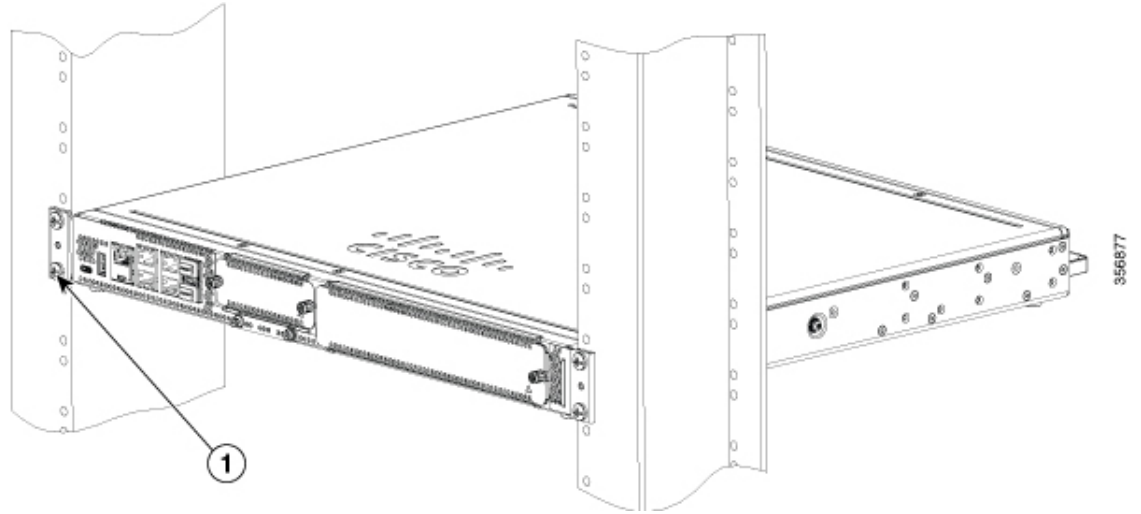
| 1 | Rack Mounting screws |

Figure 20: I/O Mount with RFID (C8300 1N1S-4T2X|6T)
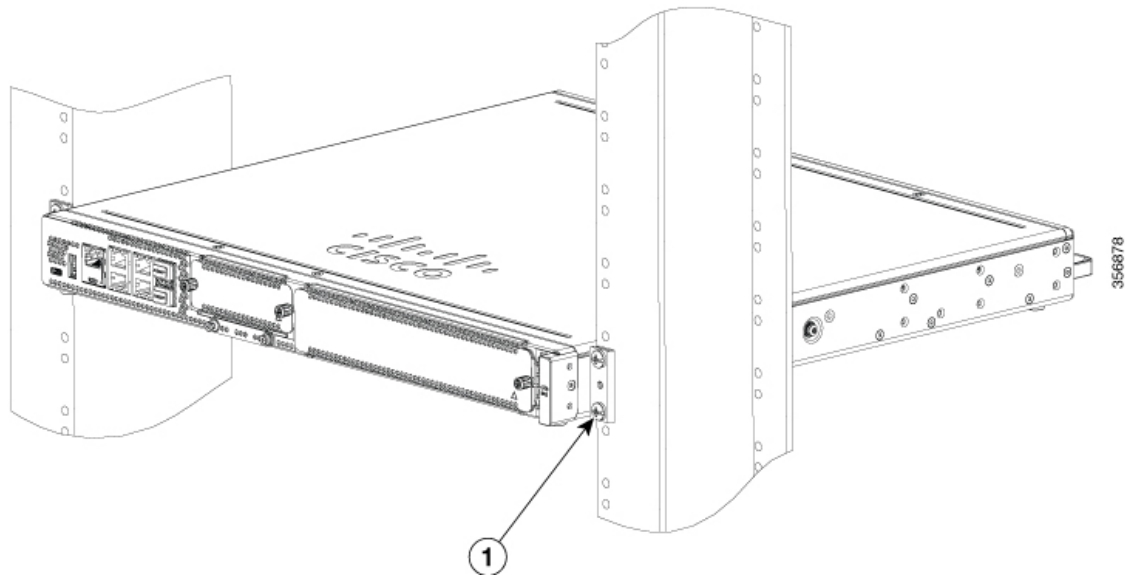
| 1 | Rack Mounting screws |

Figure 21: Mid Mount from I/O Side (C8300-1N1S-4T2X|6T)
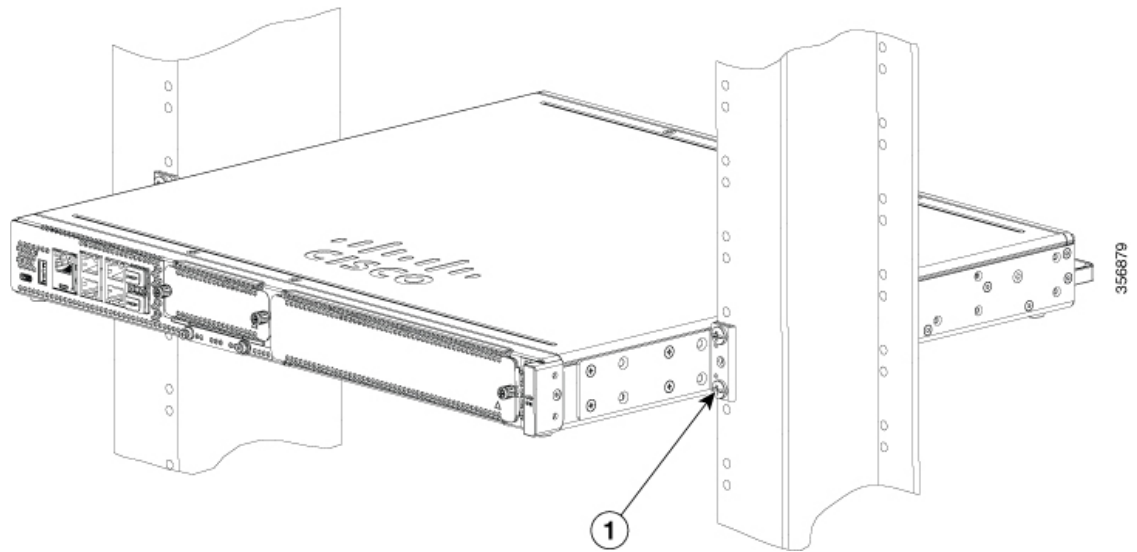
| 1 | Rack Mounting screws |

Figures below shows a typical rack mounting of a chassis in a rack.

Step1. Locate the desired position in the equipment rack.

Step2. Align the holes in the rack mount brackets with the mounting holes in the equipment frame.

Step3. Secure the device using mounting screws appropriate for your equipment frame. The rack mount brackets have been designed #12-24 PHM screws.

Step4. Tighten the screws to the appropriate torque value for your equipment

Figure 22: Mid-Mount from Power Supply Side (C8300-1N1S-4T2X|6T)
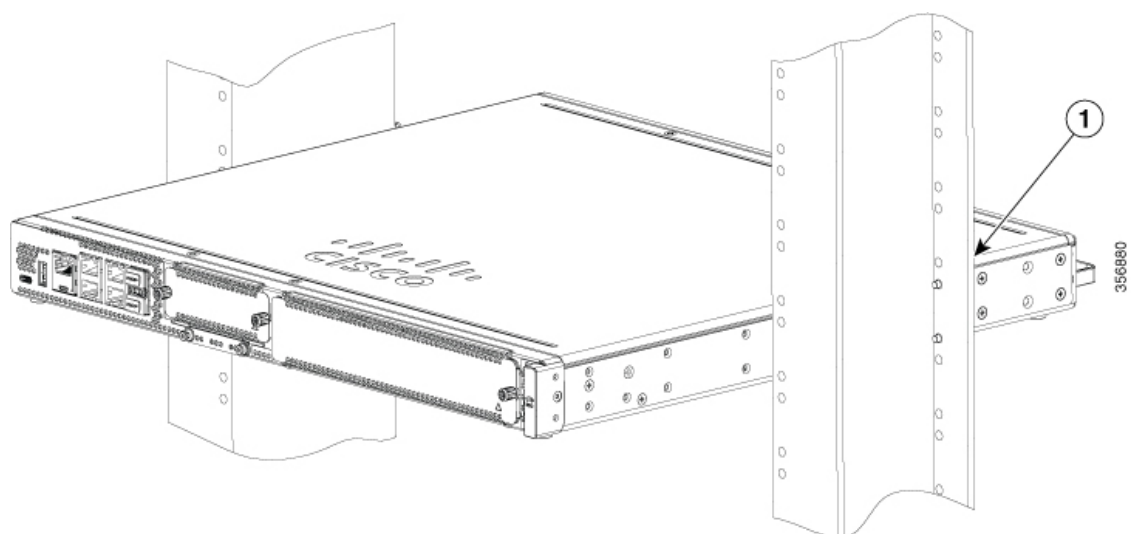
| 1 | Rack Mounting screws |

Figure 23: Power Supply Side-Mount (C8300 1N1S-4T2X|6T)
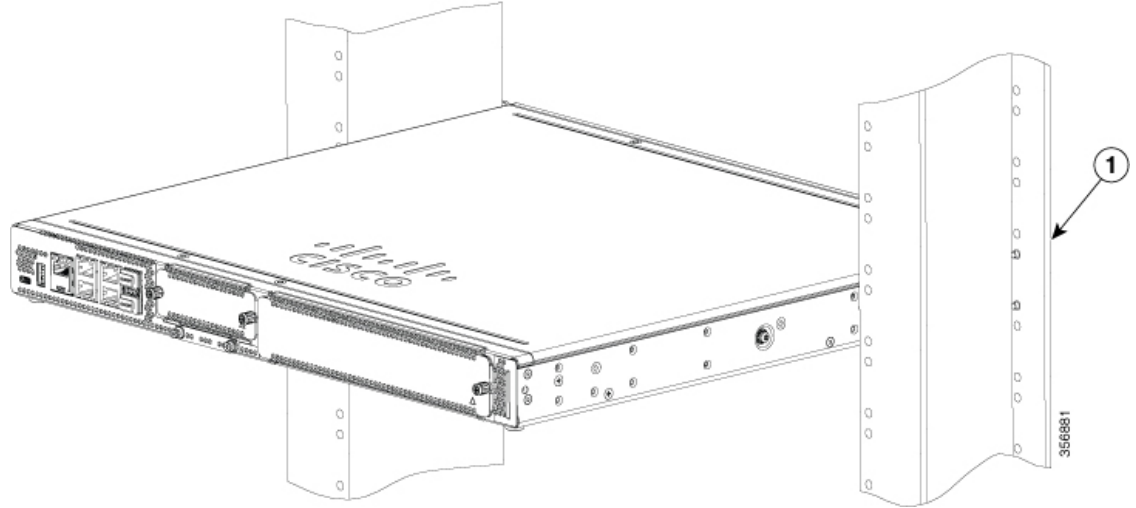
| 1 | Rack Mounting screws |

Figure 24: I/O Mount in Rack (C8300 2N2S-4T2X|6T)
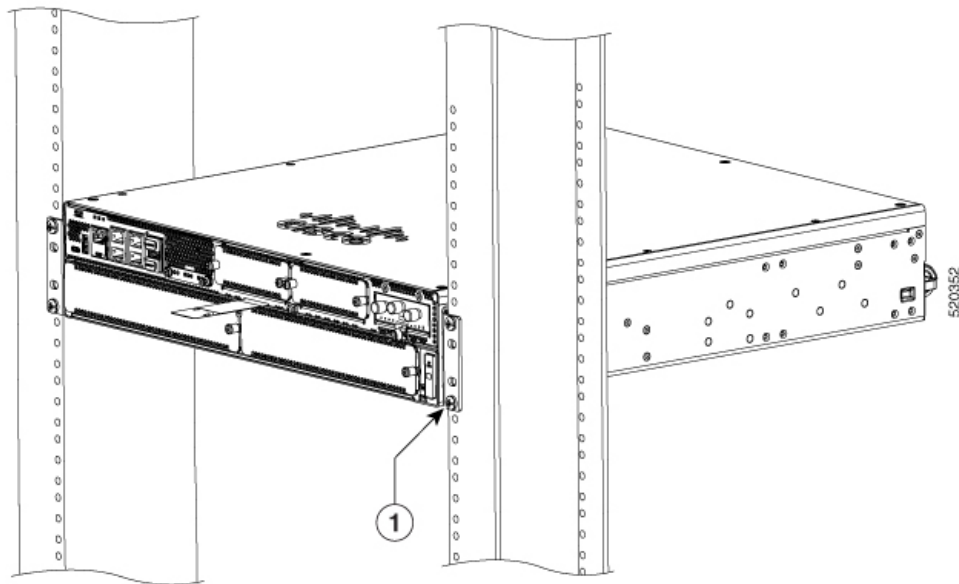
| 1 | Rack Mounting screws |

Figure 25: Mid Mount from I/O Side (C8300 2N2S-4T2X|6T)
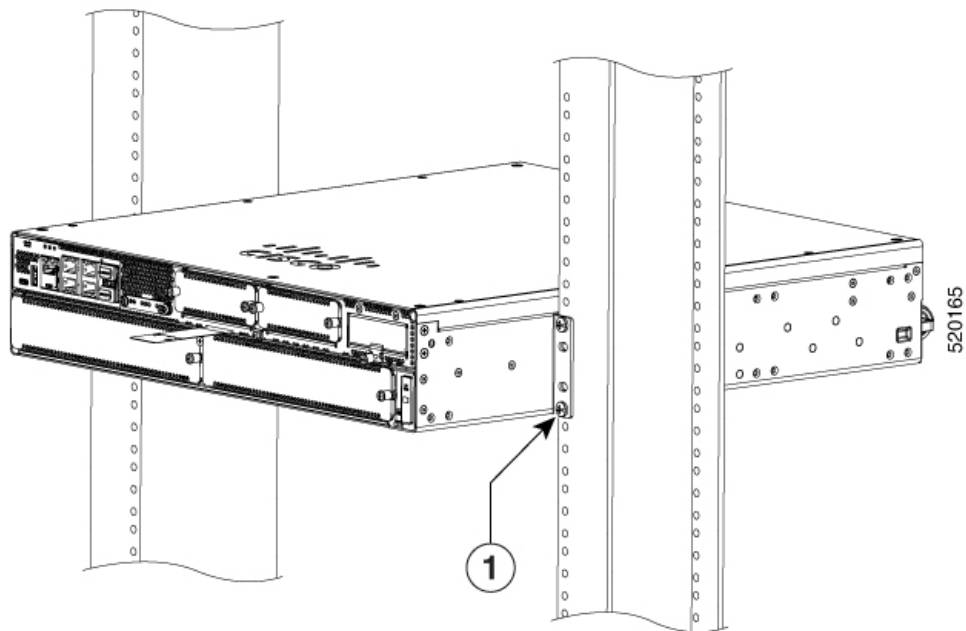
| 1 | Rack Mounting screws |

Figure 26: Power Supply Side Mount (C8300 2N2S-4T2X|6T)
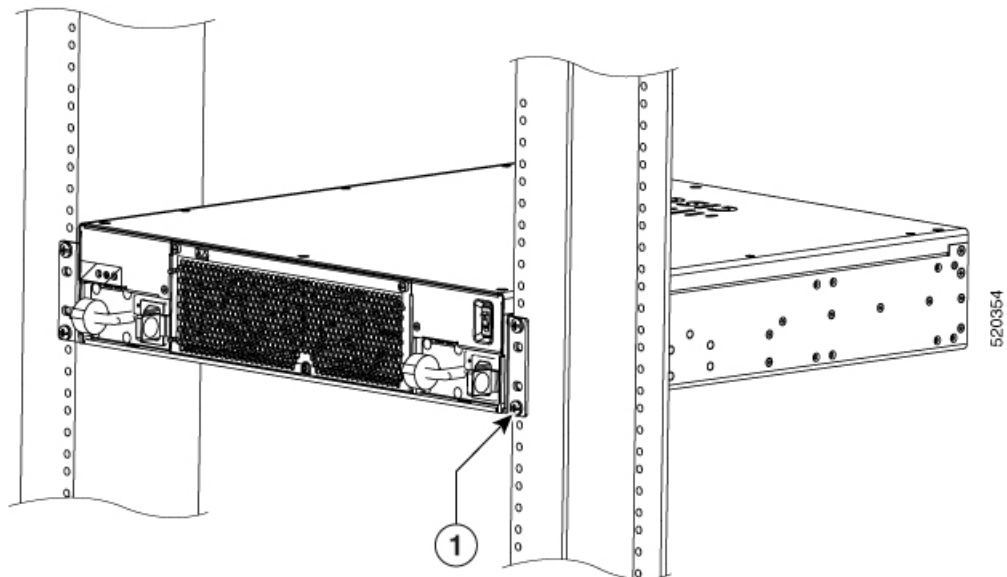
1	Rack Mounting screws

Figure 27: Mid-Mount from Power Supply Side (C8300 2N2S-4T2X|6T)
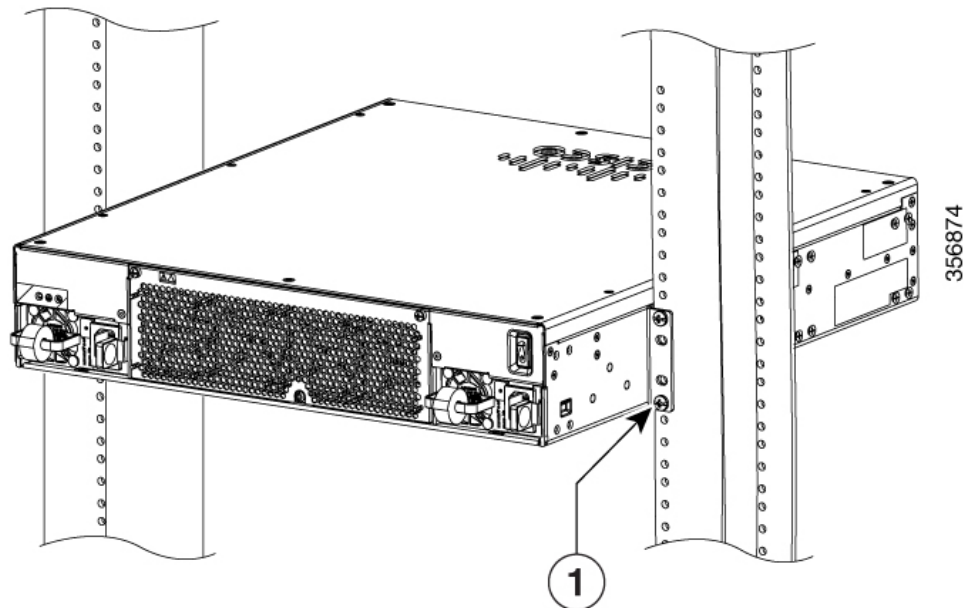
1	Rack Mounting screws

Attach Cisco Cisco Catalyst 8300 Series Edge Platforms on a Wall

⚠️ **Caution** Only the C8300-1N1S-4T2X|6T are designed to be wall mounted. The C8300-2N2S-4T2X|6T have not been designed to be wall mounted.

⚠️ **Caution** When mounted on a wall, the C8300-1N1S-4T2X|6T should always be oriented with a side of the device oriented in the downward position. The I/O side and power supply side should be oriented so that the fan vents and cable entry will be oriented to the left or right. The I/O side or power supply should never be oriented downwards.

⚠️ **Caution** Your chassis installation must allow unrestricted airflow for chassis cooling.

Step 1 Attach the rack mount brackets to the sides of the device using only the hardware provided in the wall mounting kit (#6-32 x 0.44 inch PHMS).

Step 2 The outer face of the rack mount bracket ear, the part that typically mounts to an equipment rack, should be placed against the side of the router. Use the spacers provided to adapt the larger obround holes down to smaller holes for the screws to fit into.

Step 3 The brackets should be located diagonally from each other as shown in the figure below.

Step 4 Tighten the screws to a torque value of 15 to 18 inch-lb. (1.7 to 2.0 N-m).

Step 5 Use #6 or 4mm hardware to attach the brackets to the wall. At least 4 screws should be used per bracket, 8 screws in total. The screw length should be a minimum of 1 inch in length (25.4 mm).

Note The customer supplies the appropriate hardware. Each mounting bracket has 8 holes that can be used for the mounting fasteners.

Step 6 Route the cables so that they do not put a strain on the connectors or mounting hardware.

Figure 28: Attach Wall Mount Brackets (C8300-1N1S-4T2X|6T)
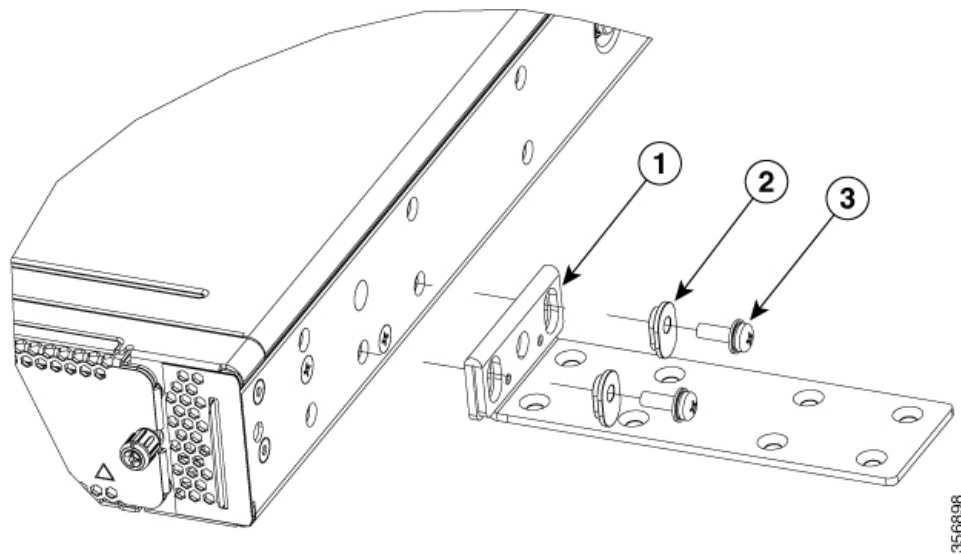
1	19-inches bracket
2	Plastic spacer
3	#6-32 PHMS

Figure 29: Wall Mount the C8300-1N1S-4T2X|6T

1	Customer supplied wall mount hardware
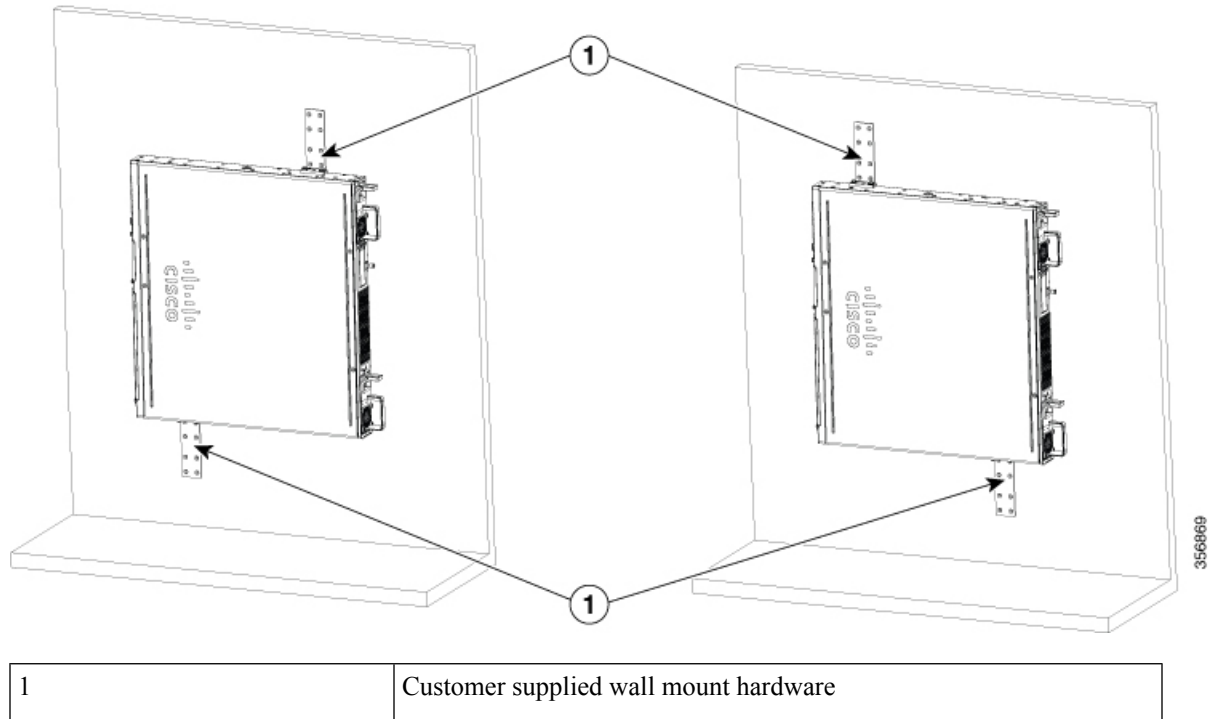
Ground the Chassis

After the device is installed, you must connect the chassis to a reliable earth ground.

Chassis Grounding

⚠

Warning   This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

⚠

Warning   During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, you could shock yourself. Statement 94

You must connect the chassis to a reliable earth ground; the ground wire must be installed in accordance with local electrical safety standards.

• For grounding, use size 6 AWG (13 mm²) copper wire and the ground lug provided in the accessory kit.

✎

Note   This equipment is suitable for installation in Network Telecommunications Facilities and locations where the NEC applies. The equipment is suitable for installation as part of the Common Bonding Network (CBN).

- For NEC-compliant grounding, use size 14 AWG (2 mm²) or larger copper wire and an appropriate user-supplied ring terminal with an inner diameter of 1/4 in. (5–7 mm)

- AWG 10 (4 mm²) or larger wire for EN/IEC 60950-1 and EN/IEC 62368-1 compliant chassis grounding

Note The grounding wire should be sized according to local and national installation requirements. The above recommended AWG values for NEBS-compliant, NEC-compliant, EN/IEC 60950-1 and EN/IEC 62368-1 as the minimum requirement respectively, the higher AWG value recommendation also with the higher priority, this means AWG 10 is the minimum requirement only when NEBS is not required. Commercially available 6-AWG grounding wire is always preferred from the chassis to the rack ground or directly to the common bonding network (CBN). The length of the grounding wire depends on the proximity of the switch to proper grounding facilities.

To install the ground connection for your device, perform the following steps:

Step 1 Strip one end of the ground wire to the length required for the ground lug or terminal.

- For the ground lug—approximately 0.75 inch (20 mm)

- For user-provided ring terminal—as required

Step 2 Crimp the ground wire to the ground lug or ring terminal, using a crimp tool of the appropriate size.

Step 3 Attach the ground lug or ring terminal to the chassis as shown in Chassis Grounding section. For a ground lug, use the two screws with captive locking washers provided. For a ring terminal, use one of the screws provided. Tighten the screws to a torque of 8 to 10 in-lb (0.9 to 1.1 N-m).

Figure 30: Chassis Ground Connection on the C8300 1N1S-4T2X|6T
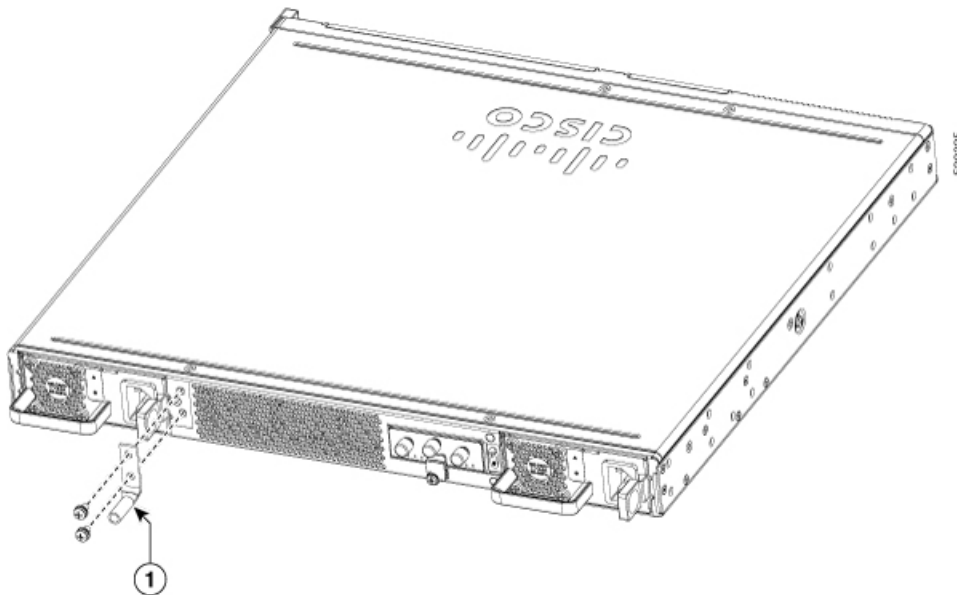
| 1 | Ground lug |

Figure 31: Chassis Ground Connection on the C8300 2N2S-4T2X|6T
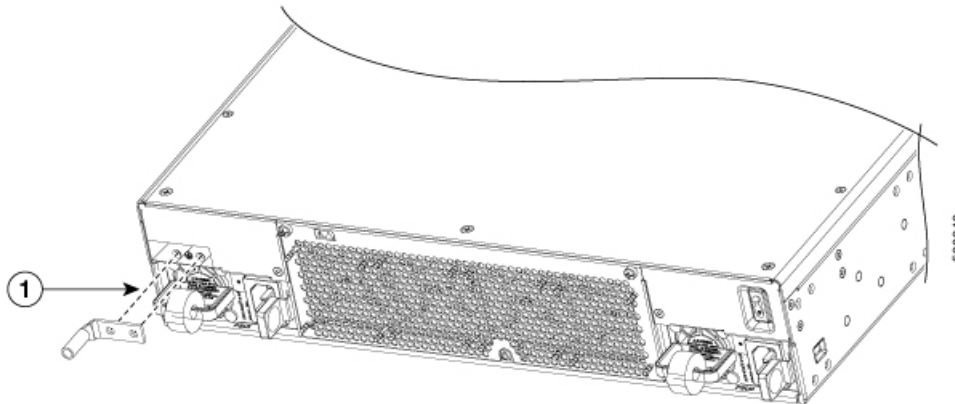
Step 4   Connect the other end of the ground wire to a known reliable earth ground point at your site.

1	Ground lug

Connect Power to the Device

This section explains how to connect power to the device.

Warning   Read the installation instructions before connecting the system to the power source. Statement 1004

Warning   This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

Warning   Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

Note   The installation must comply with all required electrical codes applicable at the installation site.

⚠️

Warning   When installing the product, please use the provided or designated connection cables/power cables/AC adaptors. Using any other cables/adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL-certified cables (that have the "UL" shown on the code) for any other electrical devices than products designated by CISCO. The use of cables that are certified by Electrical Appliance and Material Safety Law (that have "PSE" shown on the code) is not limited to CISCO-designated products. Statement 371.

If your device uses AC power, connect it to a 15 A, 120 VAC (10 A, 240 VAC) circuit with overcurrent protection.

✎

Note   The input voltage tolerance limits for AC power are 90 and 264 VAC.

✎

Note   This product requires surge protection to be provided as part of the building installation. To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, an external surge protective device (SPD) is required at the AC power service equipment.

⚠️

Warning   This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than 20A. Statement 1005

Connect to a Console Terminal or Modem

The Catalyst 8300 Series Edge Platforms have asynchronous serial ports. These ports provide administrative access to the router either locally (with a console terminal or a PC).To configure the router through the Cisco IOS CLI, you must establish a connection between the router console port and either a terminal or a PC.

Use the following cables and adapters to establish a local or remote connection.
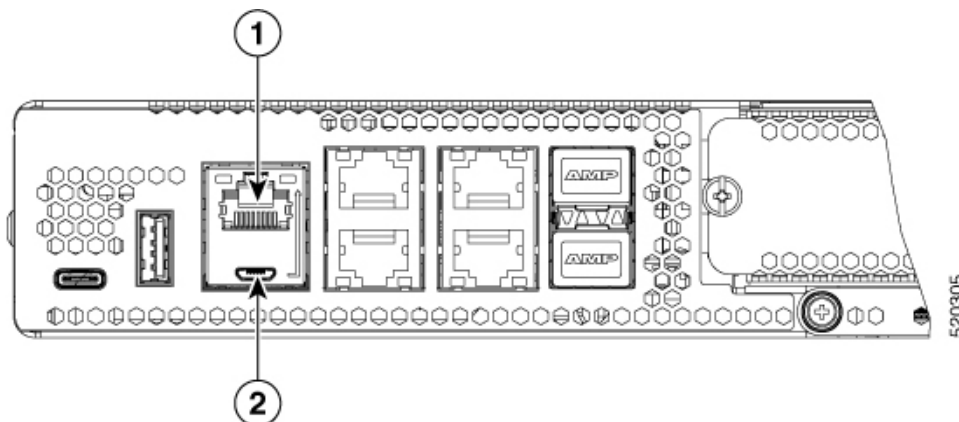
Table 9: Local and Remote Connections

Port Type	Cable	Section
1. Serial (RJ-45)	EIA RJ-45	Connect to the Serial Port with Microsoft Windows
2. Serial (USB)	USB 5-pin mini USB Type-B-to-USB Type-A	

Connect to the Console Port with Mac OS X

This procedure describes how to connect a Mac OS X system USB port to the console using the built in OS X Terminal utility.

Step 1   Use the Finder to go to Applications > Utilities > Terminal.

Step 2   Connect the OS X USB port to the router.

Step 3   Enter the following commands to find the OS X USB port number

Example:

```
macbook:user$ cd /dev
macbook:user$ ls -ltr /dev/*usb*
crw-rw-rw-  1 root    wheel      9,  66 Apr  1 16:46 tty.usbmodem1a21 DT-macbook:dev user$
```

Step 4   Connect to the USB port with the following command followed by the router USB port speed

Example:

```
macbook:user$ screen /dev/tty.usbmodem1a21 9600
```

To disconnect the OS X USB console from the Terminal window

Enter Ctrl-a followed by Ctrl-\

Connect to the Console Port with Linux

This procedure shows how to connect a Linux system USB port to the console using the built in Linux Terminal utility.

Step 1   Open the Linux Terminal window.

Step 2   Connect the Linux USB port to the router.

Step 3   Enter the following commands to find the Linux USB port number

Example:

```
root@usb-suse# cd /dev
root@usb-suse /dev# ls -ltr *ACM*
```

```
crw-r--r--   1 root     root     188,   0 Jan 14 18:02 ttyACM0
root@usb-suse /dev#
```

Step 4   Connect to the USB port with the following command followed by the router USB port speed

Example:

```
root@usb-suse /dev# screen /dev/ttyACM0 9600
```

To disconnect the Linux USB console from the Terminal window

Enter Ctrl-a followed by : then quit

Install the Silicon Labs USB Device Driver

This section contains the following topics:

Install the Silicon Labs Windows USB Device Driver

Step 1   Go to the Silicon Labs website (www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads), and click CP210x Universal Windows Driver.

Step 2   Unzip the downloaded folder, and select the installer for your system configuration. The Device Driver Installation Wizard begins.

Step 3   Click Next on the Installation Wizard, then click Finish to complete installation.

Step 4   Open the Device Manager on your system and click the Ports (COM & LPT) drop-down.

Step 5   Insert the USB console cable and power into your system. The Device manager refreshes and indicates the newly-detected COM port.

Step 6   Open a terminal emulator and click the Serial connection type. Input the values for Serial Line and Speed (or Baud Rate).

Step 7   Click Open.

Step 8   The terminal emulator opens. Click Enter to view the console output response.

The USB console is ready for use.

Install the Silicon Labs Mac USB Device Driver

Step 1   Go to the Silicon Labs website (www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads), and click CP210x VCP Mac OSX Driver.

Step 2   Click the Downloads folder, then click the macOS_VCP_Driver folder, and double-click the SiLabsUSBDriverDisk.dmg program.

Step 3   Click Install CP210X VCP Driver, and then click Open. The Driver Installer begins.

Step 4   Follow installer instructions. Click Continue, scroll all the way down, then click Continue, and click Agree.

Step 5   Click Continue, and enter your password. Then click Install Helper, and click Close.

Step 6   Insert the USB console cable and power into your system..

Step 7   Open a terminal and type cd/dev, and then type ls-ltr. Serial port tty.SLAB_USBtoUART appears.

Step 8   Type screen/dev/tty.SLAB_USBtoUART <baudrate> to see console output. Console will show response upon first Enter key if there is no output.

The USB console is ready for use.

Connect WAN and LAN Interfaces

This section describes how to connect WAN and LAN interface cables. Before you connect the interface cables, refer to the following warning statements:

Warning   Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Statement 1036.

Warning   Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Statement 1037.

Warning   For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection, LAN, PoE. Statement 1044.

Warning   Avoid using or servicing any equipment that has outdoor connections during an electrical storm. There may be a risk of electric shock from lightning. Statement 1088.

Ports and Cabling

The connections summarized here are also described in detail in the document on Cisco.com: Cisco Modular Access Cable Specifications

Table 10: WAN, LAN, and Voice Connections

Port or Connection	Port Type, Color[1]	Connection:	Cable
Ethernet	RJ-45, yellow	Ethernet hub or Ethernet switch	Category 5 or higher Ethernet
T1/E1 WANxCE1T1-PRI	RJ-48C/CA81ARJ-48S, tan	T1 or E1 networkExternal T1 CSU or other T1 equipment	RJ-48 T1/E1RJ-48S to RJ-48S TERJ-48S to RJ-48S NTRJ-48S to RJ-48S T1RJ-48S to bareRJ-48S to BNCRJ-48S to twinaxial cableRJ-48S to DB-15RJ-48S to DB-15 null

Port or Connection	Port Type, Color[1]	Connection:	Cable
T3/DS3/E3 WAN	BNC connector	T3 network, CSU/DSU, or other T3/DS3 equipment	75-ohm coaxial cable
Cisco serial	60-pin D-sub, blue	CSU/DSU and serial network or equipment	Cisco serial transition cable that matches the signaling protocol (EIA/TIA-232, EIA/TIA-449, V.35, X.21, or EIA-530) and the serial port operating mode (DTE or DCE).[2]
Cisco Smart serial	Cisco Smart compact connector, blue	CSU/DSU and serial network or equipment	
Gigabit Ethernet SFP, optical	LC, color according to optical wavelength	1000BASE-SX, -LX, -LH, -ZX, -CWDM	Optical fiber as specified on applicable data sheet
Gigabit Ethernet SFP, copper	RJ-45	1000BASE-T	Category 5, 5e, 6 UTP

[1] Cable color codes are specific to Cisco cables.
[2] See the Cisco Modular Access Router Cable Specifications document for information about choosing these cables.

Connection Procedures and Precautions

- Connect each WAN and LAN to the appropriate connector on the chassis or on a network module or interface card.

- Position the cables carefully, so that they do not put strain on the connectors.

- Organize cables in bundles so that cables do not intertwine.

- Inspect the cables to make sure that the routing and bend radius is satisfactory. Reposition cables, if necessary.

- Install cable ties in accordance with site requirements.

For cable pinouts, see Cisco Modular Access Cable Specifications.

Note After installing the device and connecting the cables, you can configure the device with basic configurations. For more information on how to configure the device, see the Cisco Catalyst 8300 Series Edge Platforms Software Configuration Guide.

Install Internal Components and Field Replaceable Units

This document describes how to install internal components and field replaceable units (FRUs) in the Cisco Catalyst 8300 Series Edge Platforms. The installation information is contained in these sections:

Safety Warnings

Warning High touch/leakage current – Permanently connected protective earth ground is essential before connecting to telecommunication network.

Warning Class 1 laser product. Statement 1008

Warning To reduce the risk of electric shock, the chassis of this equipment needs to be connected to permanent earth ground during normal use. Statement 0445

⚠

Warning   To reduce risk of electric shock and fire, a readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022

⚠

Warning   Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

⚠

Warning   Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

⚠

Warning   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. Statement 1056

⚠

Warning   Only instructed person or skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person.

⚠

Warning   Only instructed person or skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1090

⚠

Warning   Only instructed person or skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1091

⚠

Warning   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.. Statement 1255

Locate and Access Internal Components

The figures below show the locations of internal components on the motherboard. Internal modules include DIMMs on Cisco Catalyst 8300 Series Edge Platforms.

To access the internal components on the device, you must first remove the chassis cover. For instructions on how to remove and replace the chassis cover on the device, see the sections on Install and Remove Chassis Covers.

Figure 32: Internal Component Locations in the C8300-1N1S-4T2X|6T
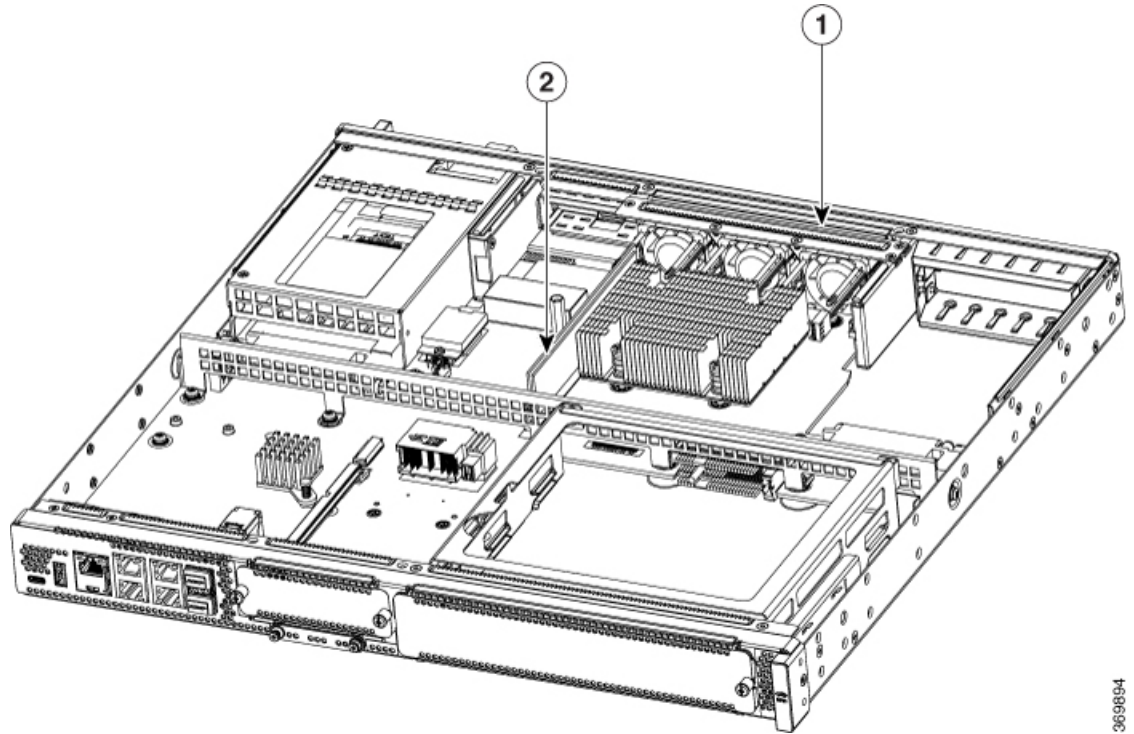
Sl. No	Modules
1	Fan tray
2	DIMM

Figure 33: Internal Component Locations in the C8300-2N2S-4T2X|6T
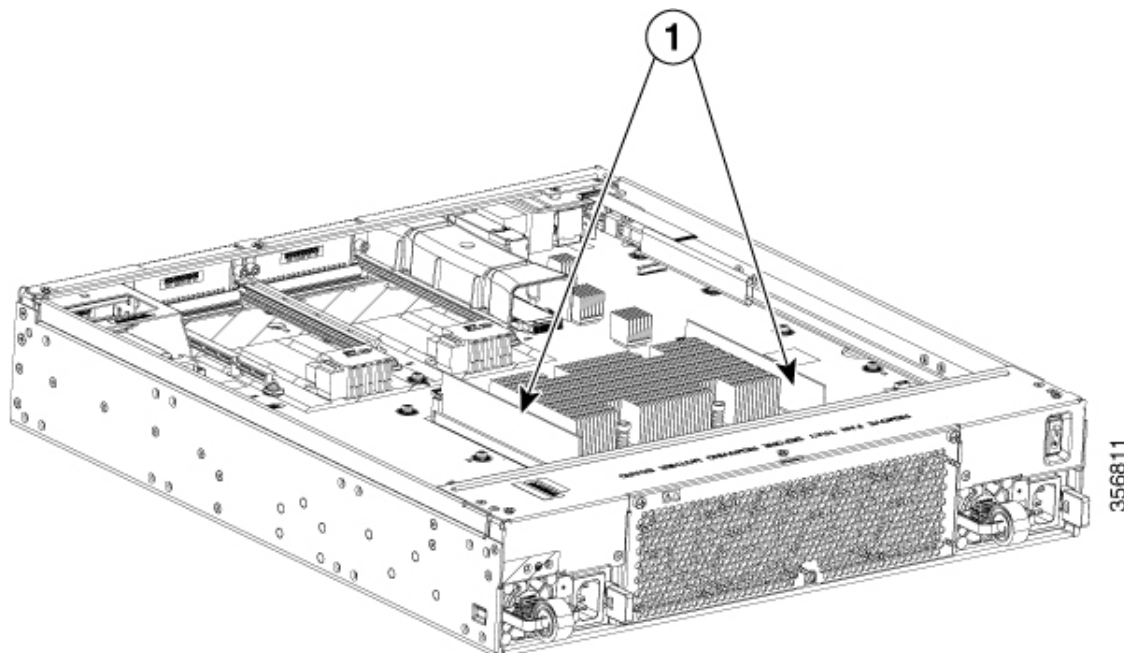
Sl. No	Module
1	DIMMs

Remove and Replace the Chassis Cover

The Cisco Catalyst 8300 Series Edge Platforms have removable covers. Before removing the cover, do these steps:

- Do not run the device with the cover off. Doing so can cause the chassis to overheat very quickly.

- Before opening the unit, disconnect the telephone-network cables to avoid contact with telephone-network voltages. Statement 1041.

- Disconnect all power cables.

- Remove the device from the rack

Use a number-2 Phillips screwdriver to perform the following tasks.

Remove the Chassis Cover

To remove the cover, perform the following steps.

Step 1   Read the Safety Warnings and disconnect the power supply before you perform any module replacement.

Step 2   Confirm the device is turned off and disconnected from the power supply or power supplies. If a redundant power is used, disconnect from the redundant power supply.

Step 3   Place the chassis on a flat surface.

Step 4   For C8300-1N1S-4T2X|6T, remove the 11 cover screws. For C8300-2N2S-4T2X|6T, remove the 6 cover screws.

Step 5   Lift the cover straight up.

Replace the Cover

To replace the cover, perform the following steps.

Step 1   Place the chassis on a flat surface.

Step 2   Drop the cover straight down and ensure that the side flanges insert into the chassis. Care should be taken to not damage the EMC Gaskets.

Step 3   For C8300-1N1S-4T2X|6T install the 11 cover screws. For C8300-2N2S-4T2X|6T install the 6 cover screws.

Figure 34: Install the Cover on the C8300-1N1S-4T2X|6T
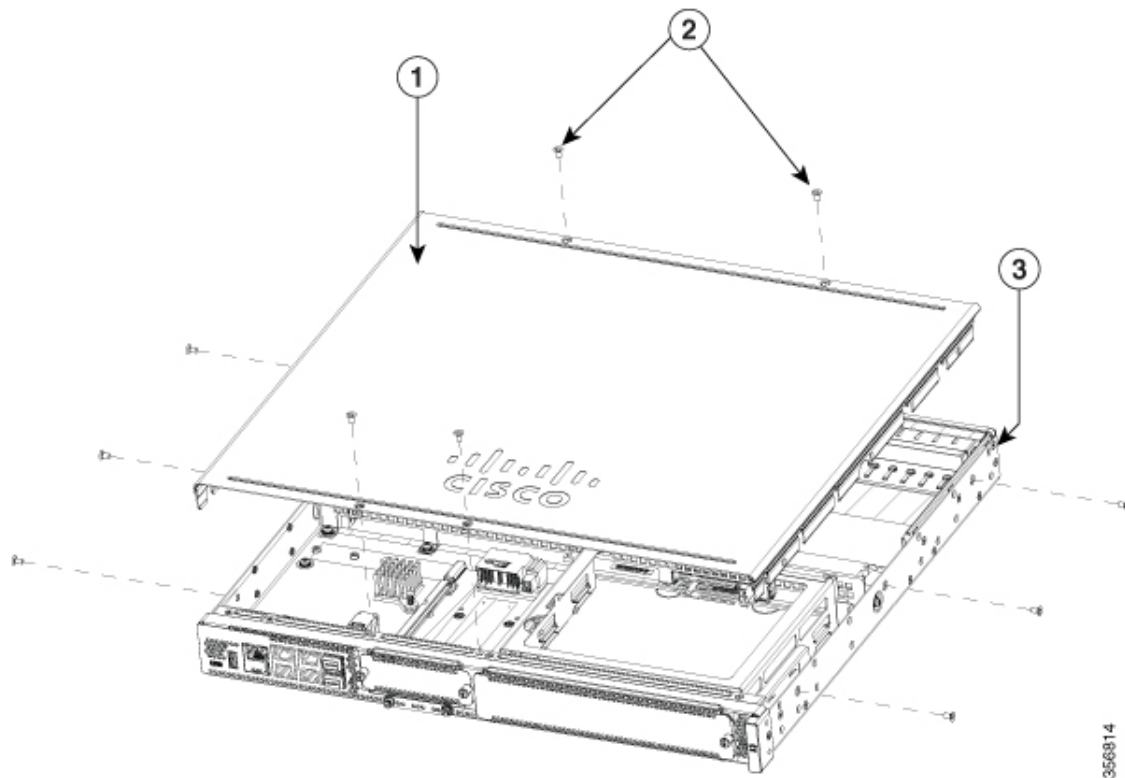
1	Chassis cover
2	Screws
3	Chassis

Figure 35: Install the Cover on the C8300-2N2S-4T2X|6T
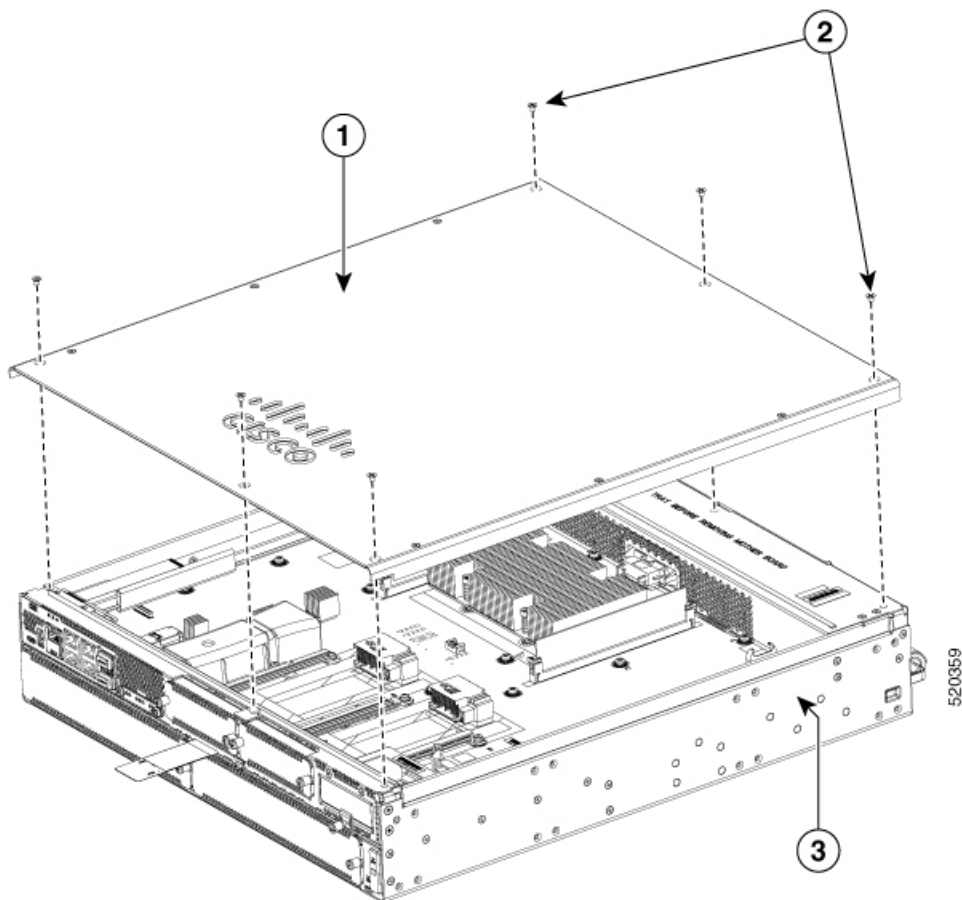
1	Chassis cover
2	Screws
3	Chassis

Remove and Replace DDR DIMMs

To access the DIMMs, you must remove the chassis cover as described in the Access and Install Modules section.

⚠️

Caution   Always wear an ESD-preventive wrist strap and ensure that it makes good contact with your skin when you remove or install DIMMs. Connect the equipment end of the wrist strap to the metal part of the chassis.

> ⚠
>
> **Caution**   Handle DIMMs by the edges only. DIMMs are ESD-sensitive components and can be damaged by mishandling.

Locate and Orient DIMM

DIMMs have a polarization notch on the mating edge to prevent incorrect insertion. The following image shows the polarization notch on a DIMM.

Figure 36: DIMM Showing Polarization Notch
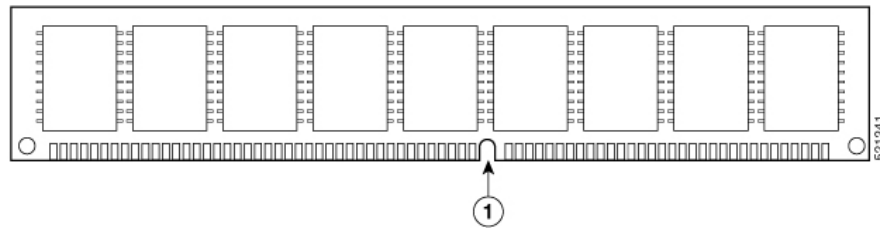
1	Polarization notch

Remove a DIMM

Follow these steps to remove a DIMM:

Step 1   Read the Safety Warnings section and disconnect the power supply before you perform any module replacement.

Step 2   If the cover is not already removed, remove the chassis cover.

Step 3   Locate the DIMM module to find the DIMM sockets on the chassis.

Step 4   Rotate DIMM connector handles downwards to extract the DIMM module.

Figure 37: Remove a DIMM
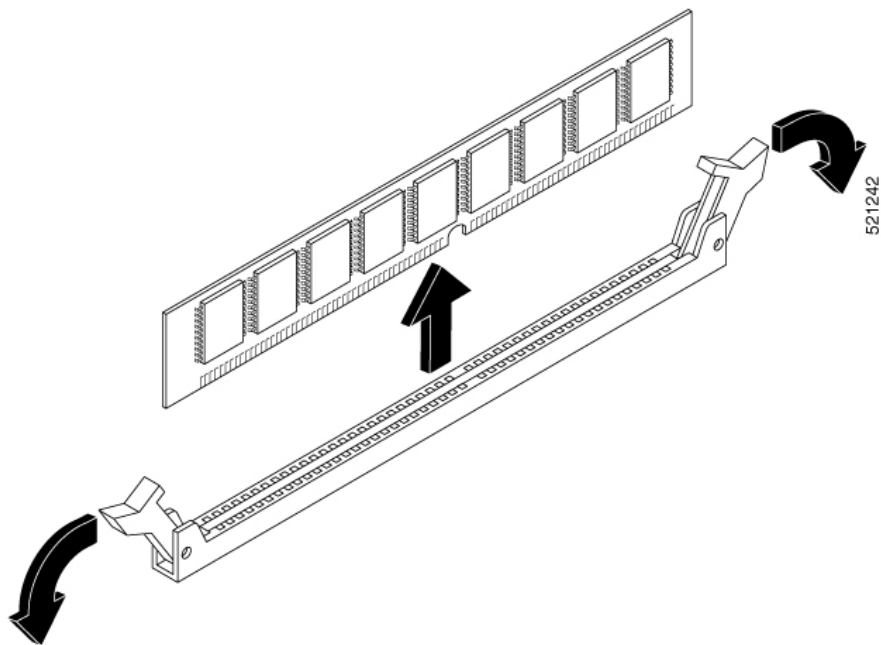
Install a DIMM

Follow these steps to install a DIMM on the Cisco Catalyst 8300 Series Edge devices.

Step 1   Read the Safety Warnings section and disconnect the power supply before you perform any DIMM replacement.

Step 2   If the cover is not already removed, remove the chassis cover.

Step 3   Locate the DIMM module to find the DIMM sockets on the device.

Step 4   Ensure that both latches on the DIMM connector are in the open position.

Step 5   Orient the DIMM so that the polarization notch lines up with the polarization key on the connector.

Figure 38: DIMM Showing Polarization Notch
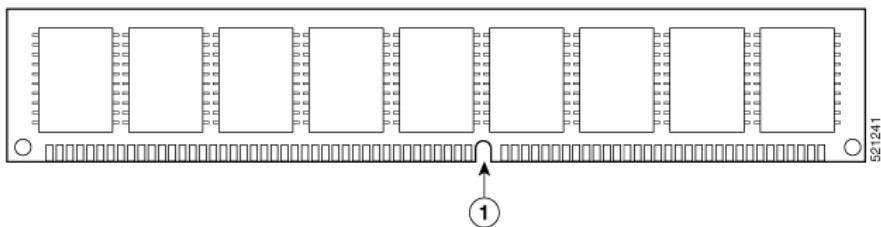
Step 6   Insert the DIMM into the connector one side at a time.

Step 7   Rotate the connector handles upward and click into place.

Step 8   Reinstall the chassis cover.

Figure 39: Install a DIMM
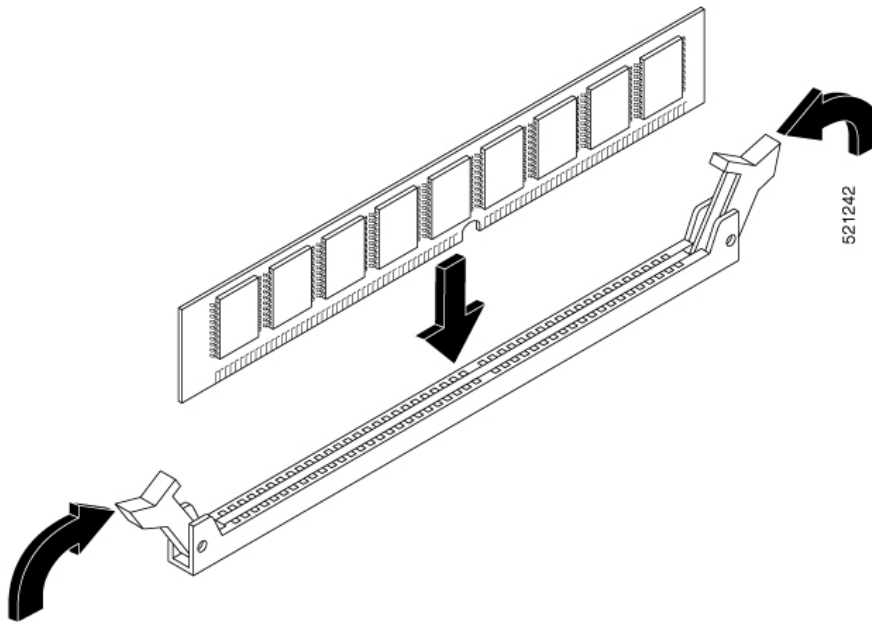
Step 9   Replace the chassis cover.

Remove and Replace the Power Supplies

Warning   Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029

Warning   This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

Warning   Care should be taken while removing the power supplies (especially in boost mode of operation). If the total power consumption is higher than can be supported by one power supply alone and in this condition a power supply is removed, the hardware can be damaged. This may then result in the system being unstable or unusable.

AC Power Supplies

The C8300-1N1S-4T2X|6T devices have two different AC power supply types and they are the same physical size. The C8300-2N2S-4T2X|6Tdevices also have two AC power supply types and they are of the same physical size but they are not the same size as those in the C8300-1N1S-4T2X|6T. The power supplies cannot be interchanged.

Overview of the AC Power Supply

The AC power supplies for C8300-1N1S-4T2X|6T devices are as follows. The two supplies are physically similar and a diagram is shown in the figure below.

- PWR-CC1-250WAC

- PWR-CC1-500WAC

Figure 40: 250W/500W AC Power Supply for C8300-1N1S-4T2X|6T
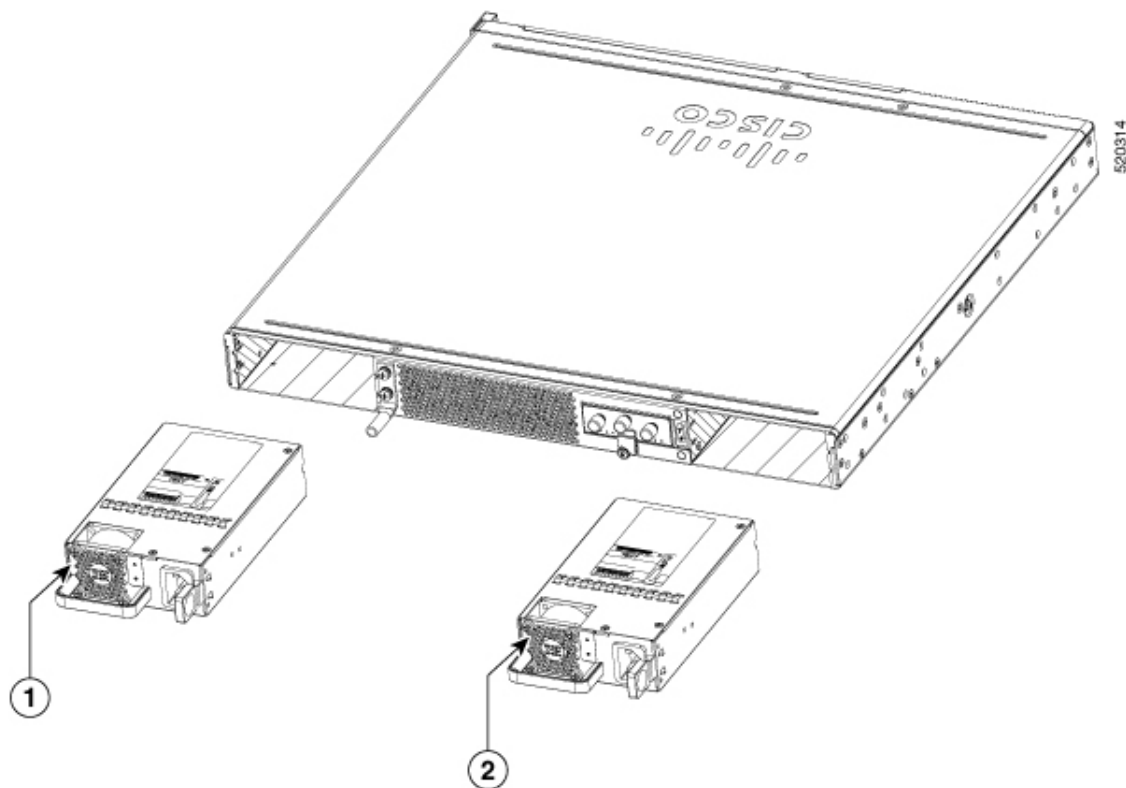
Sl. No	Module
1	PSU1
2	PSU0

Figure 41: 250W/500W AC Power Supply for C8300-1N1S-4T2X|6T
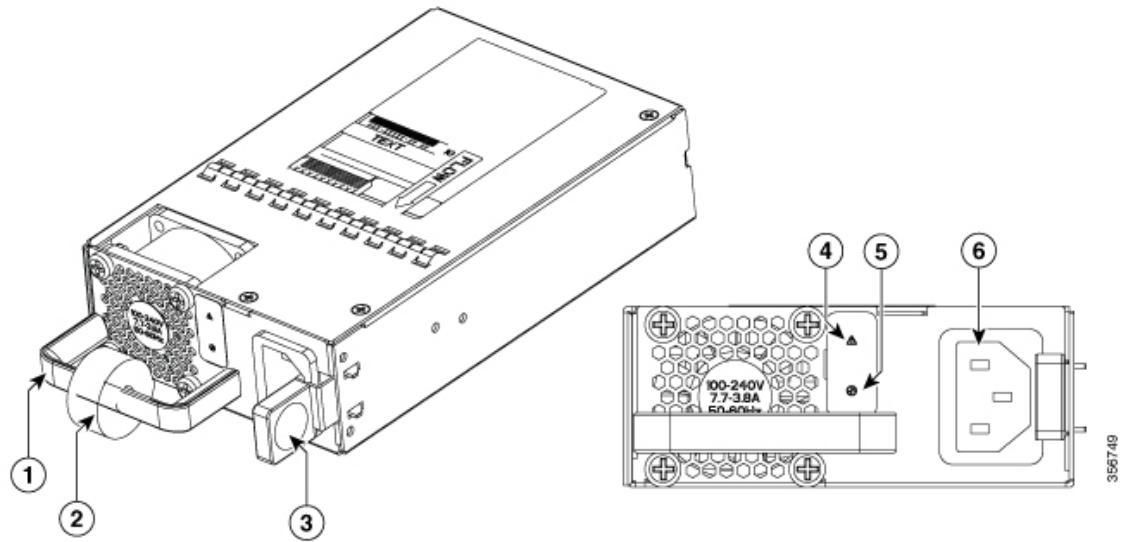
1	Handle	2	Strain relief
3	Latch	4	Fail LED
5	Status LED	6	Power socket

The AC power supplies for C8300-2N2S-4T2X|6T devices are as follows. The two supplies are physically similar and a diagram is shown in the figure below.

- PWR-CC1-650WAC

- PWR-CC1-1000WAC

Figure 42: 650WAC/1000WAC Power Supply for C8300-2N2S-4T2X|6T
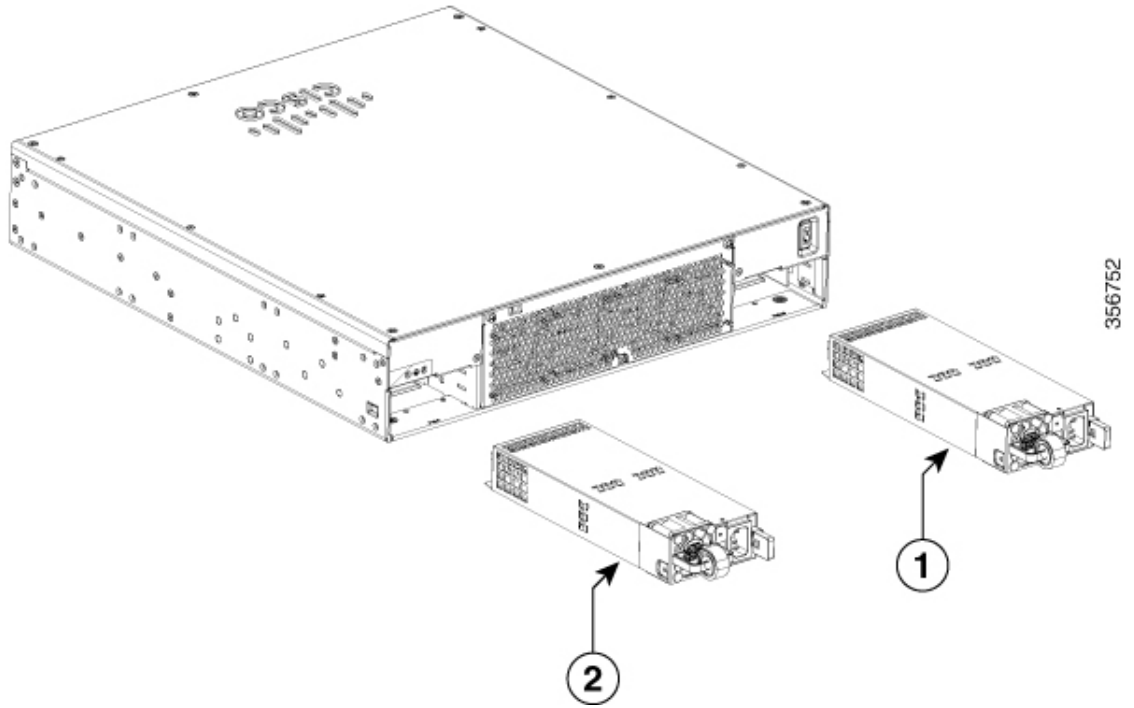
Sl. No	Module
1	PSU0
2	PSU1

Figure 43: 650W/1000W AC Power Supply for C8300-2N2S-4T2X|6T
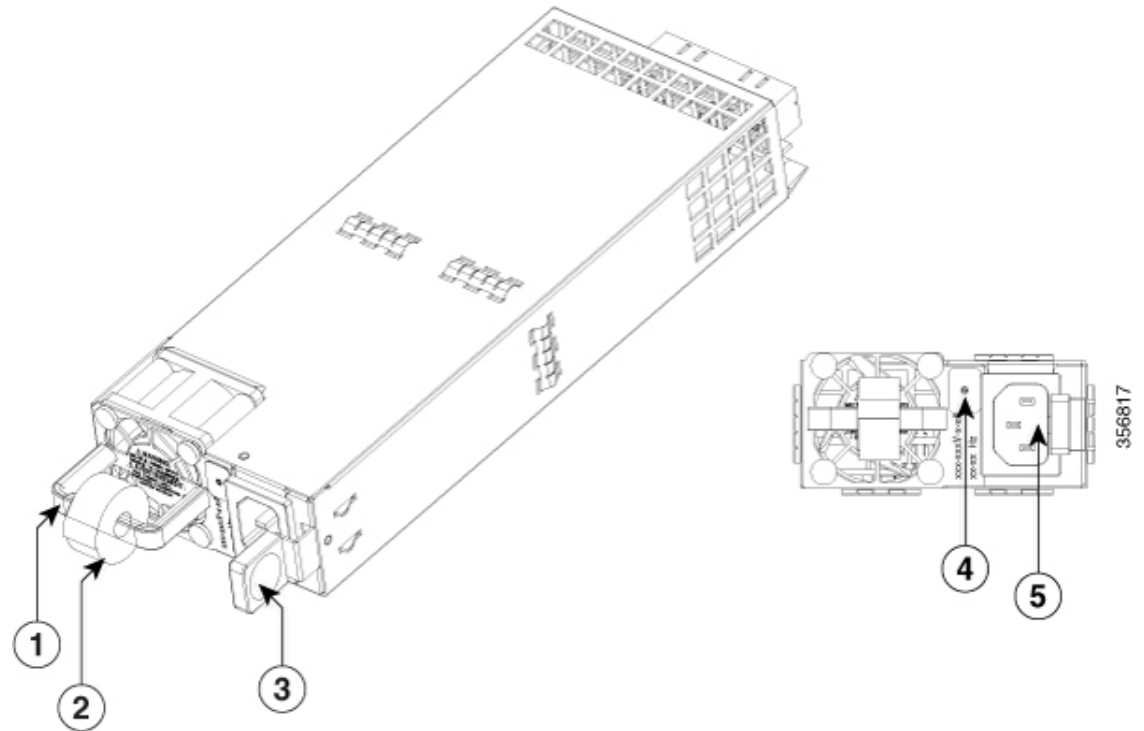
Table 11: 650W/1000W AC Power Supply for C8300-2N2S-4T2X|6T

1	Handle	2	Strain relief
3	Latch	4	Status LED
5	Power socket		

Remove and Replace the AC and HVDC Power Supply (C8300-1N1S-4T2X|6T)

To remove an AC power supply from the C8300-1N1S-4T2X|6T, perform these steps:

Step 1 Read the safety warnings section of this document.

Step 2 If there is only one power supply in the system, shut down the device before removing the power supply.

Step 3 If there are redundant power supplies in use the device does not have to be shut down prior to replacing the power supply. The power supply may be replaced while the device is in service.

Step 4 If in use, remove the strain relief securing the power supply cable to the power supply latch.

Step 5 Remove the AC power cord from the power socket.

Step 6 Depress the power supply latch and use the handle to pull the supply out of the device.

Figure 44: Step 4

Figure 45: Step 5

Figure 46: Step 6

To replace or install an AC power supply into the C8300-1N1S-4T2X|6T device, perform these steps:

Step 1 Use the handle to push the power supply into the router. The power supply latch should provide an audible click when the supply is fully seated.

Step 2 Install the AC power cord into the power socket on the power supply.

Step 3 If used, reapply the strain relief strap around the power cord and the power supply latch.

Step 4 If the device was turned off, turn the power back on to the device.

Remove and Replace the AC Power Supply (C8300-2N2S-4T2X|6T)

To remove an AC power supply from a C8300-2N2SS-4T2X|6T device, perform these steps:

Step 1 Read the safety warnings section of this document.

Step 2 If there is only one power supply in the system, shut down the device before removing the power supply.

Step 3 If there are redundant power supplies in use the device does not have to be shut down prior to replacing the power supply. The power supply may be replaced while the device is in service.

Step 4 If in use, remove the strain relief securing the power supply cable to the power supply latch.

Step 5 Remove the AC power cord from the power socket.

Step 6 Depress the power supply latch and use the handle to pull the supply out of the router.

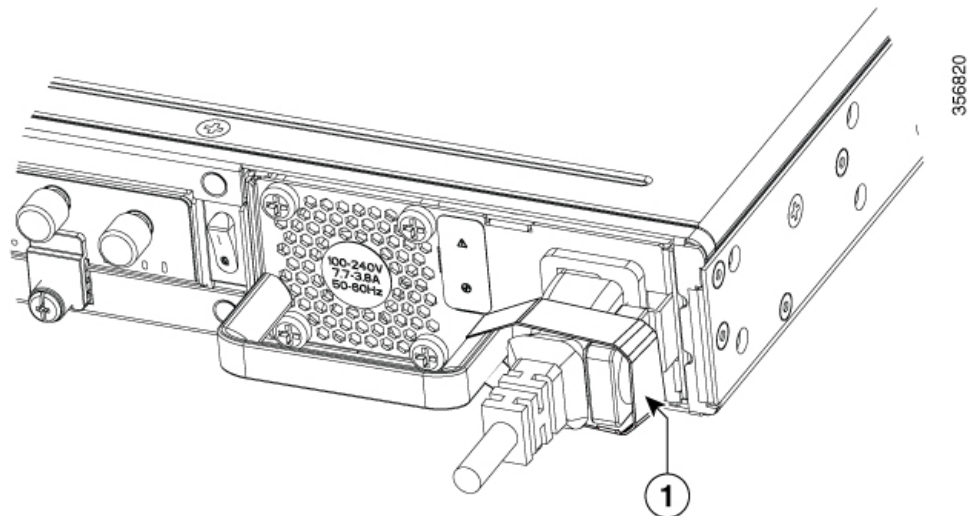*Figure 47: Remove an AC Power Supply from the C8300-2N2S-4T2X|6T*
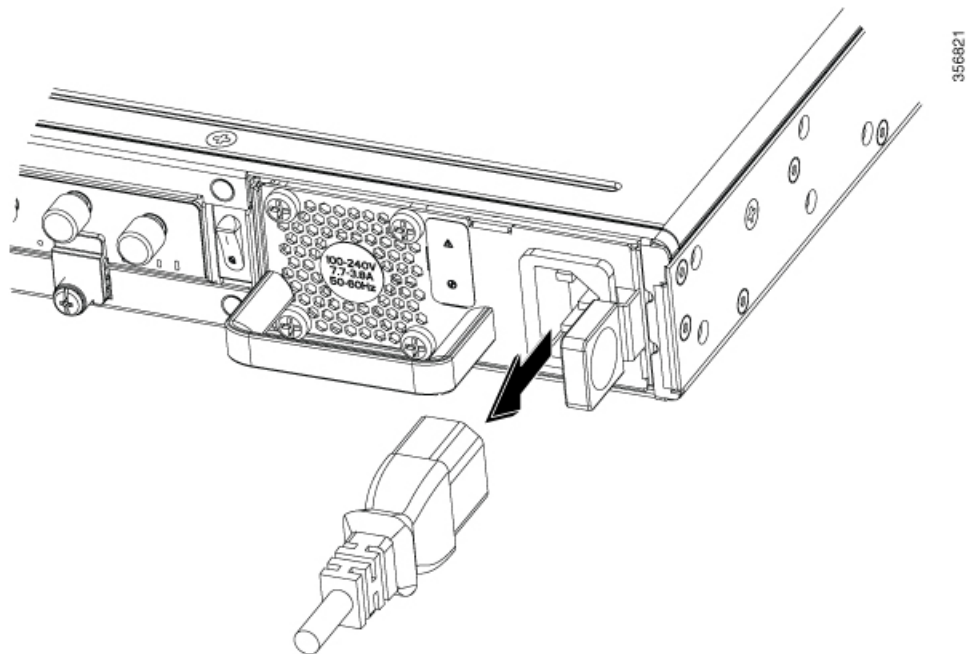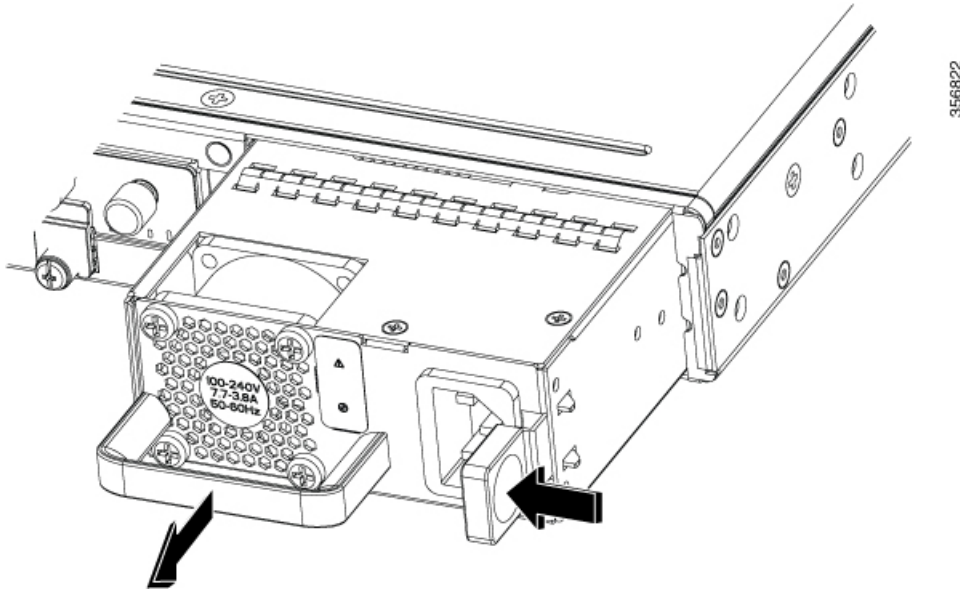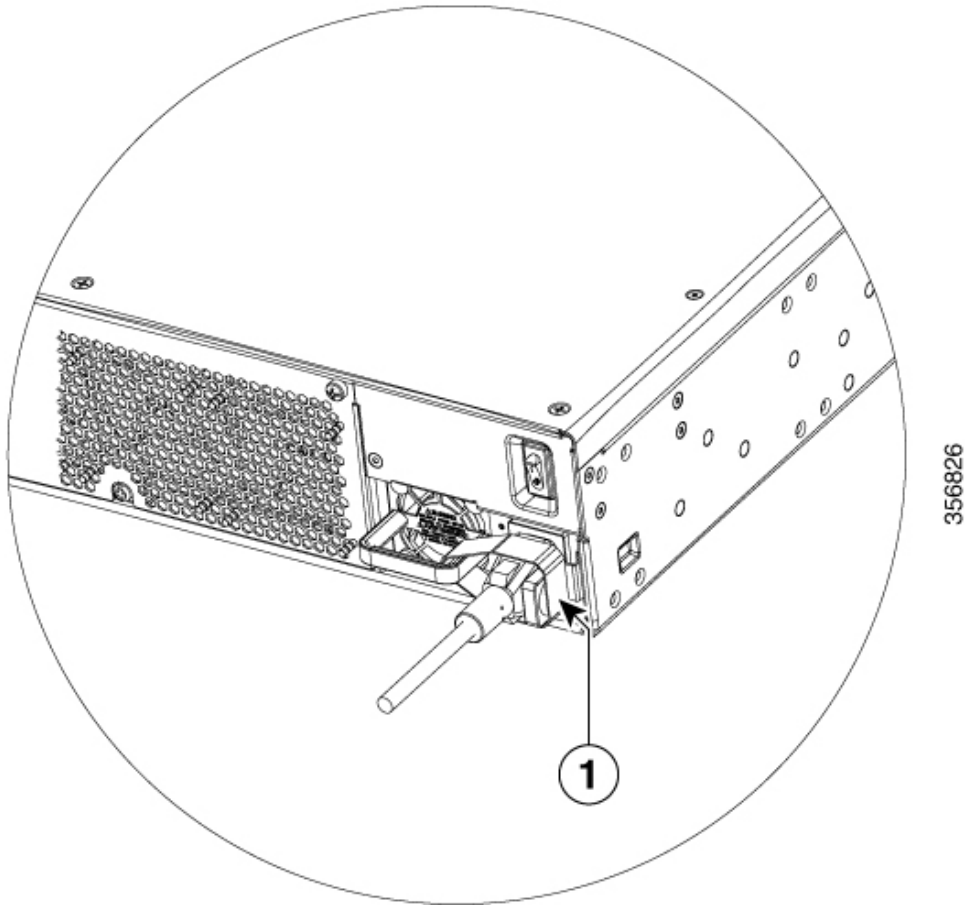
Figure 48: Step 5
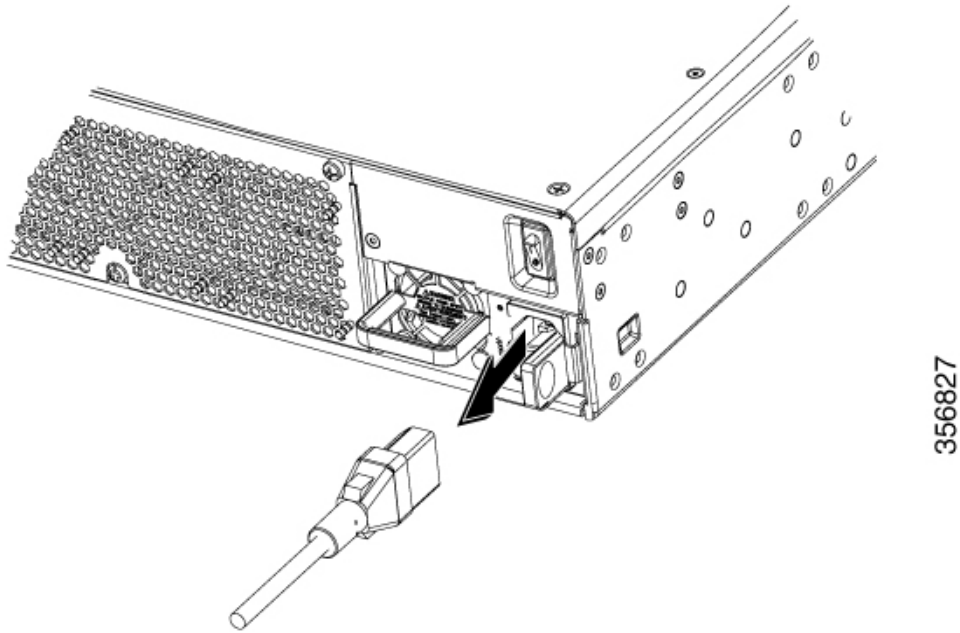
Figure 49: Step 6
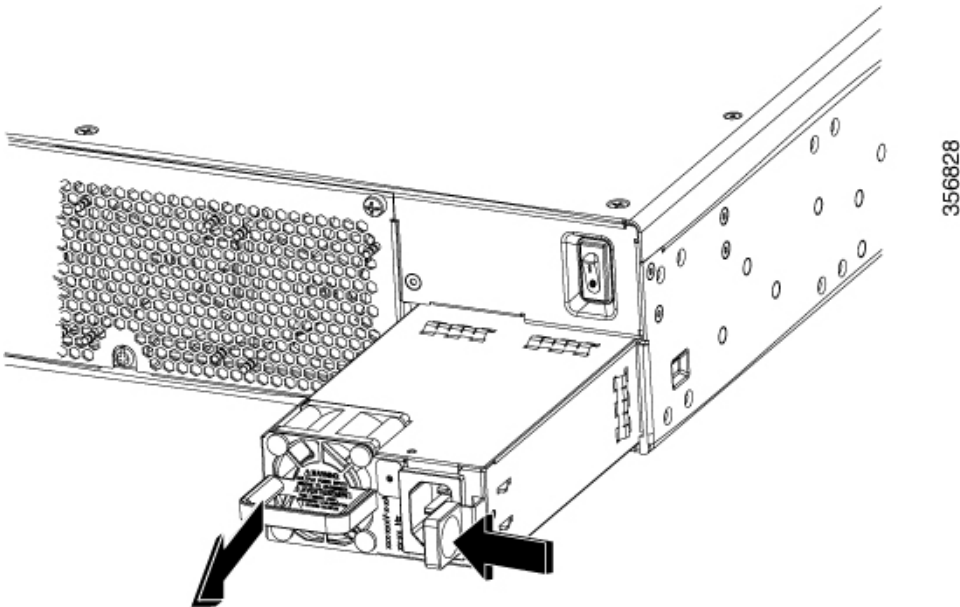
To replace or install an AC power supply into a C8300-2N2S-4T2X|6T device, perform these steps:

Step 1 Use the handle to push the power supply into the device. The power supply latch should provide an audible click when the supply is fully seated.

Step 2   Install the AC power cord into the power socket on the power supply.

Step 3   If used, reapply the strain relief strap around the power cord and the power supply latch.

Step 4   If the device was turned off, turn the power back on to the device.

DC Power Supplies

The C8300-1N1S-4T2X|6T devices have one DC power supply type. The C8300 2N2S-4T2X|6T devices also have one DC power supply type. As with the AC power supplies, the DC power supplies are not of the same size and cannot be interchanged.

Overview of the DC Power Supplies

The DC power supply for C8300-1N1S-4T2X|6T devices is shown in the figure below:

- PWR-CC1-400WDC

- PWR-CC1-400WHV

Figure 50: 400WDC Power Supply for C8300-1N1S-4T2X|6T
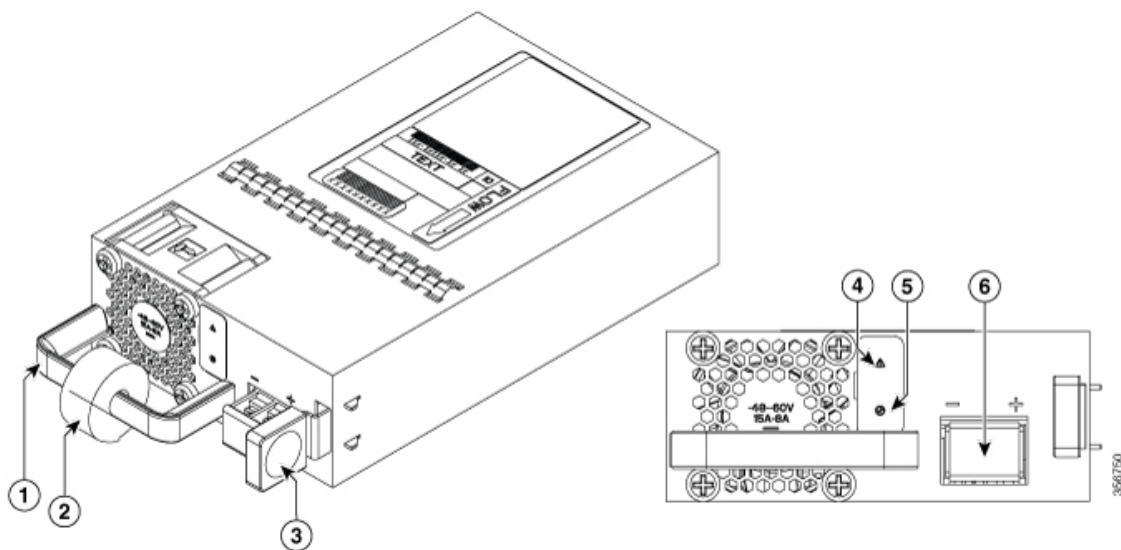
1	Handle	2	Strain relief
3	Latch	4	Fail LED
5	Status LED	6	Terminal block

Figure 51: 400WHV Power Supply for C8300-1N1S-4T2X|6T
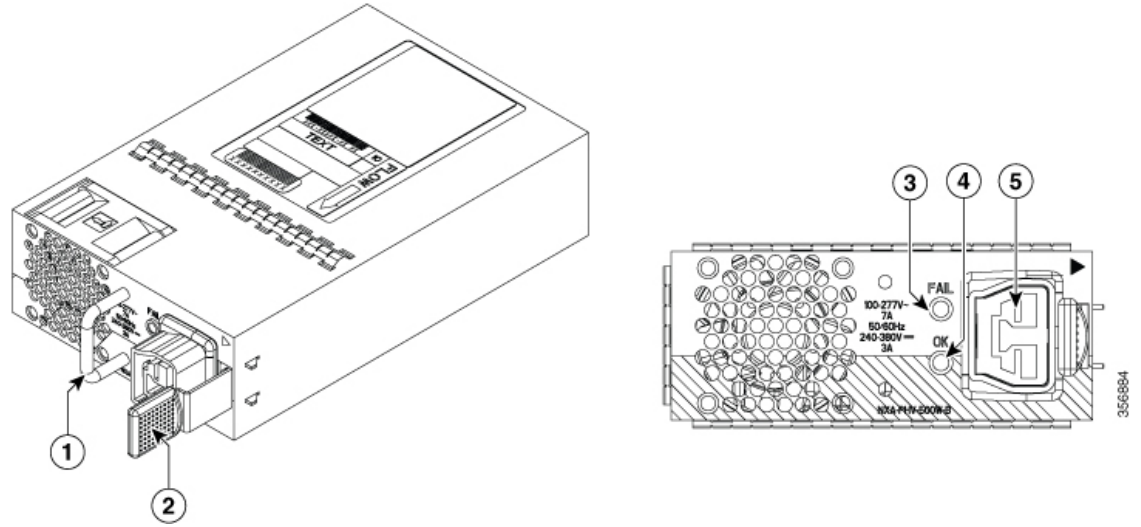
1	Power socket	2	Fail LED
3	Status LED	4	Handle
5	Latch		

The DC power supply for C8300-2N2S-4T2X|6T devices is shown in the figure below:

Figure 52: 650WDC Power Supply for C8300-2N2S-4T2X|6T
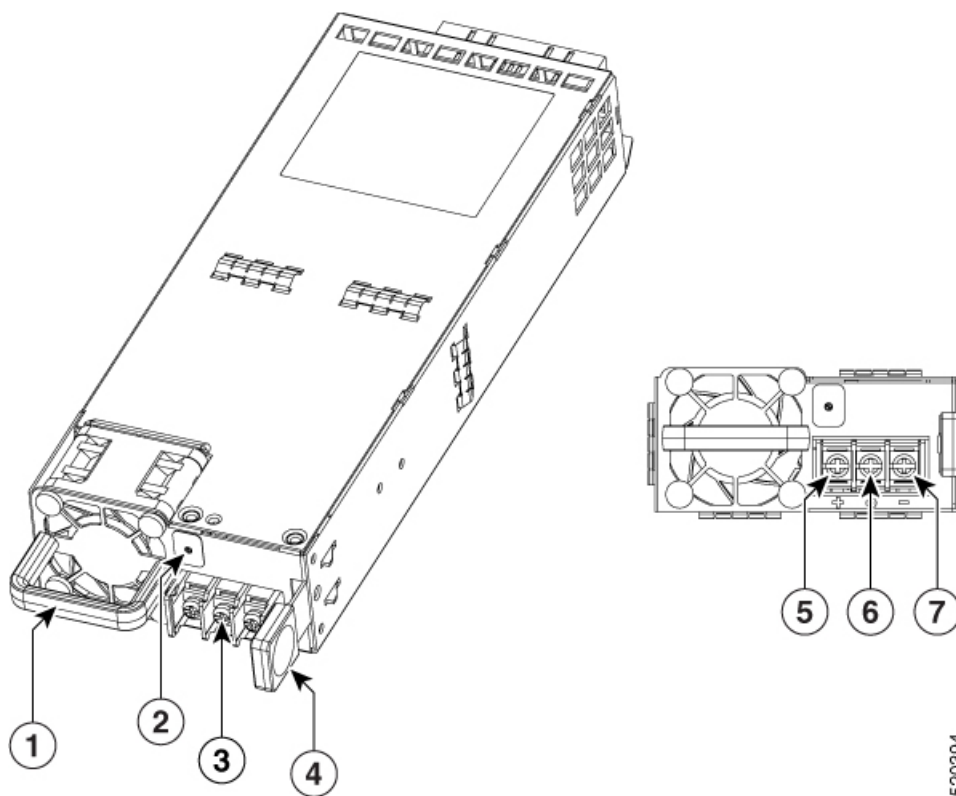
1	Handle	2	Status LED
3	Ground lead wire	4	Latch
5	Positive (+) lead wire	6	Ground lead wire
7	Negative (-) lead wire		

Remove and Replace the DC Power Supply (C8300-1N1S-4T2X|6T)

To remove a DC power supply from a C8300-1N1S-4T2X|6T, perform these steps:

Step 1   Read the safety warnings section of this document.

Step 2   If there is only one power supply in the system, shut down the device before removing the power supply.

Step 3   If there are redundant power supplies in use the device does not have to be shut down prior to replacing the power supply. The power supply may be replaced while the device is in service.

Step 4   At the power distribution panel or at the local circuit breaker, remove the power from the DC power leads (label **1**)attached to the power supply to be replaced.

Step 5   Remove the terminal block cover and loosen the terminal screws (label **1**) securing the power cabling. Remove the power cabling from the terminal block.

Step 6   Depress the power supply latch and use the handle to pull the supply out of the device.

*Figure 53: Remove a DC Power Supply from the C8300-1N1S-4T2X|6T*
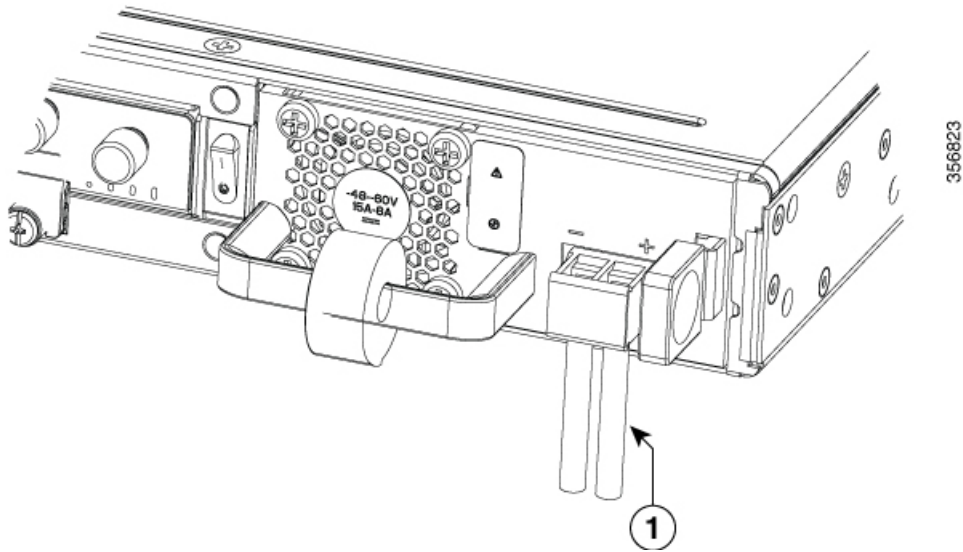
Figure 54: Step 5

Figure 55: Step 6

To replace or install a DC power supply from a C8300-1N1S-4T2X|6T, perform these steps:

Step 1 Use the handle to push the power supply into the router. The power supply latch should provide an audible click when the supply is fully seated.

Step 2 If this is an initial installation, please see the section on preparing the DC power leads below.

Step 3 Install the DC power leads into the terminal block and tighten the terminal block screws to secure the cables. For the PWR-CC1-400WDC power supply the negative lead installs into the left terminal position and the positive lead installs into the right terminal position. The polarity is marked on the faceplate of the power supply.

    Caution Do not over torque the terminal block captive screws. Ensure that the connection is snug, but the wire is not crushed. Verify by tugging lightly on each wire to ensure that they do not move.

Step 4 Reinstall the terminal block cover.

Step 5 If the device was turned off, turn the power back on to the device.

Remove and Replace the DC Power Supply (C8300-2N2S-4T2X|6T)

To remove a DC power supply from the C8300-2N2SS-4T2X|6T, perform these steps:

Step 1 Read the safety warnings section of this document.

Step 2 If there is only one power supply in the system, shut down the device before proceeding.

Step 3 If there are redundant power supplies in use the router does not have to be shut down prior to replacing the power supply. The power supply may be replaced while the router is in service.

Step 4   At the power distribution panel or at the local circuit breaker, remove the power from the DC power leads (label **1**) attached to the power supply to be replaced.

Step 5   Remove the terminal block cover and loosen the terminal screws (label **1**) securing the power cabling. Remove the power cabling from the terminal block.

Step 6   Depress the power supply latch and use the handle to pull the supply out of the device.

*Figure 56: Remove a DC Power Supply from the C8300-2N2S-4T2X|6T*
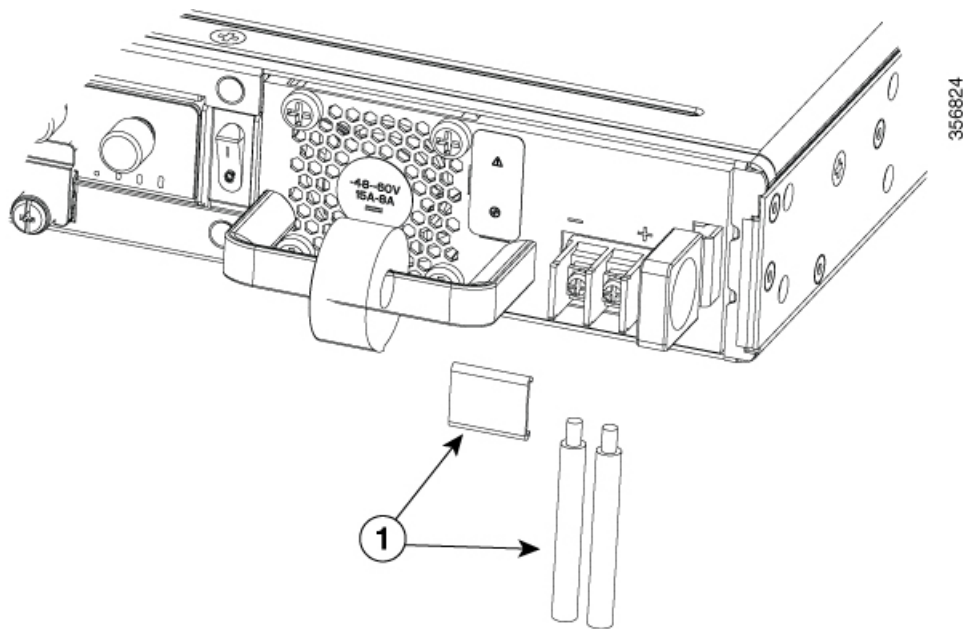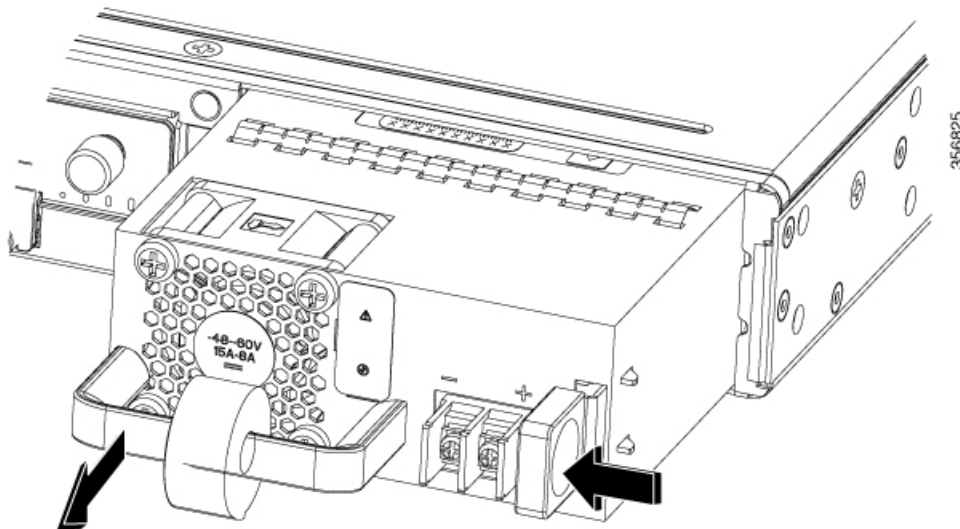
Figure 57: Step 5
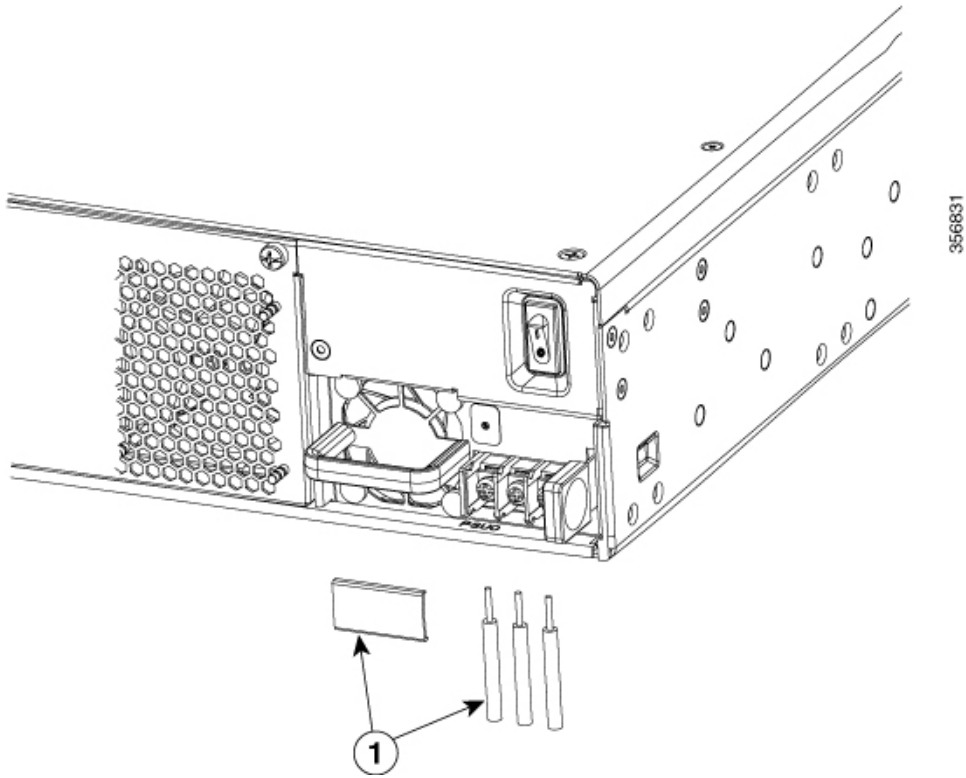
Figure 58: Step 6
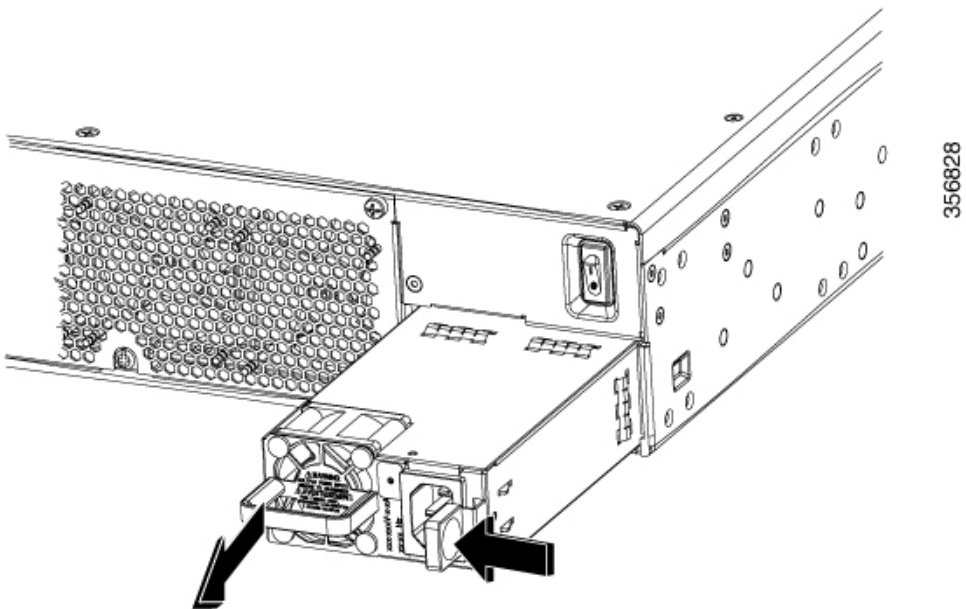
To replace or install a DC power supply from the C8300-2N2SS-4T2X|6T, perform these steps:

Step 1 Use the handle to push the power supply into the router. The power supply latch should provide an audible click when the supply is fully seated.

Step 2 If this is an initial installation, please see the section on preparing the DC power leads below.

Step 3 Install the DC power leads into the terminal block and tighten the terminal block screws to secure the cables. For the PWR-CC1-650WDC(R) power supply, the negative lead installs into the right terminal position and the positive lead installs into the left terminal position, and the ground lead installs into the middle terminal position. The polarity is marked on the faceplate of the power supply.

> **Caution** Do not over torque the terminal block captive screws. Ensure that the connection is snug, but the wire is not crushed. Verify by tugging lightly on each wire to ensure that they do not move.

Step 4 Reinstall the terminal block cover.

Step 5 If the device was turned off, turn the power back on to the device.
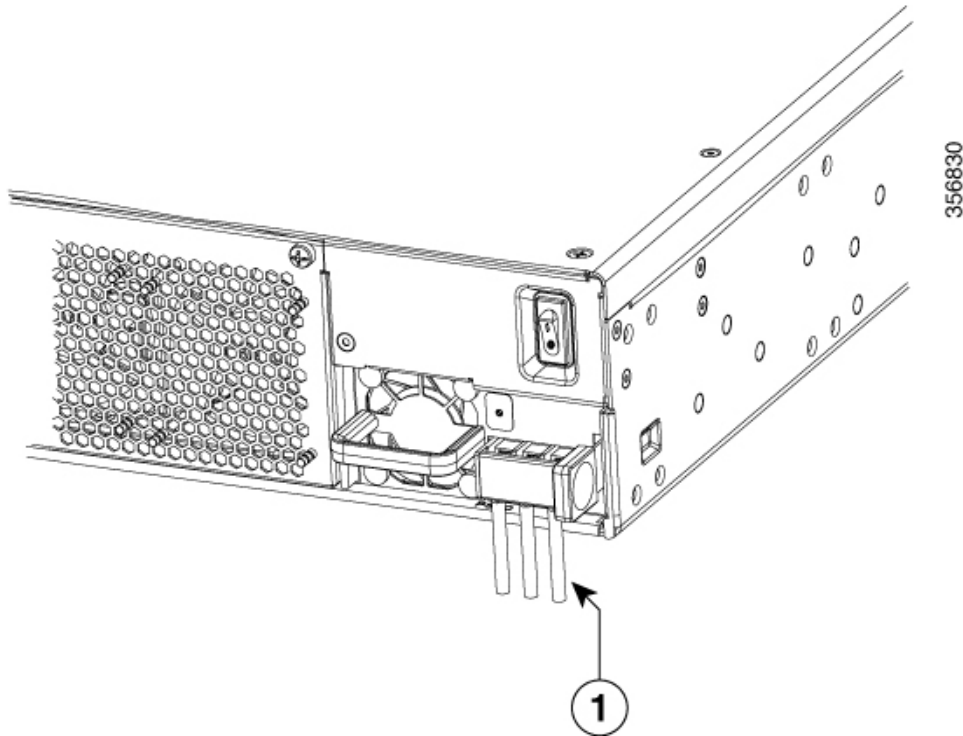
Install the DC Input Power

This section describes how to install the DC power supply input power leads to the C8300-1N1S-4T2X|6T and C8300-2N2S-4T2X|6T DC input power supply. Before you begin, read these important notices:

- The color coding of the DC input power supply leads depends on the color coding of the DC power source at your site. Ensure that the lead color coding you choose for the DC input power supply matches the lead color coding used at the DC power source and verify that the power source is connected to the negative (–) terminal and to the positive (+) terminal on the power supply.

- Ensure that the chassis ground is connected on the chassis before you begin installing the DC power supply. Follow the steps provided in the *Chassis Grounding* .

> **Warning** Before performing any of the following procedures, ensure that power is removed from the DC circuit. Statement 1003

> **Warning** Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

Prepare the Wire for Connecting to the DC Power Supply

In the C8300-1N1S-4T2X|6T and C8300-2N2S-4T2X|6T platforms, the DC power supply has a terminal block that is installed into the power supply terminal block header.

Use the following steps to prepare the wire for connection to the terminal source:

Step 1   Turn off the circuit breaker from the power source to be connected to the power source. Ensure the wires to be attached to the power supply are not energized.

Step 2   The wires connecting to the power supply can be stripped back and terminated directly to the power supply terminal block. Alternately a crimp style spade terminal lug can be attached to the end of the wire. If using a terminal lug, follow the manufacturer's instructions for terminating the lug to the wire. If terminating directly to the terminal block using bare wire, following the directions shown below.

Use a wire-stripping tool to strip each of the two wires coming from the DC input power source to approximately 0.39 inch (10 mm) +/- 0.02 inch (0.5 mm). It is recommended that 14 AWG insulated wire be used. Do not strip more than the recommended length of wire because doing so could leave the wire exposed from the terminal block and shows a stripped DC input power source wire.

Figure 59: Stripped DC Input Power Source Wire
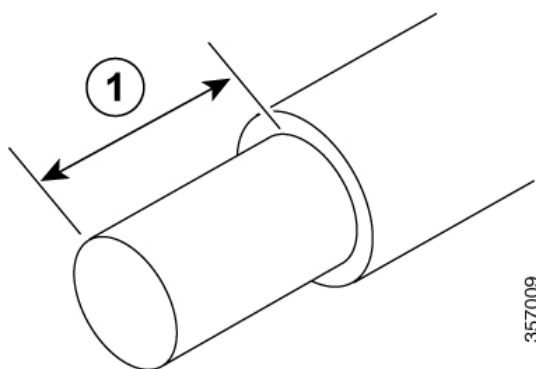
| 1 | 0.39 inch (10 mm) is the recommended wire-strip length for the terminal block. |

Warning   An exposed wire lead from a DC input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC input power source wire extends from the terminal block. Statement 122

Identify the positive and negative feed positions for the terminal block connection of C8300-1N1S-4T2X|6T:

a)   Positive (+) lead wire (right)
b)   Negative (−) lead wire (left)

Figure 60: DC Power Supply with Lead Wires
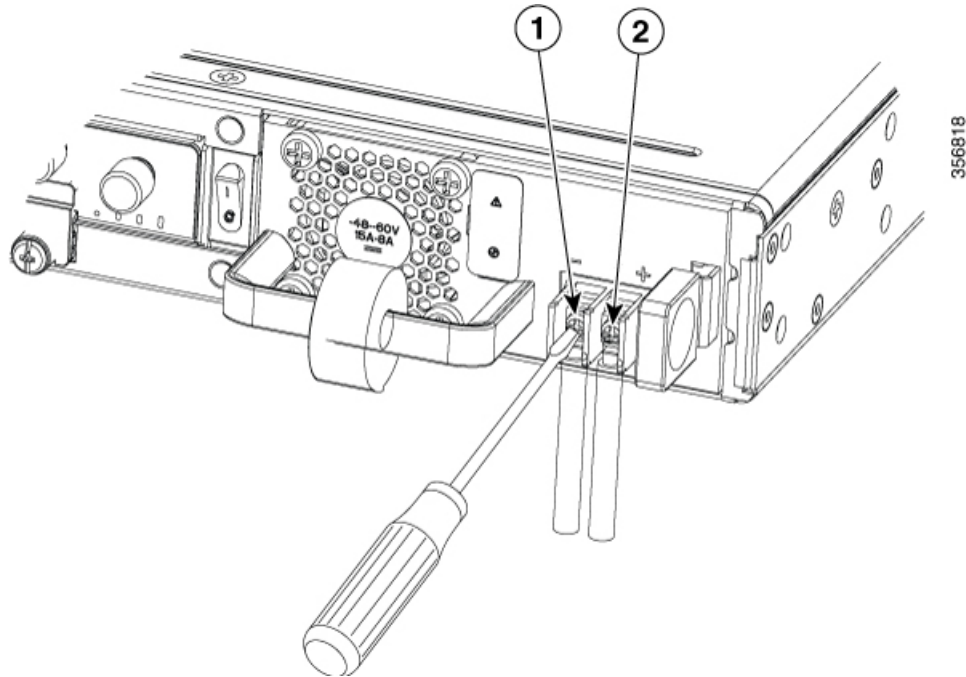
Table 12:

1	Negative (-) lead wire
2	Positive (+) lead wire

Identify the positive, ground, and negative feed positions for the terminal block connection of C8300-2N2S-4T2X|6T:

- Positive (+) lead wire(left)

- Ground Lead wire (middle)

- Negative (–) lead wire(right)

Figure 61: DC Power Supply with Lead Wires
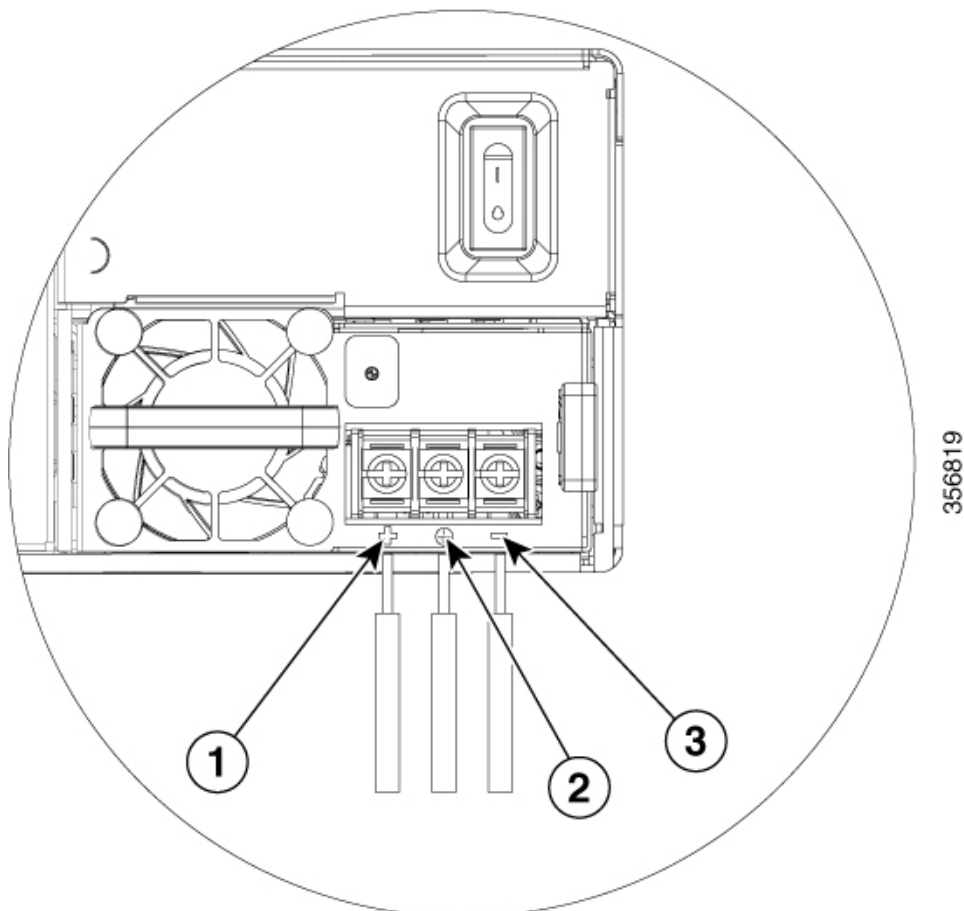
1	Positive (+) lead wire
2	Ground lead wire
3	Negative (-) lead wire

Remove and Install PoE Converter Power Supply Unit

The PoE converter power supply supports only online insertion feature, it does not support online removal.

Note Remove and Install PoE Converter Power Supply Unit in a C8300-2N2S-4T2X|6T

The optional PoE converter PSU slots come with factory-installed fillers. You must remove them to install the PoE converter power supplies. If you are using only one PoE converter power supply, you must install the PoE converter power supply in PoE slot 0.

This section shows the location of the PoE converter power supply slots located behind fan tray.

Remove the PoE Power Supply Slot Filler

To remove a PoE power supply filler, perform these steps:

Step 1   Loosen the screws securing the fan tray in the chassis.

Step 2   Remove the fan tray from the device.

Step 3   Loosen the screw securing the filler panel in the device.

Step 4   Pull on the screw and rotate the filler panel out of the slot.

Figure 62: Remove PoE Power Supply Slot Fillers
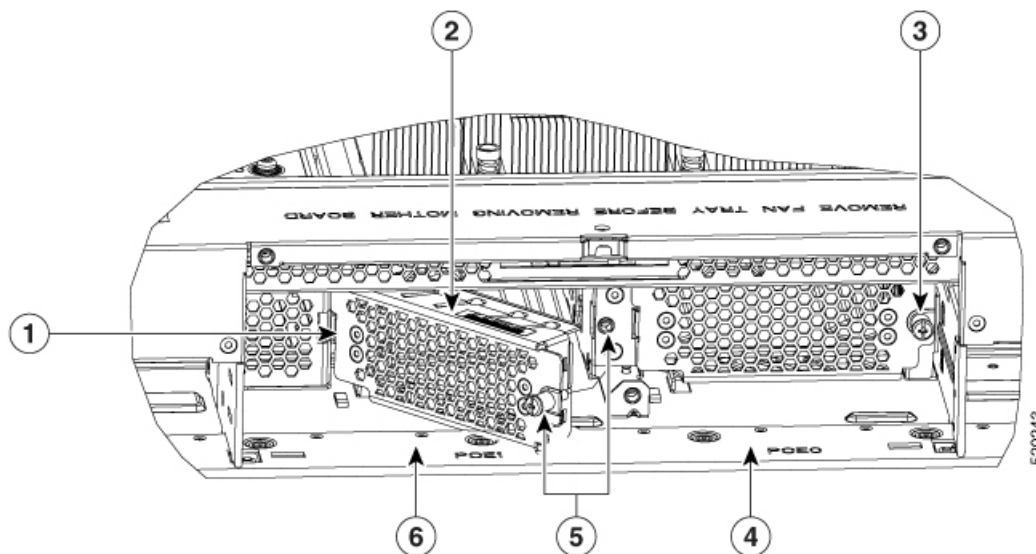
1	Install tab slot on the chassis	2	POE filler being installed in PoE slot 1
3	PoE filler shown installed in PoE slot 0	4	PoE slot 0
5	Rotate to secure screw into securing nut in chassis	6	PoE slot 1

Install the PoE Power Supply Slot Filler

To install a PoE power supply slot filler, perform these steps:

Step 1   Install the tab on the left side of the filler panel into the slot in the chassis.

Step 2   Tighten the screw to secure the filler panel in the chassis.

Step 3   Install the fan tray from the device.

Step 4   Tighten the screws securing the fan tray in the chassis.

Remove the PoE Converter Power Supply

To remove the PoE converter power supply, follow these steps:

Step 1   Remove the fan tray from the device.

Step 2   Loosen the screws securing the fan tray in the chassis.

Step 3   Remove the fantray from the device.

Step 4   Loosen the two screws securing the POE supply in the device.

Step 5   Rotate the PoE latch and pull the supply out of the slot.

Figure 63: Remove the PoE Converter Power Supply
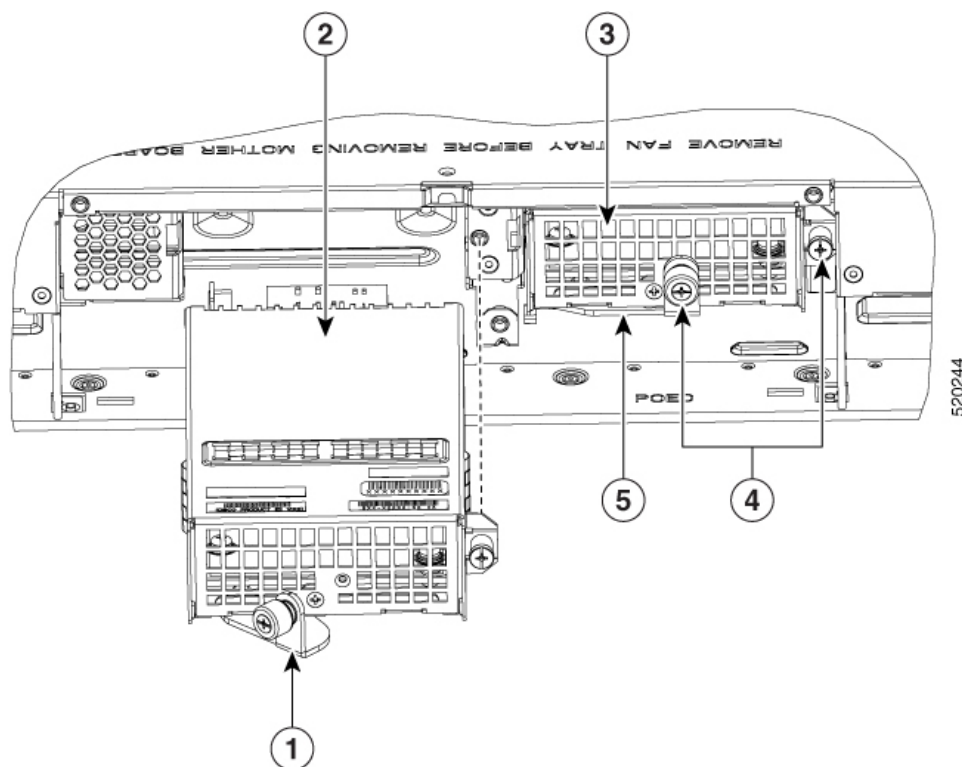
1	Latch to secure module (shown open).	2	PoE converter module being installed in PoE slot 1
3	PoE converter module installed in PoE slot 0	4	Screws to secure PoE module to the chassis.
5	Latch to secure PoE converter module (shown closed).		

Install the PoE Converter Power Supply

To install the PoE converter power supply, perform these steps:

Step 1 Push the POE power supply into the slot, continue until the supply is fully seated. The power supply latch should rotate until it touches the faceplate of the supply.

Step 2 Tighten the screw to secure the filler panel in the chassis.

Step 3 Tighten the two screws securing the POE supply in the device.

Step 4 Install the fan tray from the device.

Step 5 Tighten the screws securing the fan tray in the chassis.

Figure 64: Install the PoE Converter Power Supply
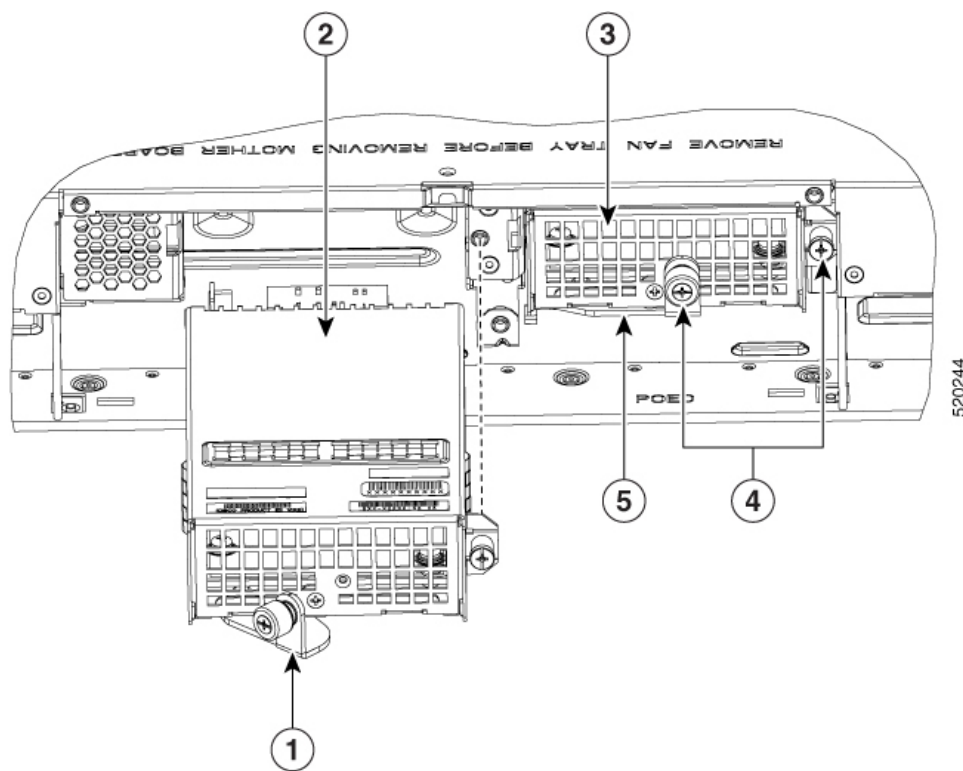
1	Latch to secure module (shown open).	2	PoE converter module being installed in PoE slot 1
3	PoE converter module installed in PoE slot 0	4	Screws to secure PoE module to the chassis.
5	Latch to secure PoE converter module (shown closed).		

The following messages are expected behavior when you try to reload or insert a PoE supply in a device with Ethernet Switch Network Module:

```
Example:

*Jul 21 22:35:23.868: %IOSXE_PEM-6-INSPEM_FM: PEM/FM slot POE0 inserted
Upon PoE converter power supply insertion, inline power supply restores automatically in the router.
```

```
   After the insertion, resets are needed for the switch modules in the router for the PoE supply to
work properly.
If there are two PoE supplies, the power supplies can operate in a boost mode or redundant mode. In
 a boost mode, the total power supplied is a sum of the two power supplies capacity. In a redundant
 mode, if one of the PoE supply fails, the other PoE will supply power.
```

Replace a Fan Tray for Cisco Catalyst 8300 Series Edge Platforms

In the Cisco Catalyst 8300 Series Edge Platforms, we have fan trays that are field replaceable units (FRUs). The fan tray includes all the fans in one assembly. If a fan fails, replace the tray using a #1 Phillips screwdriver.

Before Replacing a Fan Tray

Read the safety precautions below and have the required tools available before replacing a fan tray:

Replace a Fan Tray in a C8300-2N2S-4T2X|6T

The C8300-2N2S-4T2X|6T supports forward air flow (standard version).

To replace the fan tray, complete the following steps:

Note If you are hot-swapping the fan tray, it is recommended to complete the operation within two minutes to ensure that the device remains within operating temperature.

Step 1   Loosen the three captive fan tray screws.

Step 2   Pull the fan tray out.

Step 3   Insert the replacement fan tray and tighten the three captive screws.

Figure 65: Fan Tray of a C8300-2N2S-4T2X|6T
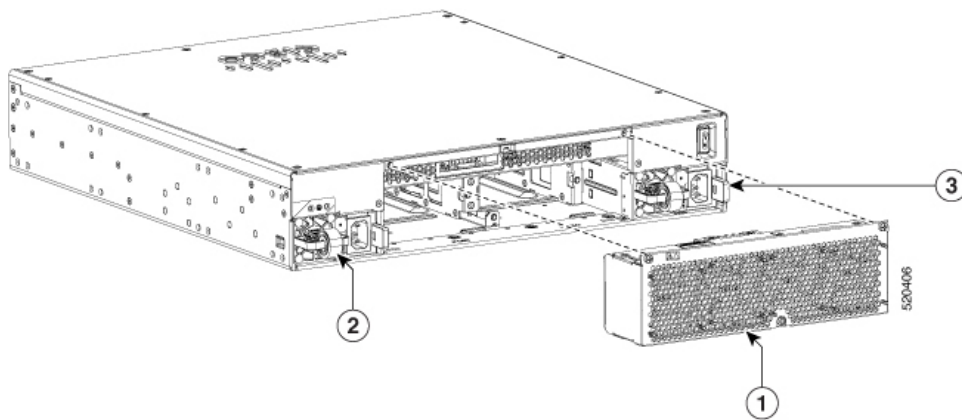
1	Fan tray

2	PSU 1
3	PSU 0

Remove the Fan Tray Air Filter from a C8300-2N2S-4T2X|6T

To insert the fan tray, complete the following steps:

Step 1 Loosen the middle captive air filter screws.

Step 2 Pull the old air filter out.

Step 3 Insert the replacement fan tray and tighten the captive screws.

Figure 66: Reinstall the Fan Tray Air Filter (Cisco 8300-2N2S-4T2X|6T)
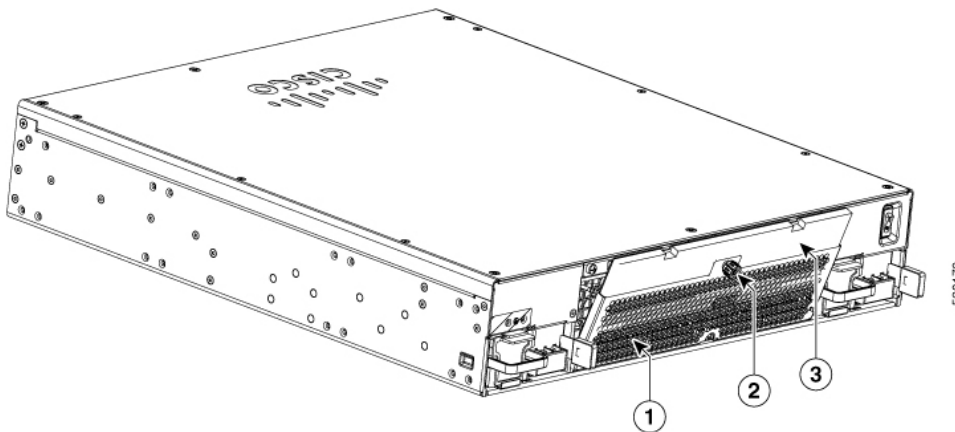
1	Air filter cover
2	Captive screw for air filter
3	Air filter

Note
- First inspection of the air filter must be performed six months after the first installation of the air filter.

- Air filters must be inspected every three months after the initial six month inspection and replaced if found to be dirty.

- Air filters cannot be cleaned and reused. Replace with a new air filter. It is recommended to have spare air filters in stock.

Remove the Fan Tray from a C8300-1N1S-4T2X|6T

The C8300-1N1S-4T2X|6T supports forward air flow (standard version).

To replace the fan tray, perform these steps:

Step 1   Power off the device

Step 2   Remove all cables from the chassis

Step 3   Remove unit from the equipment rack if it is installed in a rack

Step 4   Remove the top cover

Step 5   Remove the three screws from the fantray

Step 6   Disconnect fan cables from the motherboard

Step 7   Remove the fan tray

Note   The estimated time for replacing the fan tray on C8300-1N1S-4T2X|6T by a skilled technician within 60 Minutes.
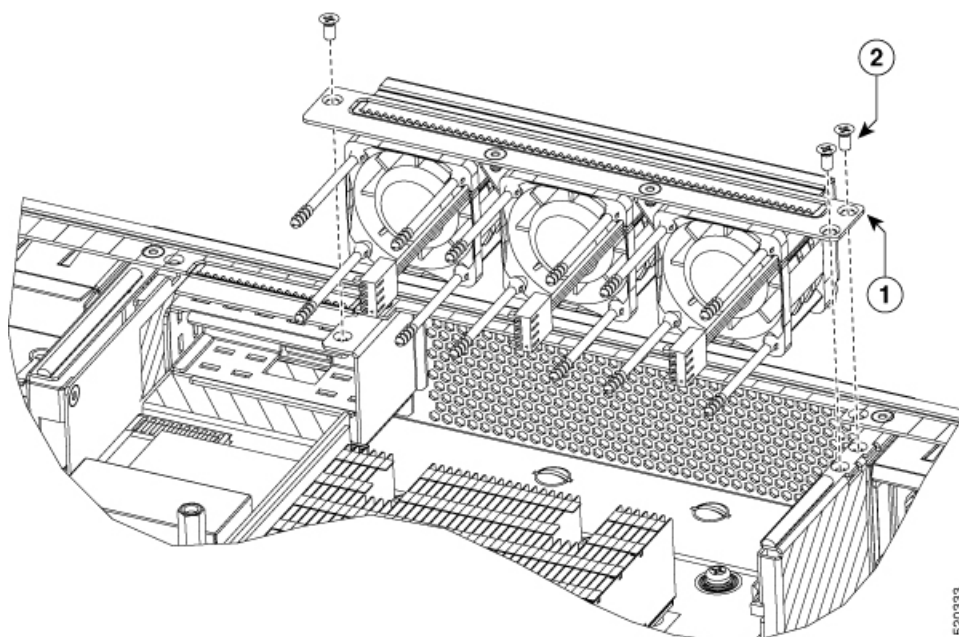
1	Fan tray	2	Screws

Install the Fan Tray into a C8300-1N1S-4T2X|6T

The C8300-INIS-4T2X|6T supports forward air flow (standard version).

To replace the fan tray, perform these steps:

Step 1   Install the fan tray

Step 2   Install the three fan tray mounting screws

Step 3   Connect the fan cables to the motherboard

Step 4   Install the top cover

Step 5   If appropriate, re-install the unit back in an equipment rack

Step 6   Reinstall all cables from the chassis

Step 7   Power on the unit
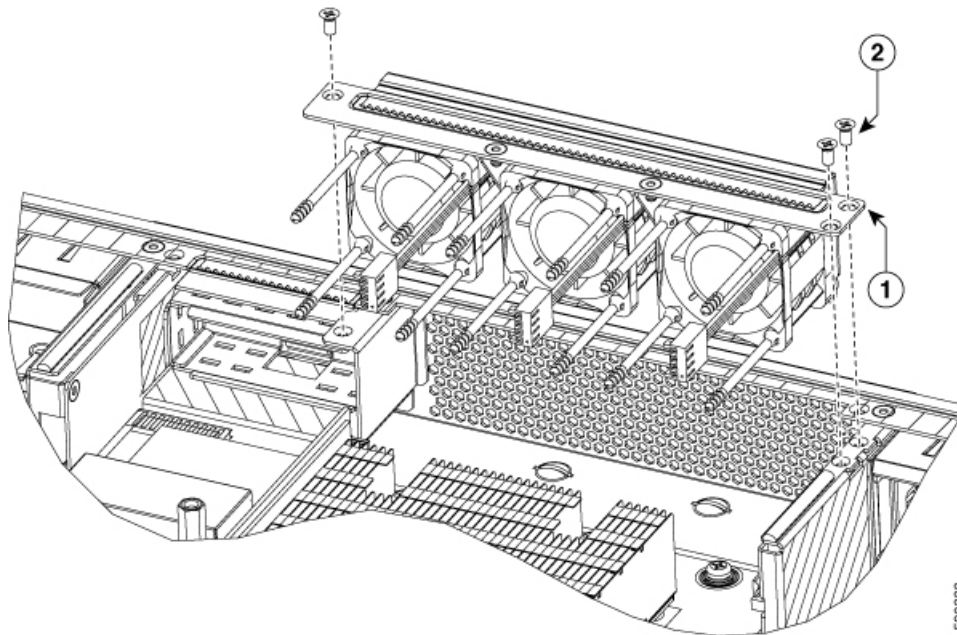
1	Fan tray	2	Screws

Install and Remove SFP and SFP+ Modules

Before you begin

See the Cisco Catalyst 8300 Series Edge Platforms's datasheet on cisco.com for a list of supported SFP and SFP+ modules. Use only supported SFP/SFP+ modules on the platform.

Warning   Class 1 laser product. Statement 1008

Note   We recommend that you wait 30 seconds between removal and insertion of an SFP on an interface module. This time is recommend to alllow the transceiver software to initilize and synchronise with the standby RSP. Chaning an SFP more quickly could result in transceiver initialization issues that disable the SFP

- Do not remove the dust plugs from the SFP and SFP+ modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.

- Removing and installing an SFP and SFP+ module can shorten its useful life. Do not remove and insert any SFP/SFP+ module more often than is necessary.

- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

- When you insert several SFP and SFP+ modules in multiple ports, wait for 5 seconds between inserting each SFP/SFP+. This will prevent the ports from going into error disabled mode. Similarly, when you remove an SFP and SFP+ from a port, wait for 5 seconds before reinserting it.

Step 1 Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2 Find the send (TX) and receive (RX) markings that identify the top of the SFP/SFP+ module.

On some SFP/SFP+ modules, the send and receive (TX and RX) markings might be shown by arrows that show the direction of the connection.

Step 3 If the SFP/SFP+ module has a bale-clasp latch, move it to the open, unlocked position.

Step 4 Align the module in front of the slot opening, and push until you feel the connector snap into place.

Step 5 If the module has a bale-clasp latch, close it to lock the SFP/SFP+ module in place.

Step 6 Remove the SFP and SFP+ dust plugs and save.

Step 7 Connect the SFP and SFP+ cables.

Laser Safety Guidelines

Optical Small-Form Pluggable (SFPs) use a small laser to generate the fiber-optic signal. Keep the optical transmit and receive ports covered whenever a cable is not connected to the port.

Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Warning Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040

Warning 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. Statement 1255.

To install an SFP module in your device, perform these steps:

Step 1 Read the Safety Warnings section and disconnect the power supply before you perform any module replacement.

Step 2 Slide the SFP into the device connector until it locks into position

Tip   If the SFP uses a bale-clasp latch (see Laser Safety Guidelines section, the handle should be on top of the SFP module.

Figure 67: Install a Small-Form Pluggable Module
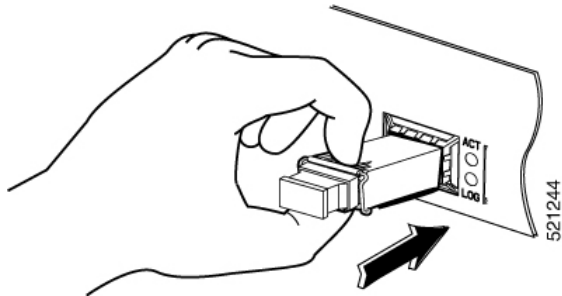
Caution Do not remove the optical port plugs from the SFP until you are ready to connect cabling.

Step 3   Connect the network cable to the SFP module.

Remove Small Form Pluggable Modules

Follow these steps to remove a Small Form Pluggable (SFP) from the device:

Step 1   Read the Safety Warnings section and disconnect the power supply before you perform any module replacement.

Step 2   Disconnect all cables from the SFP.

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

Caution The latching mechanism used on many SFPs locks the SFP into place when cables are connected. Do not pull on the cabling in an attempt to remove the SFP.

Step 3   Disconnect the SFP latch.

Note   SFP modules use various latch designs to secure the module in the SFP port. Latch designs are not linked to SFP model or technology type. For information on the SFP technology type and model, see the label on the side of the SFP.

Figure 68: Disconnecting SFP Latch Mechanisms
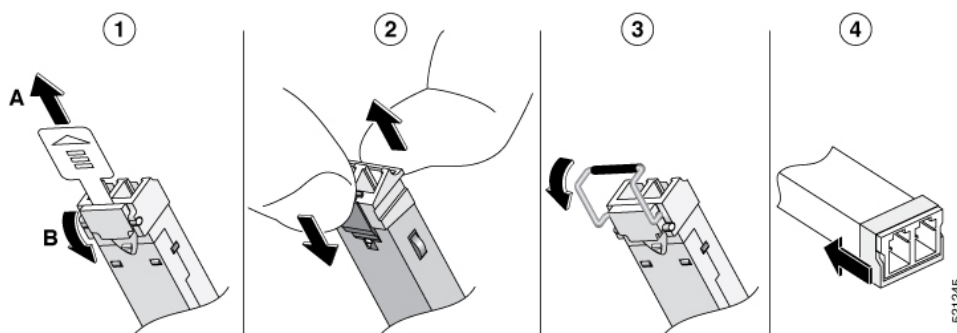
1	Sliding latch	3	Bale-clasp latch
2	Swing and slide latch	4	Plastic collar latch

Tip   Use a pen, screwdriver, or other small straight tool to gently release a bale-clasp handle if you cannot reach it with your fingers.

Step 4   Grasp the SFP on both sides and remove it from the device.

Remove and Replace the USB Flash Token Memory Stick

The Cisco Catalyst 8300 Series Edge Platforms contain ports for a USB memory stick to store Cisco configurations or Cisco IOS XE consolidated packages.

⚠

Caution   Do not remove a USB Flash memory module when issuing some file access command or a read/write operation to the Flash memory module when it is processing. The router might reload or the USB Flash memory module can be damaged. You can check to see if the USB activity LED on the router front panel is flashing, prior to the removal of the USB device

To install, remove a USB memory stick from the device, follow these steps:

Step 1   Place the USB stick into the USB port.

Step 2   Type-C memory sticks are supported on USB port 1 and type-C memory can be inserted in any direction. Type-A memory sticks are supported on USB port 0 and it must be oriented correctly to allow for proper insertion.

Note   A sample of how the memory stick is inserted into the port.

Figure 69: USB Memory Stick
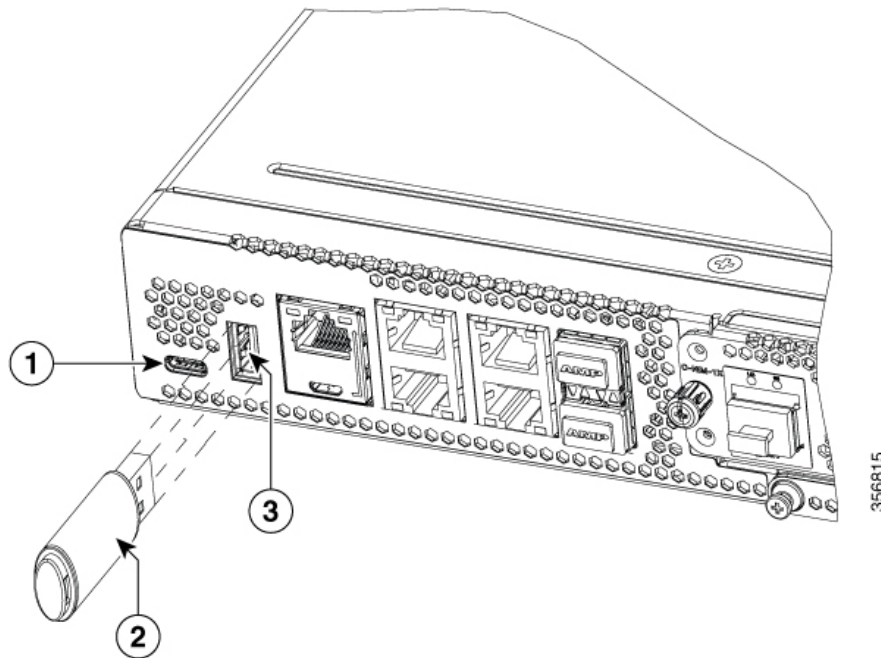
Note   You can insert or remove the memory stick whether the device is powered on or not.

1	USB Type C (3.0) (USB 1)
2	USB stick
3	USB Type A (3.0) (USB 0)

What to do next

This completes the USB Flash memory installation procedure.

Remove and Install an M.2 USB|NVMe Module

This section describes installing and replacing an M.2 USB|NVMe module on the Cisco Catalyst 8300 Series Edge Platforms.

Prevent Electrostatic Discharge Damage

The M.2 module is sensitive to electrostatic discharge (ESD) damage, which can occur when electronic cards or components are handled improperly. ESD results in complete or intermittent failures.

To prevent ESD damage, follow these guidelines:

   • Always use an ESD wrist or ankle strap and ensure that it makes good skin contact.

• Connect the equipment end of the strap to an unfinished chassis surface.

• Place the M.2 storage devices on an anti-static surface or in a static shielding bag. If you have to return the device to the factory, immediately place it in a static shielding bag.

• Avoid contact between the device and clothing. The wrist strap protects the device from ESD voltages on the body only; ESD voltages on clothing can still cause damage.

• Do not remove the wrist strap until the installation is complete.

⚠️

Caution   For safety, periodically check the resistance value of the anti static strap. The measurement should be between 1 and 10 megohms (Mohms).

Remove the M.2 USB|NVMe Module

To remove a M.2 USB|NVMe module, perform these steps:

✎

Note   The M.2 USB|NVMe module installation for C8300 1N1S-4T2X|6T and C8300 2N2S-4T2X|6T are different.

The M.2 USB|NVMe modules are flipped upside down.

Step 1   The device should be powered down and the power supply disconnected before you perform any module replacement.

Step 2   Loosen 2 mounting screws using a #1 Philips screwdriver.

Step 3   Gently pull the M.2 USB|NVMe module out and remove it from the device.

Figure 70: Remove the M.2 USB|NVMe Module (C8300-2N2S-4T2X|6T)
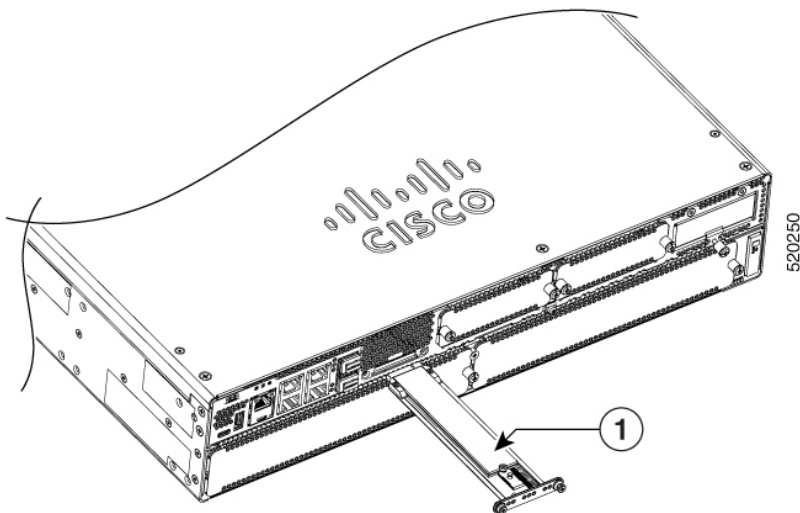
1	M.2 USB|NVMe module

Install the M.2 USB|NVMe Module

✎

Note The installation of M.2 USB|NVMe module for C8300-1N1S-4T2X|6T and C8300-2N2S-4T2X|6T are different.

The M.2 USB|NVMe module's orientations are flipped. For the C8300-1N1S-4T2X|6T, the PCB faces down, whereas, for the C8300-2N2S-4T2X|6T, the PCB faces upwards.

To install the M.2 USB|NVMe module, perform the following steps:

Step 1 Read all Safety Warnings, ensure that the C8300-1N1S-4T2X|6T is not powered on.

Step 2 Insert the M.2 USB|NVMe module into the slot of the device (as shown in the figure). The slide should engage the internal card guides.

Step 3 Gently slide the M.2 USB|NVMe module all the way in until the faceplate is flush with the device.

Step 4 Screw down and tighten the two Philips head screws. Torque it to 4-6 in lbs.

Step 5 The device can now be powered on.

Figure 71: Install the M.2 USB|NVMe (C8300-1N1S-4T2X|6T)
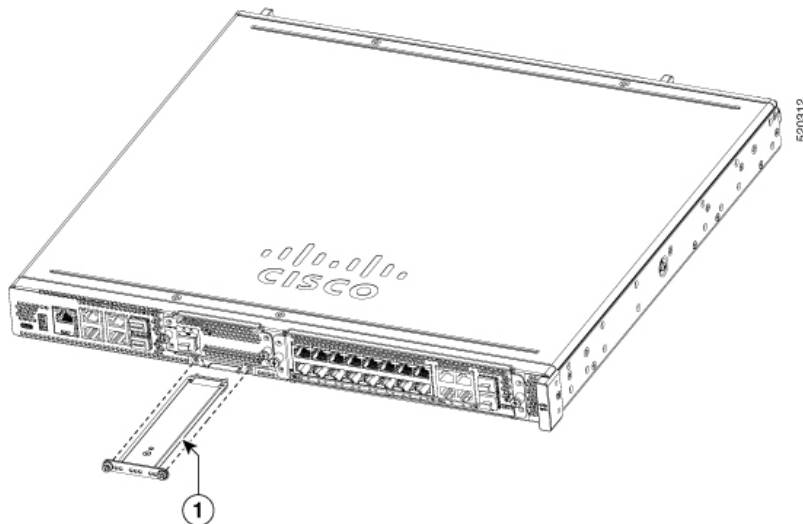
1	M.2 USB|NVMe

Managing Self Encrypting Drives

Cisco Catalyst 8300 Series Edge Platforms Series support self-encrypting drives (SED), which helps to enhance the security of data that are stored on these platforms. SEDs are locked using a security key. The security key, which is also known as Key-Encryption Key or an authentication passphrase is used to encrypt the media encryption key. If the disk is not locked, no key is required to retrieve the data. To enable the security lock, use the **hw-module harddisk security-lock enable to enable the** command. To disable the security lock, use **the no hw-module harddisk security-lock enable** command.

Also, you can perform the following actions:

- To check the security status, use the **show hw-module harddisk security-lock status** command.

- To perform factory reset on the SED when the security-lock is enabled, use the **factory-reset sed**

- To perform factory reset on the SED without checkig the status of the security-lock, use the **factory-reset sed PSID** command. The PSID (Physical Secure ID) is a 32 character ASCII string read from the label attached to the SED drive.

CHAPTER 5

Install Cisco Catalyst Network Interface Module

This section provides information before and during the installation of Cisco Catalyst Network Interface Modules (NIMs) on the Cisco Catalyst 8300 Series Edge Platforms.

Overview of the Network Interface Module

The Cisco Catalyst Network Interface Module (NIM), which has 10G WAN and 1xSFP+ 10G port is supported on Cisco Catalyst 8300 Series Edge Platforms.

For additional information, see the Cisco Catalyst 8300 Series Edge Platforms datasheet on cisco.com for a list of supported NIMs on the platforms.

Figure shows the front panel of the Catalyst Network Interface Module

Figure 72: Front Panel of Catalyst NIM
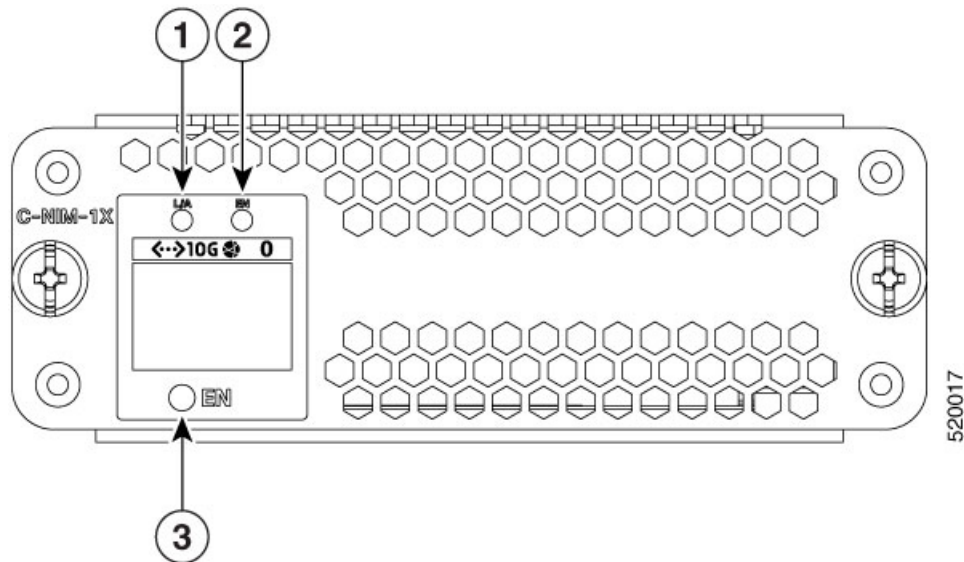
	LED	Description
1	L/A (top)	Off: No link. Green: Link established. Blinking green: Packets being transmitted.
2	EN (top)	Off: The SFP is not present. Green: The SFP is supported and no faults. Amber: The SFP is not supported or is in a fault state.
3	EN (bottom)	Off: Default state when the module is powered on for the first time. This state is persistent until changed by the host software. Green: The module is powered on and is functioning correctly. Amber: The module has some failure.

Remove and Install Network Interface Modules

Keep the following tools and equipment while working with the Network Interface Modules (NIM)s:

• Number 1 Phillips screwdriver or a small flat-blade screwdriver

• ESD-preventive wrist strap

Remove the Network Interface Module

Step 1 Shut down the electrical power to the slot in the device, turn off the electrical power to the device. Leave the power cable plugged-in to channel ESD voltages to ground.

Step 2 Remove all network cables from the rear panel of the device. Using a number 1 Phillips screwdriver, loosen the captive screws on the network interface module.

Step 3 Slide the network interface module out.

Step 4 If you are not replacing the module, install a blank faceplate over the empty slot to ensure proper air flow.

Install the Cisco Catalyst Network Interface Modules

Step 1 Shut down the electrical power to the slot in the router by turning off the electrical power to the router. Leave the power cable plugged in to channel ESD voltages to ground.

Step 2 Remove all network cables from the rear panel of the device.

Step 3 Remove the blank faceplates installed over the network interface module slot that you intend to use.

Note Save blank faceplates for future use.

Step 4 Align the module with the guides in the chassis walls or slot divider and slide it gently into the NIM slot on the device.

Step 5 Push the module into place until you feel the edge connector seat securely into the connector on the router backplane. The module faceplate should contact the chassis rear panel.

Step 6 Using a number 1 Phillips screwdriver, tighten the captive screws on the network interface module.

Step 7 Connect the module to the network and re-enable the power to the slot in the device.

Remove and Install Network Interface Modules Adapter

This section provides information for before and during the installation of the Cisco Catalyst NIM adapter for two Cisco network interface modules (NIMs) on the Cisco Catalyst 8300 Series Edge Platforms.

Figure 73: Front Panel of Cisco Catalyst NIM Adapter
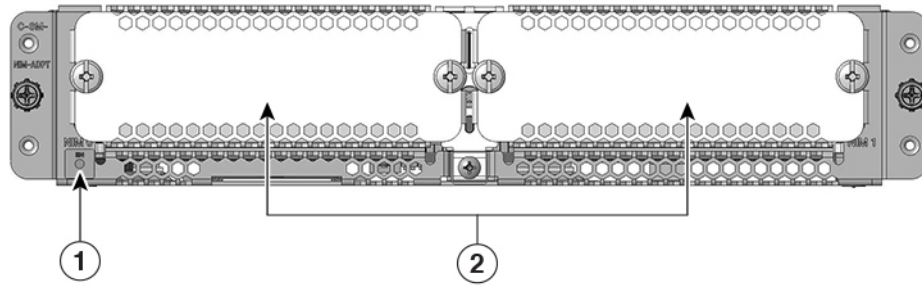
	Description
1	**LED: EN**
	Off: Device power is off, or the adapter has not yet started. (It may take several seconds for the adapter to start after the router is powered on.)
	Green, solid: Powered on and functioning normally.
	Amber, solid: Module has some type of failure.
2	NIM slots

Remove the Network Interface Module Adapter

Before You Begin

- Read the safety warnings section before beginning this procedure.

- The Cisco Catalyst NIM adapter is considered "hot swappable." Removing the adapter does not require powering off the device.

- When preparing to remove the Cisco Catalyst NIM adapter, first remove any installed NIMs, and then remove the adapter.

Procedure

To remove the Cisco Catalyst NIM adapter from a service module (SM) slot on a Cisco Catalyst 8300 Series Edge Platforms:

Step 1 Locate the NIM adapter to be removed. Using a number 1 Phillips or flat-blade screwdriver, unscrew the captive mounting screws on the module faceplate.

Step 2 Pull the NIM adapter out of the chassis.

Step 3 Align the module with the guides in the chassis walls or slot divider and slide it gently into the NIM slot on the device.

Step 4 Place the NIM adapter in an antistatic bag to protect it from electrostatic discharge (ESD) damage.

Step 5 Install a blank faceplate over the empty slot to ensure proper air flow.

Install Network Interface Module Adapter

Before You Begin

- Read the safety warnings section before beginning this procedure.

- The Cisco Catalyst NIM adapter is considered 'hot swappable'. Installing the adapter does not require powering off the device.

- Do not install network interface modules (NIMs) into the Cisco Catalyst NIM adapter before installing the adapter in the chassis.

- When preparing to remove the Cisco Catalyst NIM adapter, first remove any installed NIMs, then remove the adapter.

Procedure

To install the Cisco Catalyst NIM adapter into a service module (SM) slot on a Cisco Catalyst 8300 Series Edge Platforms:

1. Remove the blank faceplate installed over one of the device SM slots. The position of the slots depends on the platform's form factor: 1 rack unit (RU) or 2 RU, as shown below.

✎

Note   Save blank faceplates for future use.
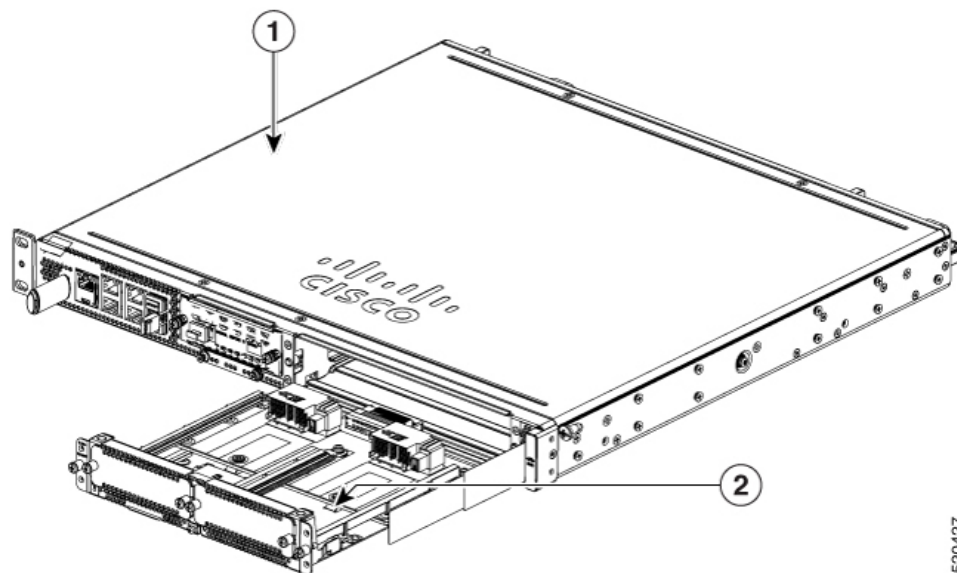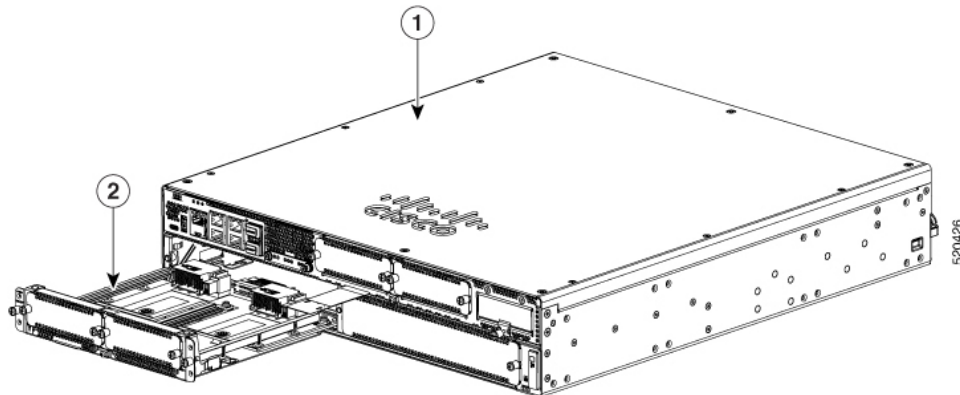
Figure 74: Cisco Catalyst SM-NIM Adapter on C8300-1N1S-4T2X|6T

Figure 75: Cisco Catalyst SM-NIM Adapter in C8300-2N2S-4T2X|6T

	Description
1	Chassis
2	Cisco C-SM-NIM adapter

2. Align the Catalyst NIM adapter with the guides in the chassis walls or slot divider and slide it gently into a service module (SM) slot on the router.

3. Push the Catalyst NIM adapter into place until you feel the edge connector seat securely into the connector on the router backplane. The faceplate should contact the chassis rear panel.

4. Using a number 1 Phillips screwdriver, tighten the captive screws on the network interface module.

5. Check the LED on the Catalyst NIM adapter and confirm proper operation.

Note   A solid green LED indicates that the Catalyst NIM adapter is correctly inserted. It may take several seconds for the adapter to start before the LED is solid green.

6. (Optional) Install either one or two network interface modules into the Catalyst NIM adapter after it has been installed in the chassis. Follow the instructions for installing the NIM.

Install Network Interface Modules in the NIM Adapter

The Cisco Catalyst NIM adapter provides two network interface module (NIM) slots. To install a NIM into the adapter, follow the instructions for the NIM.

Note   • Install the Cisco Catalyst NIM adapter into the router chassis before installing any NIMs into the adapter.

   • Before removing the Cisco Catalyst NIM adapter from the chassis, first remove any NIMs that have been installed into the adapter.

C H A P T E R 6

Install Cisco Catalyst Service Module

This section describes how to install the Cisco Catalyst Service Modules on the Cisco Catalyst 8300 Series Edge Platforms. The service modules supported on the on the Cisco Catalyst 8300 Series Edge Platforms are:

- C-SM-16P4M2X

- C-SM-40P8M2X

For additional information on the supported SMs, see the Cisco Catalyst 8300 Series Edge Platforms' datasheet on cisco.com.

Note
- Only one service module is supported within a single chassis at a time

- Reload the system when you need to switch between the switching modes

- You can perform online insertion and removal of the modules. After installing the service module, you must reload the system to enable and activate the next-generation switching feature set.

Prepare for Installation

The following sections describe safety warnings, general maintenance guidelines, and safety recommendations that you must read before installing and using the service module:

Equipment That You Need

- Ratcheting torque screwdriver with a number-2 Phillips head that exerts a maximum of 15 pound-force inches (lbf-in.) of pressure

- Wire-stripping tools

• 12-gauge copper ground wire (insulated or not) for the single-hole ground connection

• Single-hole ground lug and screw (included in the accessory kit)

• Four leads of 14-gauge copper wire

Remove the Cisco Catalyst Service Module

To remove the service modules from the chassis, perform these steps:

Step 1 Read the Safety Warnings before you perform any module replacement.

Step 2 Locate the service module(s) to be removed

Step 3 Unscrew the captive mounting screws on the module faceplate using a number 1 Phillips or flat-blade screwdriver.

Step 4 Pull the module out of the chassis.

Step 5 For the module, keep the latches in open position and pull the module out of the chassis.

Step 6 Place the service module in an antistatic bag to protect it from electrostatic discharge (ESD) damage.

Install a Cisco Catalyst Service Module

This section describes how to install the service modules.

Note For illustration purposes, we have used images of Cisco C-SM-X-16P4M2X and C-SM-X-40P8M2X.

After the device boots up, insert either C-SM-X-16P4M2X or the C-SM-X-40P8M2X module into the slot of the chassis. A system message displays: : *Jun 10 13:58:14.367 CST: %IOMD-3-UNSUPPORTED_NGSWITCH: R0/0: iomd:*

The message denotes that the system is in legacy switching mode. For the legacy switching mode to take effect, you need to reload the slot 1 bay 0 of the switch module for the SM-X-16P4M2X service module. Also, you need to reload the device to get the module working.

**Caution** Always wear an electrostatic discharge (ESD)-preventive wrist strap and ensure that it makes good contact with your skin when you install or remove the C-SM-X-16P4M2X or C-SM-X-40P8M2X service module. Connect the equipment end of the wrist strap to the metal part of the chassis.
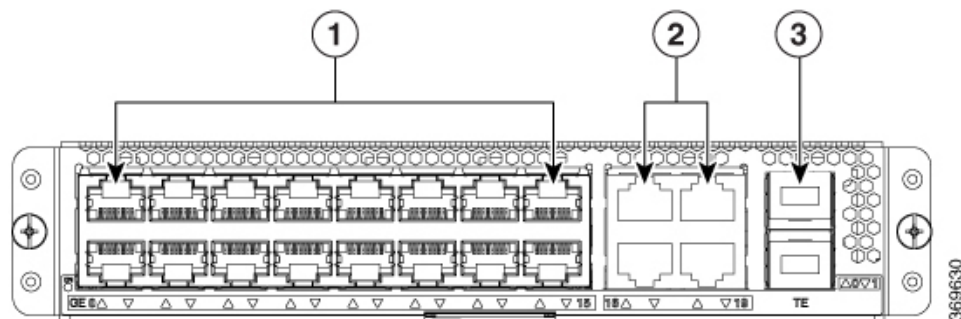
Caution Handle your service modules only by their edges. Service modules are ESD-sensitive components and can be damaged by mishandling.

Figure 76: Front panel of the Double-wide Service module
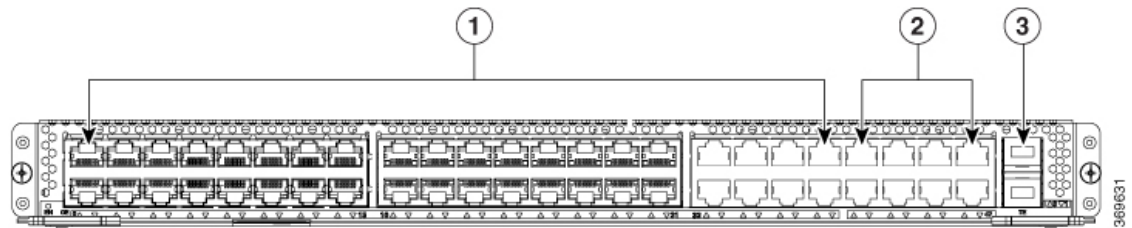
1	GE copper port	3	1G/10G SFP/SFP+ port
2	MultiGiagabitEthernet ports (2.5G)		

Figure 77: Front panel of the Single-wide Service Module

1	GE copper port	3	1G/10G SFP/SFP+ port
2	2.5G mGiG copper port		

To install a service module on your device, perform these steps:

Step 1 Read the Safety Warnings before you perform any module replacement.

Step 2 For the module, remove the blank faceplate installed over the slot you intend to use.

Step 3 For the module, remove both the blank faceplates and the divider installed over the slot you intend to use.

> **Note** A single-wide service module that it can be inserted into one service mode slot. However, the port of a double-wide service module (C-SM-X-40G8M2X) requires two slots to install it side-by-side.

Step 4 With the service module, push the module into place until you feel the edge connector seat securely into the connector on the backplane. The module faceplate should contact to the chassis panel.

Step 5 For the double-wide service module-C-SM-X-40P8M2X, keep the latches in open position before inserting the module. The latches assist to fully insert the module before securing the screws.

Step 6 Using a number 1 Phillips or flat-blade screwdriver, tighten the captive mounting screws on the module faceplate.

Cisco Catalyst Pluggable Interface Module

This section provides information before and during the installation of Cisco Catalyst Pluggable Interface Module (PIM) on the Cisco Catalyst 8300 Series Edge Platforms.

For additional information on the supported NIMs, see the Cisco Catalyst 8300 Series Edge Platforms' datasheet on cisco.com for a list of supported PIMs on the platforms.

Figure 78: Pluggable Interface Module in a Cisco 8300-1N1S-4T2X|6T
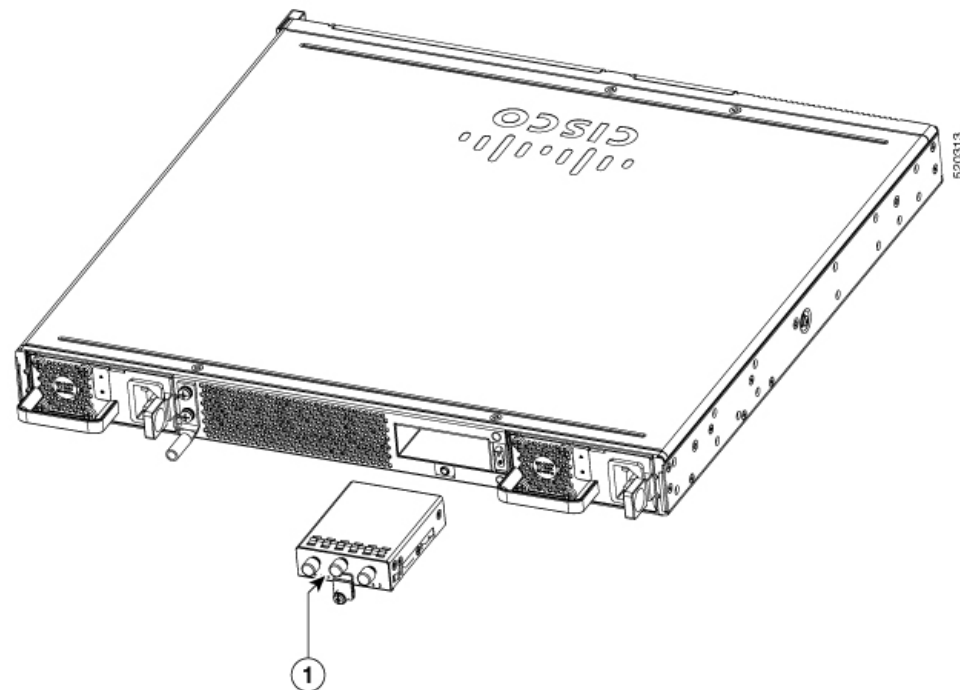
1	Pluggable interface module

Figure 79: Pluggable Interface Module in a Cisco 8300-2N2S-4T2X|6T

1	Pluggable interface module

Safety Recommendations

To prevent hazardous conditions, follow these safety recommendations while working with this equipment:

- Keep tools away from walk areas where you or others could fall over them.

- Do not wear loose clothing around the router. Fasten your tie or scarf and roll up your sleeves to prevent clothing from being caught in the chassis.
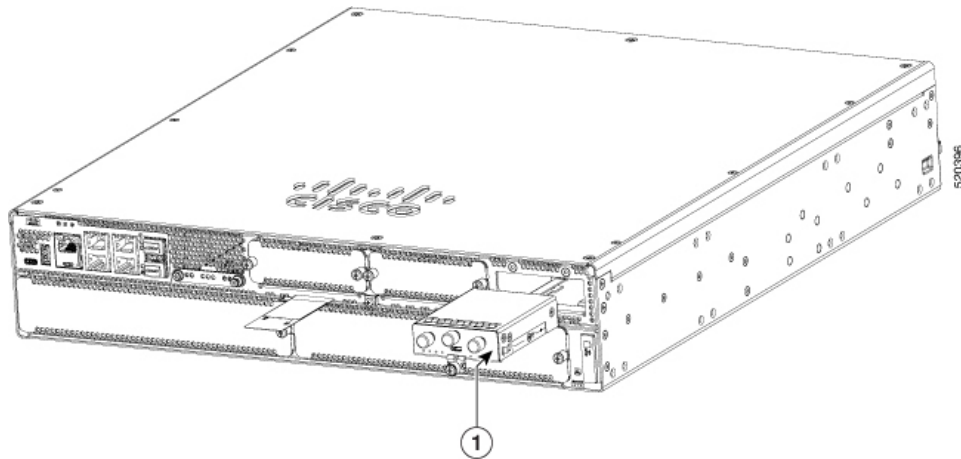
- Wear safety glasses when working under any conditions that might be hazardous to your eyes.

- Locate the emergency power-off switch in the room before you start working. If an electrical accident occurs, shut the power off.

- Before working on the router, turn off the power and unplug the power cord.

- Disconnect all power sources before doing the following:

    - Installing or removing a router chassis

    - Working near power supplies

- Do not work alone if potentially hazardous conditions exist.

- Always check that power is disconnected from a circuit.

- Remove possible hazards from your work area, such as damp floors, ungrounded power extension cables, or missing safety grounds.

- If an electrical accident occurs, proceed as follows:

  - Use caution; do not become a victim yourself.

  - Turn off power to the room using the emergency power-off switch.

  - Determine the condition of the victim and send another person to get medical aid or call for help.

  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

Tools and Equipment Required During Installation

You will need the following tools and equipment while working with the Cisco C-NIM-1X NIM:

- Number 1 Phillips screwdriver or a small flat-blade screwdriver

- ESD-preventive wrist strap

Remove Cisco Catalyst Pluggable Interface Module

To remove a PIM, perform these steps:

Step 1 Read the Safety Warnings before you perform any task.

Step 2 Power down the unit and remove power from the power supplies.

Step 3 Loosen the Phillips head screw on the module faceplate, and then pull out the module by gripping the screw.

Install a Cisco Catalyst Pluggable Interface Module

To install a PIM, perform these steps:

Step 1 Read the Safety Warnings before you perform any task.

Step 2 Power down the unit and remove power from the power supplies.

Step 3 If there is a filler faceplate blank in the PIM slot, loosen the Phillips head screw and remove the blank.

Step 4 Push the module into the slot until you feel the edge connector seat into the connector on the backplane. The module faceplate should contact the chassis panel.

Step 5 Tighten the Phillips head screw on the module faceplate.

Step 6   The device may now be powered on.

Figure 80: 5G Pluggable Interface Module - P-5GS6-GL
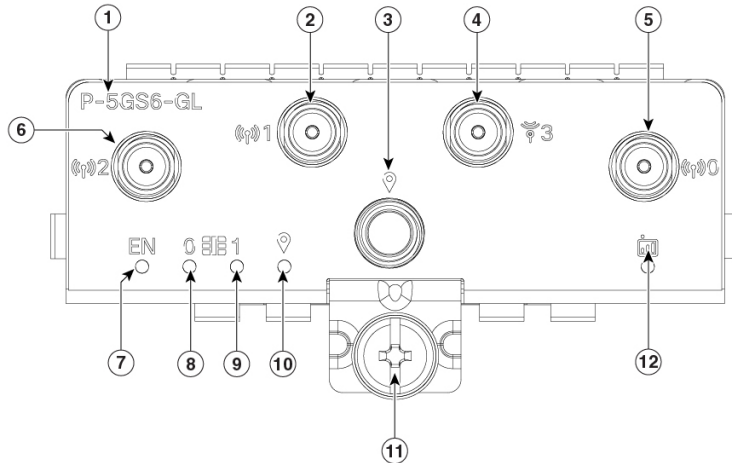
1	PID
2	Antenna 1 (SMA)
3	GPS (SMA)
4	Antenna 3 (SMA, reception only)
5	Antenna 0 (SMA)
6	Antenna 2 (SMA)
7	Enable LED
8	SIM 0 LED
9	SIM 1 LED
0	GPS LED
1	M3.5 thumb-screw
2	Service LED

Configuring a Pluggable Interface Module

To insert the antenna in the Pluggable Interface Module, perform the below steps:

Figure 81: Attaching the Antennas
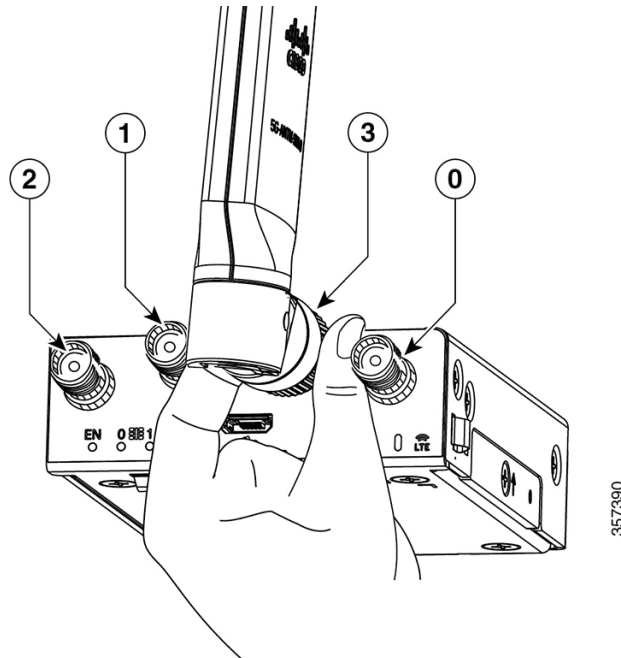
Step 1 Use your thumb and index finger to insert and tighten antenna 1 and antenna 3 in the middle antenna attachment slots as indicated in the figure.

> **Note** While installing the antennas, first install antenna 1 and antenna 3 (this instruction is for the two antenna attachments present in the middle) and secure it completely. If you install antenna 2 and antenna 0 first (this refers to the first and the last antenna attachments), there will be less space to insert your thumb and index finger and therefore you may not be able to secure antenna 1 and 3.

Step 2 Insert antenna 2 and antenna 0 in the first and last antenna attachment slots.

Step 3 After installing the antennas, adjust the antenna orientation by spacing out each of them equally until they are spread out. This is important as it helps in getting higher RF performance.
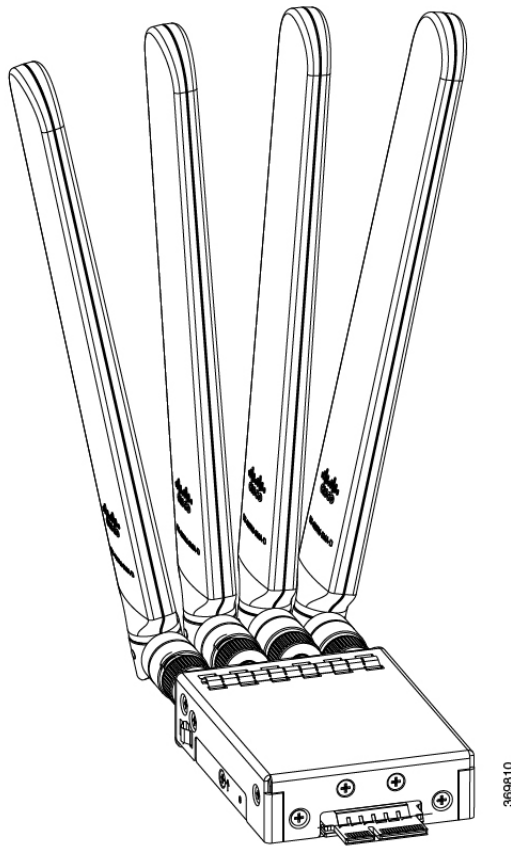
RF Band Mapping for Antenna Ports (For P-5GS6-GL only)

The following table lists the RF band mapping for antenna ports.

RF Band Mapping for Antenna Ports:

Antenna Port	Technology	TX	RX
ANT 0	3G WDCMA	B1, B2, B3, B4, B5, B6, B8, B9, B19	B1, B2, B3, B4, B5, B6, B8, B9, B19
	LTE	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B66, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	5G NR FR1	n1, n2, n3, n5, n7, n8, n12, n20, n28, n38, n40, n41, n66, n71	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79

Antenna Port	Technology	TX	RX
ANT 1	3G WDCMA	-	B1, B2, B3, B4, B5, B6, B8, B9, B19
	LTE	B5, B20, B42, B43, B48, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	5G NR FR1	n5, n48, n77, n78, n79	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79
ANT 2	3G WDCMA	-	-
	LTE	B1, B2, B3, B4, B7, B41, B66	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66
	5G NR FR1	n1, n2, n3, n7, n25, n41, n66, n77, n78, n79	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79
ANT 3	3G WDCMA	-	-
	LTE	-	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66
	5G NR FR1	-	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79

Attaching the Antennas

To attach the antenna in the Pluggable Interface Module, perform the below steps:

Figure 82: Attaching 5G NR Antenna (5G-ANTM-O4-B) to P-5GS6-GL PIM
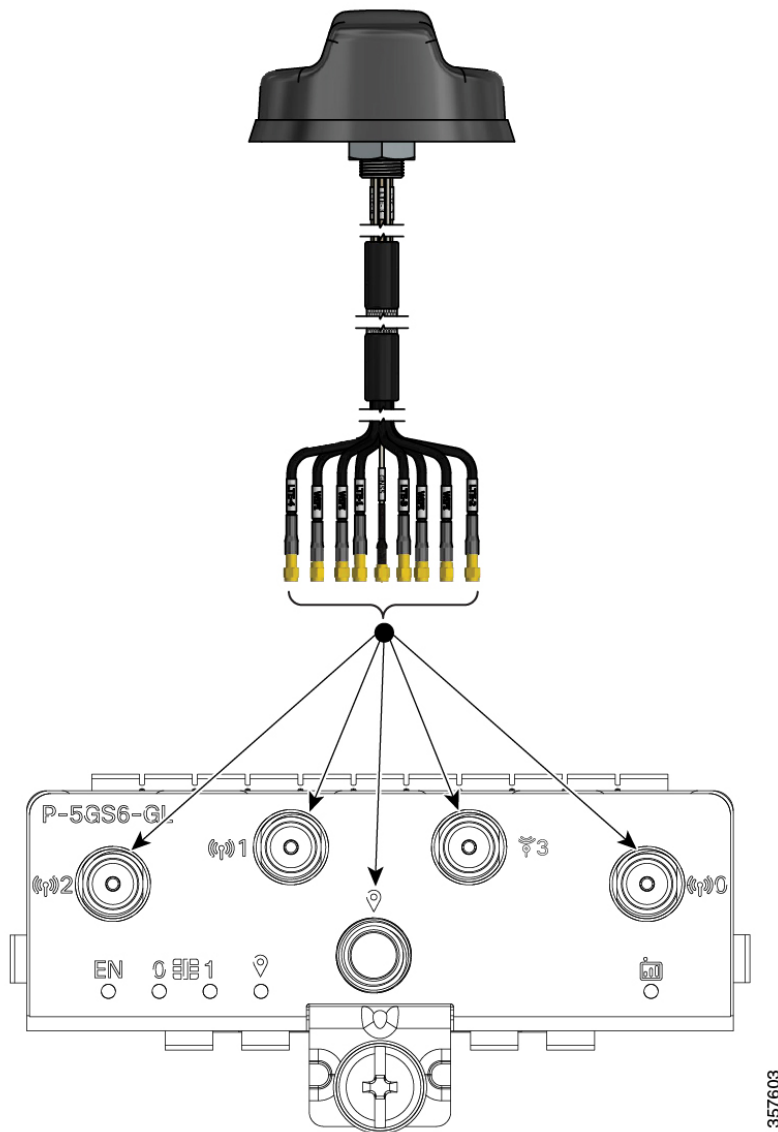
Note   5G NR Antenna (5G-ANTM-04-B) is supported on both P-LTEAP18-GL and P-5GS6-GL PIMs.

1. Attach each SMA cable to the ports as indicated in the table mappings.

2. Ensure that you tighten and secure each SMA cable into the SMA connector on the PIM.

Table 13: Port Mappings for 5G-ANTM-0-4-B on P-5GS6-GL and P-LTEAP18-GL PIMs

| 5G-ANTM-O-4-B	P-LTEAP18-GL	P-5GS6-GL
MAIN 0 (LTE1)	Main 0	ANT 0
MAIN 1 (LTE3)	Main 1	ANT 1
DIV 0 (LTE2)	DIV 0	ANT 2
DIV 1 (LTE4)	DIV 1	ANT 3
GNSS	No connection	GPS

The following link contains the antenna specifications and installation instructions for 5G NR (5G-ANTM-O-4-B):

https://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/antennas/installing-combined/
b-cisco-industrial-routers-and-industrial-wireless-access-points-antenna-guide/m-5g-antm-04b.html#Cisco_
Generic_Topic.dita_e780a6fe-fa46-4a00-bd9d-1c6a98b7bcb9

CWDM Optic Support for Cisco Catalyst 8300 Series Edge Platforms

The Cisco Coarse Wavelength-Division Multiplexing (CWDM) Small Form-Factor Pluggable (SFP) solutionallows enterprise companies and service providers to provide scalable and easy-to-deploy Gigabit Ethernet and Fibre Channel services in their networks. The product set helps enable the flexible design of highly available, multiservice networks.

TheCWDM SFPs are hot-swappable, transceiver components that you can plug into standard receptacles in Cisco routers and switches and convert Gigabit Ethernet electrical signals into a single-mode fiber-optic (SMF) interface. You can connect the CWDM SFPs to CWDM passive opticalsystem optical add/drop multiplexer (OADM) or multiplexer/demultiplexer plug-in modules using single-mode fiber-optic cables with standard SC connectors.
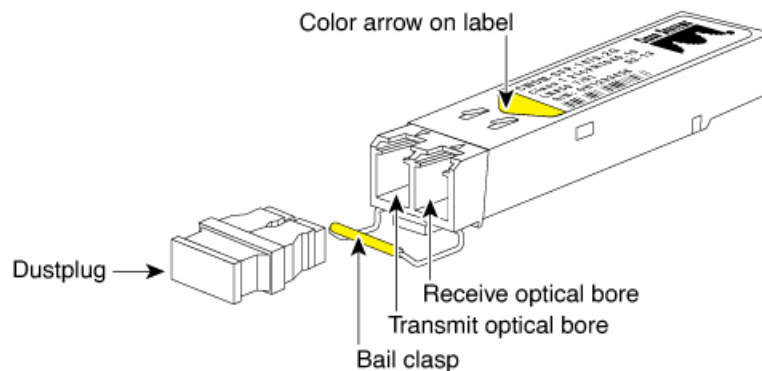
The CWDM SFPs come in eight wavelengths that range from 1470 nm to 1610 nm. Color markings on the devices identify the wavelength to which the Gigabit Ethernet channel is mapped. The table lists the SFPs with their wavelengths and color codes.

Table 14: SFP Wavelengths and Color Coding

SFP Product	Number Description	Color Identifier
CWDM-SFP-1470=	Cisco CWDM 1470-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Gray
CWDM-SFP-1490=	Cisco CWDM 1490-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Violet
CWDM-SFP-1510=	Cisco CWDM 1510-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Blue
CWDM-SFP-1530=	Cisco CWDM 1530-nm SFP; Gigabit Ethernet and 1 and 2-Gb Fibre Channel	Green
CWDM-SFP-1550=	Cisco CWDM 1550-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Yellow
CWDM-SFP-1570=	Cisco CWDM 1570-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Orange
CWDM-SFP-1590=	Cisco CWDM 1590-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Red
CWDM-SFP-1610=	Cisco CWDM 1610-nm SFP; Gigabit Ethernet and 1 and 2 Gb Fibre Channel	Brown

Installing and Removing CWDM SFPs

This section describes howto install and remove CWDM SFPs. This section also contains guidelines for handling the CWDM SFPs.

Laser Safety

Warning : CWDM SFPs are equipped with a Class 1 laser, which emits invisible radiation. Do not stare into open optical ports. The following laser warnings apply to CWDM SFPs.

Warning Class 1 laser product.

Warning: Because invisible laser radiation may be emitted from the aperture of the port when no fiber is connected, avoid exposure to laser radiation and do not stare into open apertures.

Warning: Only trained and qualified personnel should be allowed to install or replace this equipment.

Guidelines for Handling SFPs

Follow these guidelines when working with and SFPs:

- CWDM SFP modules are static sensitive. To prevent ESD damage, wear an ESD-preventive wrist strap that is connected to the chassis.

- CWDM SFP modules are dust sensitive. Always store the devices with plugs installed in the optical bores.

- Do not remove and insert a CWDM SFP module more often than is necessary. Repeated removals and insertions of a CWDM SFP module can shorten its useful life.
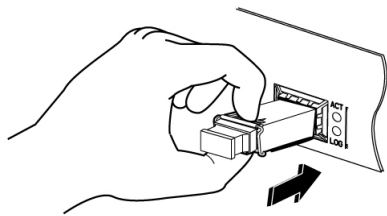
Installing a CWDM SFP Module

1. Removethe CWDM SFP module from its protective packaging and verify that the CWDM SFP module is the correct model for your network configuration.

   Note You can identify CWDM SFP modules by the color arrow on the CWDM SFP module label, which also lists the SFP model number and wavelength, and by the color bar on the bale clasp.

2. Verifythat the bale clasp on the front of the SFP module is closed before inserting the SFP module.

3. Alignthe CWDM SFP module in front of the slot opening and slide the SFP module into the slot until you feel the connector on the module snap into place in the rear of the slot.

   Caution: Do not remove the dust plugs from the optical bore of the CWDM SFP module or the dust caps from the fiber-opticcable until you are ready to connect the cable. The plugs and caps protect the CWDM SFP module optical ports and the cable connectors from contamination.

Removing a CWDM SFP Module

1. Disconnect the fiber-optic connector cable from the CWDM SFP module.

2. Pivot the bale out and down to eject the CWDM SFP module. If the bale-clasp latch is obstructed and you cannot use your index finger to open it, use a small, flat-blade screwdriver or other long, narrow instrument to open the bale-clasp latch.

3. Grasp the CWDM SFP between your thumb and index finger and, carefully slide the module out of the receptacle.

4. Close the CWDM SFP bale-clasp and then insert the dust plug into the optical bores. Place the CWDM SFP in an antistatic bag or other protective environment.
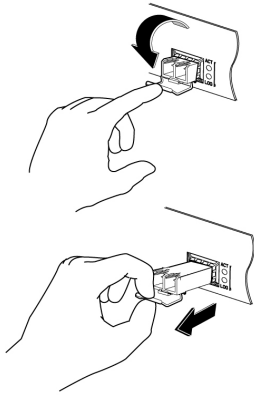
Connecting to the CWDM Passive Optical System

For information on connecting your CWDM SFP modules to a CWDM network, refer to the Installation Note for the Cisco CWDM Passive Optical System.

Supported Platforms

The CWDM Optics transceivers are compatible with the following platforms based on specific customer requests for support.

Note   Support is limited to the onboard SFP/SFP+ (1G/10G) ports on these platforms.

- C8300-2N2S-4T2X

- C8300-1N1S-4T2X

- C8300-2N2S-6T

- C8300-1N1S-6T

CHAPTER 8

Online Insertion and Removal and Hot-Swapping

The online insertion and removal (OIR) operation lets you replace faulty data and voice modules without affecting system operations. The OIR is similar to hot-swapping. OIR commands are issued before removing and after installing a module. When performing OIR, use an identical module to replace an original one. If you need to perform the OIR operation on multiple modules within a router, perform the operation one module at a time.

The difference between hot-swapping and OIR is that OIR requires executing Cisco IOS commands before and after the OIR. Hot-swapping is strictly a hardware function and does not require the execution commands. Not all router components or modules use OIR, or can be hot swapped.

The following components use OIR in the routers:

   • Service Modules (SMs)

   • Network Interface Modules (NIMs)

   • SFPs

   • USB devices

The following components can be hot swapped:

   • Fan tray

   • Power supply: only when the router is backed up with an optional PSU

Requirement

To issue OIR commands, you must keep the module that is to be replaced in EnergyWise full-power mode. If the module is in EnergyWise power-saving or shutdown mode, you cannot issue OIR commands, and you cannot, therefore, remove the module.

   • OIR Procedures, on page 117

OIR Procedures

The following procedures describe using the OIR process to remove and replace NIMs and SMs.

Remove a Module

From a console terminal run the **hw-module subslot subslot stop** command. The service module adapter LED blinks, turns off, and the console displays a prompt signaling the module can be removed. See the following output:

```
Device# hw-module subslot 2/0 stop
Proceed with stop of module? [confirm]
damo-O2#
*Mar 22 20:43:31.088: %SPA_OIR-6-OFFLINECARD: SPA (SM-X-1T3/E3) offline in subslot 2/0
*Mar 22 20:43:31.088: %IOSXE_OIR-6-SOFT_STOPSPA: SPA(SM-X-1T3/E3) stopped in subslot 2/0,
interfaces disabled
Device# show hw-module subslot 2/0 oir
Module Model Operational Status
------------- ------------------- ------------------------
subslot 2/0 SM-X-1T3/E3 stopped
```

Insert a Module

You require to run this step only if you run the oir-stop command when the module is not physically removed from the slot. If the module is physically removed, you do not require to run this command.

From a console terminal issue the hw-module sm {slot} oir-start command. The console displays output that shows the module change states:

```
Device# hw-module sm 2 oir-start
Device#
*Nov 11 21:06:17.546: %ATMOC3POM-6-SFP_IN: Interface ATM2/0 OC3 MM SFP has been inserted.
Router#
*Nov 11 21:06:19.442: %LINK-3-UPDOWN: Interface ATM2/0, changed state to up
*Nov 11 21:06:20.442: %LINEPROTO-5-UPDOWN: Line protocol on Interface ATM2/0, changed state
 to up
```