Cisco Unified Edge XE9305 Chassis Installation and Service Guide

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Preface

This preface contains the following topics:

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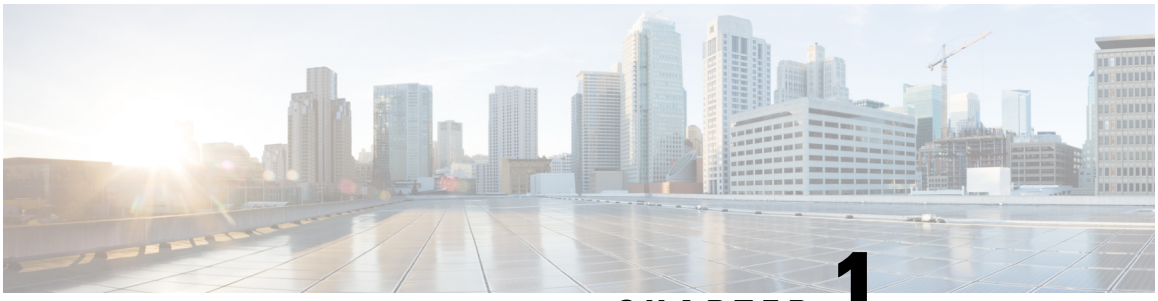
Cisco Bug Search Tool (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.

Preface



CHAPTER 1

Overview

This chapter contains the following topics:

Overview

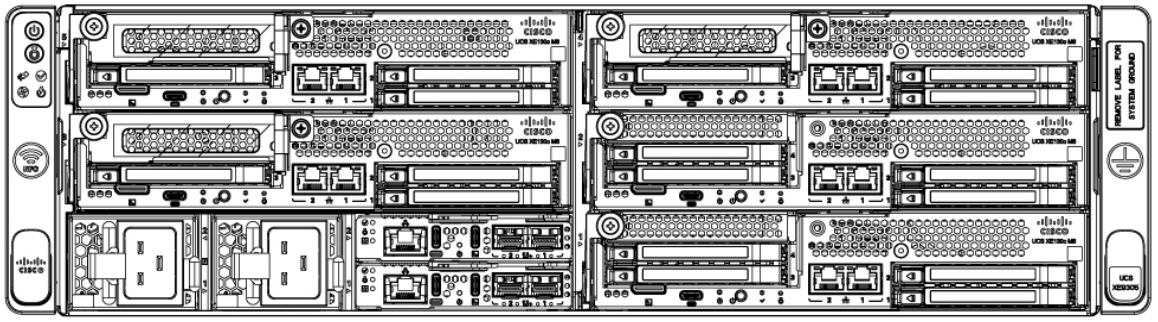
Cisco Unified Edge Overview

Cisco Unified Edge brings together compute, storage, routing, switching, and security into a single configurable solution to help IT organizations simplify the deployment, operations, and lifecycle management of edge infrastructure at global scale.

Cisco Unified Edge is a fully integrated, edge-optimized, AI-ready, and SaaS managed platform, engineered to deliver a superior user experience with unprecedented visibility, consistency, and control for a host of edge use cases.

Cisco Unified Edge XE9305 Chassis Overview

At the heart of the Cisco Unified Edge solution is the Cisco UCS XE9305 modular system. A 3RU, short-depth, multi-mountable chassis, the Cisco UCS XE9305 provides five front-facing slots that can accommodate compute nodes that are easy to service and adaptable to deliver a range of capabilities, from computing to storage and networking to security.



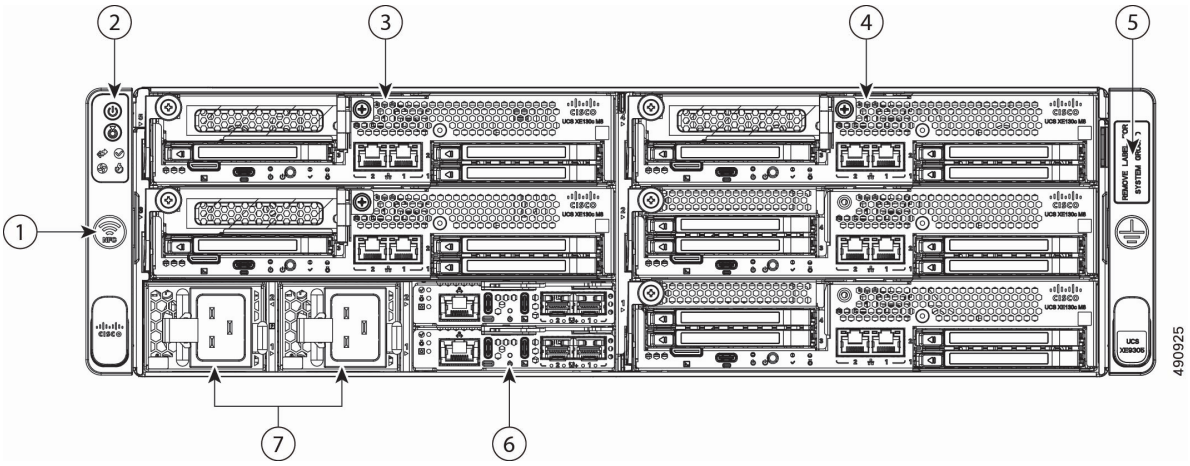
Designed and built for edge locations and distributed computing environments running virtualized, containerized, or AI workloads, the Cisco UCS XE9305 modular system provides the following benefits:

- Simplification of edge infrastructure and operations

- Unification of typically disparate edge systems
- Redefinition of edge solutions

Front Panel

The front panel of the Cisco UCS XE9305 modular system contains the following hardware features.

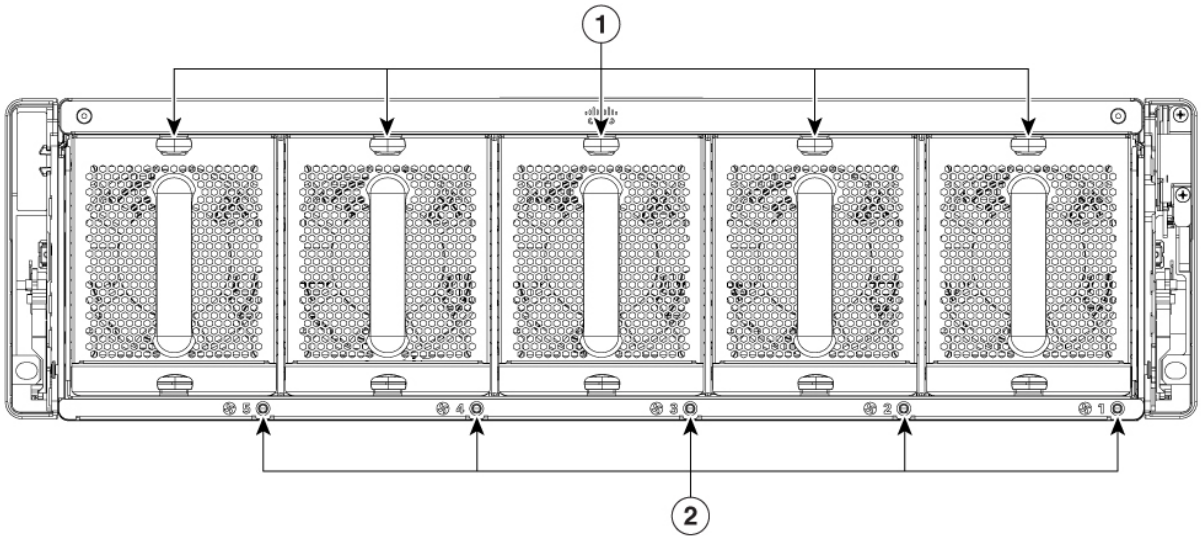


1	Icon indicating Near-field Communication (NFC) antenna location. Indicates the location to connect NFC devices.	**2**	Chassis Health and Status LEDs. For more information, see Chassis Health LEDs, on page 4.
3	Slots for compute nodes and other modules. These slots are numbered 1 through 5, bottom up and right to left. So, slot 1 is at the bottom right slot, and slot 5 is at the top left. Slot numbers are labeled on the front panel for easy identification.	**4**	Slots for compute nodes that support either network or storage.

5	Electrical earth ground pad.	**6**	Edge Chassis Management Controller (eCMC) modules, two installed for redundancy. Slots are numbered from bottom to top, so slot 1 contains the bottom eCMC, and slot 2 contains the top eCMC.
7	AC PSUs, two 2400W Titanium rated. PSUs support N+N grid redundancy and non-redundant mode.	-	

Rear Panel

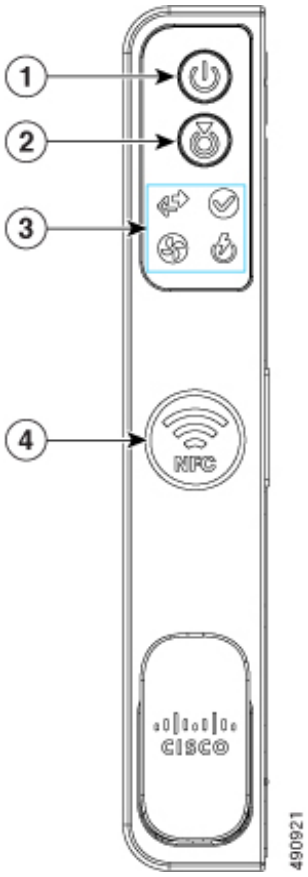
The rear panel of the Cisco UCS XE9305 is devoted to cooling and ventilation.



1	Five hot swappable fan modules. Fans slots are numbered one through 5 starting with the right-most fan. Each slot number is labeled on the chassis.	**2**	Per-slot fan Status LEDs.

Chassis Health LEDs

The Cisco UCS XE9305 modular system has the following buttons and chassis health LEDs.



	LED Name	States
1	Power button/LED 	• Off—There is no AC power to the chassis. • Green (Solid)—The chassis is in main power mode. Power is supplied to all chassis components. • Green (Blinking)—The chassis is in power down mode, which can occur after pressing and holding the Power button for 5 seconds.
2	System identification 	• Off—The unit identification function is not in use. • Blue, blinking—The unit identification function is activated.

3	System health
	 
		• Off—The chassis is not powered, or is initializing after power on.
		• Green (Solid)—The chassis is running in normal operating state.
		• Amber (Solid)—The chassis in a Degraded operational state, for example:
		  • PSU redundancy lost
		  • Intra-chassis communication failure
		  • eCMC (Edge Chassis Management Controller) fault
		  • One fan is faulty or missing
		• Amber (Blinking)—The chassis in a Critical operational state, for example:
		  • Chassis hardware inventory failure
		  • Multiple fans are faulty or missing

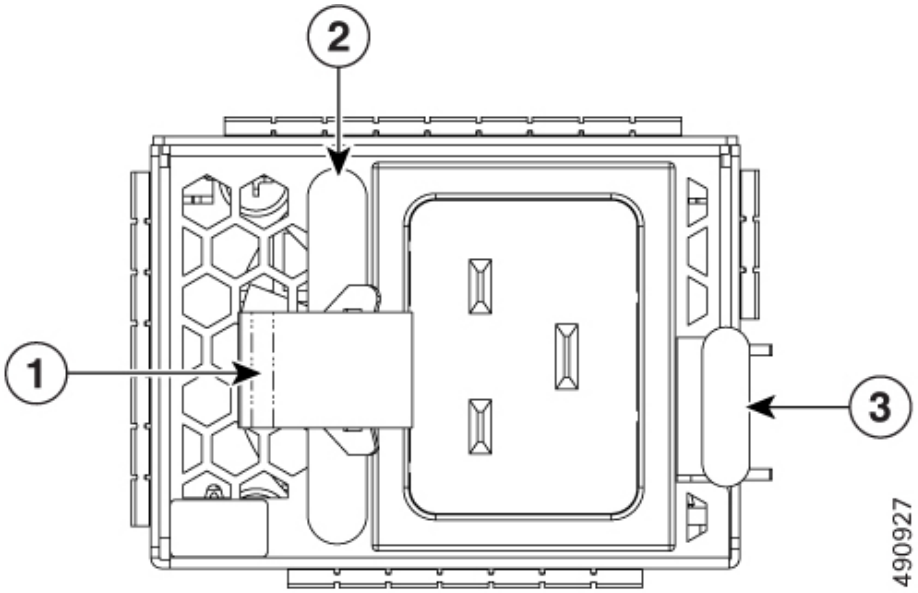
3	Power supply status
	 
		• Off—The chassis is not powered on, or is initializing after power on
		• Green (Solid)—
		  • Two PSU chassis: Both PSUs are operating normally
		  • Single PSU chassis: PSU is operating normally.
		• Amber (Solid)—
		  • Two PSU chassis: One PSU is in a fault state
		  • Single PSU chassis: N/A
		One or more power supplies are in a degraded operational state.
		• Amber (Blinking)—
		  • Two PSU chassis: Both PSUs are in a fault state
		  • Single PSU chassis: The PSU is in a fault state

3	Fan status 	• Off—The chassis is not powered on or is initializing after power on • Green (Solid)—Normal operation • Amber, blinking—Two or more fans are in a fault state.

3	Network link activity 	• Off—N/A • Green (Solid)—One or more eCMCs are connected to Intersight • Green (Blinking)—No eCMCs are connected to Intersight, but at least one eCMC can reach its management network gateway (IPv4 or IPv6). • Amber (Solid)—No eCMCs can reach any of the gateways; no eCMCs are connected to Intersight
4	Near-Field Communication (NFC) Icon 	Indicates the location to connect NFC devices.

Power Supplies

The Cisco UCS XE9305 Modular System has two 2400W Titanium rated AC PSUs (UCSXE-PSU-2400W). PSUs are hot swappable and support N+N (Grid) and non-redundant modes. Each PSU is accessible directly from the front of the chassis and is hot-swappable.

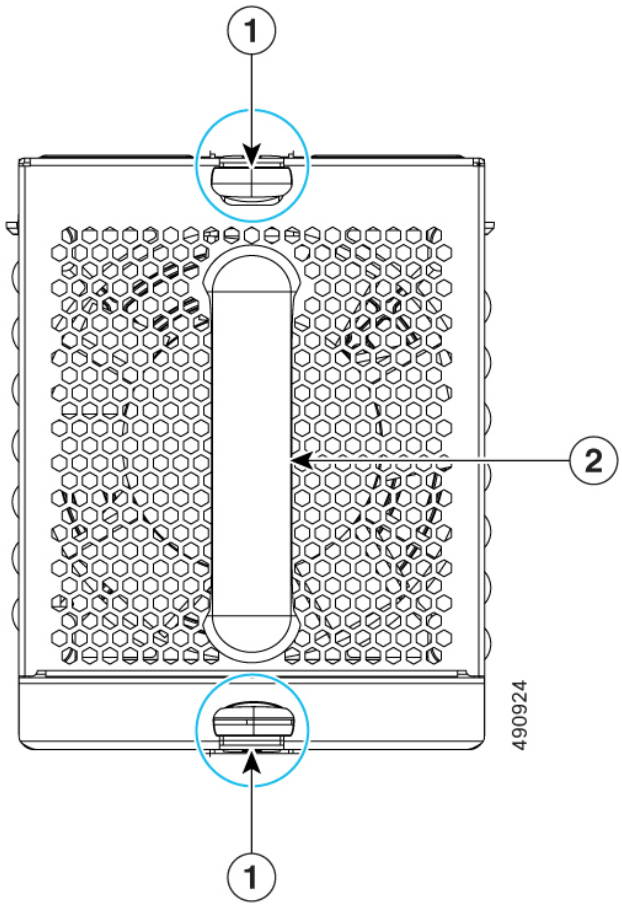


1	Flexible power cord cable tie	**2**	PSU handle
3	PSU release tab (ejector button)	-	

Fan Module

The Cisco UCS XE9305 support 5 fans in the chassis rear panel.

Each fan module supports optimizing cooling controls. Each fan module is hot-swappable and can be replaced from both the top and the rear of the chassis.



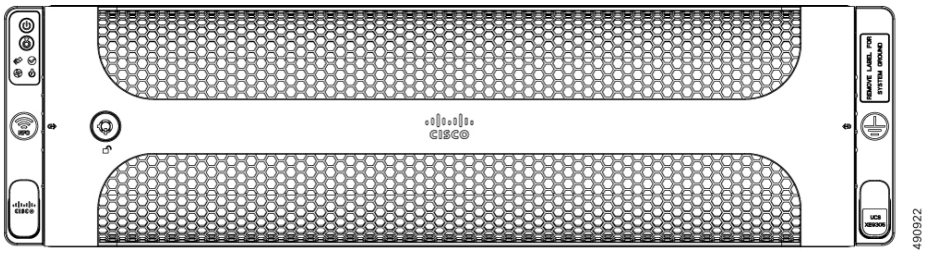
1	Fan module locking release buttons, two. Both must be pressed to remove the fan module.	**2**	Fan module handle.

Security Bezel

The Cisco UCS XE9305 Modular System supports an optional locking bezel (UCSXE-BEZ-3) that Fattaches to the front panel. The bezel is installed between the chassis front mounting brackets (latches) and prevents access to the compute nodes, PSUs, and cabling.

To provide additional physical security for the chassis, keys are associated with the bezel to enable locking the bezel to prevent its removal.

As an option, the interior of the security bezel support two threaded standoffs which can accept an individually mountable air filter to minimize the intrusion of dust and other airborne particulates into the chassis.



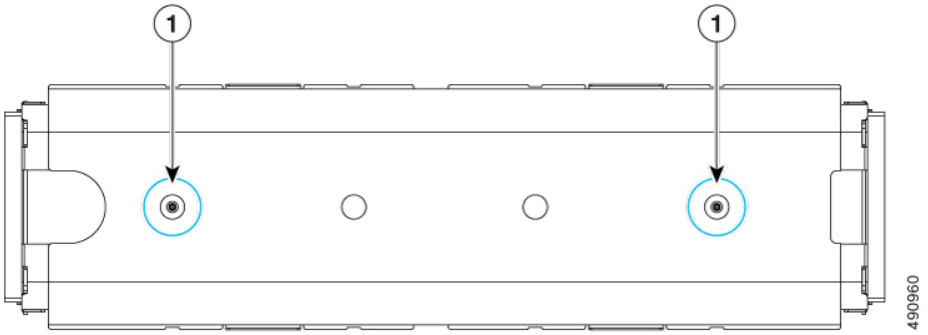
Air Filter Assembly

The Cisco UCS XE9305 Modular System supports an optional air filter assembly (UCSXE-BEZ-FLTR) that prevents dust and other particulate contaminants from entering the chassis.

The air filter assembly consists of a frame around which a foam filter is wrapped. The foam filter captures the airborne particles that would normally enter the chassis. The foam filter is replaceable by fitting it into the frame.

Cable management brackets install onto the left and right side and must be oriented the same way to facilitate cable organization at the front of the chassis.

The air filter installs into the interior of the security bezel by two captive thumbscrews (1). After the air filter is attached, installing the bezel provides not only security, but filtration also.



Cisco XE130c M8 1U Compute Node

The Cisco XE9305 modular system supports up to five Cisco XE130c M8 compute nodes. These compute nodes support a mix of network and storage options, including a dedicated slot for an NVIDIA L4 GPU, E3.S NVMe EDSFF drives, and/or a PCIe card in a riser cage expansion slot.

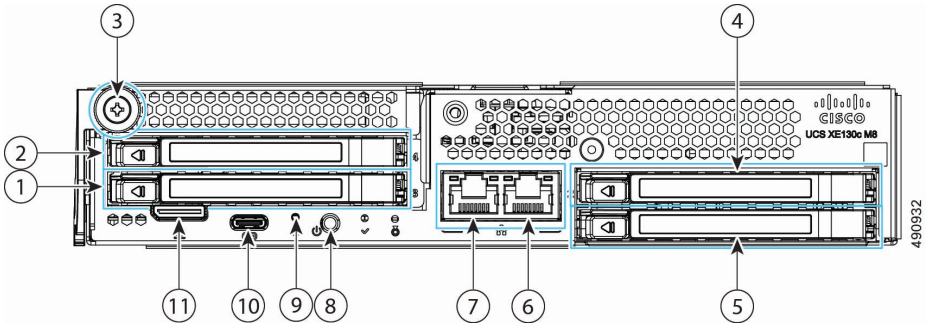
The Cisco X3130c M8 1U compute node offers 12 core (UCSXE-130C-M8-12), 20 core (UCSXE-130C-M8-20), and 32 core versions (UCSXE-130C-M8-32).

Each compute node can feature an optional M.2 boot-optimized M.2 SATA RAID controller. The module supports a variety of SSD capacities, 240G, 480G, or 960G. A single SSD connects to the module, and the module connects to the compute node's PCB through a through a USB 2.0 interface. This M.2 module is used as the boot drive for the compute node. RAID 0/1 and out-of-band management (OOB) are supported.

Each compute node features local storage through its E3.S drives. Compute nodes support either a three-drive or four-drive configuration. Drive slot numbering is bottom to top and left to right, so drive 1 is in the bottom slot, and drive 2 is in the top slot.

Four-Drive Compute Node

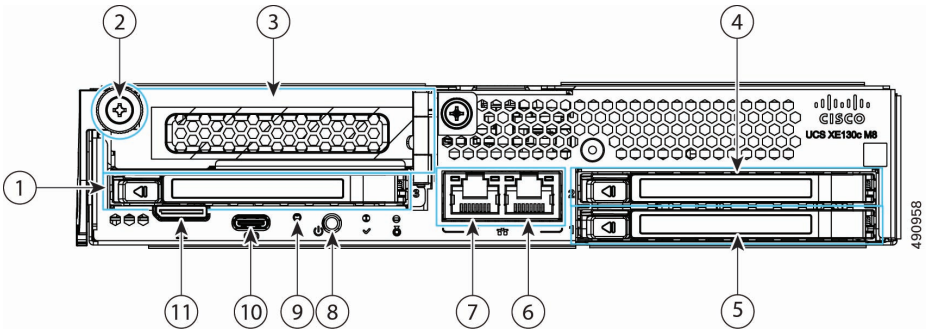
The four-drive configuration has the following features.



1	One hot-pluggable E3.S drive, slot 3	**2**	One hot-pluggable E3.S drive, slot 4
3	Node ejector thumbscrew	**4**	One hot-pluggable E3.S drive, slot 2
5	One hot-pluggable E3.S drive, slot 1	**6**	Integrated 10 Gbps RJ-45 host port
7	Integrated 10 Gbps RJ-45 host port	**8**	Locator LED/button
9	Pin-hole Reset button	**10**	USB-C Console port
11	UCuLink port **Note** An adapter cable (PID UCSX-C-DEBUGCBL) is required to connect the OCuLink port to the transition serial USBand video (SUV) octopus cable.	-	

Three-Drive Compute Node

The three-drive configuration has the following features.



1	One hot-pluggable E3.S 1T drive, slot 3	**2**	Thumbscrew
3	Optionally, can support either one PCIE Gen5 x4 slot or one additional E3.S drive. When populated with a device, this is slot four. For more information, see Supported PCIe Cards, on page 11.	**4**	One hot-pluggable E3.S drive in slot 2. Drive slot numbering is bottom to top and left to right, so drive 1 is in the bottom slot, and drive 2 is in the top slot.
5	One hot-pluggable E3.S drive in slot 1.	**6**	Integrated 1/10 Gbps RJ-45 host port
7	Integrated 1/10 Gbps RJ-45 host port	**8**	Locator LED/Button
9	Pin hole reset button	**10**	USB-C Console port
11	UCuLink port **Note** An adapter cable (PID UCSX-C-DEBUGCBL) is required to connect the OCuLink port to the transition serial USBand video (SUV) octopus cable.	-	

Compute Node LEDs

Each of the Cisco UCS XE130C M8 compute nodes features the following module indicator LEDs.

Table 1: Compute Node Status LEDs

LED	Color	Description
Status LEDs 	Solid Green	The compute node is operating normally
	Blinking Green	Chassis initialization and memory check
	Solid Amber	The compute node is experiencing a non-optimal condition: • Chassis is in a degraded operational state • Processors are experiencing a fault • Memory RAS failure • Drive failure
	Blinking Amber	The compute node is experiencing a critical condition: • Boot Failure • Fatal Processor and/or bus error detected • Loss of both eCMC connection • Over Temperature Condition
Locator LED/button 	Off	Locator function not enabled
	Blinking blue, 1 Hz	Locates a selected compute node—If the LED is not blinking, the compute node is not selected. You can control the LED through either of the following ways: • Cisco UCS Intersight • Physically, by pressing the button, which toggles the LED on and off.

Supported PCIe Cards

The UCS XE130c M8 Compute Node offers customizable PCIe connectivity through a configurage PCIe riser cage that can accept up to one PCIe adapter card, a NIC or an HBA.

The optional PCIe card can be installed on the left side of the node, above slot 3 or in slots 3 and 4 depending on whether the PCIe cage is one slot or two.. The following PCIe cages are supported to complete either a three drive or four drive configuration.

- Left E3.S 2-Drive Riser Assembly for UCS XE9305 Chassis, four drives (UCSXE-1U-E3S-2L).
- Left E3.S 2-Drive Riser Assembly for UCS XE9305 Chassis, three drives (UCSXE-1U-E3S-1L). With this configuration a serparate riser (UCSXE-1U-PCI-L) is also required.

Each riser cage can accept one of the following third-party PCIe cards.

Card Type	Card	Cisco PID
NIC	Cisco-Intel I710-T4L 4x1GBASE-T NIC	UCSXE-P-IQ1GC
	Cisco-Intel X710T2LG 2x10GBE RJ45 PCIe NIC	UCSXE-P-ID10GC
	Cisco-Intel X710T4LG 4x10GBE RJ45 PCIe NIC	UCSXE-P-IQ10GC
	Cisco-Intel E810XXVDA2 2x25/10GBE SFP28 PCIe NIC	UCSXE-P-I8D25GF
	Cisco-Intel E810CQDA2 2x100 GbE QSFP28 PCIe NIC	UCSXE-P-I8D100GF
HBA	Cisco-QLogic QLE2872 2x 16/32/64GFC Gen 7 Enhanced PCIe HBA	UCSXE-P-Q7D64GF

Supported GPUs

Through the use of optional PCI riser cages, each Cisco UCS XE130c M8 Compute Node can be customized to accept up to one GPU.

The riser cage and GPU can be installed on the right side of the node, above slots 1 and 2.

If you order a GPU with your initial shipment, the GPU will be pre-installed, but additional GPUs can be ordered and installed in the field, as your deployment scales out.

The following table shows the model and form factor of GPU supported by the compute node.

Table 2: Half-Height, Half Length (HHHL) Single-Slot GPUs

GPU	Cisco PID
NVIDIA L4:70W, 24GB, 1-slot HHHL GPU	UCSXE-GPU-L4

UCS Edge Chassis Management Controller

The chassis contains two Chassis Management Controller modules, called the Edge Chassis Management Controllers (eCMC) which support the interface from the chassis to the rest of the network through uplink ports. The two eCMC modules operate as a pair.

- One module is the primary, which is online and active.

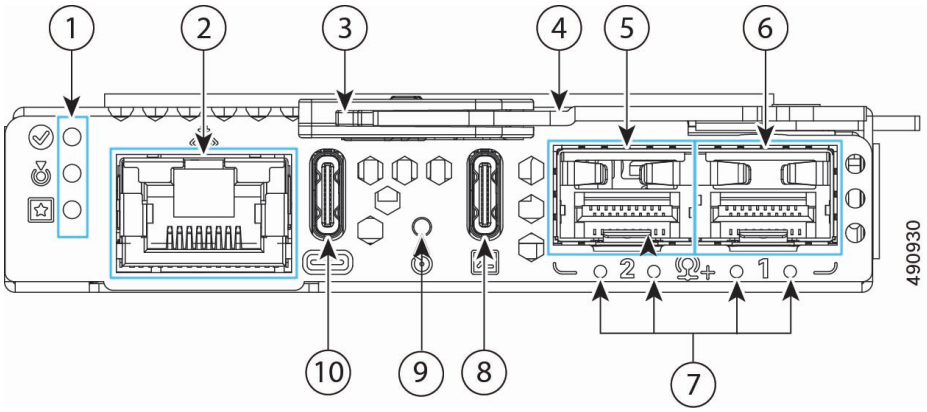
- The other module is the secondary, which is a warm standby to ensure continuous operation of the chassis in the unlikely event that the chassis experiences a switchover event.

The eCMC modules are assigned dedicated slots in the chassis. They must always be installed in those slots.

The online primary module manages the chassis and computing nodes. It also supports the connection to UCS Intersight management software. Also, eCMC functions as switch for data traffic from different computing nodes.

Each eCMC module can feature an optional M.2 boot-optimized M.2 module. The module supports a single 75 GB M.2 SSD (UCSXE-ECMC-M2-75G). The SSD connects to the module, and the module connects to the eCMC PCB through a through a USB 2.0 interface. This M.2 module provides local storage to support parallel compute OS installation through visual media. The eCMC can be ordered with the M.2 SSD installed (UCSXE-ECMC-M2-75G) or without (UCSXE-ECMC-G1).

Each eCMC module has the following hardware features.



1	Module status LEDs.	**2**	RJ-45 Ethernet Management port
3	Ejector handle, which unlocks the module for hot-swap	**4**	Ejector
5	1/10G SFP+ Network uplink port, two	**6**	1/10G SFP+ Network uplink port, one
7	SFP+ port LEDs	**8**	USB-C Console port
9	Reset Button Behavior depends on how long you press. • A short press (<10 seconds) reboots the eCMC • A long press (>10 seconds) restores the eCMC to factory default state	**10**	USB-C port

Edge Chassis Management Controller LEDs

Each eCMC module has module status LEDs and port status LEDs.

Table 3: eCMC Module Status LEDs

LED	Color	Description
Status LEDs 	Off	The eCMC is not powered on
	Green (Solid)	Normal operation
	Amber (Solid)	The eCMC is in a Degraded operational state, for example: • Power On Self-Test (POST) fault • Firmware fault
	Amber (Blinking)	The eCMC is booting up, or if the eCMC has booted to runtime, it is in a Critical operational state, for example: • PM fault • Switch fault • Hardware inventory fault • Low memory
Locator LED/Button 	Off	The eCMC Locator is not currently active.
	Blinking (Blue)	Locates a selected eCMC. If the LED is not blinking, the eCMC is not selected. You can initiate the LED in UCS Intersight.
Primary/Secondary LED	Off	Dark, no color
	Green	Primary
	Blinking Green	Secondary

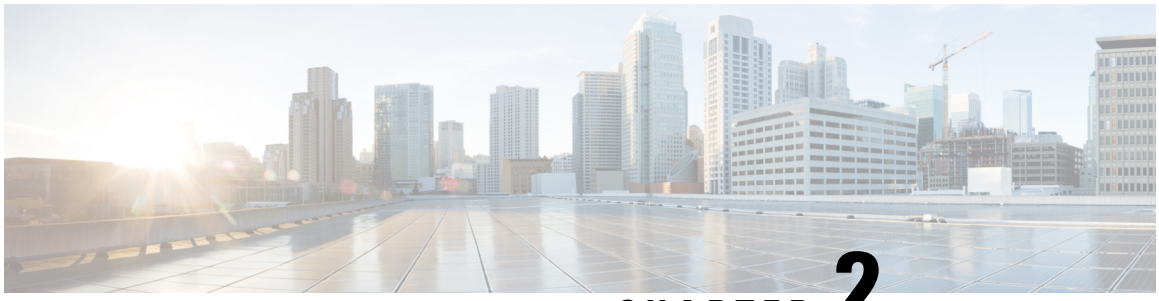
Table 4: eCMC SFP+ Port Status LEDs

LED	Color	Description
Link/Activity (Left LED)	Off	No Link Detected
	Solid Green	Link Detected
	Blinking Green	Transmitting or Receiving Data Traffic
	Blinking Amber	Software-defined errors detected
Speed (Right LED)	Off	No traffic detected
	Solid Green	Maximum speed detected

Summary of Features

The Cisco UCS XE9305 modular system has the following main features.

- RU-high, 19-inch wide and 18-inch deep chassis with 5 front-facing flexible slots for compute nodes.
- Two (2) hot-swappable eCMCs forming a unified fabric that provide connectivity between all nodes within the chassis and with upstream networks, and provide local chassis management and secure control plane connection with Cisco Intersight. Each CMC features:
  - An embedded 25 Gbps switch with 145 Gbps of switching bandwidth with five (5) rear-facing 25 Gbps switch ports connecting to nodes within the chassis through the chassis mid-plane and two (2) front-panel 10 Gbps SFP+ uplink ports for data traffic
  - One (1) front-panel 1 Gbps RJ45 uplink port for management traffic
  - Two (2) front-panel USB-C ports for management console and external storage connectivity
- Two (2) hot-swappable 2400W Titanium AC Power Supply Units (PSUs) providing N+N redundancy, removable from the front for service by a latching mechanism without special tooling.
- Five (5) 80 mm by 56 mm hot-swappable fan modules with acoustically optimizing cooling controls, removable from both the top and the rear for service by a latching mechanism without special tooling.
- Near Field Communication (NFC) capability embedded in the chassis to aid chassis identification, claiming, and troubleshooting when used in conjunction with the Cisco Intersight app.
- One (1) optional locking security bezel with separately replaceable air filter covering the entire front of the chassis, providing protection against physical tampering and filtration against ambient particulate matter
- Additional accessories to fit your deployment:
  - sliding rail kit for installation and maintenance in 4-post racks
  - static mount kit for 2-post racks
  - brackets for horizontal or vertical mountng on flat surfaces, such as shelves and tabletops



CHAPTER 2

Installing the Chassis

This chapter contains the following topics:

Product Transportation and Handling Considerations

Be aware of the following transporting and safe handling requirements for this product:

- Although not a requirement, it is a best practice to secure the product into a shipping container, such as the original packaging that came with the product.
- Whenever the product is shipped or transported, it is a requirement that the product is loaded onto a pallet.

⚠

Caution Before loading the product onto a pallet, inspect the pallet for damage, missing screws, nails, or other fasteners. Only use undamaged pallets that are not missing any fasteners to ship the product.

This requirement is also indicated by the following label which is directly affixed to the product.

You must use these transportation and handling considerations for shipping or transporting the product to or from any customer or order fulfillment site, or when return shipping the product to Cisco Systems, for example, due to an RMA.

If you do not have access to a pallet that can support the product's weight and size, you can order one from Cisco Systems by ordering UCSXE-PKG-MINIPLT=

Note The Cisco pallet (UCSXE-PKG-MINIPLT=) does not include any product packaging or shipping container.

Caution Shipping the product without using an appropriate pallet can void your product warranty.

Safety Warnings

This topic contains safety warnings for the installation and use of the product. Additional certification and safety warnings are available in the Required Certifications and Safety Information document.

General Safety Warnings

Take note of the following general safety warnings:

Warning

IMPORTANT SAFETY INSTRUCTIONS

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

SAVE THESE INSTRUCTIONS

Note

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

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

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

〈製品使用における安全上の注意〉

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

接続ケーブル、電源コードセット、**AC**アダプタ、バッテリなどの部品は、必ず添付品または

指定品をご使用ください。添付品・指定品以外をご使用になると故障や動作不良、火災の

原因となります。また、電源コードセットは弊社が指定する製品以外の電気機器には使用

できないためご注意ください。

Warning

Statement 1015—Battery Handling

To reduce risk of fire, explosion, or leakage of flammable liquid or gas:

- Replace the battery only with the same or equivalent type recommended by the manufacturer.
- Do not dismantle, crush, puncture, use a sharp tool to remove, short the external contacts, or dispose of the battery in fire.
- Do not use if battery is warped or swollen.
- Do not store or use battery in a temperature >60° C (140° F) .
- Do not store or use battery in low air pressure environment <10.1 psia at 10,000 feet.

Warning 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.

Warning There are no serviceable parts inside. To avoid risk of electric shock, do not open.

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

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

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

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

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

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

Equipment Installation to Power Warnings

Take note of the following power safety warnings:

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

Warning **Statement 1005—**Circuit Breaker

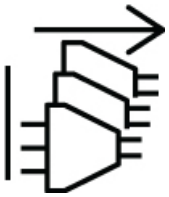
This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

AC: 20A

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

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

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



Warning 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.

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

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

Ground Connection Warnings

Take note of the following ground connection warnings:

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

Warning In the Scandinavian countries (Denmark, Finland, Iceland, Norway, and Sweden) the appliance must be connected to a grounded outlet.

Optical Connection (SFP) Warnings

Take note of the following optical connection warnings:

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

Warning Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.

Rack-Mount Warnings

Take note of the following rack-mount safety warnings:

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.

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.

Warning **Statement 1098—**Lifting Requirement

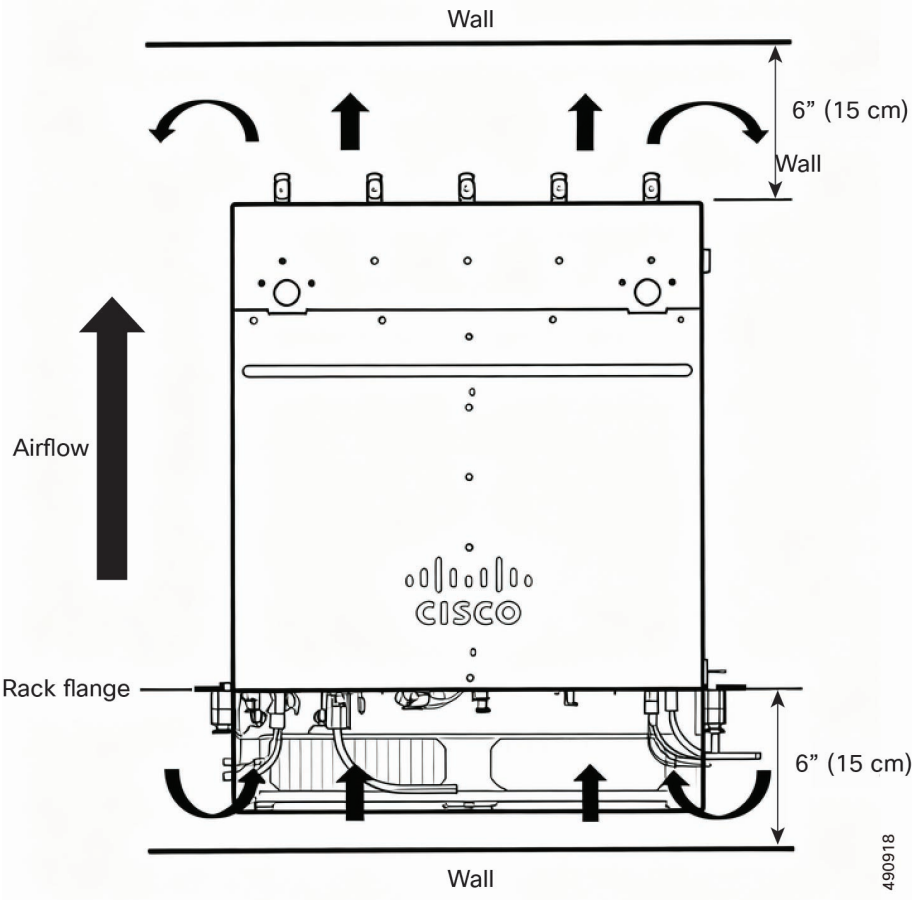
At least two people are required to lift the heavy parts of the product. To prevent injury, keep your back straight and lift with your legs, not your back.

General Installation Guidelines and Restrictions

In addition to these general guidelines and restrictions, see the Safety Warnings, on page 18.

Before installing the chassis, be aware of the following general guidelines and restrictions:

- The chassis has required clearances for airflow. To maintain proper air circulation through the chassis, we recommend keeping a minimum space of six (6) inches or fifteen centimeters (15 cm) between a wall and the chassis and power-supply unit (PSU) air intakes or a wall and the chassis and power-supply unit (PSU) hot air exhausts.



- When fully populated with compute devices, PSUs, fans, and other hardware, the chassis has considerable weight.
    - When installing the chassis, moving it, or removing it from the equipment rack, always remove all removable hardware. Always install, move, or remove the chassis as an empty chassis.

      When handling the chassis, always have at least two people to lift it. Or, as a best practice, use mechanical means, such as a server lift or scissors jack, to bear the load of the chassis.

- Before installing the chassis on an elevated surface, such as a shelf or a tabletop:
    - Make sure that the installation surface can bear the weight of a fully populated chassis.
    - Make sure that the chassis is positioned in the center of the installation surface. If the chassis is positioned off center, there is an increased chance that a shelf or tabletop might tip over.

- Depending on the type of installation, additional installation guidelines and restrictions might apply. Make sure to consult any additional guidelines and restrictions, if present, in the subsection for your installation method.

Additional Hardware

In addition to the Cisco UCS XE9305 Chassis and its compute devices, PSUs, and fans, the chassis supports some additional hardware accessories.

Installation Hardware

Some installation methods require additional equipment, which are available as accessory kits through Cisco and can be ordered with your initial purchase.

Installation Type	Kit Type	Kit PID
Horizontal Mount	Flat/horiztonal installation, shelf or table top mounting brackets	UCSXE-SHLFMT-BKT
Vertical Mount	Vertical/upright installation, shelf or table top mounting brackets	UCSXE-R2T-MT-BKT
Two-Post Rack	Rack mounting kit, mounting brackets (2), front and rear. The rear mounting bracket is extendable.	UCSXE-RKMT2P
Four-Post Rack	Rack sliding rail kit, sliding rails (2) with integrated front and rear mounting brackets	UCSXE-RAIL

Security and Filtration Hardware

The chassis supports the following additional hardware.

Usage	Kit Type	Kit PID
Security	Locking front bezel	UCSXE-BEZ-3
Dust and Particulate Filtration	Air Filter, spare The air filter is not designed as a replaceable part, so it will remain when the filter has reached its maximum supported hours.	UCSXE-BEZ-FLTR

Usage	Kit Type	Kit PID
	Foam Filter The foam filter is the replaceable part of the overall air filter assembly. When the air filter has reached its supported operating hours, the foam needs to be replaced. For more information, see Guidelines and Considerations for the Foam Filter, on page 104.	UCSXE-FLTR-FOAM=

Cable Management Hardware

The chassis supports a cable management assembly (CMA) to organize cable connections and optimize airflow and access to the chassis. The CMA consists of two cable hooks that attach to the front of the chassis and install into the security bezel and air filter assembly.

Installing the Chassis

The Cisco UCS XE9305 Chassis is a 3 rack-unit (RU) hardware platform for numerous edge computing applications. The chassis can be installed in standard 2- and 4-post equipment racks as well as flat surfaces, such as tabletops.

To install the chassis, choose the appropriate installation method for your deployment:

- Installing Horizontally on a Flat Surface, on page 26
- Installing Vertically on a Flat Surface, on page 32
- Installing the Chassis in a Two-Post Rack, on page 40
- Installing the Chassis in a Four-Post Rack, on page 46

Note Before attempting any installation procedure, read General Installation Guidelines and Restrictions, on page 23 as well as any additional installation guidelines and restrictions for your specific installation method.

Installing Horizontally on a Flat Surface

The chassis can be installed on any flat horizontal surface, such as a floor or shelf, by installing a stabilizing bracket. The bracket has vertical and horizontal parts that hold the chassis securely in place:

- The vertical parts hold the edges of the chassis and prevent it moving or sliding horizontally.
- The horizontal part supports the bottom of the chassis and secures to the floor, shelf, or other horizontal surface.

To secure the chassis to the flat surface, you will need to drill holes at specific dimensions.

Use the following procedures to install the chassis on a horizontal surface, such as a floor, shelf, or table top.

Preparing for Installation

Use this task to drill the mounting holes in the installation surface where you will install the chassis and prepare the mounting kit.

Before you begin

To complete this task:

- Gather the following tools.
  - Ruler, tape measure, or measuring stick to determine correct distances
  - Drill
  - 10 mm drill bit
  - T20 star-head screwdriver
  - M4 star-head screwdriver
  - A Torque driver or other tool for measuring torque
- Ensure that you leave enough empty space around the perimeter of the chassis to ensure proper physical access, cable routing, and airflow.
- Be sure to take into account the space required for installing and removing the equipment.
- Prior to installation, ensure the mounting surface is either a concrete or wooden floor. For mount surfaces not mentioned above, contact a professional engineer for mounting recommendations.
- Ensure that the front side of the chassis has at least 15 inches of clearance for node installation, and the rear side of the chassis has at least 6 inches of clearance to allow fan installation.

Important Read this topic entirely to familiarize yourself with the required installation dimensions and drill-hole depths before actually performing the installation procedure. Dimensions and depths can vary based on the type of surface, for example, concrete or wooden floors.

Note The illustrations in this topic show the use of a mounting plate. Cisco does not provide a mounting plate, so it is not included in the mounting kit. A mounting plate is not required. The choice of installing the product on a mounting plate or directly on the installation surface is yours.

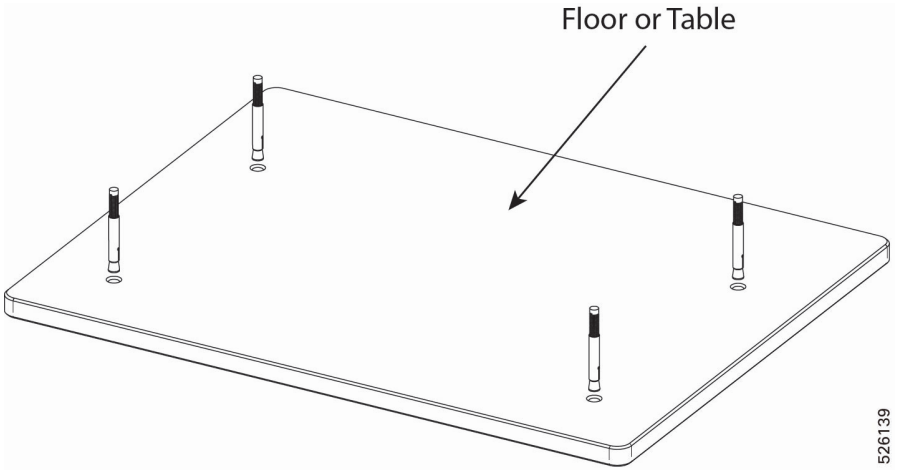
Procedure

Prepare the horizontal surface to accept the mounting kit.

a) Verify that the installation surface is either a concrete or wooden floor. Different floor types have different installation fasteners, and these fasteners have specific requirements for drill hole diameters, depths, and so on.

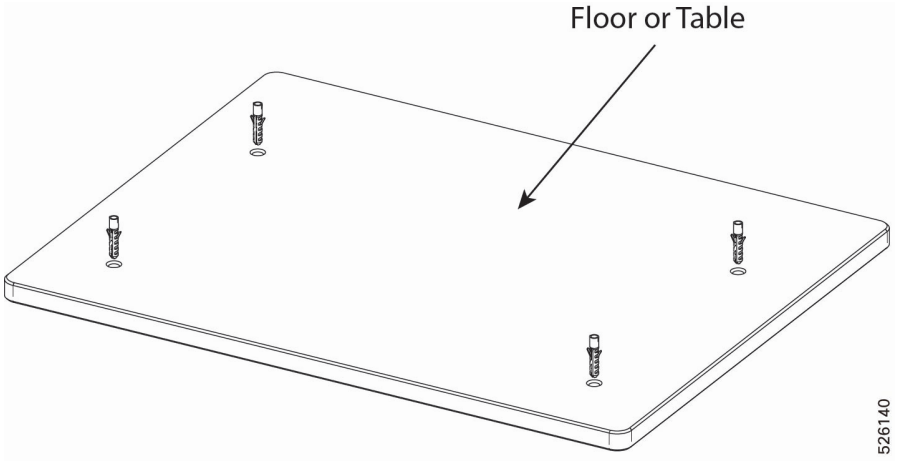
For concrete floors, the drill hole requirements are as follows for M8 anchor bolts.

- Drilling diameter: ϕ10x4
- Drill hole depth: 70 mm
- Distance from edges: ≥60 mm
- Distance from mortar joints and concrete walls: ≥30 mm



For wooden floors, the drill hole requirements are as follows for plastic anchors and tapping screws.

- Drilling diameter: ϕ8x4
- Drill hole depth: 50 mm

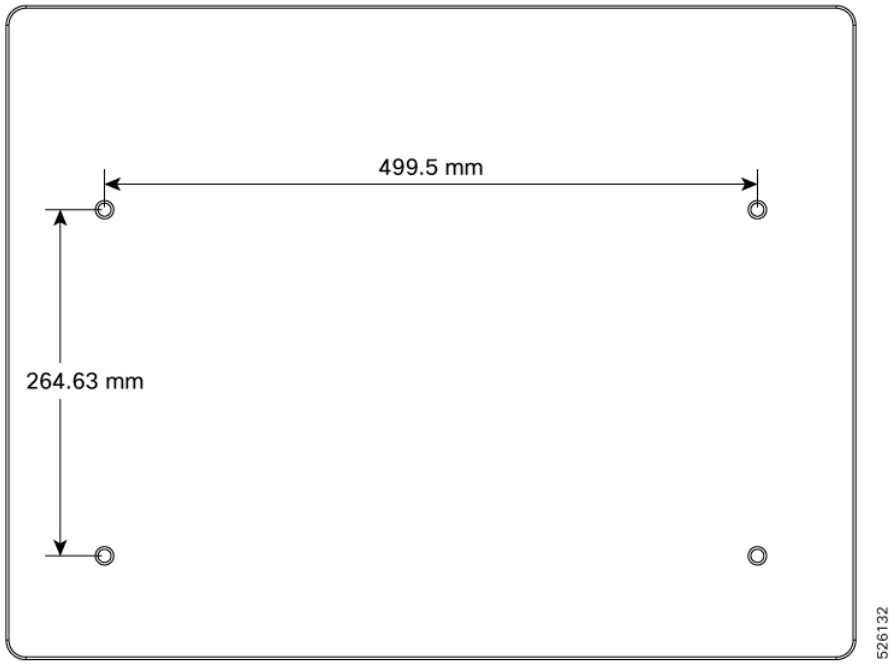


b) If you haven't already done so, insert and secure the drill bit into the drill.

Caution
Make sure the drill bit is secure in the chuck before proceeding.

c) Drill four holes for the mounting kit by using the following diagram.

Distances/dimensions shown are in millimeters.



You will install anchor sleeves or fasteners into these holes later. To prevent installation difficulties, make sure that your drill holes are straight and vertical.

What to do next

Attach the mounting kit to the surface.

Installing the Chassis Horizontally on a Flat Surface

To install the chassis horizontally on a flat surface, such as a floor, shelf, or tabletop, you will attach mounting brackets to the chassis, then secure the brackets to the installation surface.

Before you begin

To complete this task:

- Gather the following tools.
  - an M4 star-head screwdriver
  - an M8 hex-head wrench or hex nutdriver
- Ensure that you leave enough empty space around the perimeter of the chassis to ensure proper airflow and access.

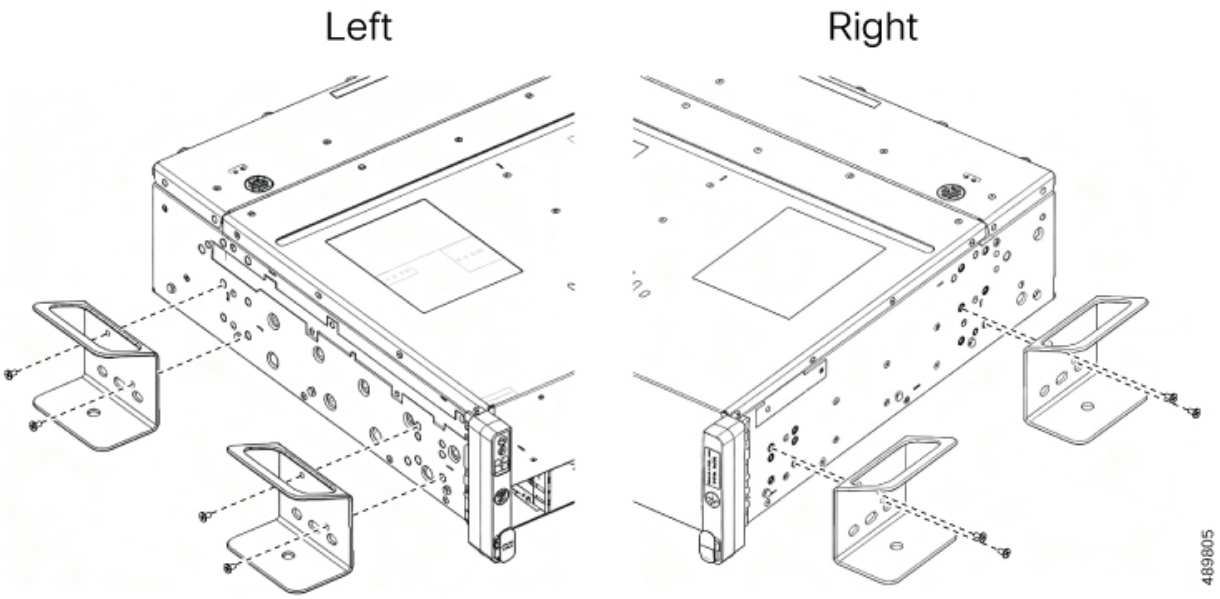
Note The illustrations in this topic show the use of a mounting plate. Cisco does not provide a mounting plate, so it is not included in the mounting kit. A mounting plate is not required. The choice of installing the product on a mounting plate or directly on the installation surface is yours.

Procedure

Step 1 Using an M4 star-head screwdriver, attach the four mounting brackets to the sides of the chassis, two per side.

a) Install two screws per mounting bracket through each mounting bracket into the side of the chassis as shown.

Caution
Make sure that you install the screws into the correct holes on the chassis.



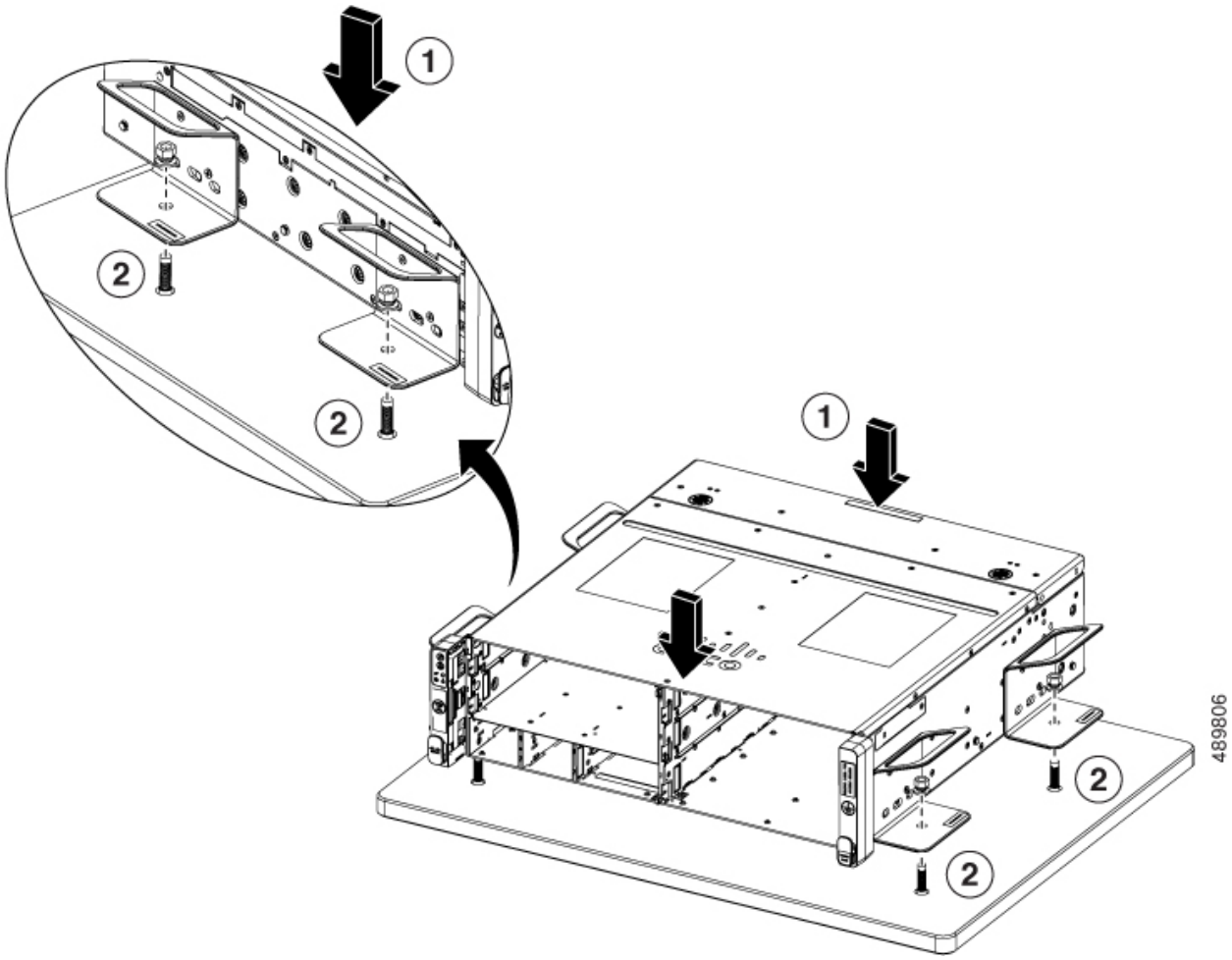
Step 2 When all the mounting brackets are correctly installed, position the chassis on the installation surface.

Caution
If you are installing the chassis on a shelf or tabletop, make sure that the installation surface can support the weight of a fully loaded chassis. **Do not install the chassis on any surface that cannot bear the load of a fully populated chassis.**

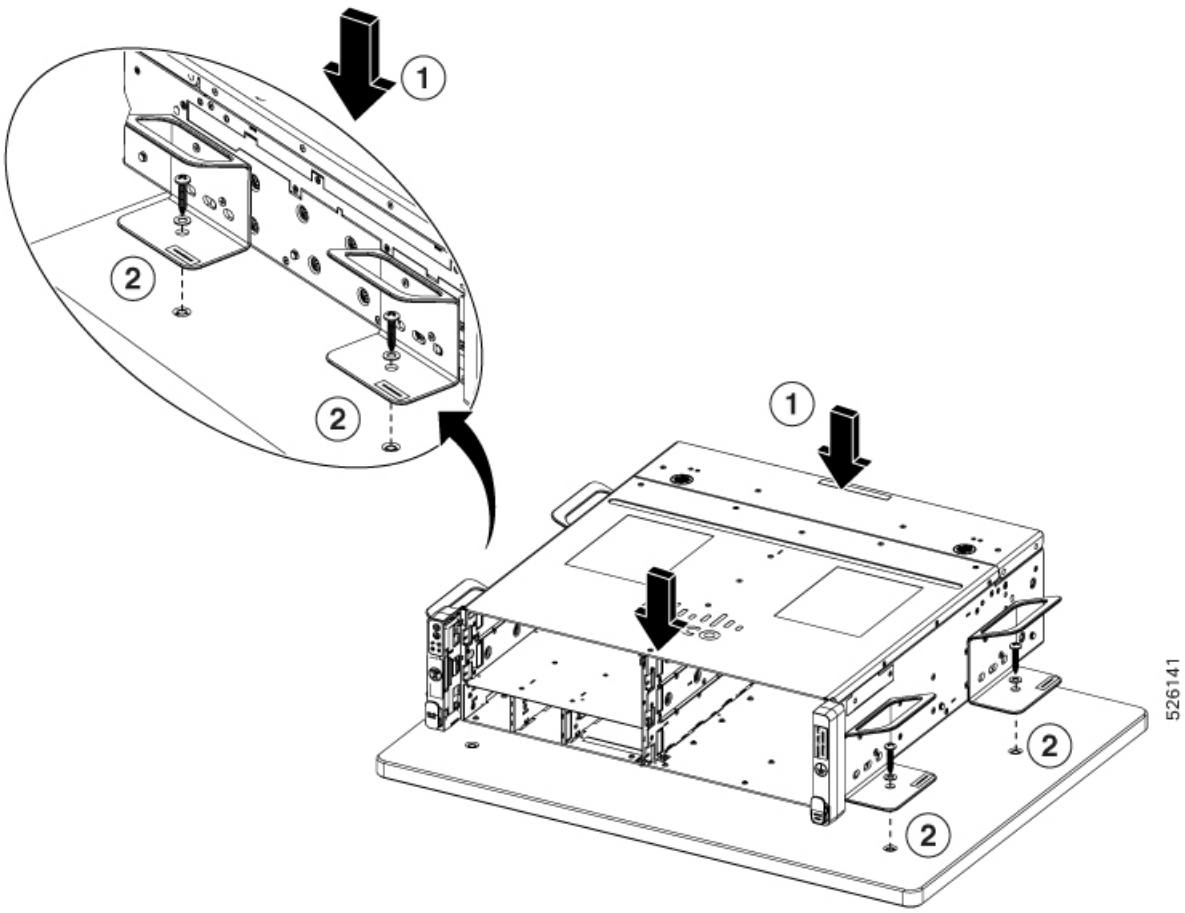
Also, make sure to position the chassis in the center of the shelf or table top to ensure that the chassis weight is distributed evenly across the installation surface. **Uneven weight distribution can increase the chance of a shelf or table tipping over**.

Step 3 Install the fasteners depending on the type of floor.

a) **For concrete floors**, insert the M8 anchor bolts into the drill holes.
b) Using the hex head socket wrench, attach the nuts to the bolts, then tighten the nuts to snug.
c) Use the torque wrench or driver to finish tightening the M8 nuts to a range of 24.5 to 30 N-m of force.



d) **For wooden floors**, insert the plastic anchors into the drill holes.
e) Lower the chassis onto the surface, making sure that the screwholes in the mounting brackets line up with the drill holes in the installation surface.
f) Use the #2 Phillips screwdriver to insert and tighten tapping screws to snug, then use the torque driver to finish tightening the screws to a range of 6 N-m of force.



Installing Vertically on a Flat Surface

The Cisco UCS XE9305 Chassis can be installed in an upright position on a flat surface, such as a shelf, floor, or table top. In this installation method, the chassis stands at a 90° angle to the installation surface, similar to a tower desktop PC.

Note Make sure that the installation surface (table top, counter top, shelf and so on) can support the weight of a fully populated chassis.

Preparing for Installation

Use this task to drill the mounting holes in the installation surface where you will install the chassis and prepare the mounting kit.

Before you begin

To complete this task:

- Gather the following tools.
  - Ruler, tape measure, or measuring stick to determine correct distances
  - Drill
  - 10 mm drill bit
  - T20 star-head screwdriver
  - M4 star-head screwdriver
  - Torque driver or some other tool to measure torque
- Ensure that you leave enough empty space around the perimeter of the chassis to ensure proper physical access, cable routing, and airflow.
- Be sure to take into account the space required for installing and removing the equipment.
- Prior to installation, ensure the mounting surface is either a concrete or wooden floor. For mount surfaces not mentioned above, contact a professional engineer for mounting recommendations.

Important Read this topic entirely to familiarize yourself with the required installation dimensions and drill hole depths before actually performing the installation procedure. Dimensions and depths can vary based on the type of surface, for example, concrete or wooden floors.

Note The illustrations in this topic show the use of a mounting plate. Cisco does not provide a mounting plate, so it is not included in the mounting kit. A mounting plate is not required. The choice of installing the product on a mounting plate or directly on the installation surface is yours.

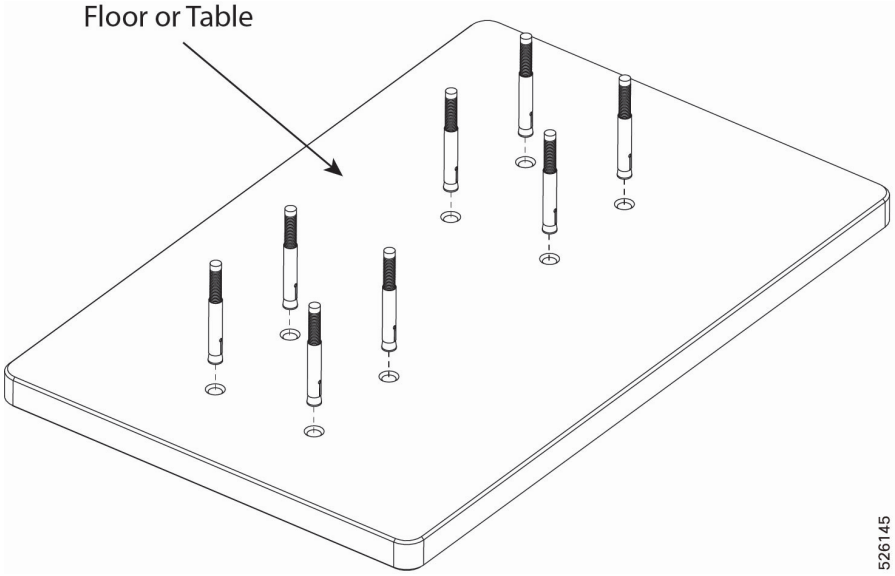
Procedure

Prepare the horizontal surface to accept the mounting kit.

a) Verify that the installation surface is either a concrete or wooden floor. Different floor types have different installation fasteners, and these fasteners have specific requirements for drill hole diameters, depths, and so on.

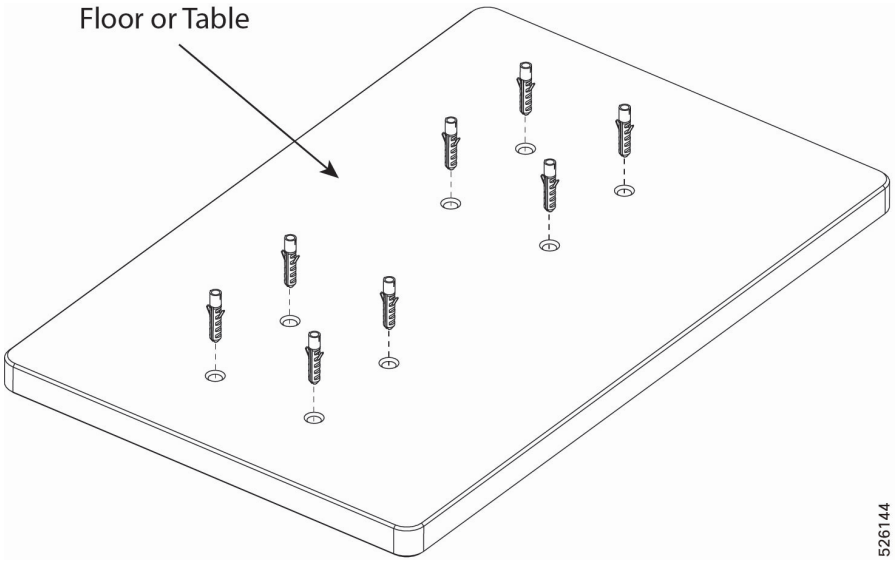
For concrete floors, the drill hole requirements are as follows for M8 anchor bolts.

- Drilling diameter: ϕ10x4
- Drill hole depth: 70 mm
- Distance from edges: ≥60 mm
- Distance from mortar joints: ≥30 mm



For wooden floors, the drill hole requirements are as follows for plastic anchors and tapping screws.

- Drilling diameter: ϕ8x4
- Drill hole depth: 50 mm

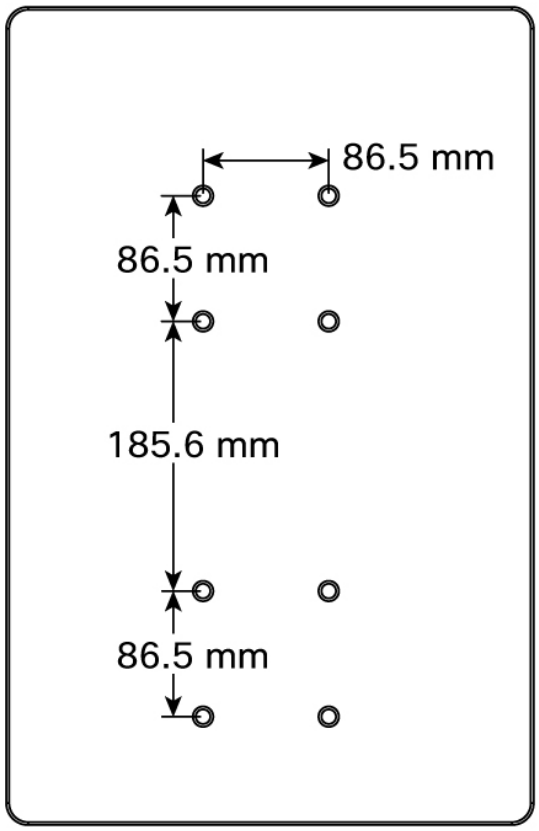


b) If you haven't already done so, insert and secure the drill bit into the drill.

Caution
Make sure the drill bit is secure in the chuck before proceeding.

c) Drill eight holes for the mounting kit by using the following diagram.

Distances/dimensions shown are in millimeters.



You will install anchor sleeves into these holes later. To prevent difficulties with installing the anchor sleeves, make sure that your drill holes are straight and vertical.

What to do next

Attach the mounting kit to the surface.

Install the Mounting Kit Vertically on a Flat Surface

The chassis can be installed vertically on a flat surface so that when its installed it resembles a tower. Although mounting surfaces can vary, this procedure documents installation onto concrete or wooden surfaces, such as floors.

Before you begin

After preparing the flat surface, you will install the mounting kit.

For this procedure, gather the following tools:

- For concrete floors, an M8 hex head socket wrench or hex nutdriver.
- For wooden floors, a #2 Phillips (cross-head) screwdriver.
- A torque wrench or driver to ensure correct force so that you do not strip a fastener.

Note The illustrations in this topic show the use of a mounting plate. Cisco does not provide a mounting plate, so it is not included in the mounting kit. A mounting plate is not required. The choice of installing the product on a mounting plate or directly on the installation surface is yours.

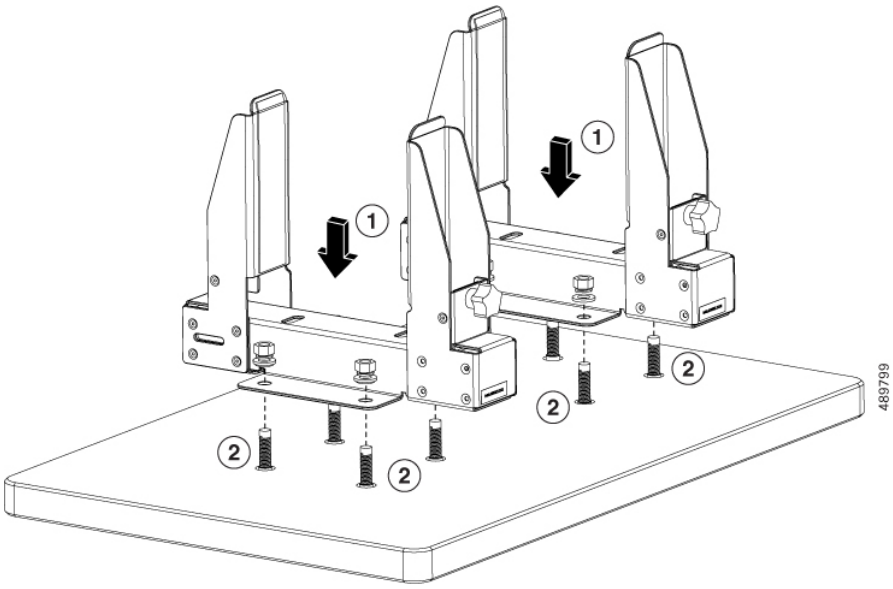
Procedure

Step 1 Gather the two mounting brackets.

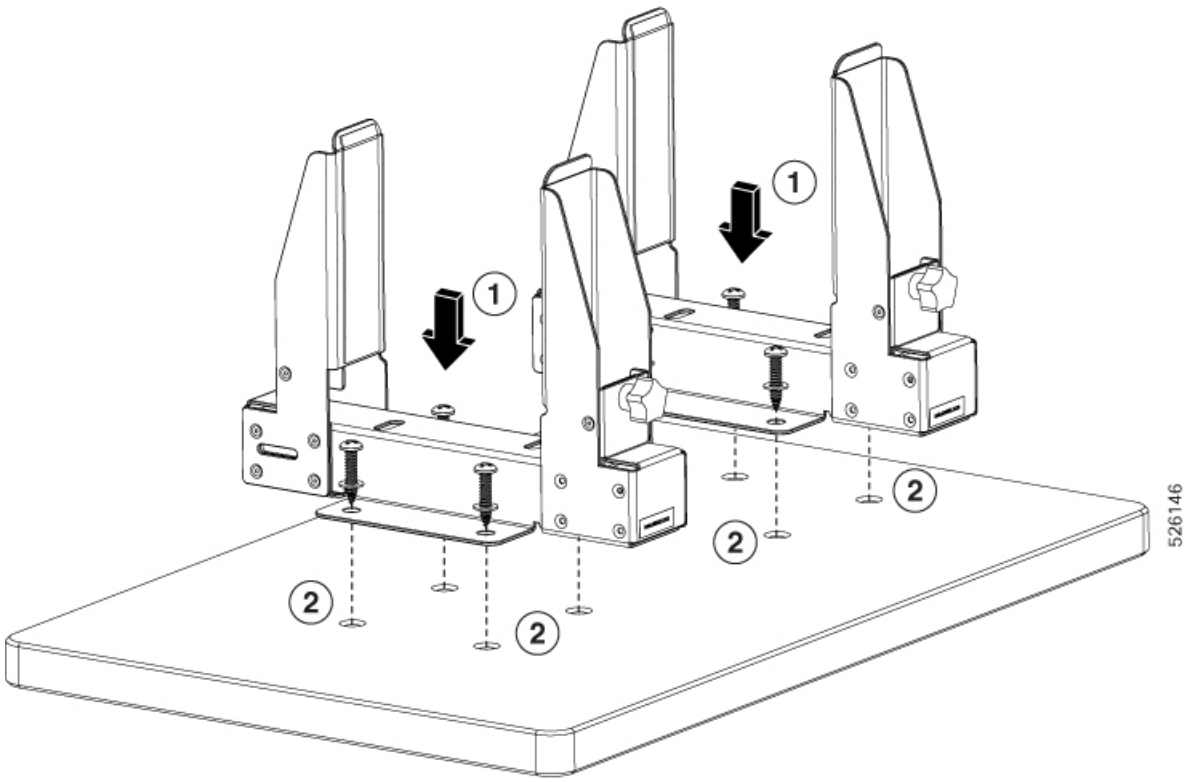
Step 2 Align the drill holes on the mounting bracket with the drill holes on the installation surface.

Step 3 Install the fasteners depending on the type of floor.

a) **For concrete floors**, insert the M8 anchor bolts into the drill holes.
b) Lower the mounting bracket into place, making sure that the screwholes in the bracket line up with the drill holes in the installation surface.
c) Using the hex head socket wrench, attach the nuts to the bolts, then tighten the nuts to snug.
d) Use the torque wrench or driver to finish tightening the M8 nuts to a range of 24.5 to 30 N-m of force.



e) **For wooden floors**, insert the plastic anchors into the drill holes.
f) Lower the mounting bracket into place, making sure that the screwholes in the bracket line up with the drill holes in the installation surface.
g) If you have not already inserted a washer onto the M5 tapping screws, do so now.
h) Use the #2 Phillips screwdriver to insert and tighten tapping screws to snug, then use the torque driver to finish tightening the screws to a range of 6 N-m of force.

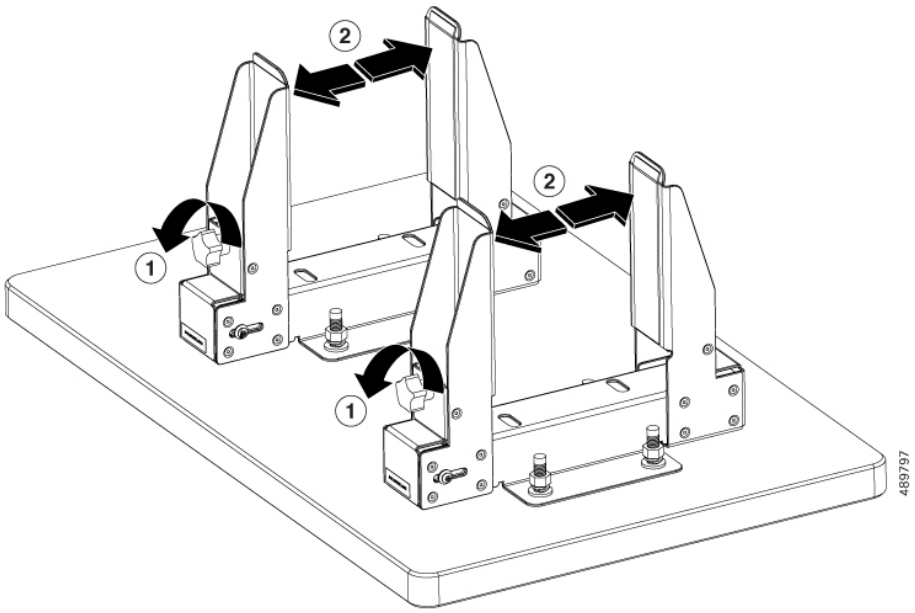


Step 4 If you have not already done so, open the mounting brackets.

a) Grasp the handle on the bracket and turn it counter clockwise.

b) Using the M4 star-head screwdriver, loosen, but do not remove, the M4 retaining screw.

Note
This illustration shows the use of a mounting plate. Cisco does not provide a mounting plate, so it is not included in the mounting kit. A mounting plate is not required. The choice of installing the product on a mounting plate or directly on the installation surface is yours.



c) Open the bracket open to at least the width of the chassis.

What to do next

Install the chassis into the mounting kit.

Installing the Chassis Vertically on a Flat Surface

After attaching the mounting kit to the installation surface, use this procedure to install the chassis into the mounting kit.

Before you begin

To perform this task, you will need the following tools:

- a pencil or marking pen
- A T20 star-head screwdriver
- An M4 star-head screwdriver

Note The illustrations in this topic show the use of a mounting plate. Cisco does not provide a mounting plate, so it is not included in the mounting kit. A mounting plate is not required. The choice of installing the product on a mounting plate or directly on the installation surface is yours.

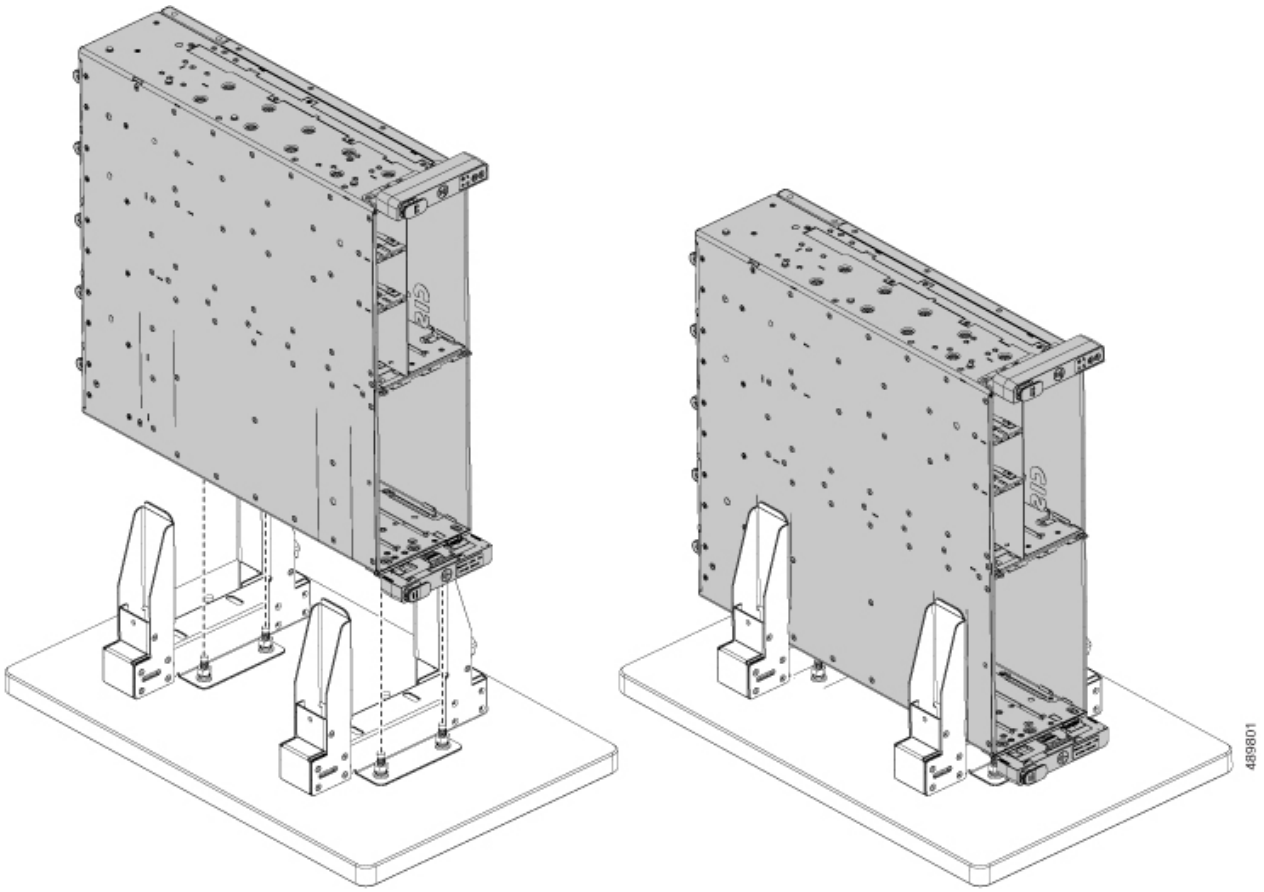
Procedure

Step 1 Using the pen or pencil, mark the bottom of the chassis to indicate where the vertical parts of the bracket will clamp onto the chassis.

Caution
Make sure that a screwhole is in the middle of the clamp area. This screwhole is required to secure the chassis and prevent it from moving.

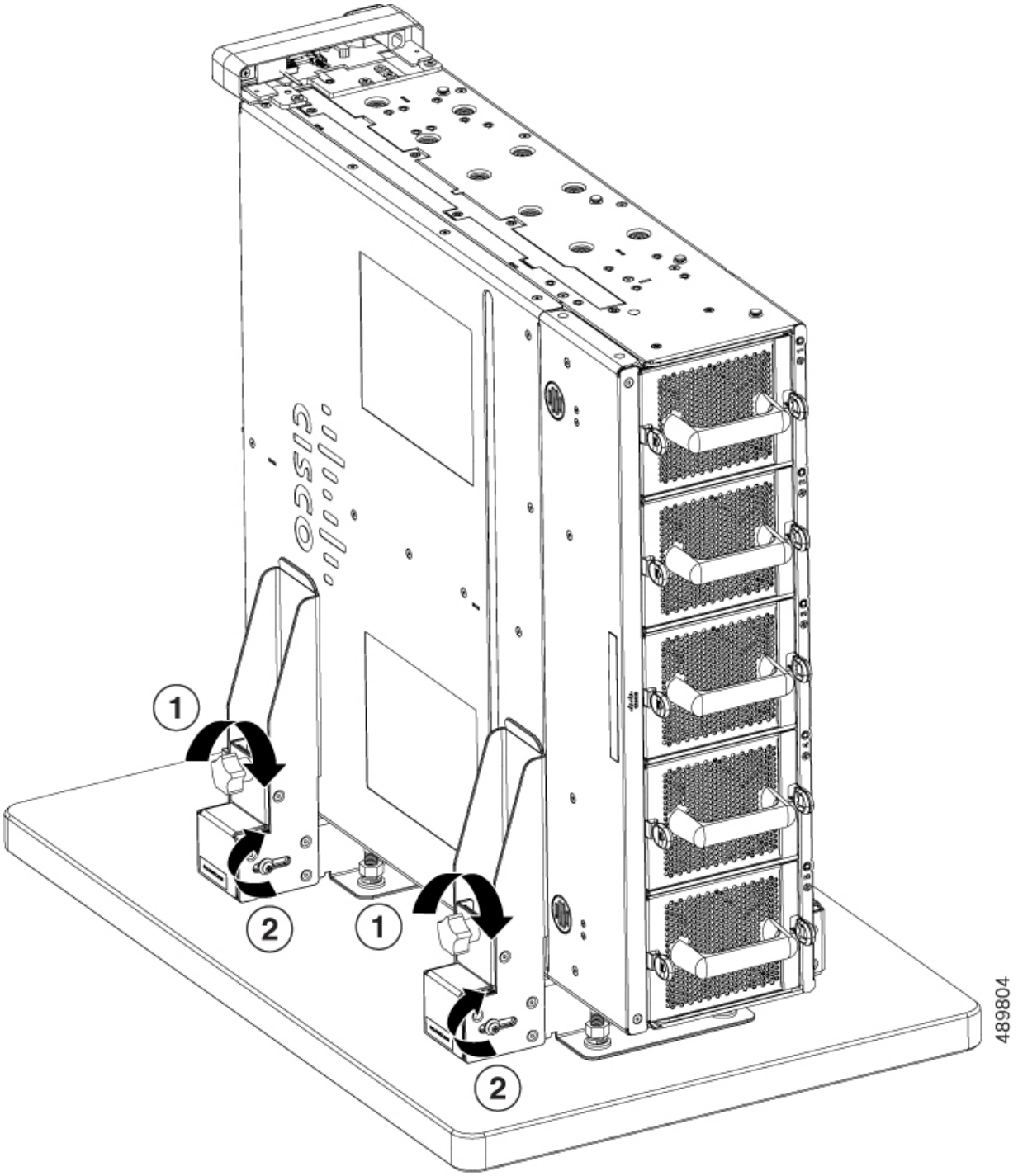
Step 2 Orient the chassis so that the power supplies (PSUs) will be at the bottom of the bracket, closest to the floor.

Step 3 Align the chassis with the clamps on the mounting kit and lower it into place.



Step 4 When the chassis sits flush on the mounting kit, and the screwholes on the mounting kit are aligned with the screwholes in the chassis, complete installation.

a) Grasp the handles and turn them clockwise to tighten the chassis to the brackets.
b) Using the M4 star-head screwdriver, tighten the four M4 screws, two per mounting bracket.



Installing the Chassis in a Two-Post Rack

The Cisco UCS XE9305 Chassis can be installed in an EIA-310, two-post central mount rack.

Chassis installation occurs through the use of two mounting brackets that attach to the two posts on the equipment rack.

- The front mounting brackets are fixed size and dimensions. They are shaped into a right angle with one face of the mounting bracket attaching to the side of the chassis, and the other face of the mounting bracket attaching to the front face of the rack's posts.
- The rear mounting brackets are variable size and dimensions. This bracket is extendible and shaped into a right angle. One face of the mounting bracket attaches to the side of the chassis, and the other face of the mounting bracket slides a moderate distance to attach to the rear face of the equipment rack's post.

By using the mounting brackets, you can mid-mount the chassis so that the middle of the chassis is attached to the equipment rack, and the chassis weight is balanced.

To install the chassis in a two-post equipment rack, use the following topic.

Installing the Chassis into a Two-Post Rack

To install the chassis in a two-post rack, you will attach front and rear mounting brackets to each side of the chassis, then you will install the chassis

Before you begin

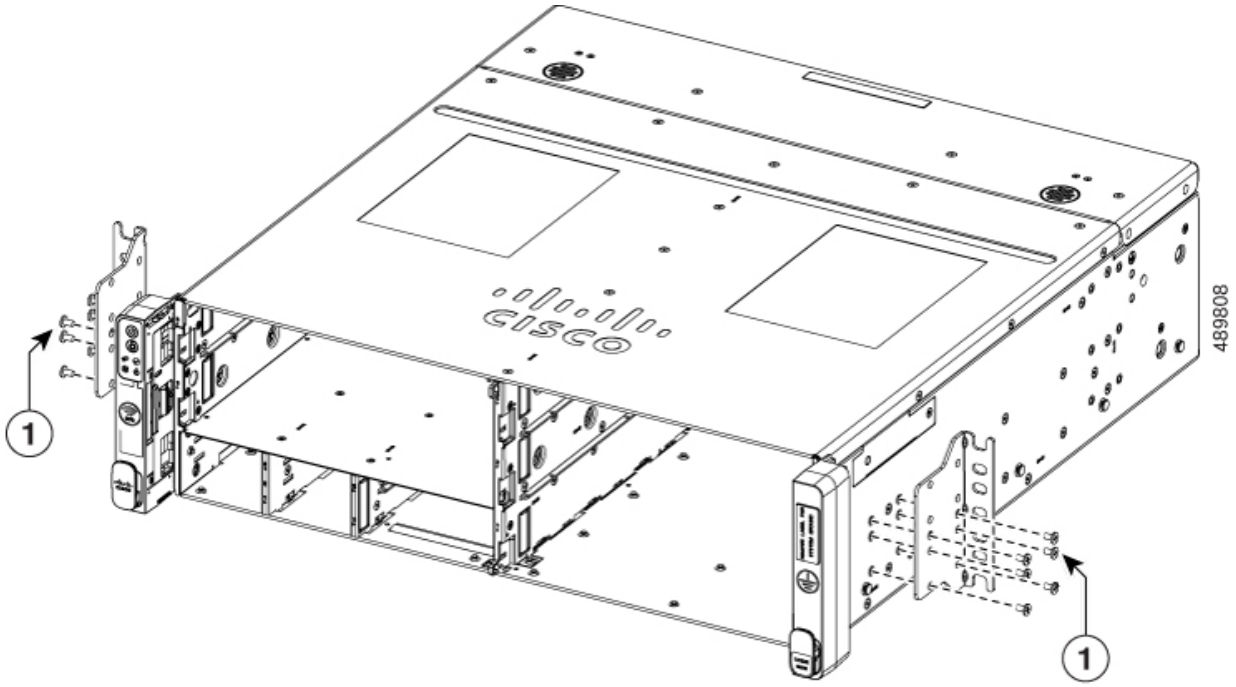
To complete this task, you will need a server lift, scissors jack, or some other mechanical assistance to support the chassis. When lifting, installing, or uninstalling the chassis, always use an empty chassis. Remove all compute devices, PSUs, and fans before attempting to move the chassis.

In addition to a server lift, gather an M4 Phillips screwdriver and the mounting screws.

Procedure

Step 1 Position the brackets over the screwholes on the side of the chassis.

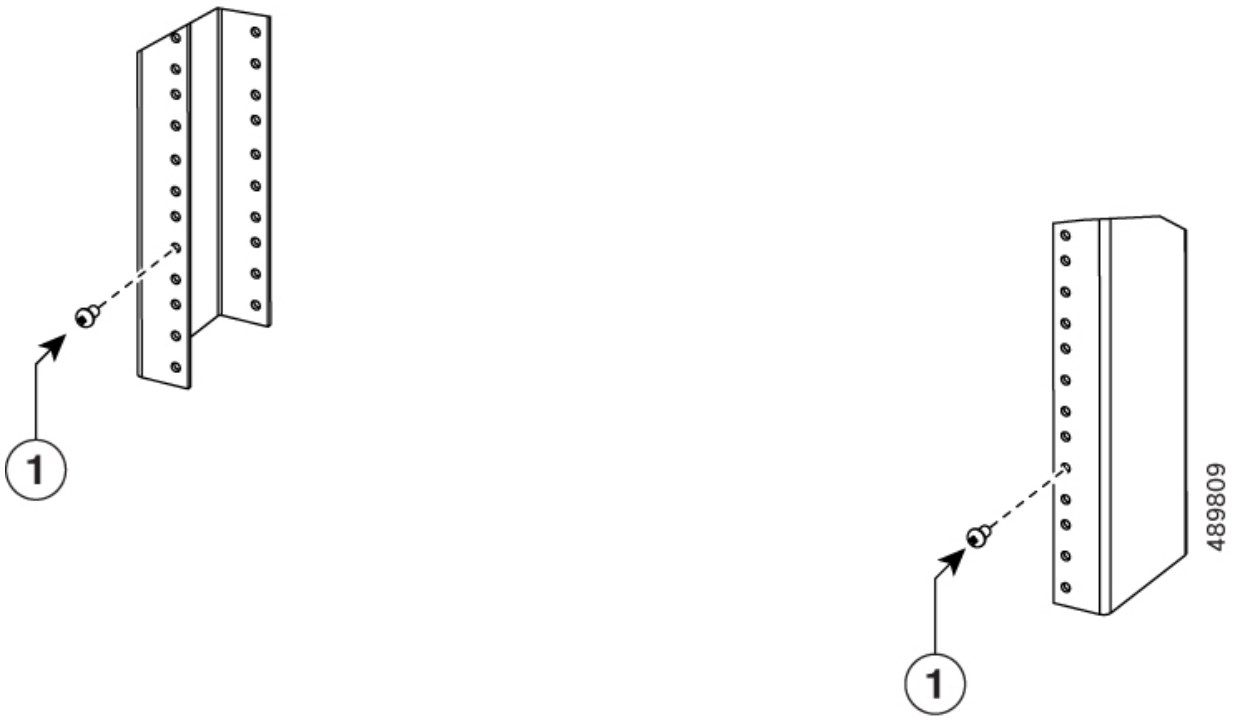
Step 2 Using the screwdriver, insert six mounting screws per side through the screwholes in the mounting brackets and tighten the screws.



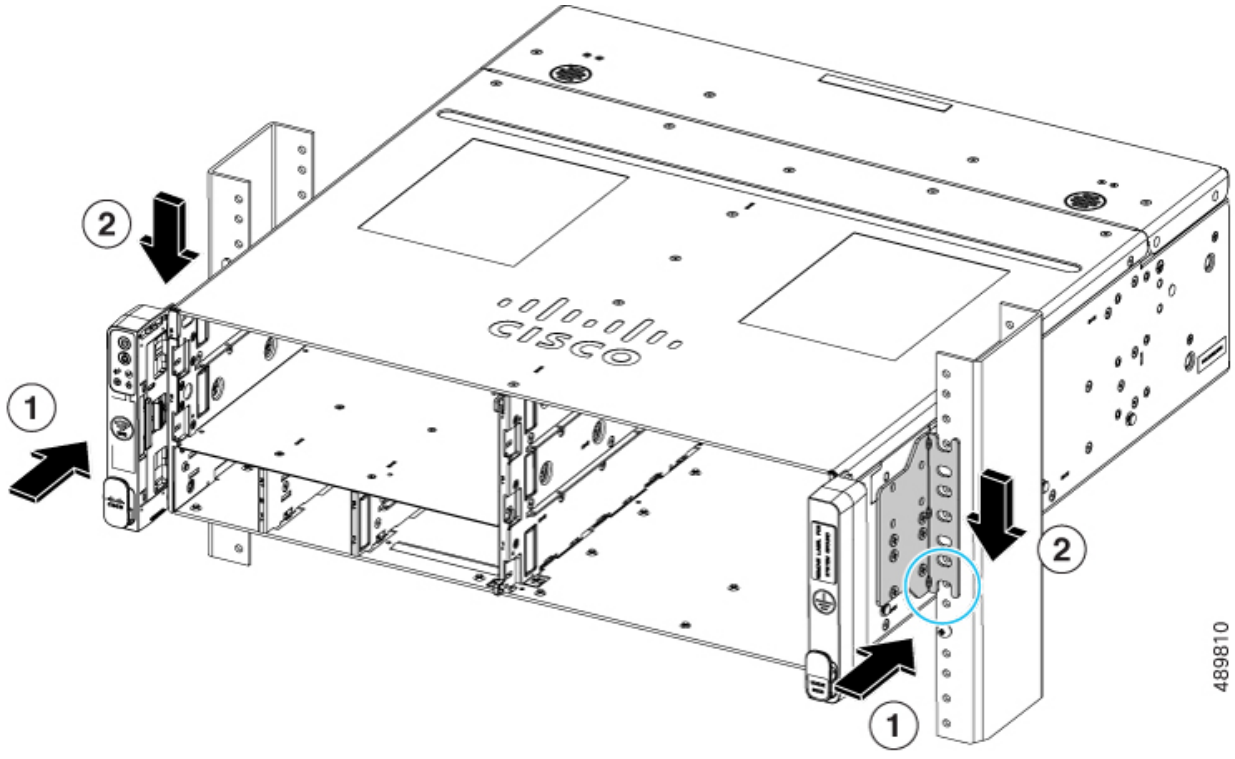
Step 3 Using the screwdriver, insert the two set screws into the front face of the rack posts.

Caution
Make sure that both screws are horizontally level or the chassis mounting ears will not catch the set screws correctly. The chassis will not be level. If the set screws are not level, remove and re-install them so that they are level.

When you install the set screws, make sure that they protrude enough to allow the thickness of the mounting bracket to fit between the set screw and the rack post.



Step 4 Using the server lift, position the chassis so that it is flush against the rack posts (1), and slowly slide the chassis down so that the mounting brackets catch the set screws (2).

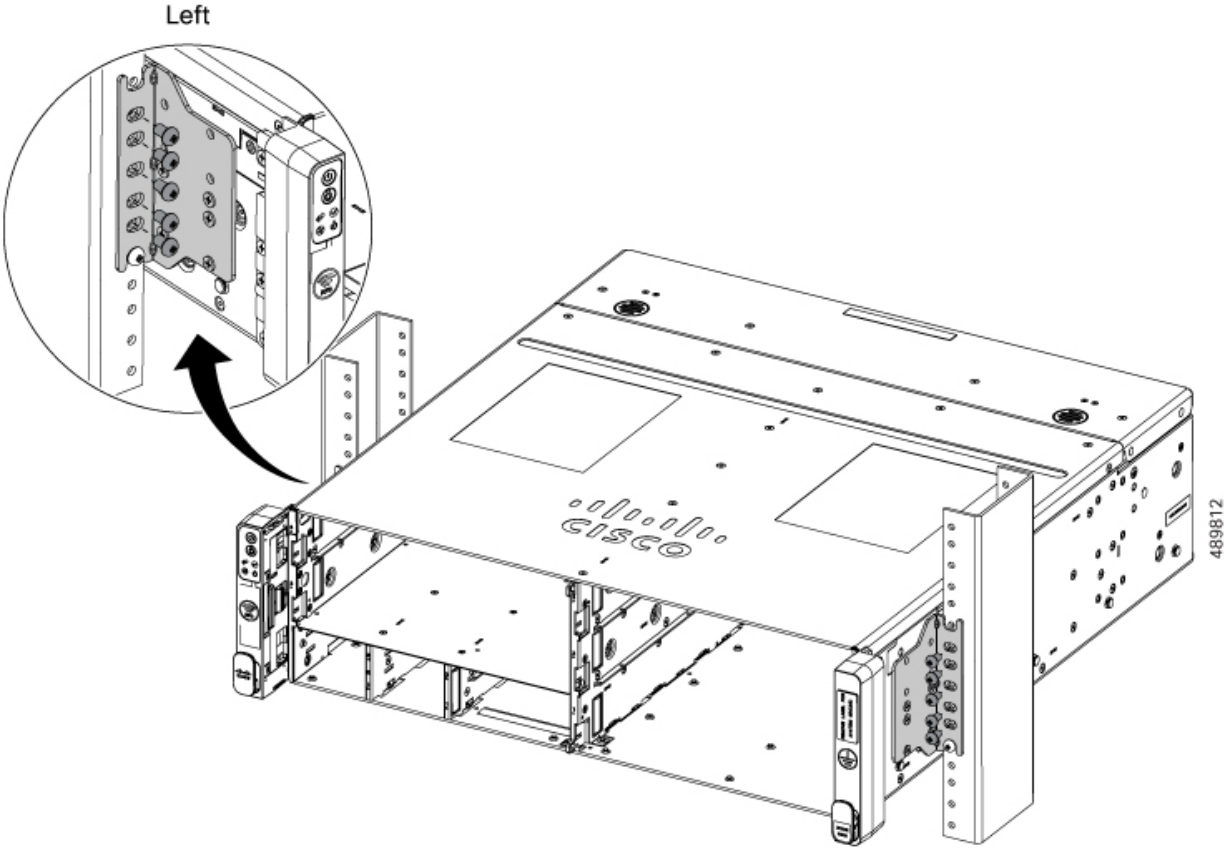


Caution

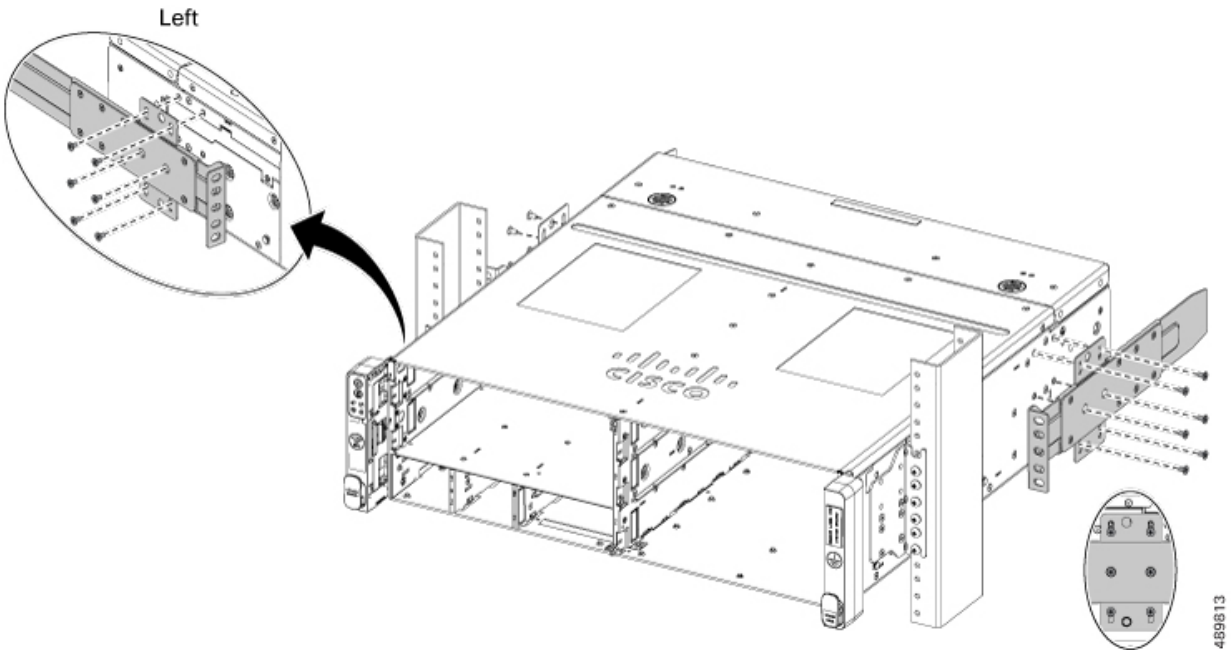
Before proceeding, verify that both set screws are fully seated in the semi-circular cutouts in the mounting brackets.

Step 5 Secure the chassis to the rack.

a) Using the screwdriver, install and tighten the securing screws through each front mounting bracket into the rack posts



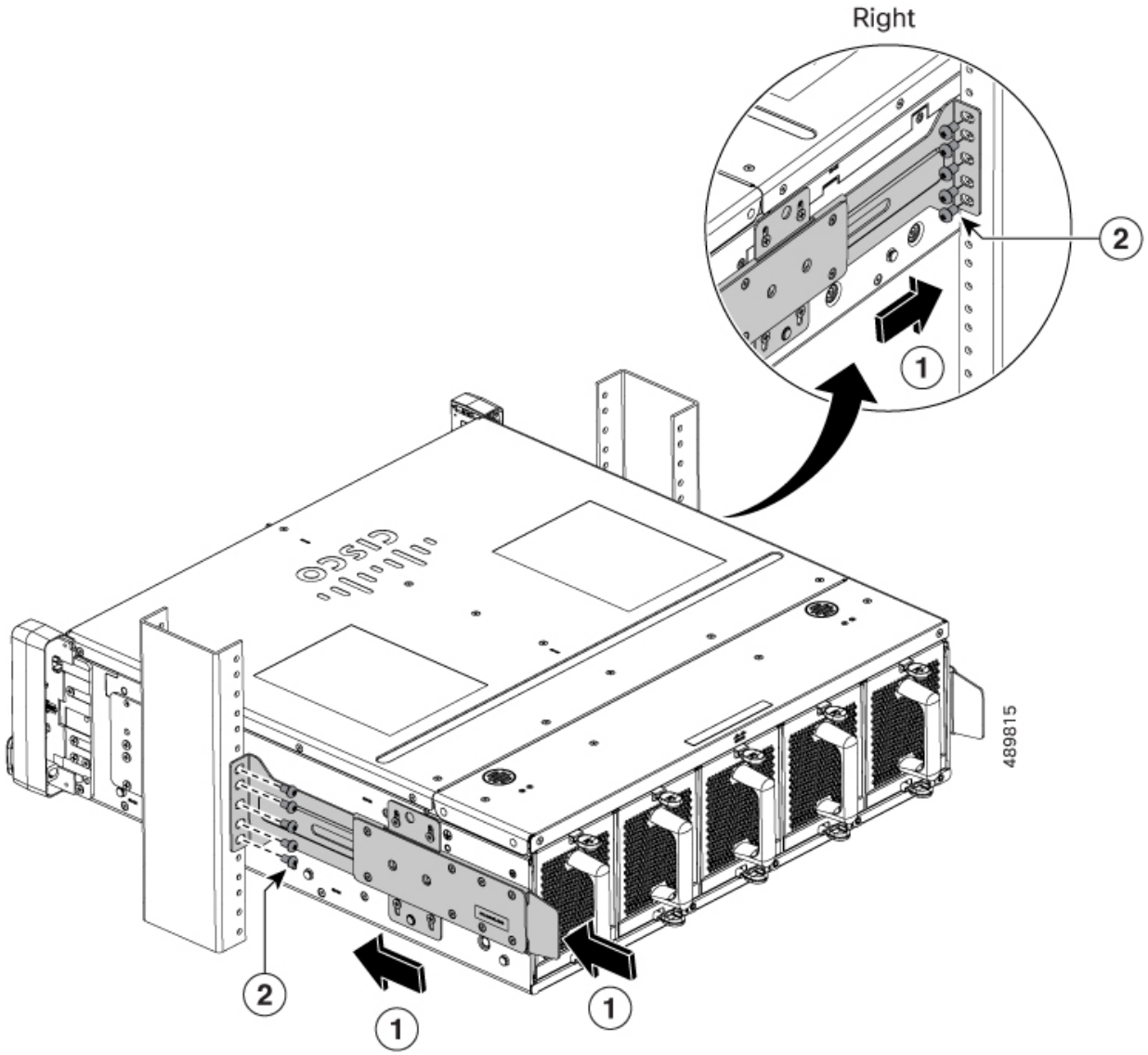
Step 6 Using the screwdriver, attach the extendable rear bracket to each side of the chassis.



Step 7 Attach the rear brackets to the equipment rack.

a) Slide the rear brackets forward so that they make contact with the rear face of the rack posts.

b) Using the screwdriver, insert the screws through the mounting brackets and tighten them into the rack posts.



Step 8 Verify that all screws on the mounting brackets and the rack posts are tight before removing the server lift.

Installing the Chassis in a Four-Post Rack

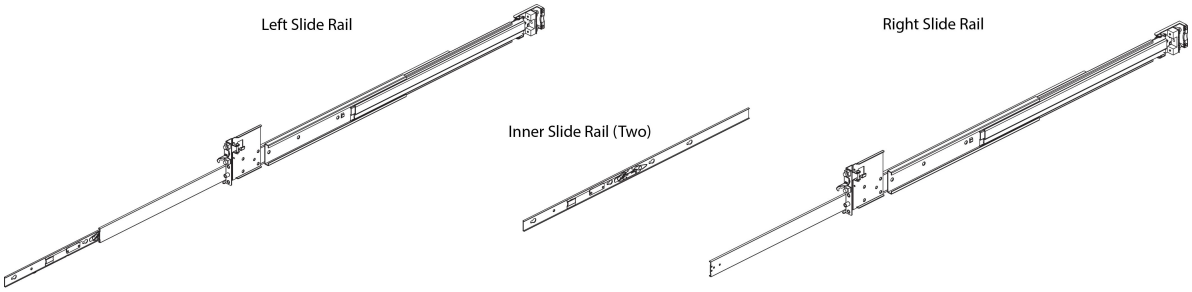
The Cisco UCS XE9305 Chassis can be installed in an open or closed frame 4-post equipment rack.

Installation in a four-post rack requires a sliding rail kit that attaches to the rack. The chassis then installs onto the rail kit and can easily slide out of the rack for easy access to the front and rear of the chassis.

Rail Kit Hardware

The sliding rail kit contains two rails, one per each side of the equipment rack.

Each rail consists of the following main pieces which telescope in and out to allow the chassis to be moved into and out of the equipment rack.



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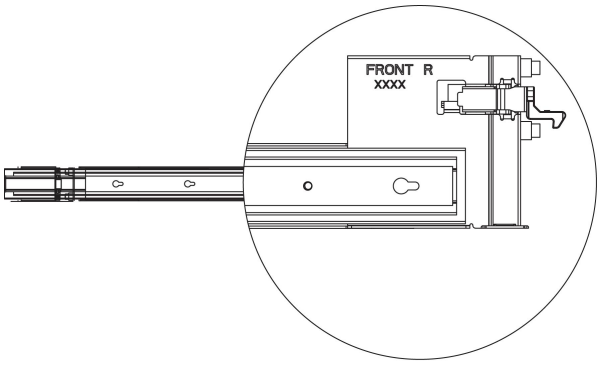
- An external rail (the handle rail) that attaches to the front and rear corners of the rack. After the rail kit is installed, this piece remains at a fixed length and is secured to the rack to bear the weight of the chassis.
- A middle rail which is part of the handle rail. The middle rail nests inside of the handle rail and extends.
- An internal piece (the inner rail) that sits inside the external rail. The inner rail attaches to the chassis to enable it to slide along the external rail. When the chassis is installed, the inner rail nests inside the middle rail and allows the chassis to slide out of the rail while its weight is supported by the middle and handle rails.
- There are “FRONT R” and “FRONT L” logos marked on the front of external (handle) rails, which represent the right rail and the left rail as shown in the following illustration. Ensure the correct rails are installed on the rack accordingly.



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Four-Post Rack Installation Guidelines and Restrictions

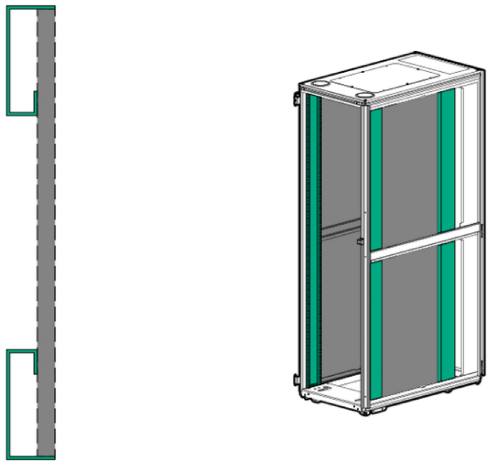
In addition to the General Installation Guidelines and Restrictions, on page 23, be aware of the following guidelines and restrictions for installing the Cisco UCS XE9305 in a four-post equipment rack.

- Ensure that the rack is compatible with the Cisco UCS XE9305 Chassis.
  - The Cisco UCS XE9305 Chassis is compatible with most industry standards, four-post, EIA-310, 48.3 cm (19 in) racks. The rack-post holes can be square 0.38-inch (9.6 mm), round 0.28-inch (7.1

mm), #12-24 UNC, or #10-32 UNC. The rail kit supports rack-post depths of 19.3 inches to 31.7 inches.

- The Cisco UCS XE9305 Chassis can be installed in an open or closed frame 4-post equipment rack.
- Installation in a four-post rack requires a sliding rail kit that attaches to the rack. The chassis then installs onto the rail kit and can easily slide out of the rack for easy access to the front and rear of the chassis.

- The rail kits require a minimum width of 18mm between the inner RETMA column edge and any rack component between the columns. In the following image, the gray indicates a rail, which takes up the full space between the front and rear RETMA rails.



- Two or more people are required to install the chassis in a rack. Or, use mechanical means, such as a server lift or scissors jack, to bear the weight of the chassis while installing it in the rack.
- Do not block any air vents, usually 150 mm (6 inches) of air space provides proper airflow.
- Plan the device installation starting from the bottom of the rack.
- Install the heaviest device in the bottom of the rack.
- Do not leave open space above or below an installed chassis in your rack. To help prevent damage to chassis components, always install a filler panel to cover the open space and to help ensure proper air circulation.
- Do not extend more than one device out of the rack at the same time.
- Do not place any objects on the top of the rack-mounted devices.
- Connect all power cords to properly wired and grounded electrical outlets.
- Do not overload the power outlet when installing multiple devices in the rack.
- Remove the rack doors and side panels to provide easier access during installation.

Setting Up the Rail Kit

Use this task to remove the inner rail from the rail kit. To complete this task, you will need to disassemble part of each sliding rail.

Before you begin

If you have not already done so, familiarize yourself with the Rail Kit Hardware, on page 46.

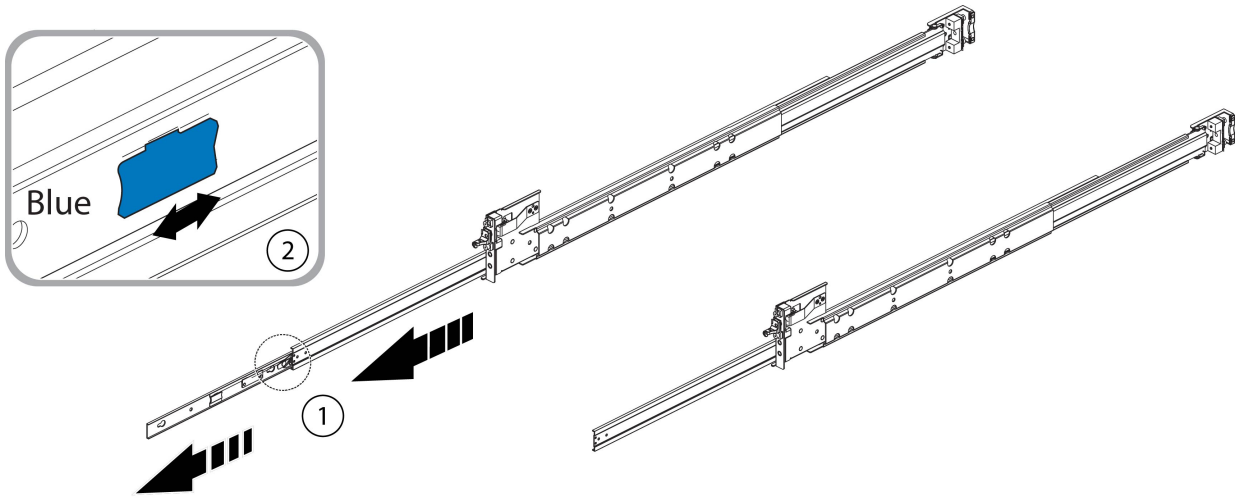
This task is toolless, so you can complete it with your hands.

Procedure

Step 1 Remove the inner rail.

a) Extend the rail.

b) When the rail no longer extends, slide the blue stopper tab to extend the inner rail completely out so that it disconnects from the rest of the sliding rail.



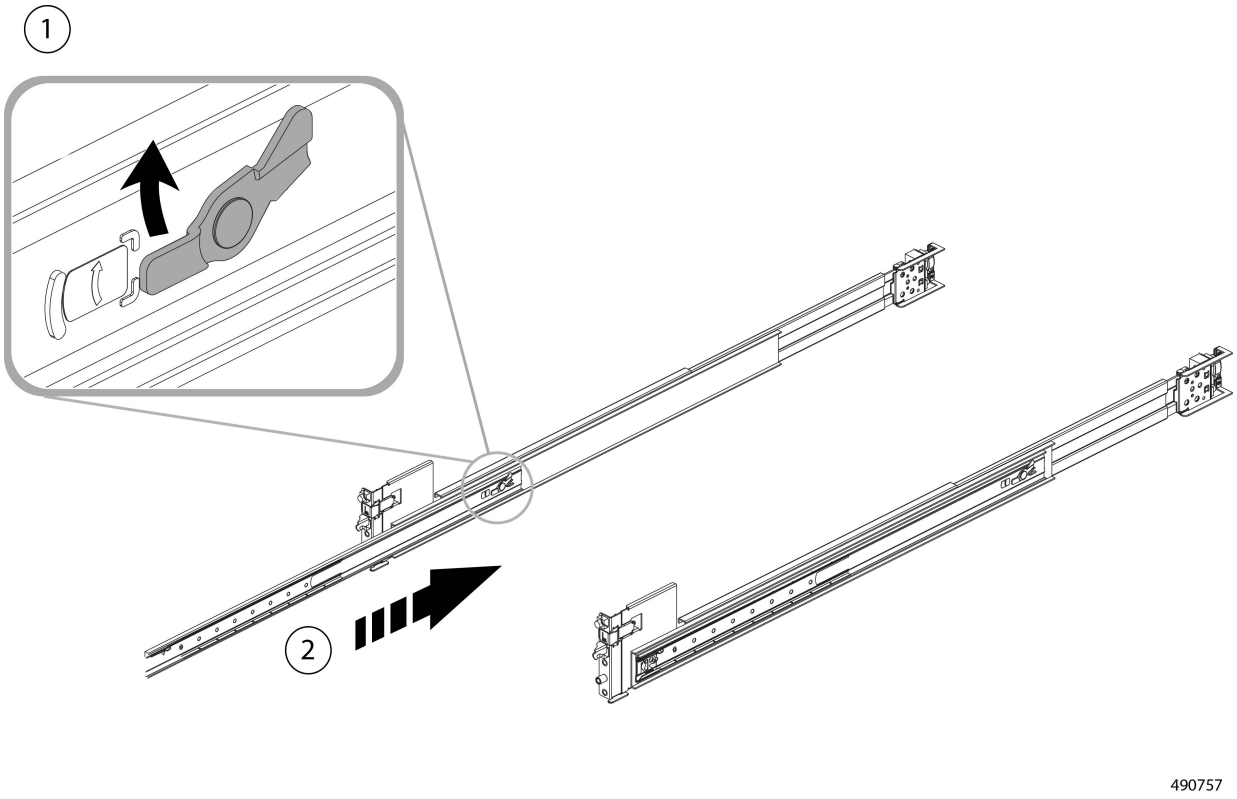
You should now have two pieces per sliding rail. The inner rail is one piece, and the handle rail and middle rail are the other. Set the inner rail aside. You will use it soon.

Step 2 Close the sliding rail.

a) Rotate the locking latch (latch) on the handle rail (1).

b) Slide the middle rail back into the handle rail (2).

When you finish this step, the rail should be completely reassembled.



What to do next

Install the inner rail onto the chassis.

Install the Inner Rail onto the Chassis

The inner rail attaches to each side of the chassis through two attachment points.

- A keyhole in the inner rail matches a catch pin on the side of the chassis
- Two M4 locking screws keep the rail in place and prevent the keyhole and pin from becoming disconnected.

Use this procedure to install the inner rail onto each side of the chassis.

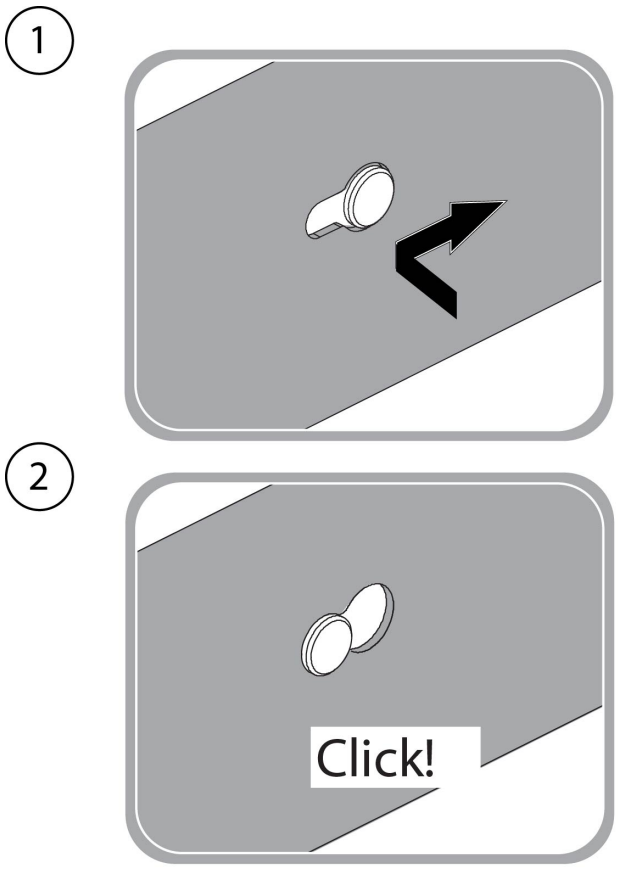
Before you begin

If you have not already separated the inner rail from the rest of the sliding rail, do so now. The inner rail must be detached to complete this task.

Gather an M4 Phillips torque screwdriver and two M4x4 Phillips screws. The screws will be used to lock the inner rail in place.

Procedure

Step 1 On each side of the chassis, insert the chassis catch pin into the keyhole on the inner rail.



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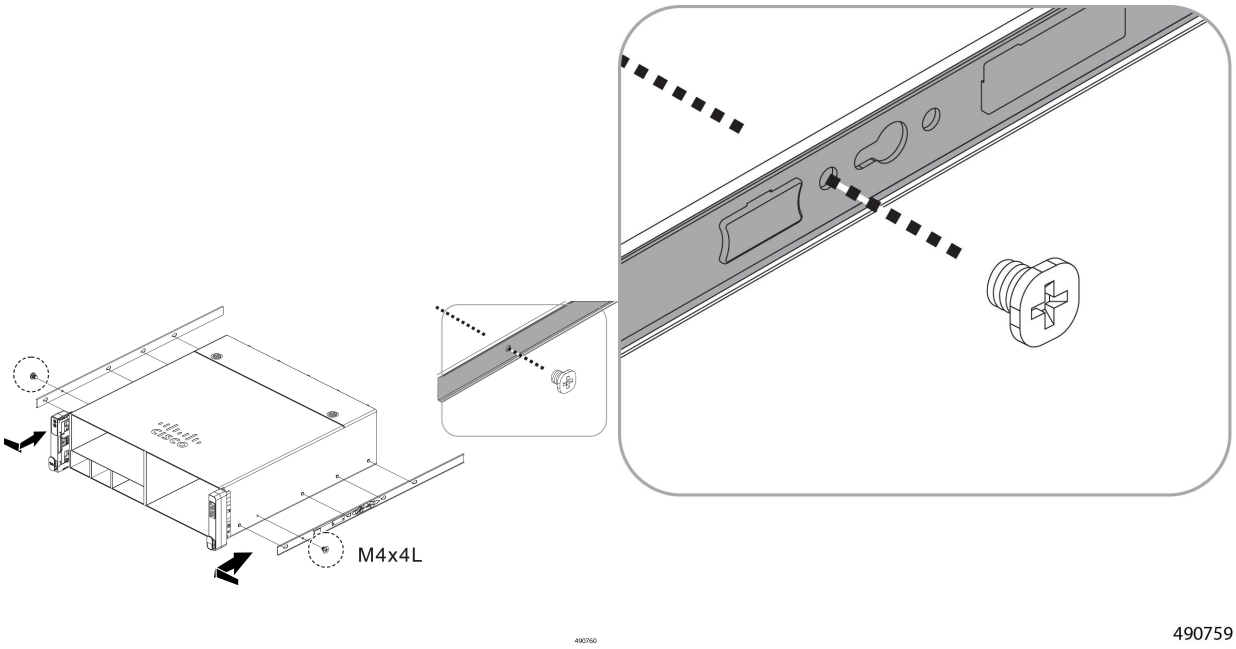
Attention
When the inner rail is properly seated onto the chassis, you will feel, and maybe hear, a click as the keyhole and pin securely meet.

Step 2 When the inner rails are attached to the chassis, use the screwdriver to install the M4 locking screws, one per side.

For these screws, torque specs are 1.4 to 1.7N-m



What to do next

Install the sliding rails into the equipment rack.

Installing the Rail Kit into the Rack

Each sliding rail extends to match the distance between the front and rear posts of the equipment rack. To install the sliding rails into the rack, you will properly size the rails, then use the locator pegs in the front and rear mounting brackets to install each rail. You can identify each end of the rail easily.

- The front end has locator pegs and a securing latch.
- The rear end has locator pegs inside an extendible clamp that attaches to both sides of the rack's rear post.

When installing the sliding rails, make sure that each end is parallel with the other. Do not install the rails so that one end is higher or lower than the other.

Caution When installing the rails, do not twist, bend, or rotate them. They must remain straight and the front and rear ends must stay in alignment to allow them to slide easily.

Before you begin

If you have not already attached the inner rails to each side of the chassis, do so now. The inner rails must be installed onto the chassis to complete this task.

This task is toolless. You can perform it with your hands.

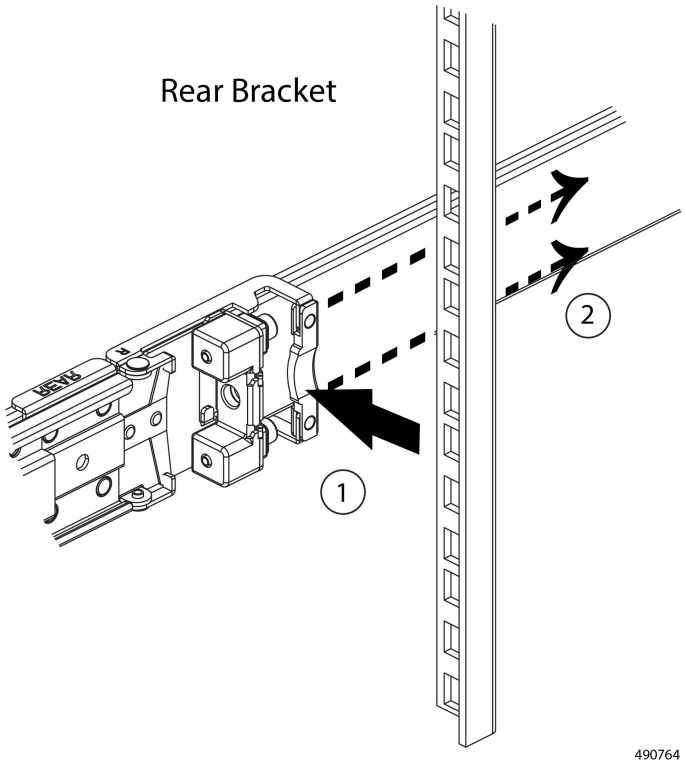
Procedure

Step 1 Extend a rail to the distance between the front and rear posts of the equipment rack.

Step 2 Attach the rear mounting bracket to the rear post.

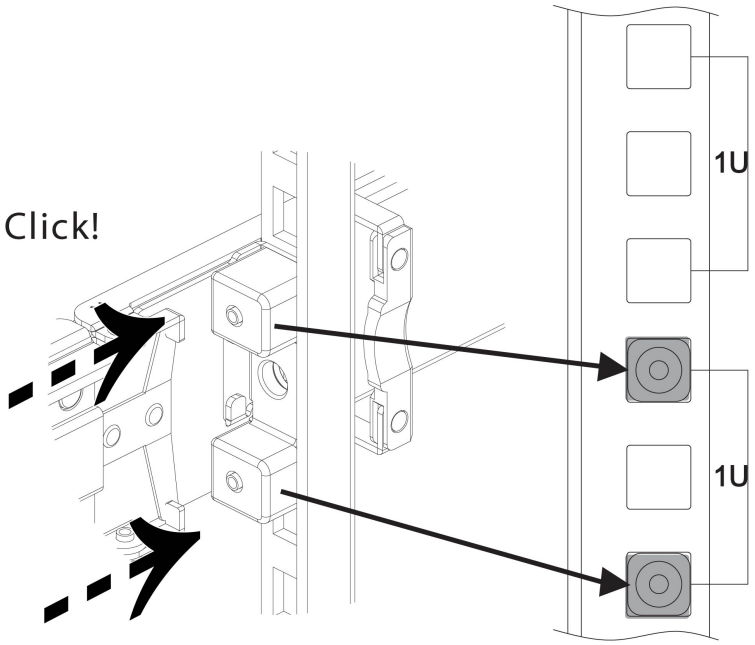
a) At the rear mounting bracket, press to release the clamp.

b) Extend the clamp far enough to accept the depth of the rear post of the equipment rack (2).



c) Squeeze the clamp closed until it is secured to the post. You should feel or hear a click when the clamp is properly attached.

Caution
The interior of the clamp has locator pegs, either round for a round-hole rack, or square pegs for a square-hole rack. Make sure that the circular pegs are securely fitted into a round-hole rack, or the square pegs are securely installed into a square-hole rack. If cage nuts are present, remove them so that the locator pegs can be correctly installed.



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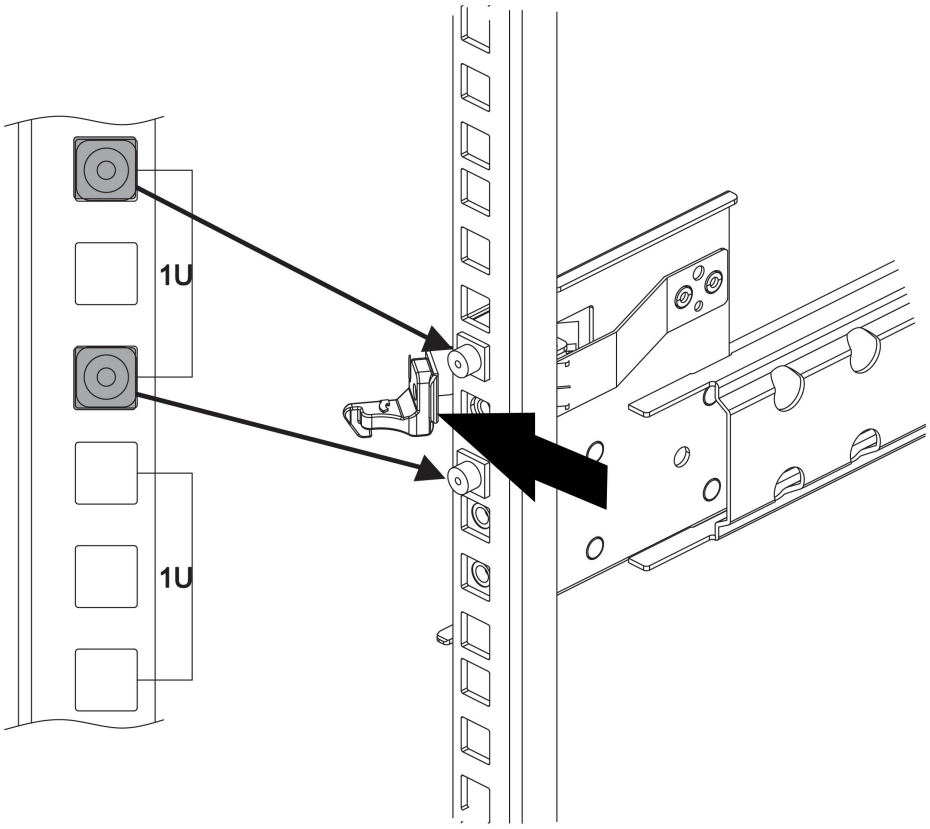
Step 3 Attach the front mounting bracket to the front post.

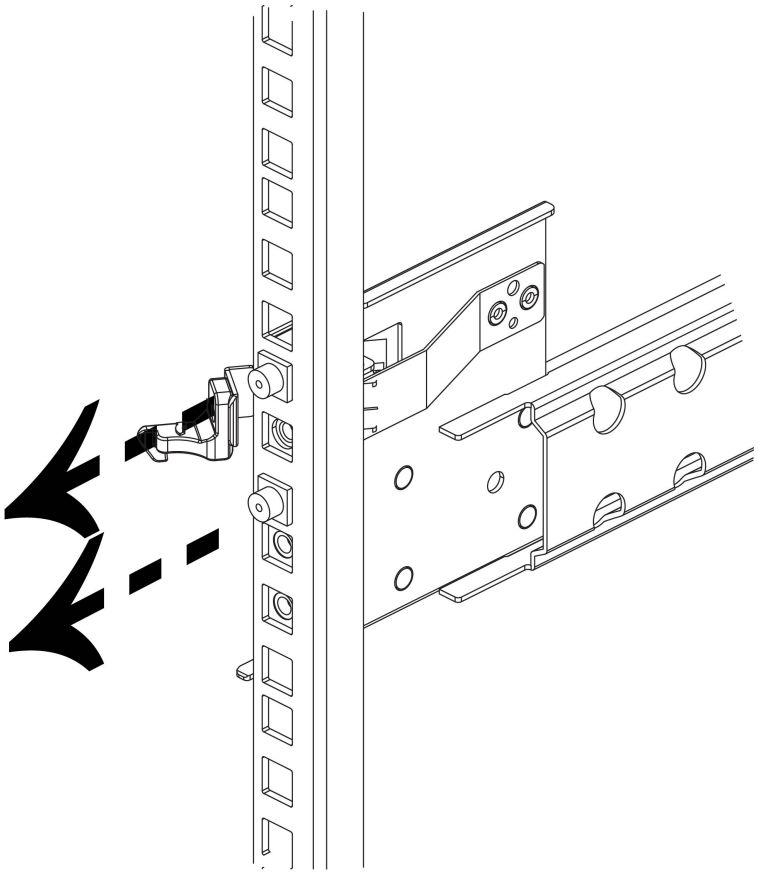
a) While extending the rail to meet the front post, push the securing latch outward so that it clears the front post.



b) Fully extend the rail so that the locator pegs insert into the equipment rack.

Caution
The locator pegs have 1 RU between them to allow for the securing latch to close into place on the rack. Make sure that the circular pegs are securely fitted into a round-hole rack, or the square pegs are securely installed into a square-hole rack. If cage nuts are present, remove them so that the locator pegs can be correctly installed.

Hold the securing latch outside of the post to prevent it obstructing the locator pegs inserting into the rack.



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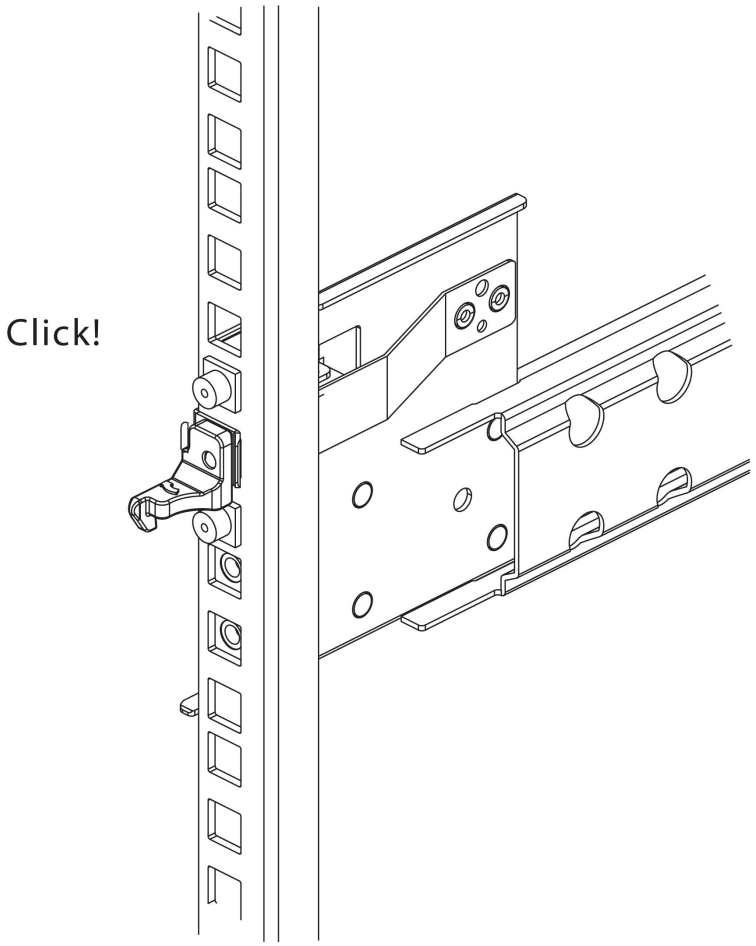
Step 4 After installing the rail by using the locator pegs, push the securing latch into place between the locator pegs.



Caution
Make sure that the securing latch is seated into the rack. When the securing latch is successfully attached to the front rack post, you should feel or hear it click into place.

Step 5 Repeat this procedure to install the other rail kit.

Step 6 Before installing the chassis onto the rails, inspect all mounting brackets and rails to verify that they are installed and attached correctly.

What to do next

Install the chassis into the rack.

Installing the Chassis into the Rack

To install the chassis, you will slide it into the rack, making sure that the inner rails on the chassis insert into the middle rails of the sliding rails. After correct installation, use the securing screws so that the chassis cannot accidentally slide out of the rack.

We recommend that you read this task at least once to familiarize yourself with it before attempting the actual installation.

Use the following task to install the chassis into the rack by using the sliding rails.

Before you begin

If you have not already installed the sliding rails into the chassis, do so now.

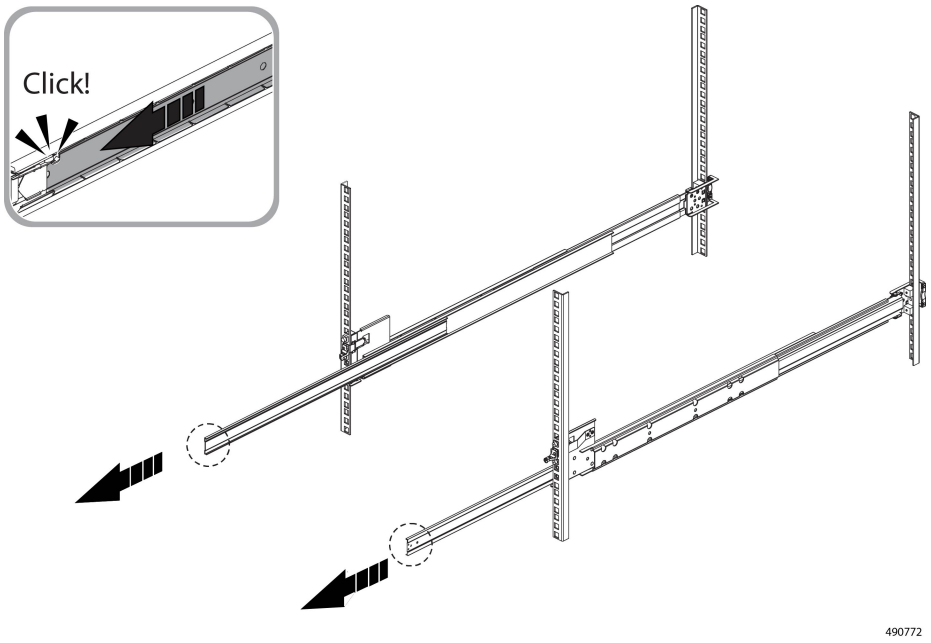
To complete this task, you will need a server lift, scissors jack, or some other mechanical assistance to support the chassis. When lifting, installing, or uninstalling the chassis, always use an empty chassis. Remove all compute devices, PSUs, and fans before attempting to move the chassis.

In addition to the server lift, gather a #10 Phillips screwdriver and two #10-32 Phillips screws.

Before installing the chassis, extend the rails a few times to ensure that they slide as expected into and out of the rack. The rails should slide easily. There should be no skipping or catching while extending or retracting the rails.

Procedure

Step 1 Extend the middle rail to the locked position and ensure that the ball bearing retainer is located at the front of the middle rail.

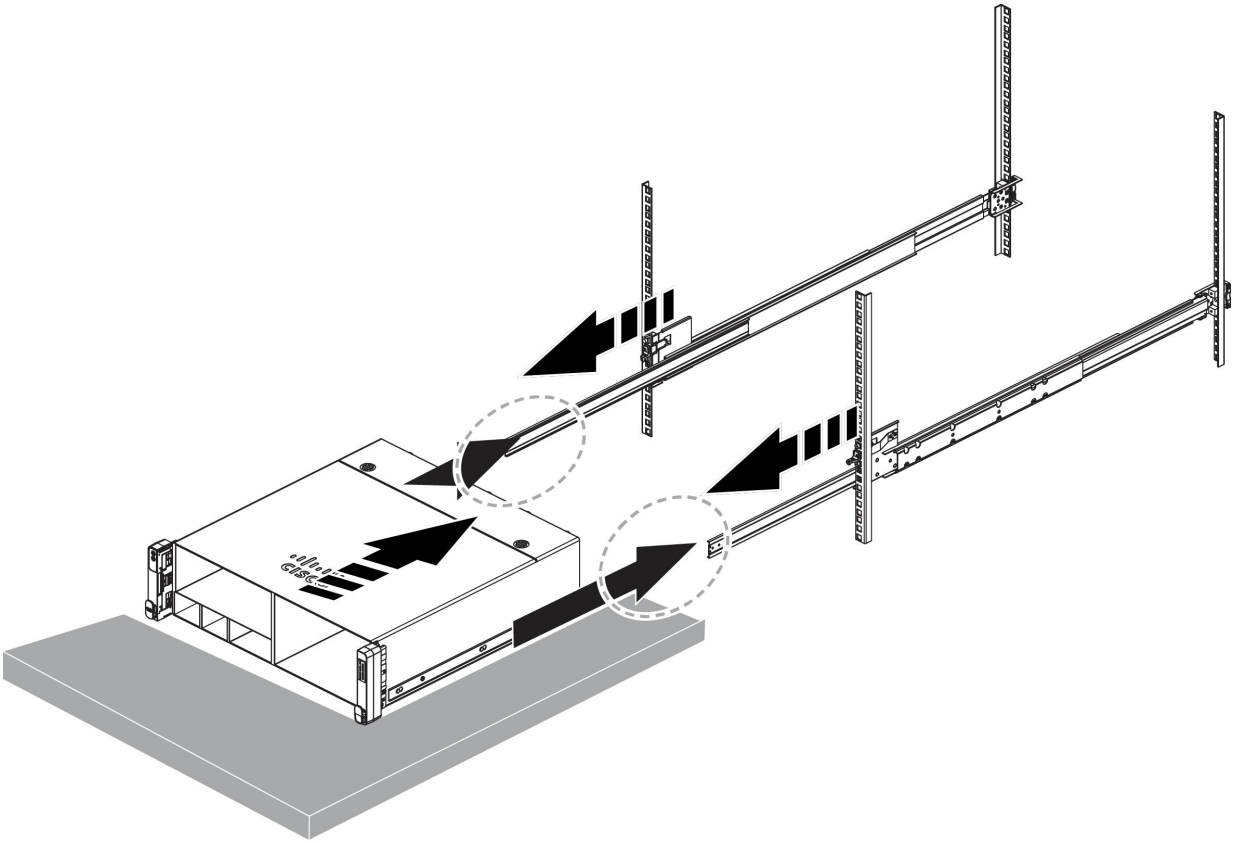


Step 2 Install the chassis onto the sliding rails.

a) Horizontally align the inner rails on the chassis with the sliding rails installed in the rack.
b) Keeping the chassis horizontal, move the server lift forward into the rack so that the rails on the chassis meet the sliding rails, but do not insert the chassis yet.

Caution
Make sure that you are using a server lift, scissors jack, or some other mechanical means to support the weight of the chassis while installing the chassis. Do not attempt to lift the chassis while installing it.

Caution
Before installing the chassis too far, verify that the inner rail and sliding rails are in alignment. If they are not, repeat this step until correct alignment is achieved.



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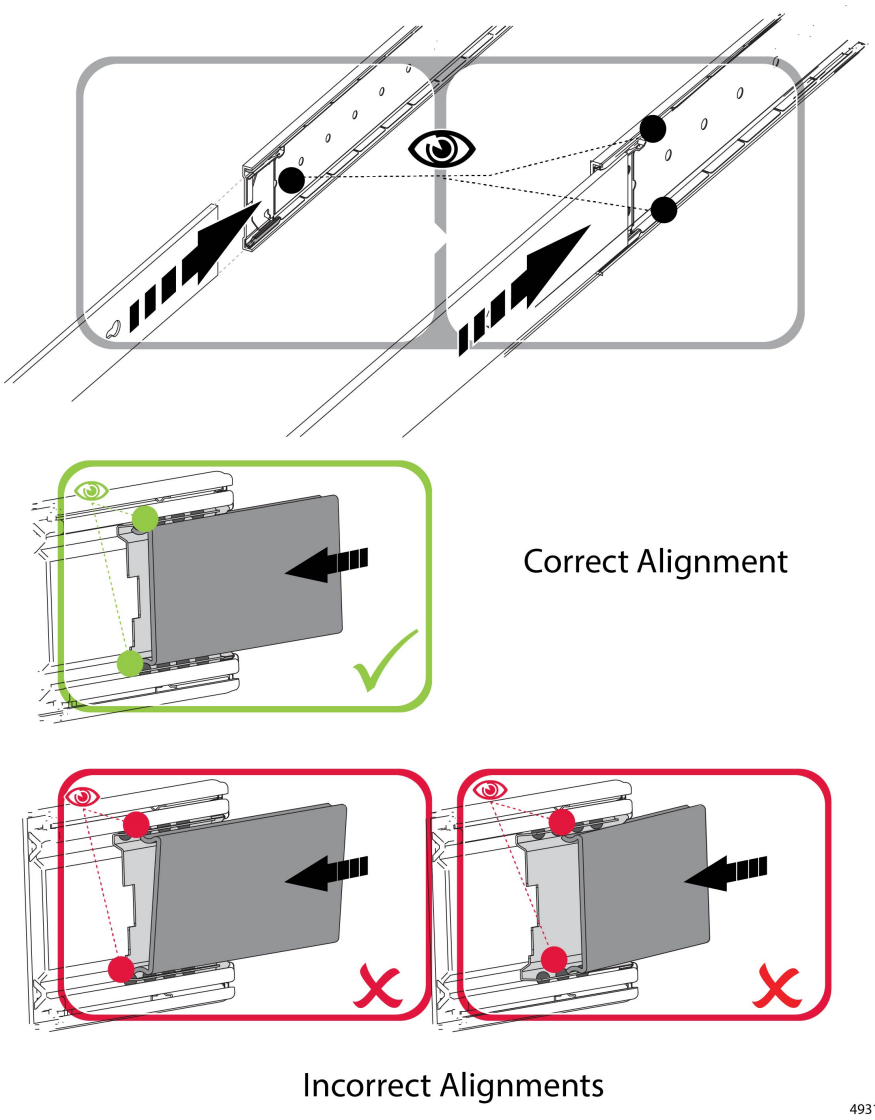
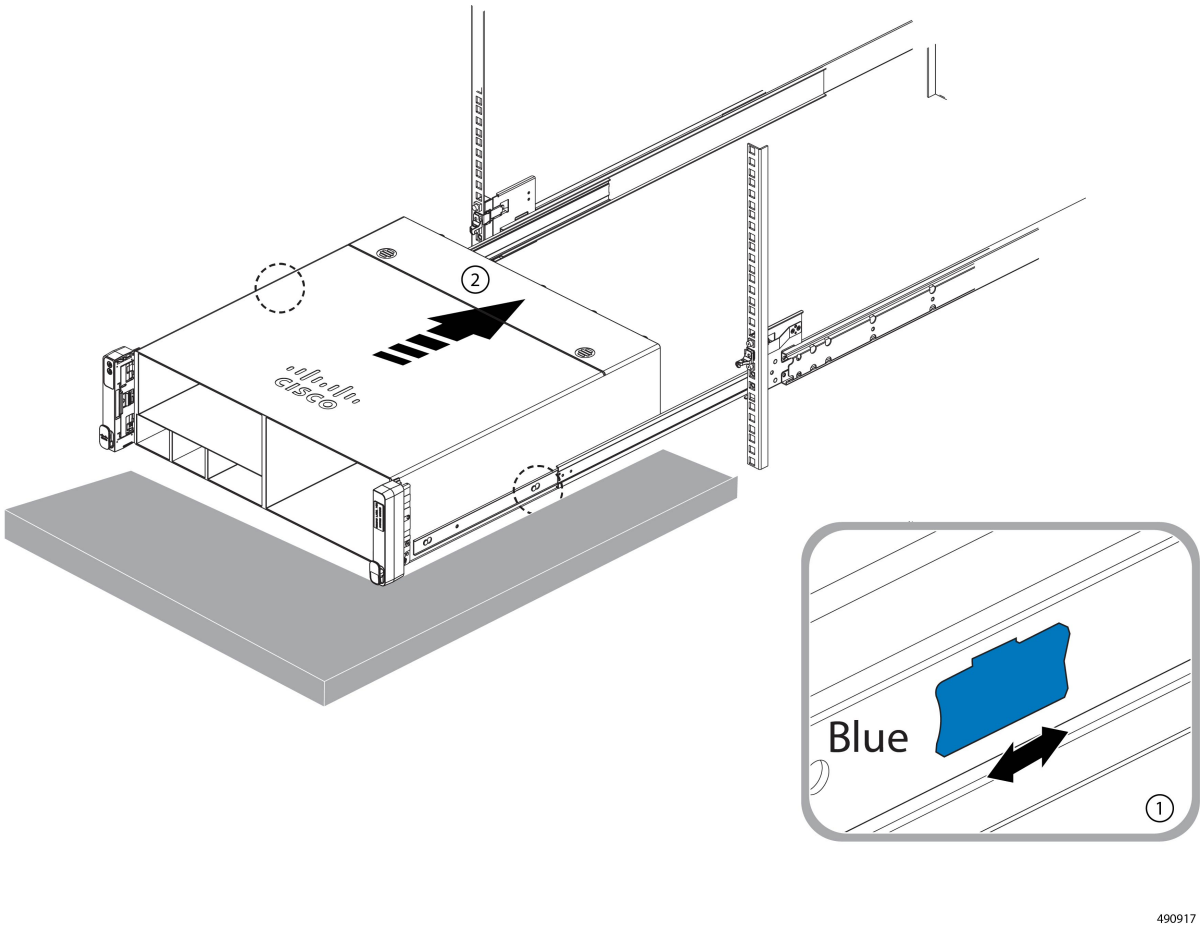
c) Visually inspect the top and bottom of the inner rails on the chassis, and where they meet the leading edges of the rails installed in the rack.

Note
It is critically important that the two pieces meet correctly! Make sure that the parts fit together correctly as shown in the following illustration. If the rails are not correctly aligned, or fit together incorrectly, you must remove the chassis and re-attempt to align the rails correctly.

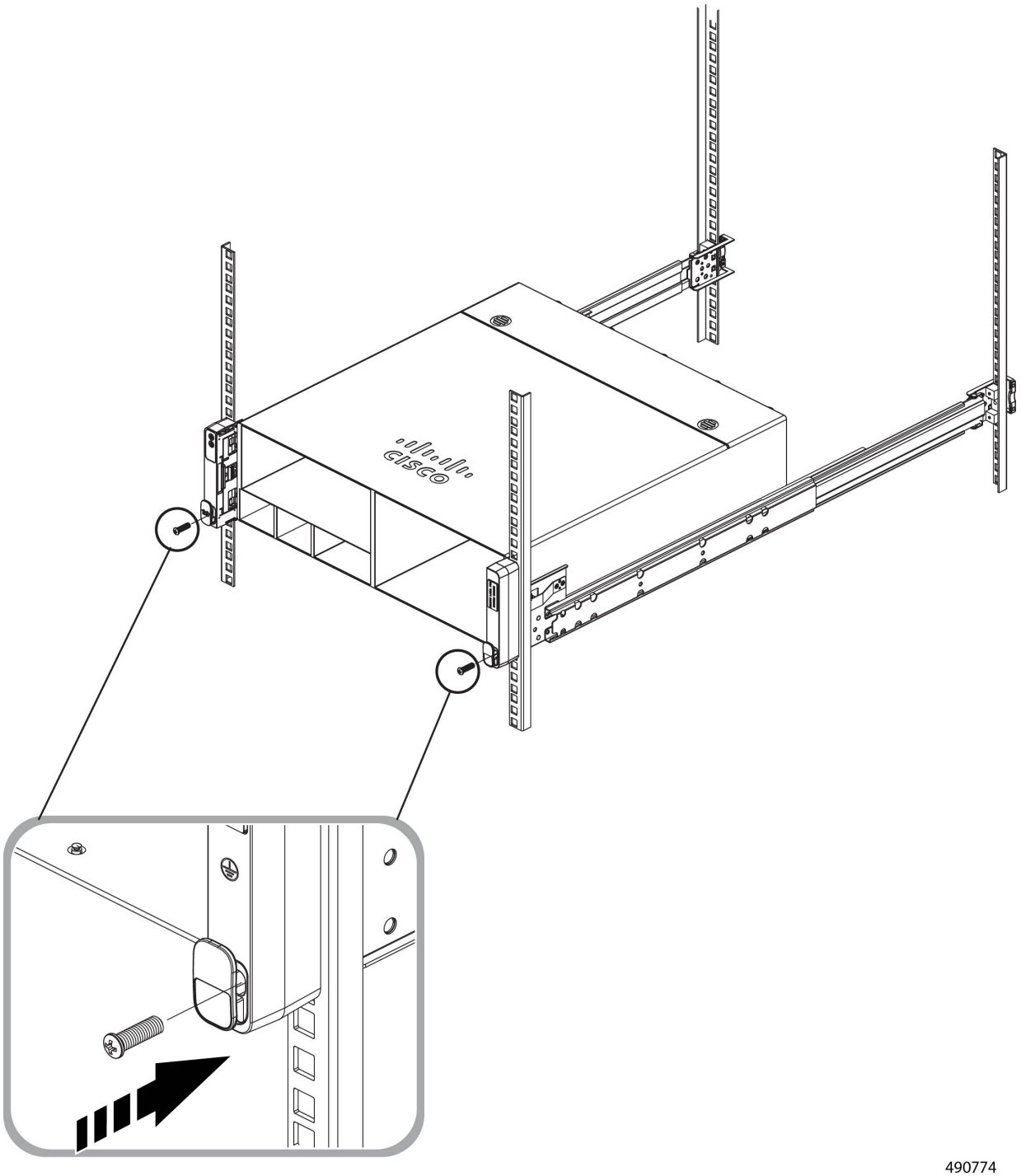


d) When the rails are properly aligned, continue to slowly insert the chassis until you reach the chassis stop feature.
e) When the chassis hits the chassis stop, slide the blue release tab on the inner rail to release the lock (1) then continue to slide the chassis into place (2).



Step 3 Using the #10 Phillips screwdriver, insert one #10 32-30L screw into each front mounting bracket to secure the chassis to the rack.

For these screws, torque specs are 2.0~2.4N-m.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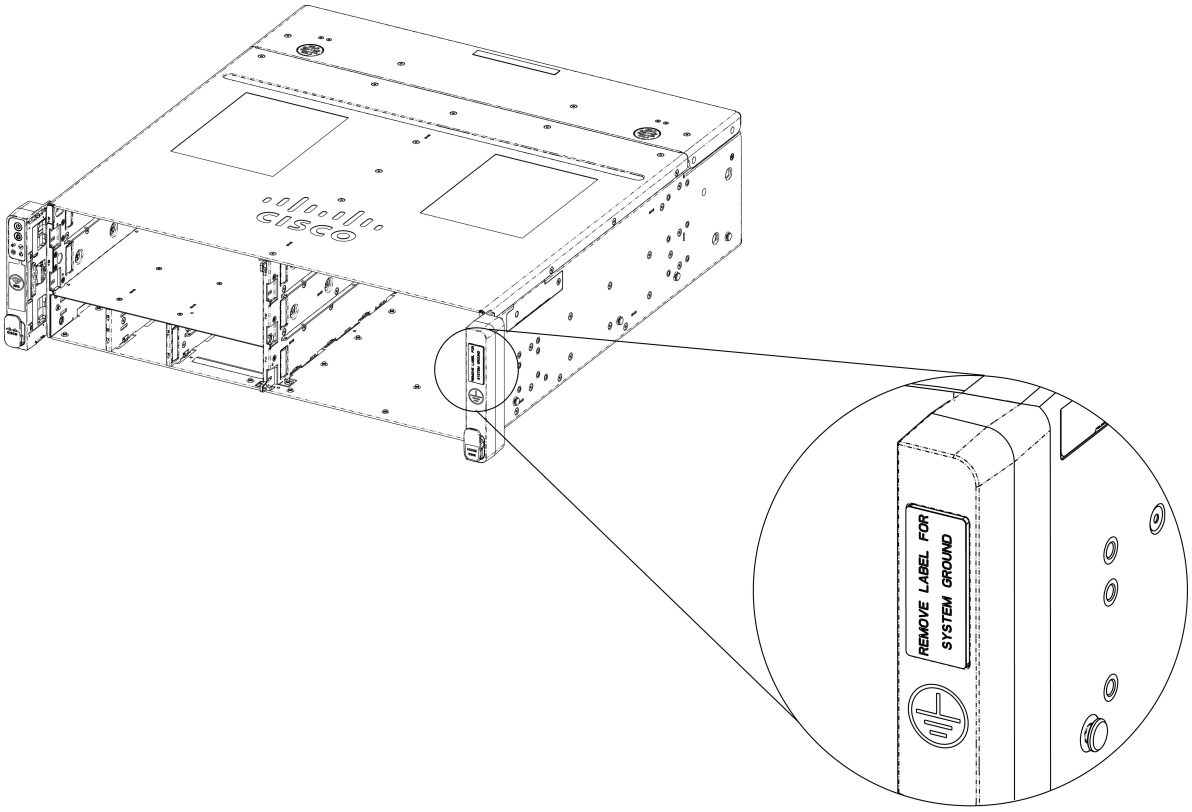
Connecting to Earth Ground

The Cisco UCS XE9305 Modular System ships with an accessory kit that contains the following parts to connect the chassis to facility earth ground.

- Grounding lug, 90° (one)
- M4x8 mm pan-head screws, (two)

The accessory kit does not include the grounding wire, which should already be available through the facility.

The front of the chassis contains an earth grounding pad for standard connection to the facility's earth ground.



The grounding pad is shipped with a protective label to prevent oils or other contaminants from affecting the contact surface. The grounding pad label must be removed before attaching to facility earth ground.

To connect to earth ground, you will assemble the grounding lug and attach the grounding lug to the grounding pad on the chassis. See the following topics.

- Earth Ground Considerations, on page 64
- Attaching the Chassis to Facility Earth Ground, on page 66

Danger You must follow all safety protocols for working with electrical circuits. We suggest de-energizing the circuit for the chassis while connecting the chassis to earth ground.

The protective earthing connections shall make earlier and break later than the supply connections.

Earth Ground Considerations

Earth Ground Compliance

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

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

Warning **Statement 366—**This equipment must be externally grounded using a customer-supplied grounding cable before power is applied. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 366

Grounding Lug

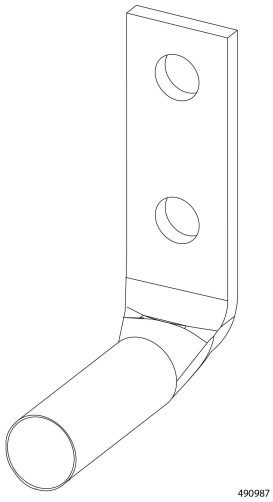
Connecting the chassis to earth ground is completed by assembling the grounding cable and grounding lug, then screwing the grounding lug and grounding cable to the grounding pad on the chassis.

Caution The grounding lug is provided in the accessory kit. The default grounding lug is manufactured at a 90° angle. If your installation requires a grounding lung with a different angle, **do not bend the grounding lug, or you risk damaging it.**

If needed, additional grounding lugs, or lugs with different angles are available through third-party retailers, such as Panduit. **Always make sure that any grounding lug or ground cable obtained through a third-party vendor is physically and electrically appropriate for your installation.**

Note The following information is for standard AC power installations in North America. Your location might require different specifications. Make sure that you are using the correct grounding lug and ground cable for your location.

The grounding lug must be a two-stud, copper barrel lug like the example shown below.



Note The positive and negative wires can be installed pointing either up or down.

Panduit LCD4-14A-L connectors (or equivalent) may be used for the supply and return wires, and Panduit LCD4-14A or equivalent connectors may be used for the 90-degree grounding lug wire. Both connections have double lugs with .25-inch holes measuring .625 inches from center to center.

Grounding Pad

The grounding pad receives the assembled facility grounding cable and provides the contact surface for the grounding lug.

The grounding pad has a protective label to prevent to protect the contact surface. Leave the label attached to the chassis until you are ready to attach the grounding lug.

Caution When needed, remove the label to expose the grounding pad. Use only your fingers to remove the label. Do not use a screwdriver or any other tools to remove the label or your risk scratching or damaging the contact surface.

Note The ground pad's protective label is attached when the chassis is shipped. The label cannot be reattached. After you remove the label, you can dispose of it.

If you move the chassis or disconnect the grounding cable, make sure to keep the grounding pad clean and undamaged. If the grounding pad appears dirty, **do not use solvents or cleaners on it.**

Caution When attaching the grounding cable to the grounding pad, tighten the screws to 11 to 15 in-lb (1.24 to 1.69 N-m) of torque. Do not over tighten the screws or you risk damaging or stripping them.

Attaching the Chassis to Facility Earth Ground

Attaching the chassis to facility ground consists of connecting the facility grounding cable to the supplied grounding lug then attaching the assembled cable to the chassis.

Before you begin

If you have not already done so, review the Earth Ground Considerations, on page 64 before performing this procedure.

Gather the following tools:

- Wire stripping tool
- Wire crimping tool
- A torque driver or adjustable screwdriver with a #2 Phillips bit.

Procedure

Step 1 Locate the chassis grounding pad, which is indicated by the industry-standard earth ground symbol on the front of the chassis.

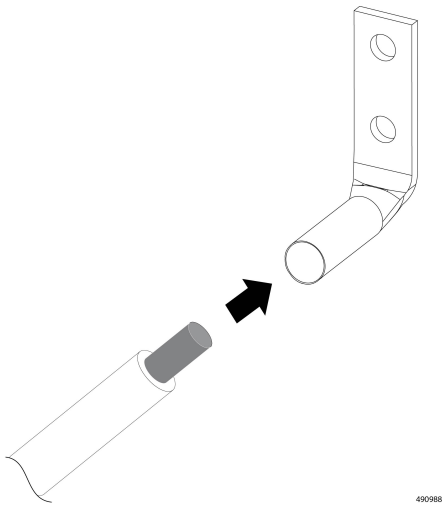
Note
Do not remove the grounding pad's protective label yet.

Step 2 Assemble the grounding cable.

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

b) Insert the stripped end of the grounding cable into the open end of the grounding lug.

We recommend 6-AWG wire for the U.S. installations. Make sure to use the proper grounding lug and grounding cable as appropriate for your country or region.



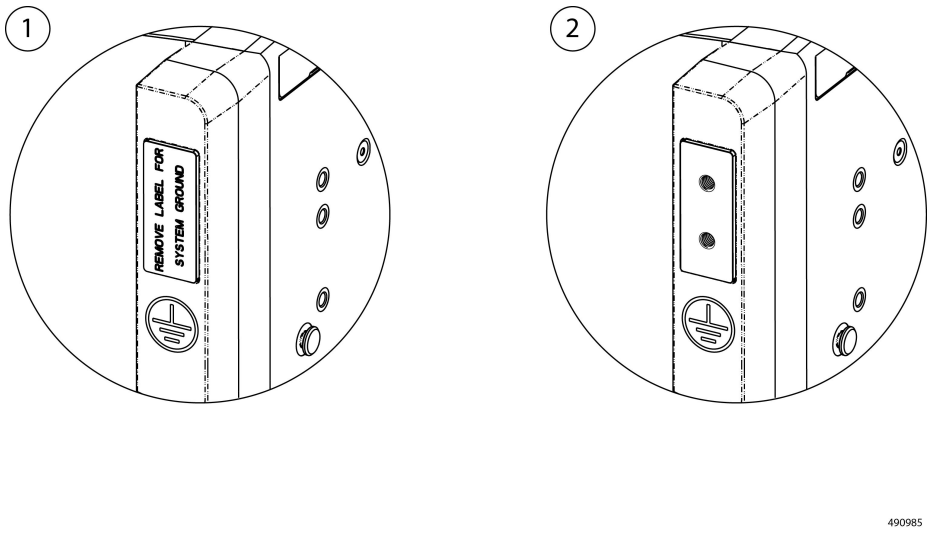
c) Use a crimping tool to secure the grounding cable in the grounding lug.

d) Prepare the other end of the grounding cable (not provided by Cisco) and connect it to an appropriate ground point at the facility.

Step 3 Attach the grounding cable.

a) Using your fingers, peel off the grounding pad's protective label.

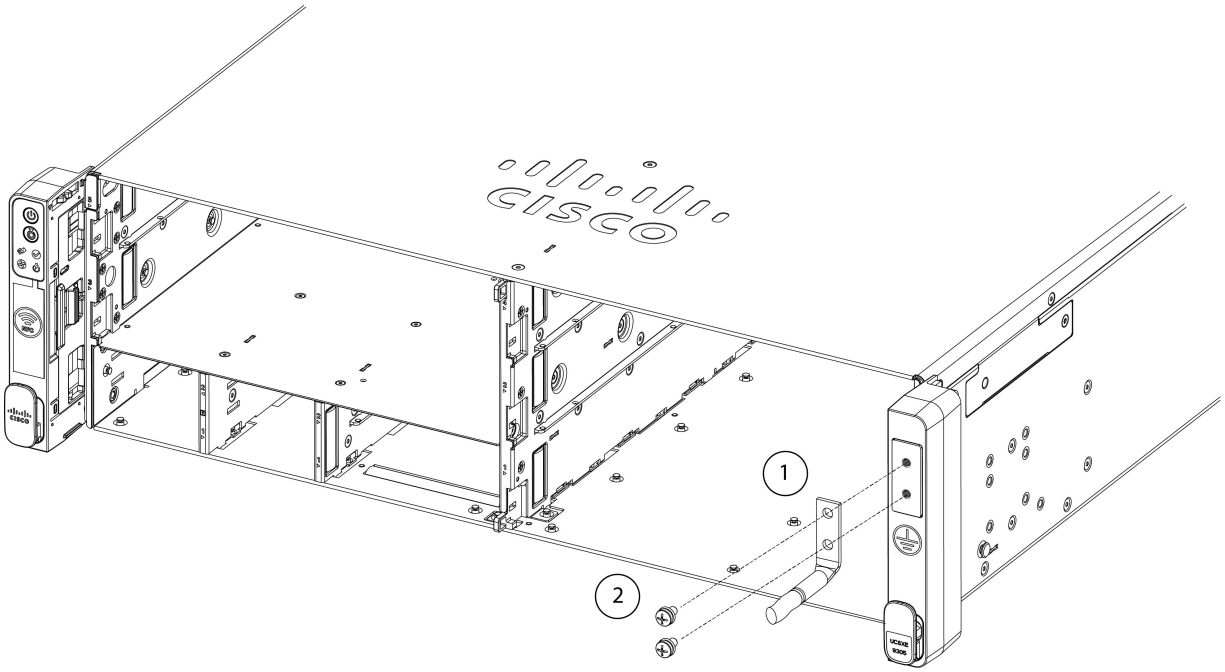
Caution
Do not use a screwdriver, scissors, or any tool to remove the label or you risk damaging the grounding pad.



b) Position the grounding lug so that the terminal holes in the grounding lug align with the terminal holes in the grounding pad.

c) Using a #2 Phillips screwdriver or torque driver, insert and tighten the two M4 x 8mm pan-head screws to secure the grounding cable to the chassis.

Caution
Tighten the screws to 11 to 15 in-lb (1.24 to 1.69 N-m) of torque. Do not over tighten the screws or you can damage or strip them.



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1	Assembled grounding cable with lug positioned over chassis grounding pad	**2**	Screw down grounding cable to secure it to the chassis grounding pad

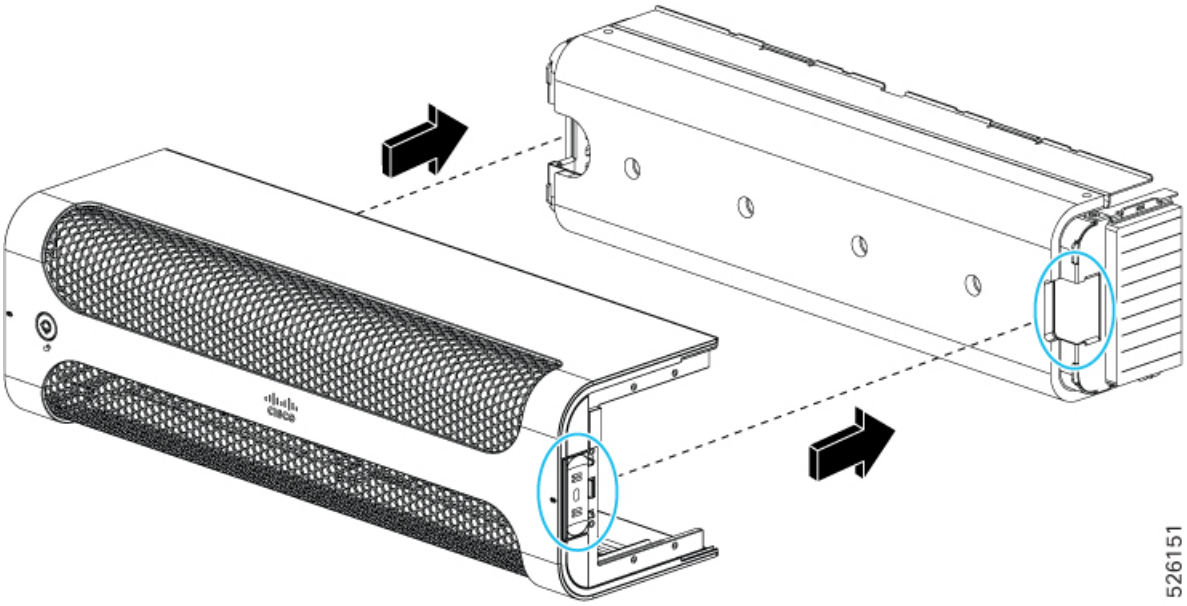
Installing the Air Filter Assembly

The air filter assembly installs into the security bezel by two captive thumbscrews.

Procedure

Step 1 Align the vertical edges of the air filter with the vertical edges of the security bezel.

Step 2 Fit the two parts together.



Step 3 Tighten the two thumbscrews on the air filter to secure it to the bezel.

Step 4 Re-install the bezel onto the chassis and, optionally, use the key to lock the bezel to the chassis.

See Installing the Security Bezel, on page 69.

Installing the Security Bezel

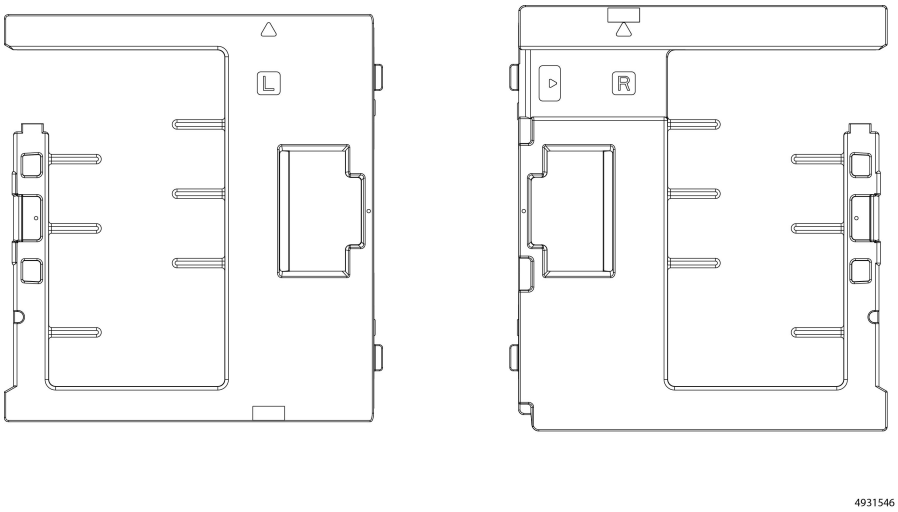
The chassis has a locking security bezel that installs onto the front panel. The bezel attaches to the front panel by a pressure fit. Through the use of the associated keys, the bezel can be locked to secure the Cisco UCS X9305 chassis, its PSUs, and cable connections.

As part of the security bezel, the cable management assemblies (CMAs) can be installed for efficient cable routing. The CMAs, both left and right sides, attach to the mounting brackets (latches) on the chassis and the security bezel so that cable connections to the chassis are also secured within the bezel. The following procedure assumes that the CMAs will be attached.

Installing the bezel is a tool-less procedure. To install the bezel, use this task.

Before you begin

The security bezel's latches accept two cable management assemblies (CMAs), one per side. The CMAs are specific to each side, so they are marked with **L** for the left side CMA and **R** for the right-side CMA.



Before beginning this procedure, make sure that you have identified each CMA. During this procedure, you must install the correct CMA on the correct side.

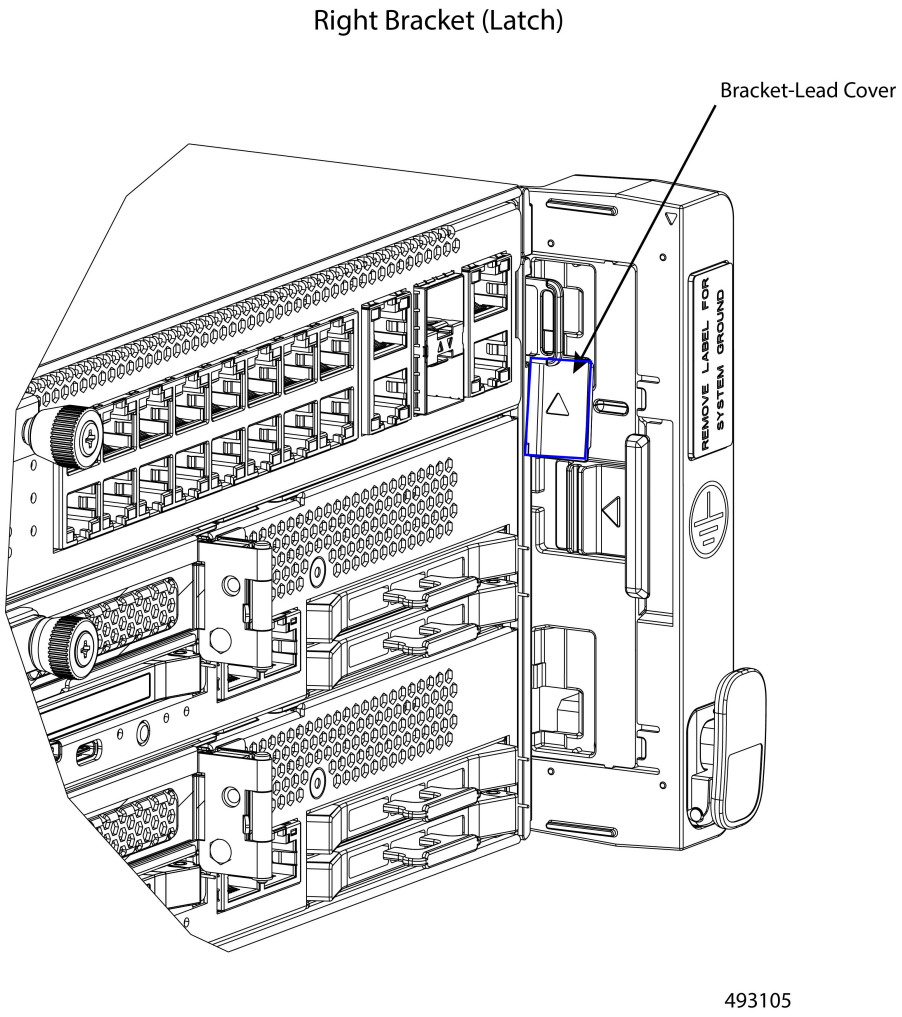
Each CMA has horizontal pegs that help to vertically organize cables into bottom, middle, and top tiers.

Procedure

Step 1 Locate the rubber cover on the bracket-lead.

Note
If not removed, this cover will obstruct the proper installation of the CMA.

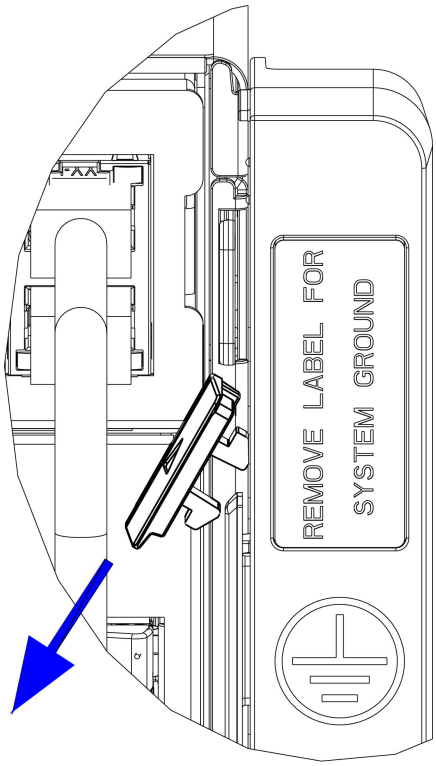
The bracket-lead to which the CMA connects is located on the interior of the bracket (latch).



Step 2 On the right mounting bracket (latch), remove the rubber cover from the bracket-lead.

This rubber cover is on the right mounting bracket (latch) only.

Caution
This rubber cover must be removed to avoid obstruction while attempting to install the CMA onto the chassis.



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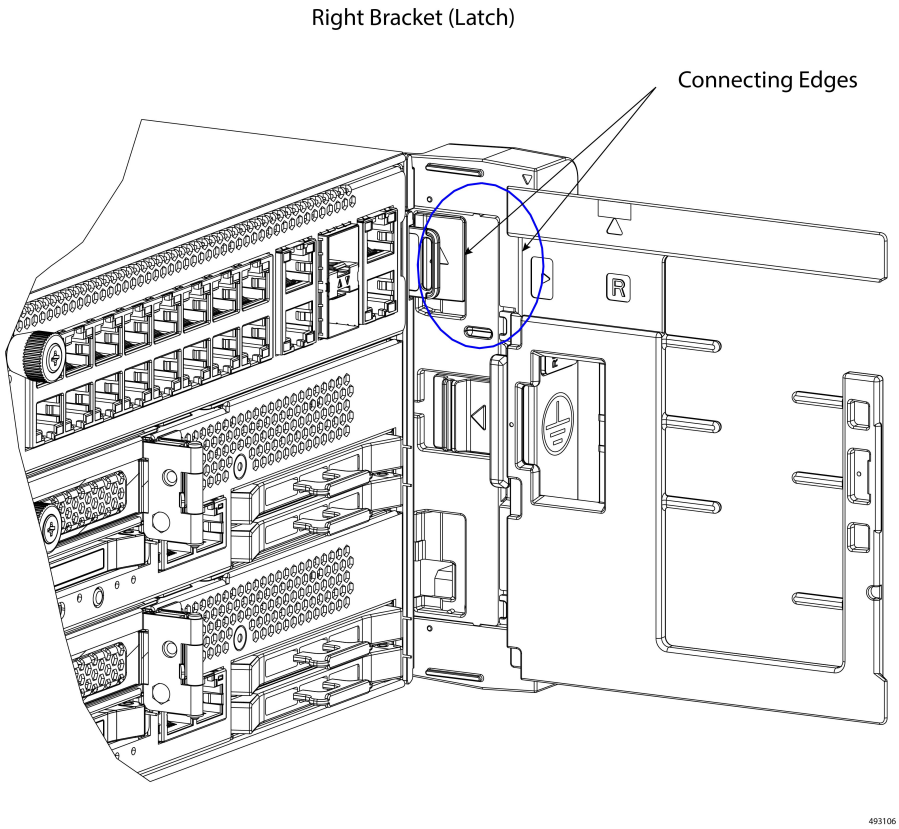
Although you have not installed the CMA yet, when the cover is removed, the connecting parts on the right bracket (latch) can meet the connecting parts on the CMA when the rubber cover is removed.



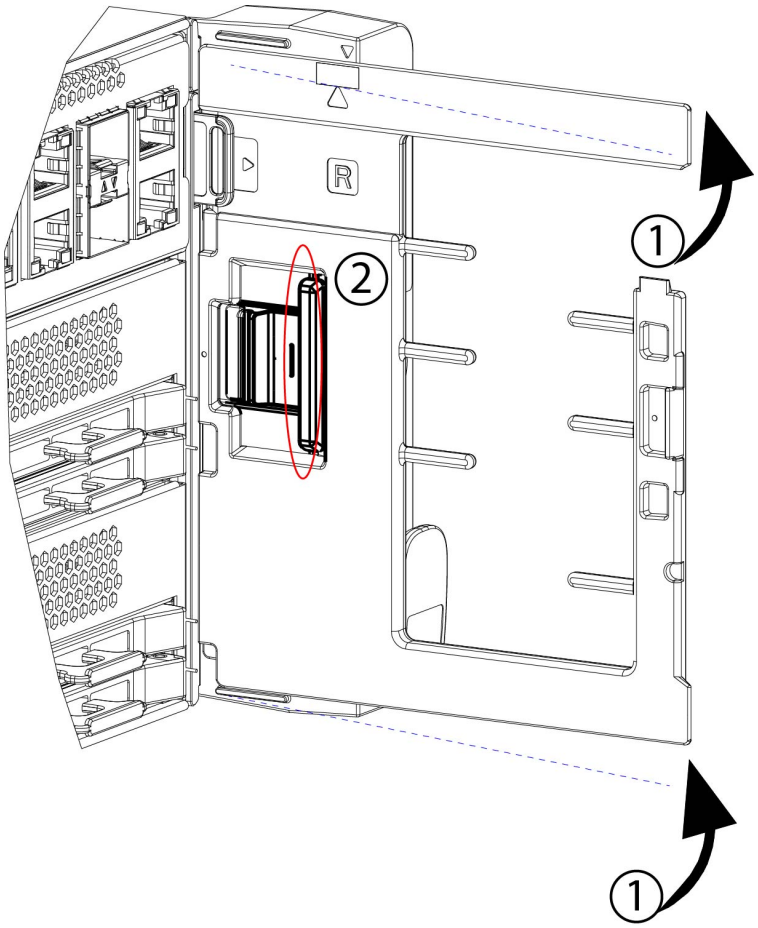
Step 3 Install the CMAs on both sides of the chassis.

a) Verify that you have a left-side CMA and a right-side CMA, and set each by the correct side of the chassis to reduce the chance of installing the CMAs on the wrong sides of the chassis.

b) Holding each CMA at a slight upward angle, connect it to the chassis by seating the connecting edge on the mounting bracket into the mating part on the CMA, which is the interior latch on the CMA's inside wall.

Do not attempt to install the CMAs directly inline with the chassis. Angling the CMA slightly upward is helpful to connect it to the chassis.

Important
When the bracket lead catches the latch on the interior of the CMA, you should feel and hear the parts click when they are successfully connected.



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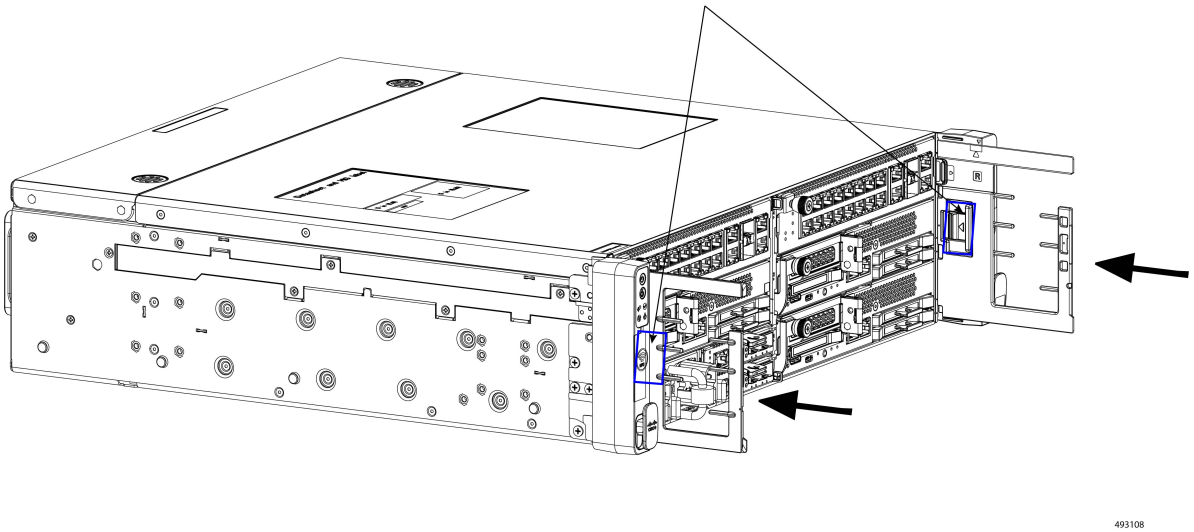


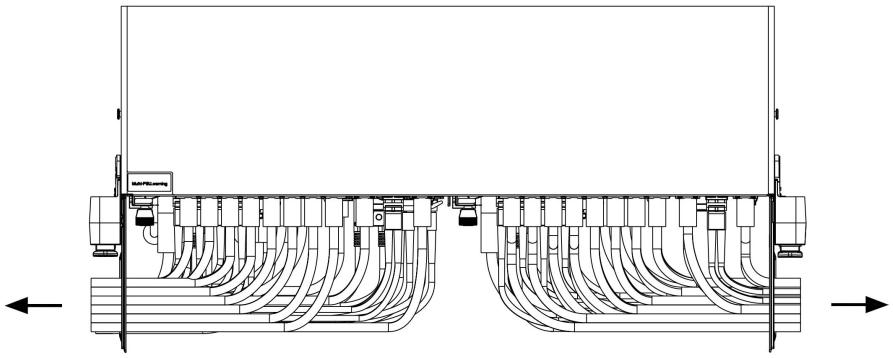
c) When the CMAs are correctly installed, verify that they do not disconnect from the chassis by gently pulling each straight towards you to.

If a CMA disconnects from the chassis, it was not correctly seated. Repeat this step until both CMAs are securely attached to the chassis.

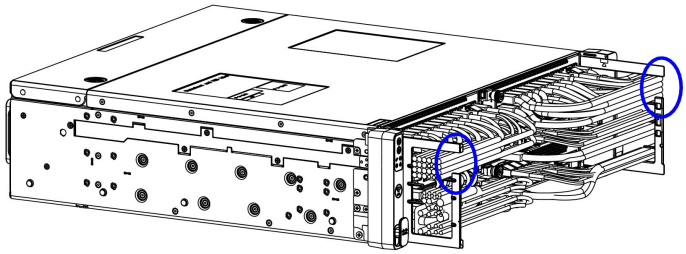
Step 4 Attach and organize cables.

a) Divide the cable run into a left and right half and connect the left cables to the left side of the chassis and the right cables to the right side of the chassis.

Cable Routing (Top View)



Cable Routing (Side View)



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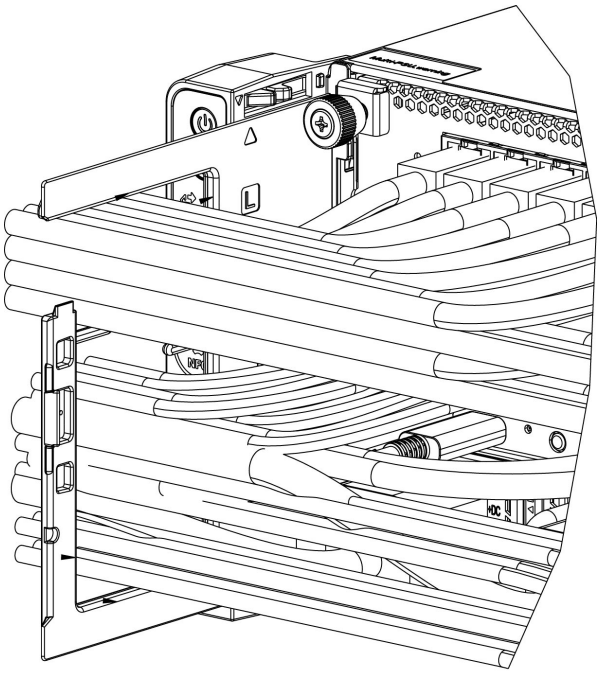
b) Route the left cables sequentially, from bottom to top, through the hook on the left CMA.

When correctly organized, the cables will pass through each horizontal tier of the CMA.

- The bottom row of cables is routed through the bottom tier of the CMA.
- The middle group of cables is routed through the middle tier of the CMA.
- The top row of cables is routed through the top tier of the CMA.



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c) Route the right cables sequentially, from bottom to top, through the hook on the right CMA.

Make sure to gather the same cables and route them through the same tier on the right CMA as on the left CMA.

d) Verify that all the cables in the left cable run pass through the left CMA, and all cables in the right cable run pass through the right CMA.

If any cables are hanging (not routed through the appropriate CMA), they can obstruct installing the security bezel.

Step 5 Install the security bezel.

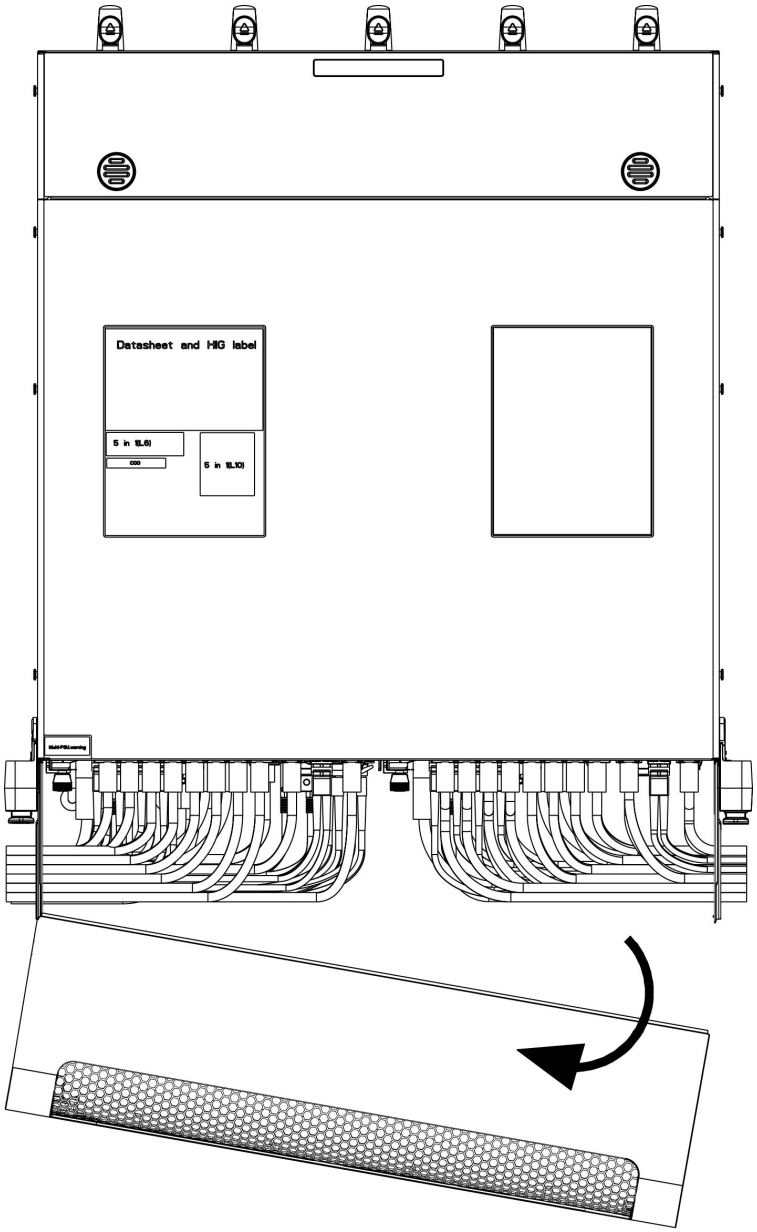
a) Before attempting to install the bezel, check the overall size of the cable runs.

Caution
The vertical space inside the bezel is limited. Inspect the height of the left and right cable connections to the chassis. Ensure cables and their routing does not exceed the upper and lower edges of the brackets! If you attempt to install the bezel onto a cable run that is larger than the available space, cables can possibly get pinched, crimped, or disconnected.

b) Inspect the top and bottom rails of the CMA as well as the leading edge of the security bezel.

Notice that the CMA's rails have rounded grooves, and the bezel has round rails. These parts will meet to ensure that the bezel is correctly aligned and seated on the CMA.

c) Angle the left side of the bezel so that its rounded rails meet the grooves on the left side of the CMA.



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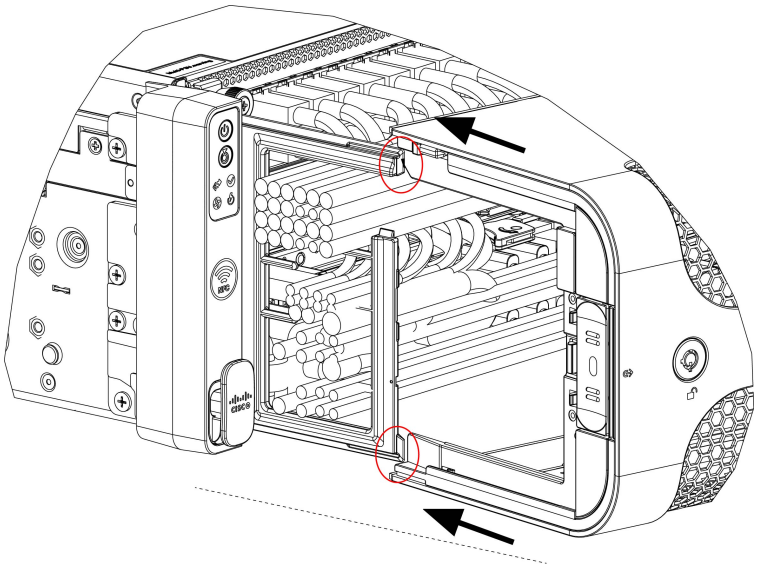
d) Holding the bezel level, slowly slide it onto the CMA no more than one inch, while making sure that the bezel's rails seat into the grooves on both CMAs.

Caution
Before proceeding, make sure that both the top and bottom are seated correctly.



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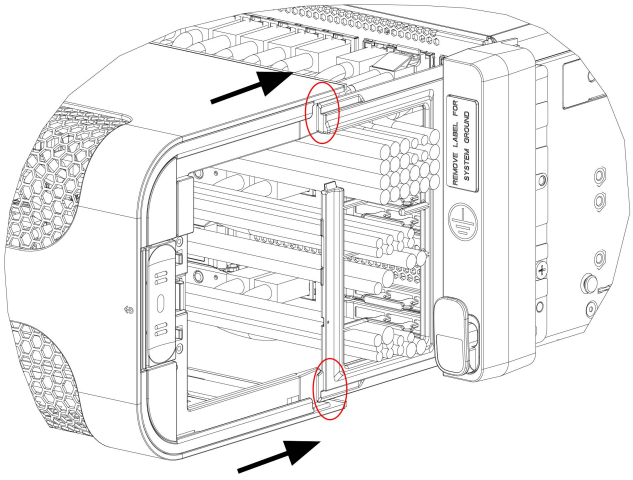
e) When the left side of the bezel is partially installed, align the right side of the bezel with the CMA.

The right side of the bezel and the right CMA have the same alignment features, round rails on the bezel and rounded grooves on the CMA.



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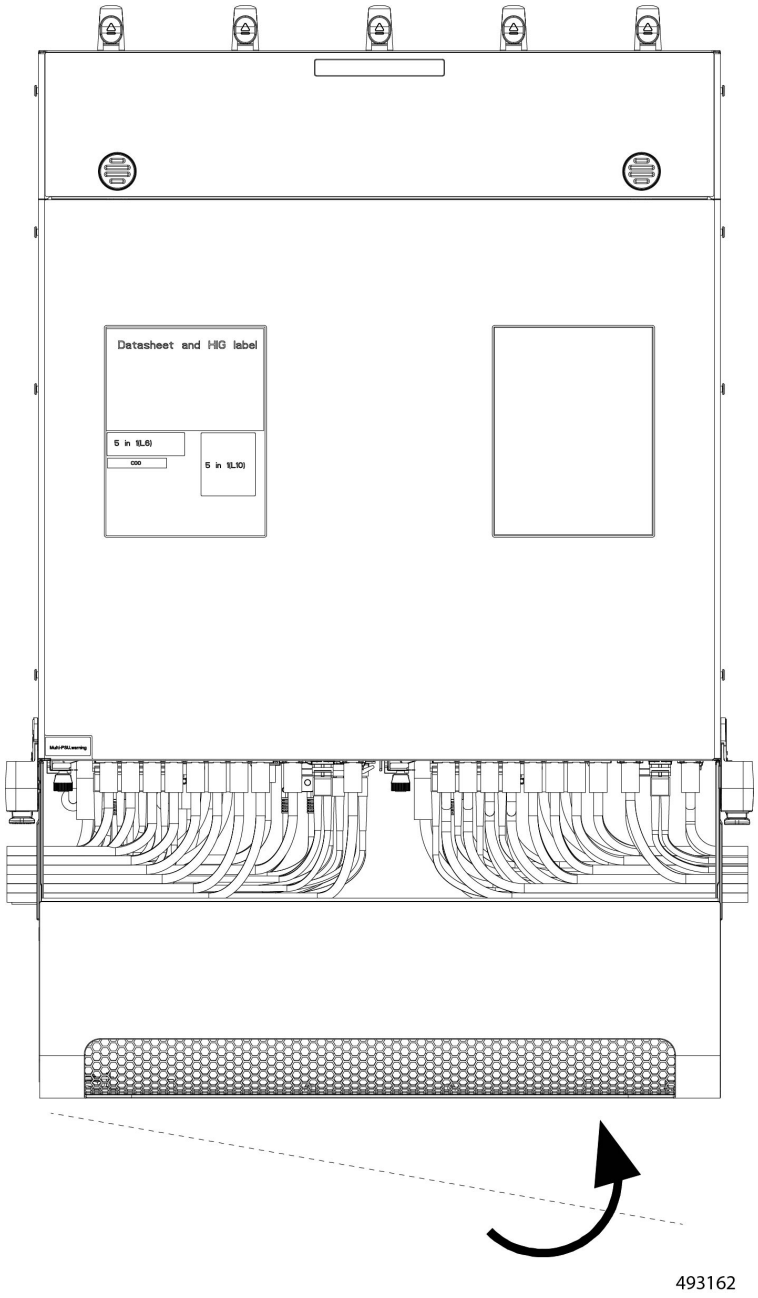
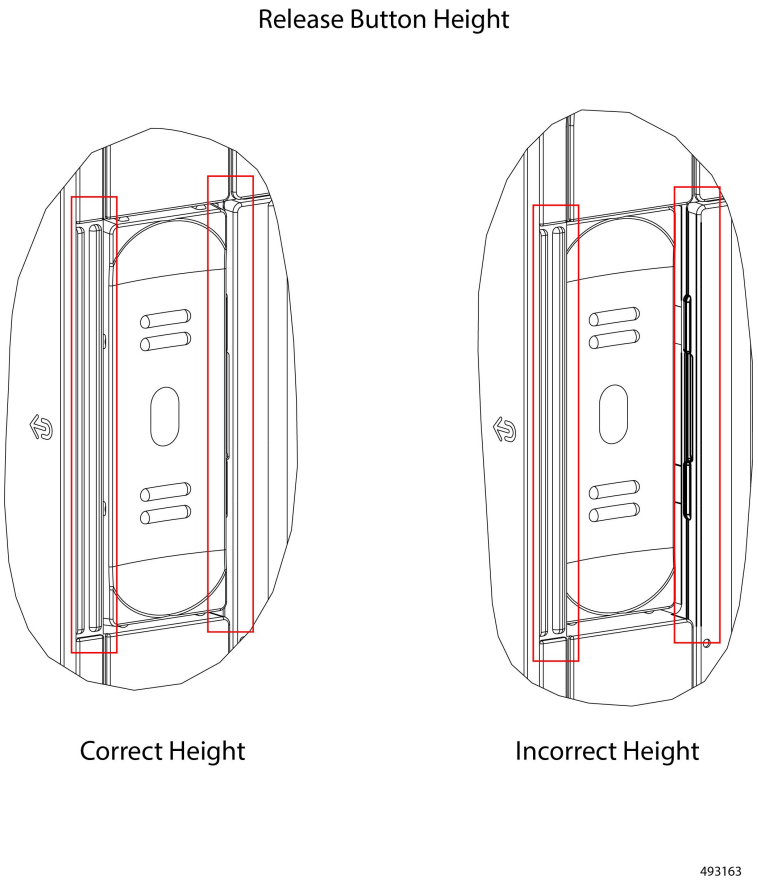
f) When both sides of the bezel and CMA are correctly seated, completely install the bezel until it sits flush against the chassis.



Step 6 Inspect the release buttons, which pop up when the bezel is correctly installed.

When it is correctly installed, the bezel sits flush against the front of the chassis, and the release buttons sit flush against their frame on **each side**. If one or both of the bezel's release buttons are recessed (not flush with the frame), the bezel is not correctly installed. After visually inspecting the buttons, you might find it helpful to trace your finger around the edge of the buttons to feel if one, or both, of them is flush or recessed.

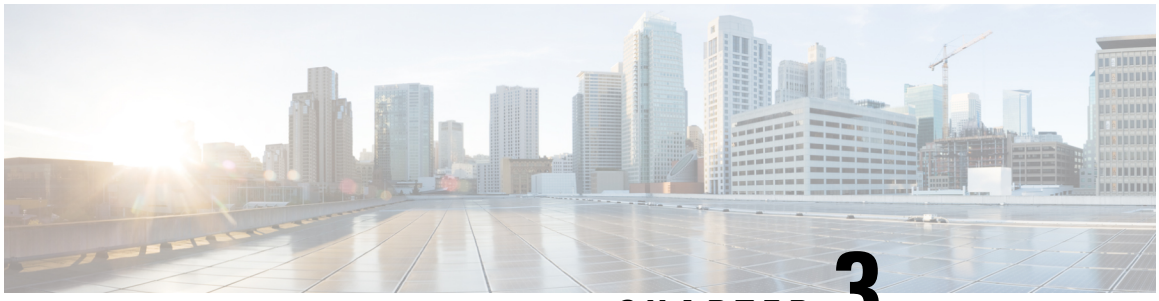


Step 7 (Optional) Lock the bezel.

a) On the front of the chassis, insert the key into the lock, and turn the key 90° clockwise to lock the bezel.

The bezel is locked when the key is horizontal.

b) Remove the key and keep it in a secure place.



CHAPTER 3

Servicing the Chassis

This chapter contains the following topics:

Servicing the Chassis

The Cisco UC XE9305 Modular System has field-serviceable components at the chassis, node, and component scope.

Scope	Serviceable Item

Chassis (UCSXE-9305=)	• Fans
	• Power Supply Units (PSUs)
	• Compute Nodes
	  • Twelve core version (UCSXE-130C-M8-12)
	  • Twenty core version (UCSXE-130C-M8-20)
	  • Thirty-two core version (UCSXE-130C-M8-32)
	• Edge Chassis Management Controllers (eCMCs)
	  • Extended image cache version with M.2 SATA SSD included (UCSXE-ECMC-M2-75G)
	  • No extended image Ccache (UCSXE-ECMC-G1)

Scope	Serviceable Item

Nodes	• Boot-Optimized M.2 RAID module, eCMC (UCSXE-ECMC-M2-75G)
	• Riser Cages (Compute Nodes)
	• M.2 RAID Controller, compute nodes
	  • M.2 SATA SSD, 240G capacity (UCSXE-M2-240G)
	  • M.2 SATA SSD, 480G capacity (UCSXE-M2-480G)
	  • M.2 SATA SSD, 960G capacity (UCSXE-M2-960G)
	  • Boot-Optimized M.2 SSD, 240G (UCSXE-M2240OA1V)
	  • Boot-Optimized M.2 SSD, 240G (UCSXE-M2480OA1V)
	• E3.S EDSFF drives (Compute Nodes)
	• DIMMs (Compute Nodes)

To perform field-service tasks for this hardware, use the tasks in this chapter.

Safety Considerations for Field-Serviceable Components

Take note of the following for servicing field-replaceable components:

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

Warning There are no serviceable parts inside. To avoid risk of electric shock, do not open.

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

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

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

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

Service Restrictions and Guidelines

In addition to these restrictions and guidelines, see Safety Considerations for Field-Serviceable Components, on page 82.

The following notes and warnings apply to all installation tasks:

Caution Parts such as PSUs and eCMCs can be removed to lessen the overall chassis weight before performing field service procedures. However, even with parts removed, the chassis still has considerable weight. Make sure to use a scissors jack, server lift, or other machinery to bear the weight of the chassis during installation.

Warning IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Important Watch your hands and fingers whenever you handle the chassis, compute nodes, and other components! Narrow vertical or horizontal spaces in situations like, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.

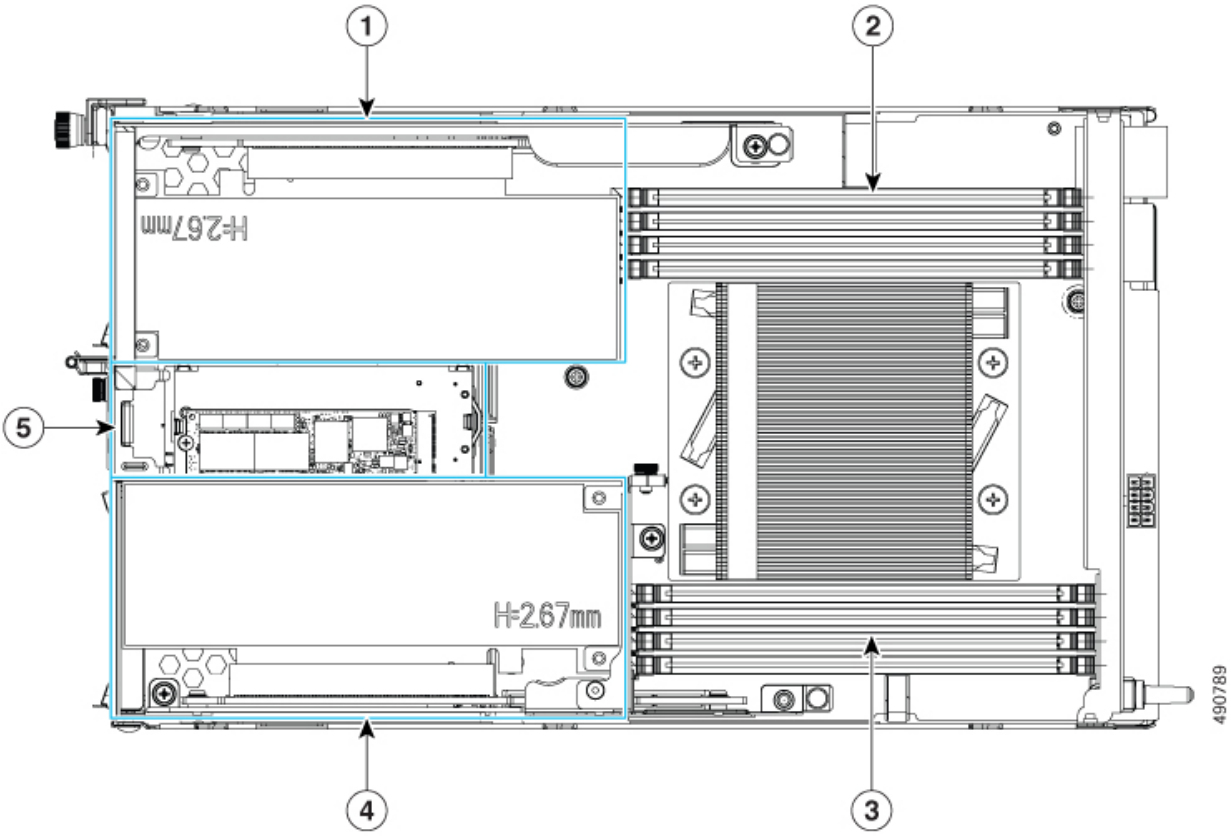
Serviceable Components

The Cisco UCS XE9305 Chassis has field-serviceable components on the eCMC and the compute nodes.

In addition to these board-level components, fans and power supplies are serviceable.

Compute Node Serviceable Components

The compute nodes have the following serviceable components.

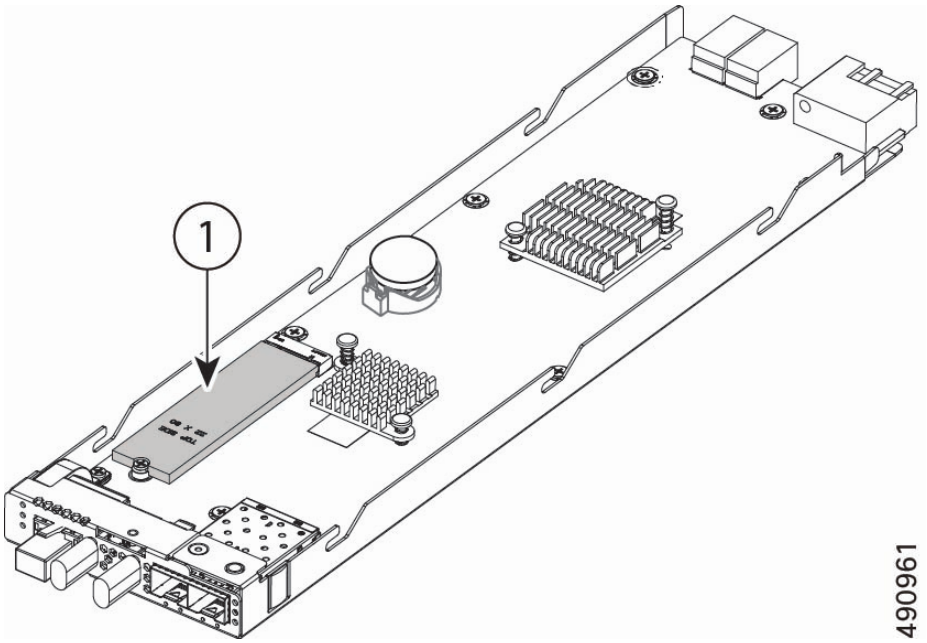


Note The compute node CPU is not field-replaceable. If you need service or an upgrade, you must order a new compute node.

1	PCI Riser 1	**2**	Top DIMM bank
3	Bottom DIMM bank	**4**	PCI Riser 2
5	M.2 Module	-	

Chassis Management Controller Serviceable Components

The chassis management controller (eCMC) module contains the following serviceable component.



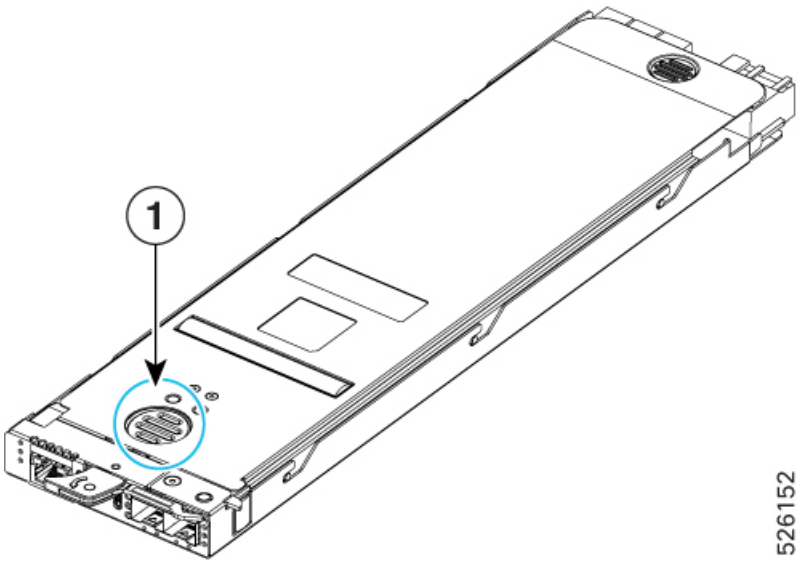
1	Boot-Optimized M.2 Module, consisting of one M.2 SSD and a carrier.	-	-

Replacing a Node Top Cover

Each node in the chassis has a sheet metal top cover to protect components and provide optimal airflow. The top cover must be removed to access any field-serviceable components.

The top cover is held in place by the following features:

- Release button that locks and unlocks the latch for the top cover.
- Alignment pins that insert into grooves on the top of the node. The pins enable easy installation and removal of the top cover as well as securing the top cover.



To replace the node top cover, use the following tasks.

- Installing a Node Top Cover, on page 87
- Removing a Node Top Cover, on page 86

Removing a Node Top Cover

Use this task to remove the node top cover.

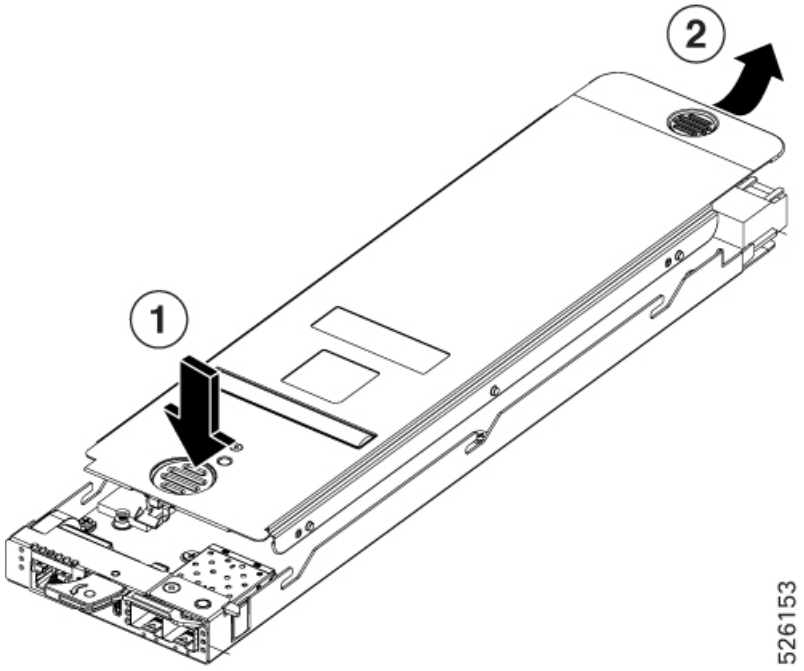
Before you begin

To access the node top cover, the node must be removed from the chassis. When the node is removed from the chassis, the node is disconnected from the power backplane, so the node is powered off.

Procedure

Step 1 Press the release button on the node top cover.

Step 2 While holding the release button down, slide the top cover toward the back of the node and lift the back end up to enable the retention pins to clear the grooves on the top of the node.



Installing a Node Top Cover

Use this task to install a node top cover.

Before you begin

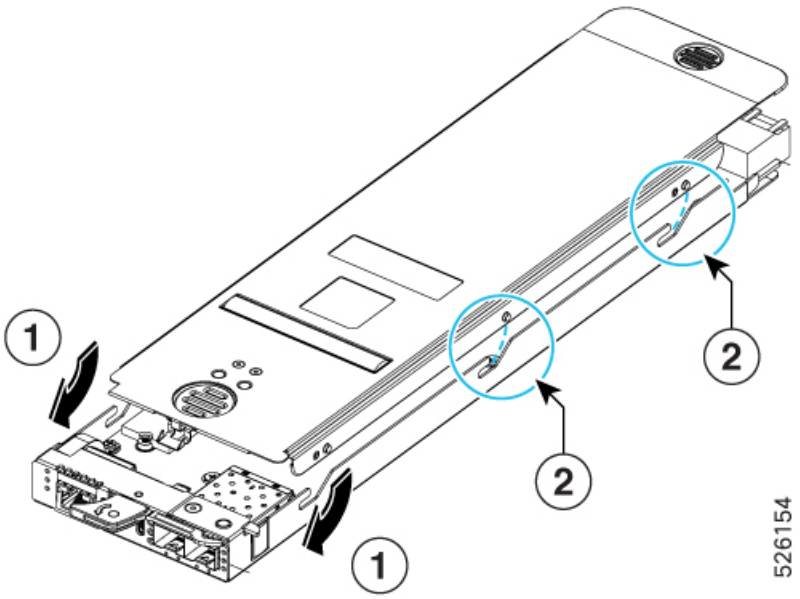
After any service procedures are complete, you must install the node top cover before re-installing it into the chassis.

When the node is re-installed, it will power on after successfully connecting to the power backplane.

Procedure

Step 1 Lower the top cover onto the node.

Step 2 Slide the front end of the top cover under the sheet metal edge on the node, while making sure that the retention pins slide into the grooves on the top of the node.



Step 3 Continue sliding the top cover until the release button engages to indicate that the top cover is locked.

Replacing the Security Bezel

The chassis features a front bezel (UCSXE-BEZ-3). To provide security, the bezel locks and unlocks with a paired set of keys that fit into the key slot on the face of the security bezel.

To provide the highest physical security, we recommend leaving the bezel attached and locked, and keep the keys in a secure place. These recommendations are in addition to any other physical security you use, such as keeping the XE9305 chassis in locked or access-controlled room, in a locked datacenter cage, and so on.

When the bezel is installed correctly, the lock is on the left of the bezel's faceplate. The lock moves in a 90° arc between the unlocked and locked position.

- To lock the bezel, insert the key and turn it to the right until the key is horizontal.
- To unlock the bezel, insert they key and turn it to the left until the key is vertical.

The security bezel also supports two cable management assemblies for efficient cable routing and an air filter that helps reduce airborne particulate matter. The cable management assemblies are considered part of the security bezel, but the air filter is a separately orderable part. Both the air filter and the cable management assemblies mount install into the security bezel. For information about replacing the air filter, see Replacing the Air Filter Assembly, on page 103.

To install and remove the security bezel, use these tasks.

- Installing the Security Bezel, on page 69
- Removing the Security Bezel, on page 89

Removing the Security Bezel

The security bezel contains two cable management assemblies that gather and organize cables connected to the chassis. As part of removing the security bezel, you can remove the cable management assemblies by pressing and holding the release latch on the interior of each CMA.

Use this procedure to unlock and remove the security bezel and the cable management assemblies.

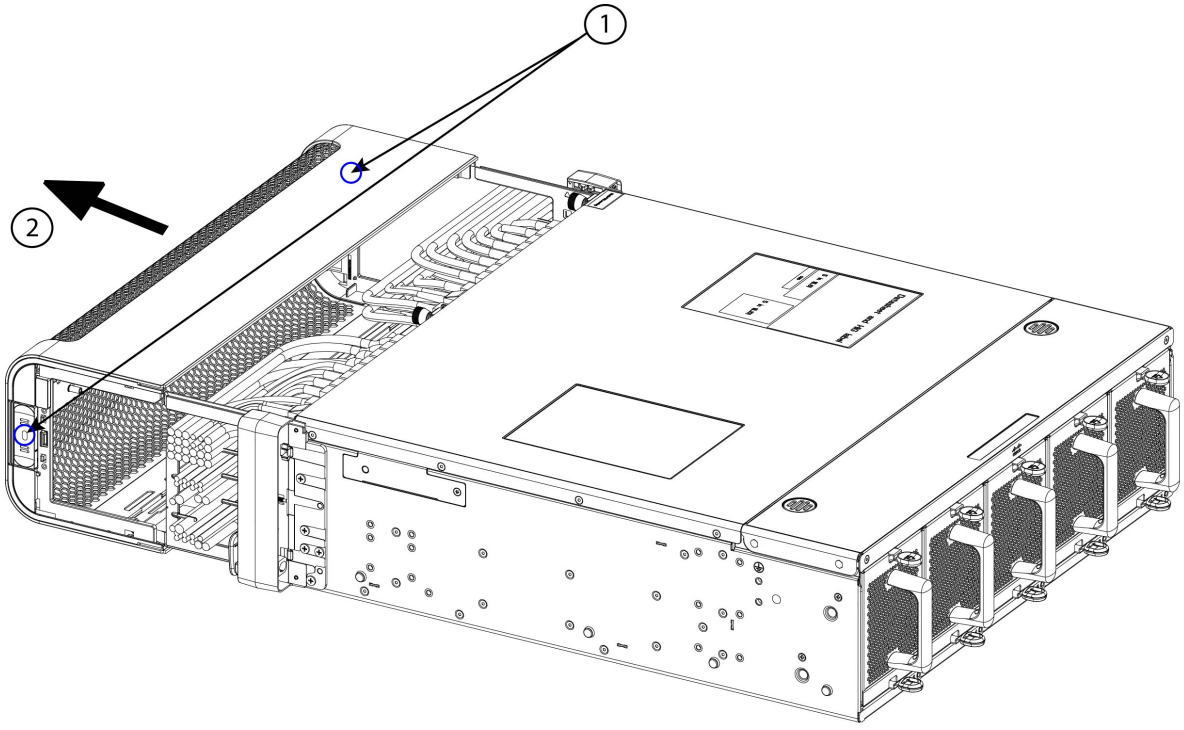
Before you begin

If you do not have the keys for the bezel, gather them now.

Procedure

Step 1 Assuming the bezel is locked, unlock it by inserting the key and turning it 90° counter clockwise to the unlocked position.

Step 2 Locate and simultaneously press and hold both release buttons on the left and right exterior sides of the bezel.



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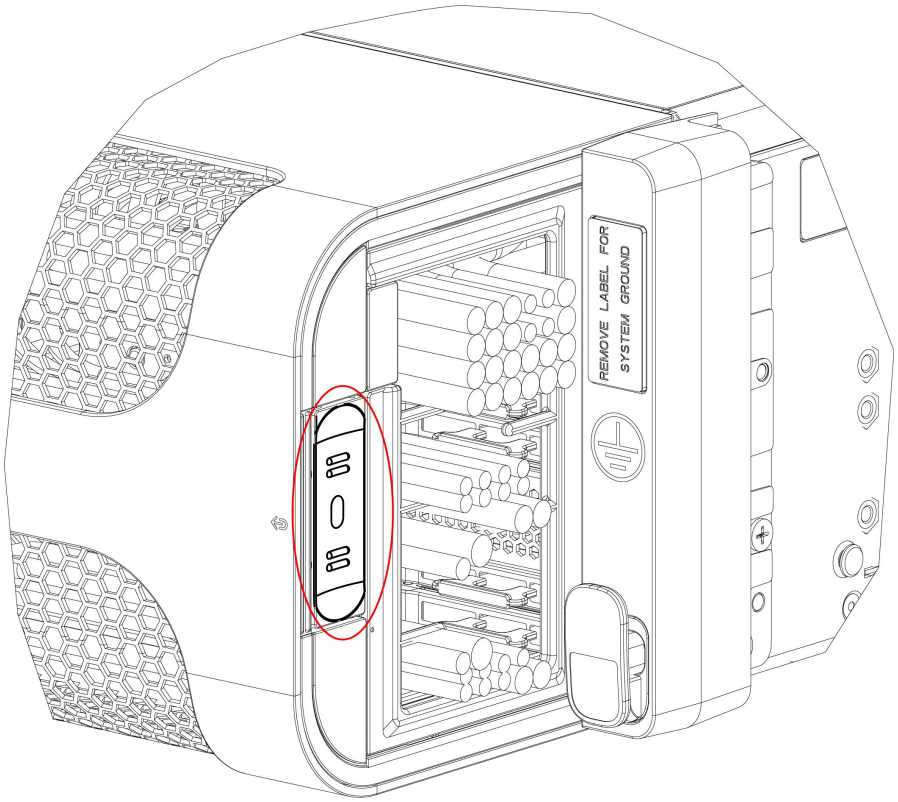

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Step 3 Holding the bezel level, pull it straight towards you to detach it from the chassis front panel.

Caution
Before removing the bezel from the chassis, make sure that no cables will cause obstruction or get caught in the bezel.

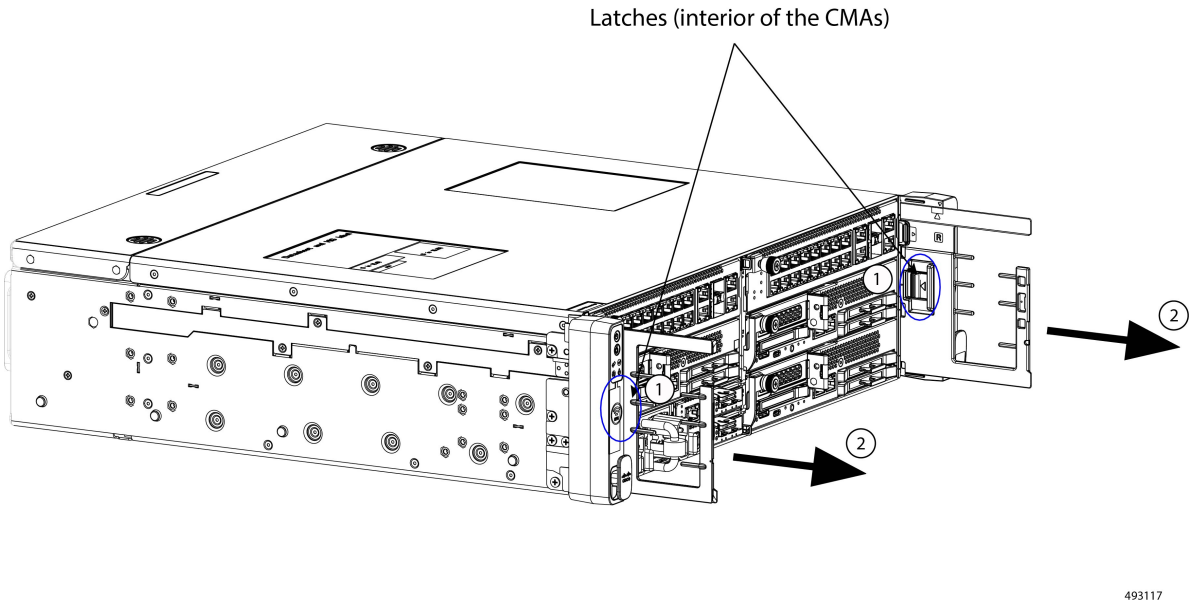
Make sure not to let the bezel fall.

Step 4 To remove the cable management assemblies:

a) Disconnect any cables from the front of the chassis and remove them from the cable management assemblies.

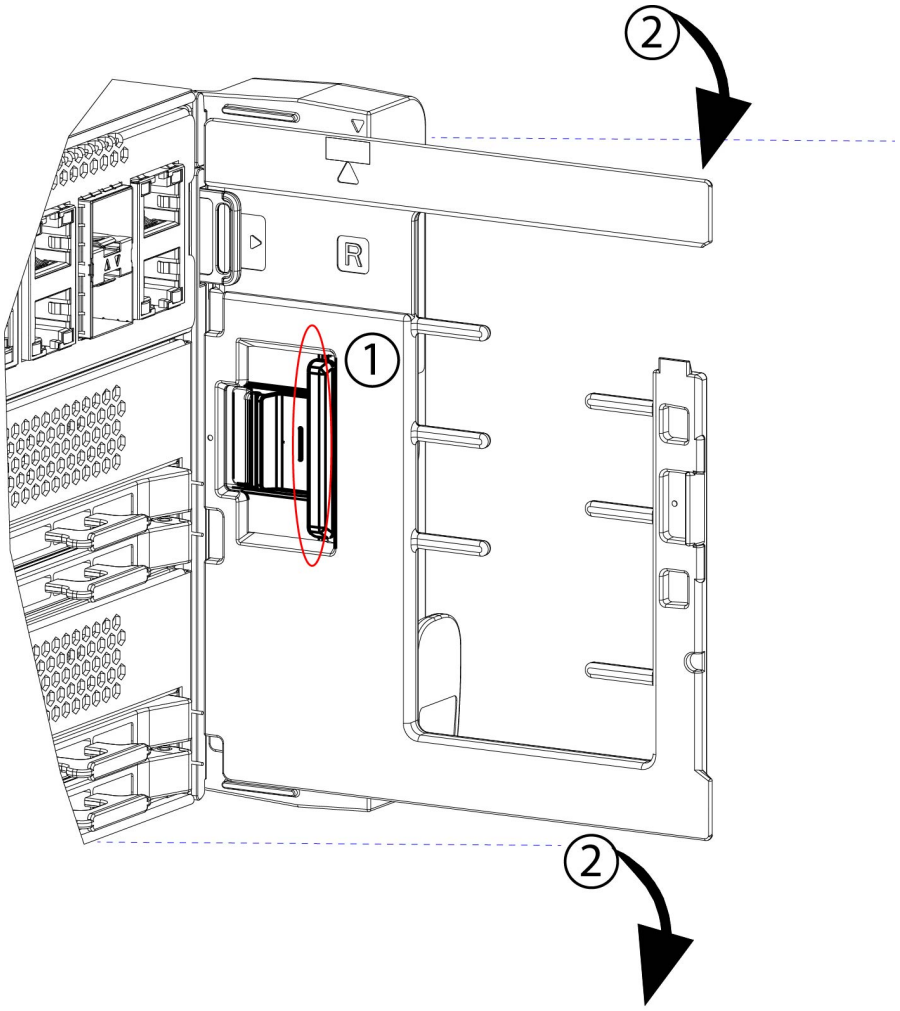
Note
Maker sure to clear all cables from the cable hooks before beginning to disassemble and remove the CMAs.

b) Locate the latches and release buttons on the interior of both the left and right CMA.



c) Press and hold the left latch on the interior of the CMA.
d) While holding the left latch, **gently** angle the CMA down or outward while pulling on it to remove it from the left mounting bracket (latch).

   Angling the CMA helps to disconnect it from the bracket on the chassis.



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e) For the right latch, repeat Step d to disconnect the CMA from the bracket.

Step 5 As an option, you can service the air filter while the bezel is removed.

If you want to service the air filter, see Replacing the Air Filter Assembly, on page 103.

Installing the Security Bezel

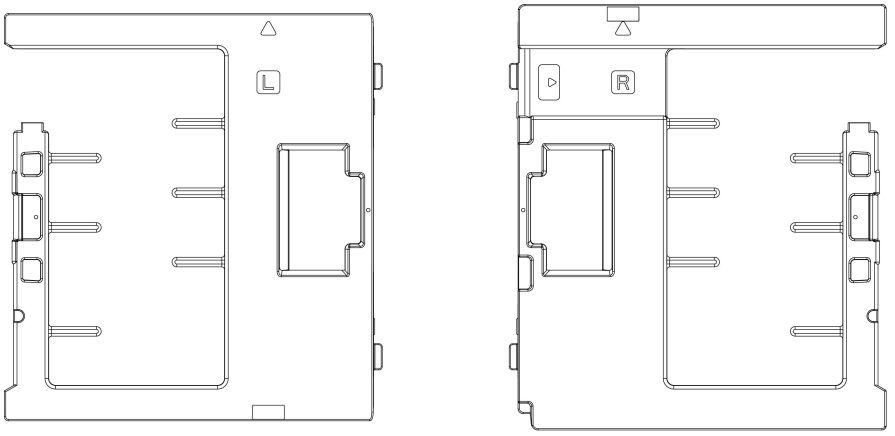
The chassis has a locking security bezel that installs onto the front panel. The bezel attaches to the front panel by a pressure fit. Through the use of the associated keys, the bezel can be locked to secure the Cisco UCS X9305 chassis, its PSUs, and cable connections.

As part of the security bezel, the cable management assemblies (CMAs) can be installed for efficient cable routing. The CMAs, both left and right sides, attach to the mounting brackets (latches) on the chassis and the security bezel so that cable connections to the chassis are also secured within the bezel. The following procedure assumes that the CMAs will be attached.

Installing the bezel is a tool-less procedure. To install the bezel, use this task.

Before you begin

The security bezel's latches accept two cable management assemblies (CMAs), one per side. The CMAs are specific to each side, so they are marked with **L** for the left side CMA and **R** for the right-side CMA.



4931546

Before beginning this procedure, make sure that you have identified each CMA. During this procedure, you must install the correct CMA on the correct side.

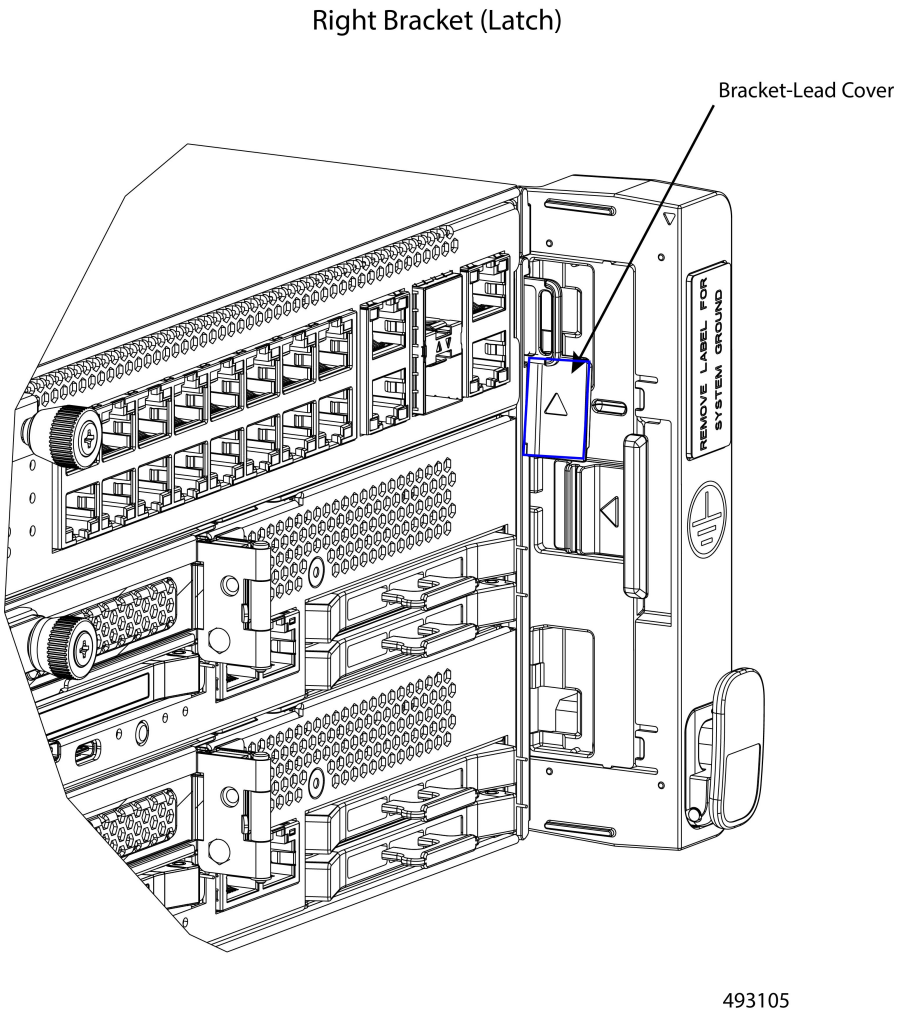
Each CMA has horizontal pegs that help to vertically organize cables into bottom, middle, and top tiers.

Procedure

Step 1 Locate the rubber cover on the bracket-lead.

Note
If not removed, this cover will obstruct the proper installation of the CMA.

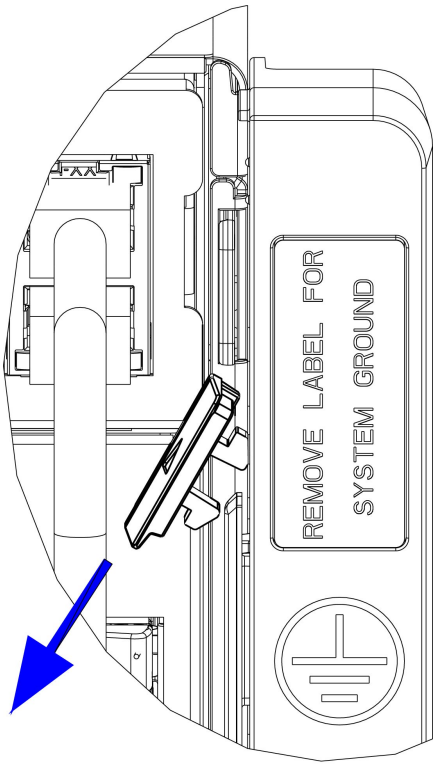
The bracket-lead to which the CMA connects is located on the interior of the bracket (latch).



Step 2 On the right mounting bracket (latch), remove the rubber cover from the bracket-lead.

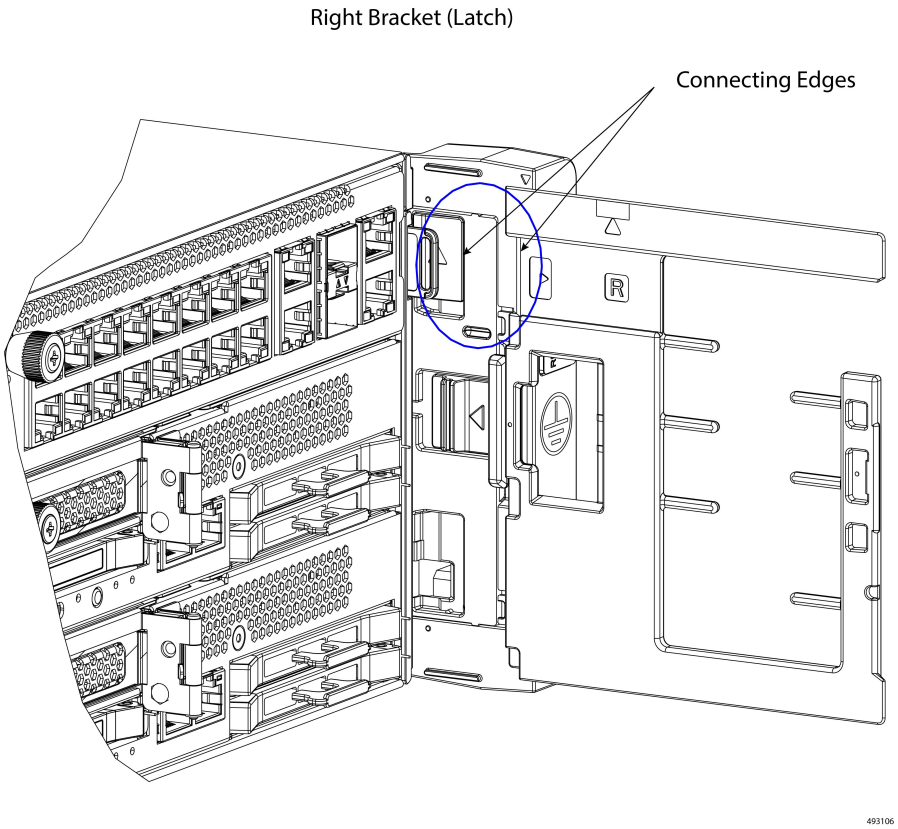
This rubber cover is on the right mounting bracket (latch) only.

Caution
This rubber cover must be removed to avoid obstruction while attempting to install the CMA onto the chassis.



493154

Although you have not installed the CMA yet, when the cover is removed, the connecting parts on the right bracket (latch) can meet the connecting parts on the CMA when the rubber cover is removed.



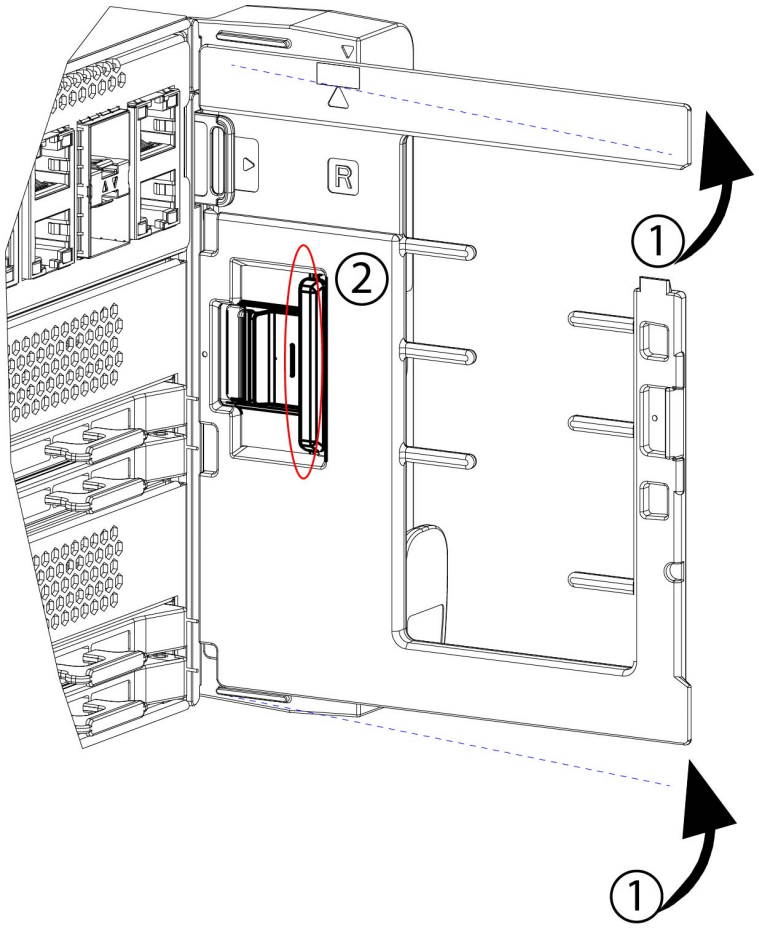
Step 3 Install the CMAs on both sides of the chassis.

a) Verify that you have a left-side CMA and a right-side CMA, and set each by the correct side of the chassis to reduce the chance of installing the CMAs on the wrong sides of the chassis.

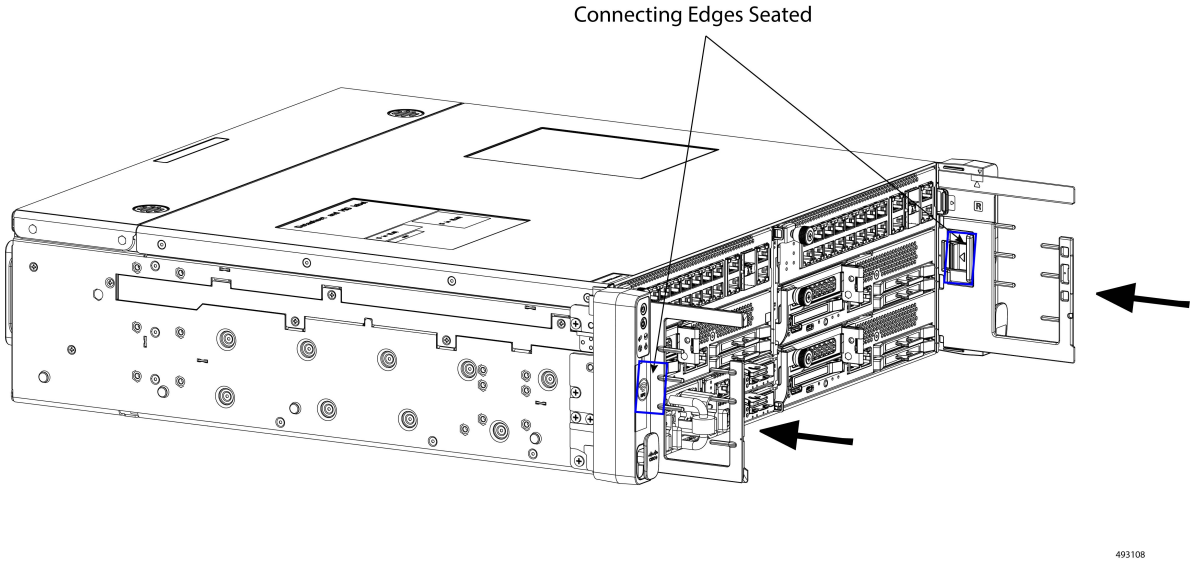
b) Holding each CMA at a slight upward angle, connect it to the chassis by seating the connecting edge on the mounting bracket into the mating part on the CMA, which is the interior latch on the CMA's inside wall.

Do not attempt to install the CMAs directly inline with the chassis. Angling the CMA slightly upward is helpful to connect it to the chassis.

Important
When the bracket lead catches the latch on the interior of the CMA, you should feel and hear the parts click when they are successfully connected.



493155



493108

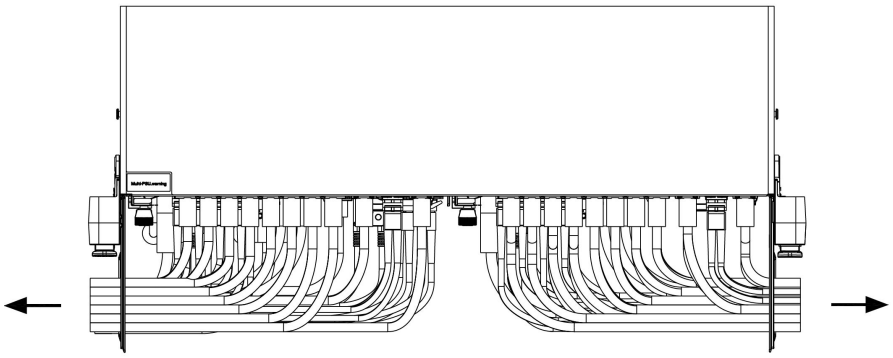
c) When the CMAs are correctly installed, verify that they do not disconnect from the chassis by gently pulling each straight towards you to.

If a CMA disconnects from the chassis, it was not correctly seated. Repeat this step until both CMAs are securely attached to the chassis.

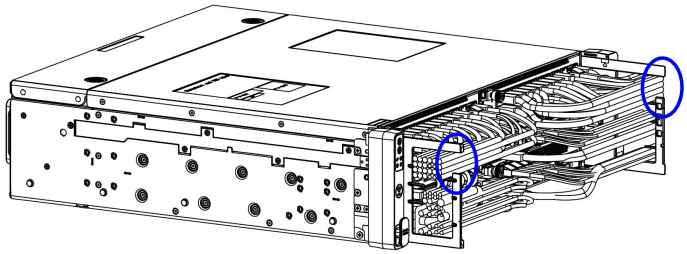
Step 4 Attach and organize cables.

a) Divide the cable run into a left and right half and connect the left cables to the left side of the chassis and the right cables to the right side of the chassis.

Cable Routing (Top View)



Cable Routing (Side View)

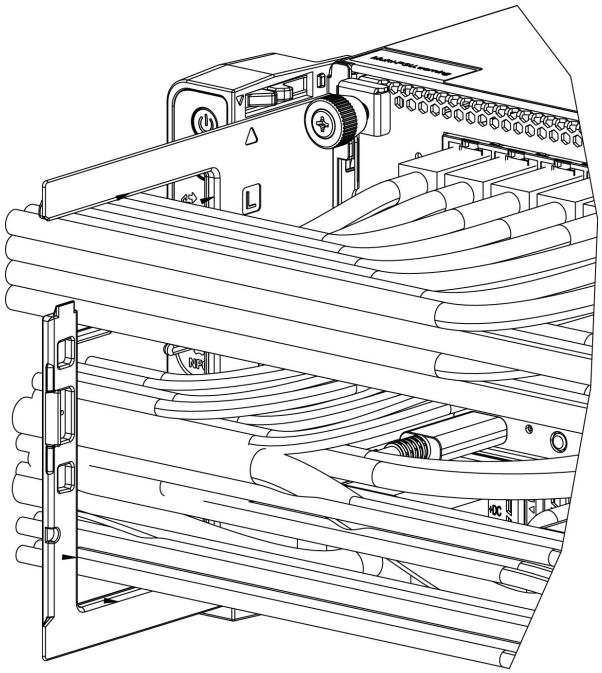


493109

b) Route the left cables sequentially, from bottom to top, through the hook on the left CMA.

When correctly organized, the cables will pass through each horizontal tier of the CMA.

- The bottom row of cables is routed through the bottom tier of the CMA.
- The middle group of cables is routed through the middle tier of the CMA.
- The top row of cables is routed through the top tier of the CMA.



493157

c) Route the right cables sequentially, from bottom to top, through the hook on the right CMA.

Make sure to gather the same cables and route them through the same tier on the right CMA as on the left CMA.

d) Verify that all the cables in the left cable run pass through the left CMA, and all cables in the right cable run pass through the right CMA.

If any cables are hanging (not routed through the appropriate CMA), they can obstruct installing the security bezel.

Step 5 Install the security bezel.

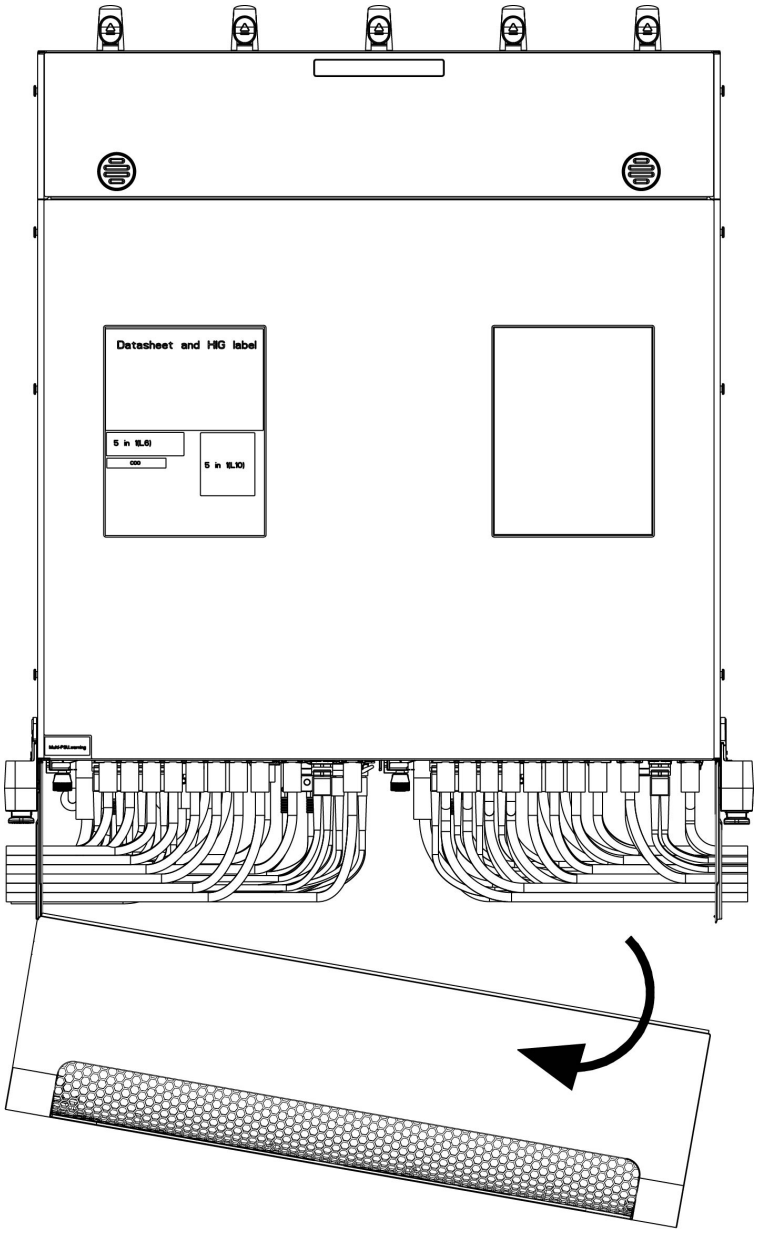
a) Before attempting to install the bezel, check the overall size of the cable runs.

Caution
The vertical space inside the bezel is limited. Inspect the height of the left and right cable connections to the chassis. Ensure cables and their routing does not exceed the upper and lower edges of the brackets! If you attempt to install the bezel onto a cable run that is larger than the available space, cables can possibly get pinched, crimped, or disconnected.

b) Inspect the top and bottom rails of the CMA as well as the leading edge of the security bezel.

Notice that the CMA's rails have rounded grooves, and the bezel has round rails. These parts will meet to ensure that the bezel is correctly aligned and seated on the CMA.

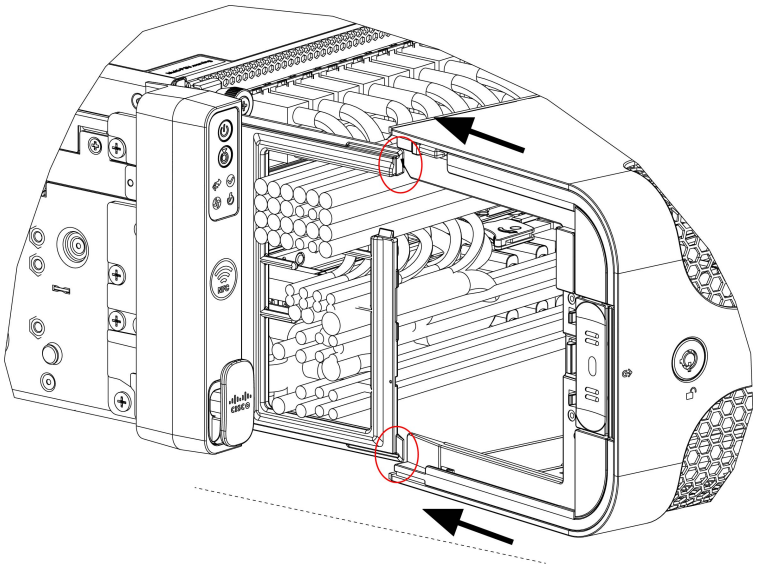
c) Angle the left side of the bezel so that its rounded rails meet the grooves on the left side of the CMA.



493158

d) Holding the bezel level, slowly slide it onto the CMA no more than one inch, while making sure that the bezel's rails seat into the grooves on both CMAs.

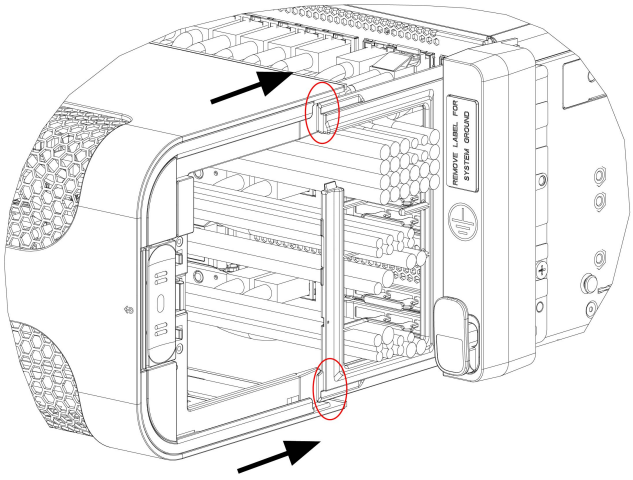
Caution
Before proceeding, make sure that both the top and bottom are seated correctly.



493159

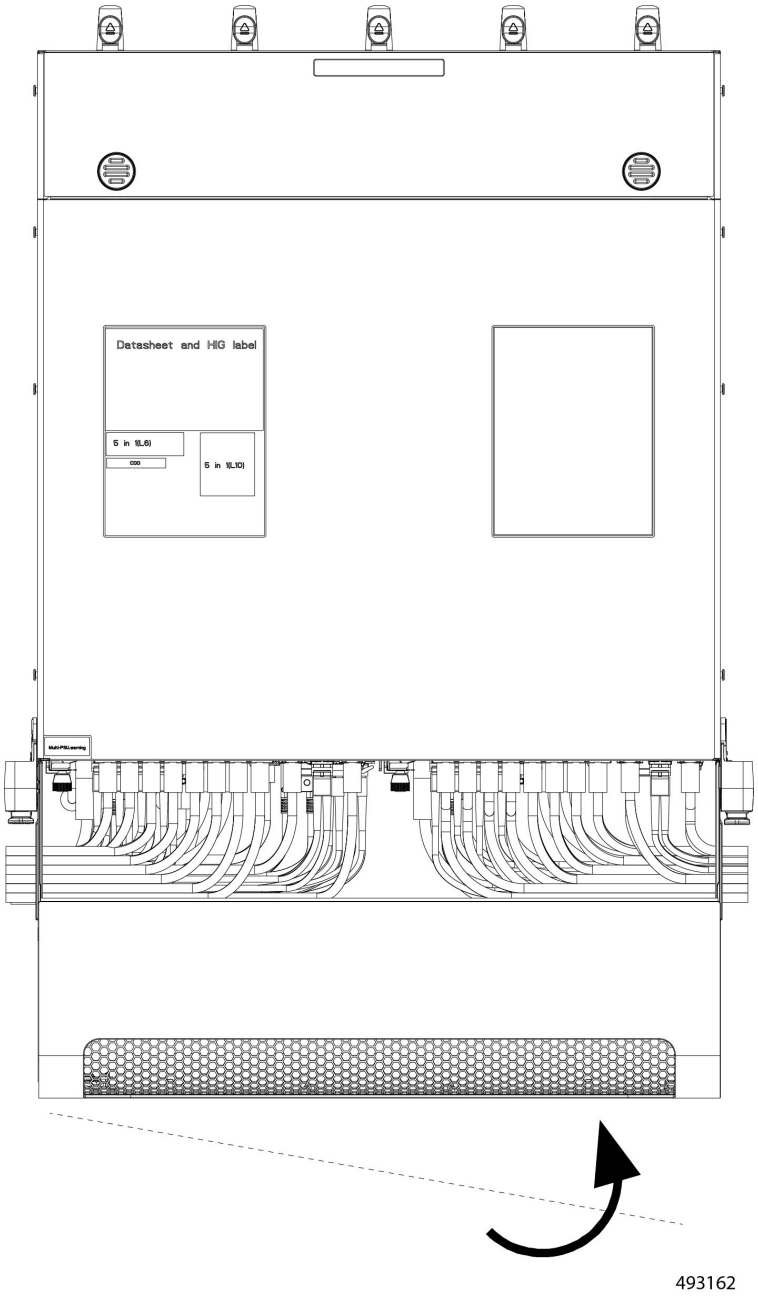
e) When the left side of the bezel is partially installed, align the right side of the bezel with the CMA.

The right side of the bezel and the right CMA have the same alignment features, round rails on the bezel and rounded grooves on the CMA.



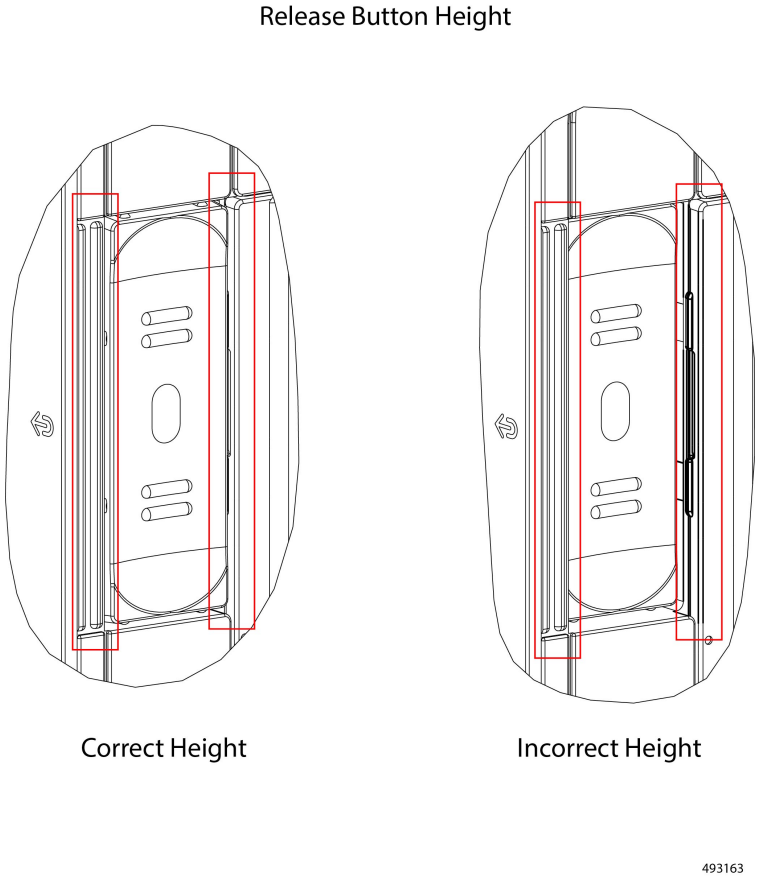
493161

f) When both sides of the bezel and CMA are correctly seated, completely install the bezel until it sits flush against the chassis.



Step 6 Inspect the release buttons, which pop up when the bezel is correctly installed.

When it is correctly installed, the bezel sits flush against the front of the chassis, and the release buttons sit flush against their frame on **each side**. If one or both of the bezel's release buttons are recessed (not flush with the frame), the bezel is not correctly installed. After visually inspecting the buttons, you might find it helpful to trace your finger around the edge of the buttons to feel if one, or both, of them is flush or recessed.



Step 7 (Optional) Lock the bezel.

a) On the front of the chassis, insert the key into the lock, and turn the key 90° clockwise to lock the bezel.

The bezel is locked when the key is horizontal.

b) Remove the key and keep it in a secure place.

Replacing the Air Filter Assembly

The chassis has an air filter assembly (UCSXE-BEZ-FLTR) that fits inside the security bezel. The air filter assembly consists of a separate frame that accepts a fine-mesh foam filter that intercepts the majority of airborne particulate matter. The foam filter is held in place by a bracket on the air filter frame, and that frame is attached to the bezel by two captive screws.

The air filter assembly is not required to operate the chassis or use the bezel. Although not required, the air filter is highly recommended.

To install and remove the air filter assembly, use the following tasks.

- Removing the Air Filter Assembly, on page 104
- Installing the Air Filter Assembly, on page 68

Guidelines and Considerations for the Foam Filter

The chassis air filtration system features a foam filter that fits onto the air filter assembly. The foam filter is a replaceable part.

Be aware of the following guidelines and considerations for the foam filter.

- General Guidelines:
  - Replacement of the filter is dependent on many factors such as the chassis installation location, amount airborne particulates, and so on. It is recommended that filters be replaced every three to six months, or within the recommended preventive maintenance schedule.
  - Cleaning the filter is not recommended. Instead, it is recommended to replace filters when the recommended hours of service are reached. Replacing filters helps maintain efficient performance of the system.
- Storage Guidelines: Storing filters for longer than a few months is not recommend. Instead, purchasing a smaller number of filters and storing them for only a few months is recommended.

Removing the Air Filter Assembly

To remove the air filter assembly and replace the filter itself, use this task.

Before you begin

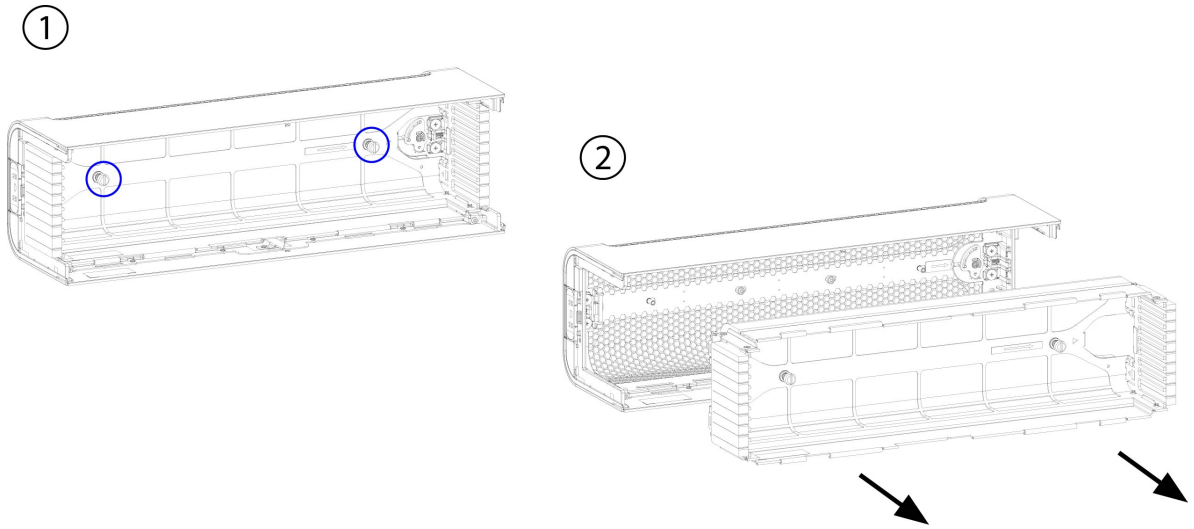
The security bezel must be removed from the chassis to access the air filter assembly. If you have not removed the locking bezel already, do so now. See Removing the Security Bezel, on page 89.

Procedure

Step 1 When the bezel is removed from the chassis, disconnect the air filter assembly.

a) Using your fingers or a #2 Phillips screwdriver, loosen the two captive screws inside the bezel (1).

b) Grasp the air filter and detach it from the security bezel.



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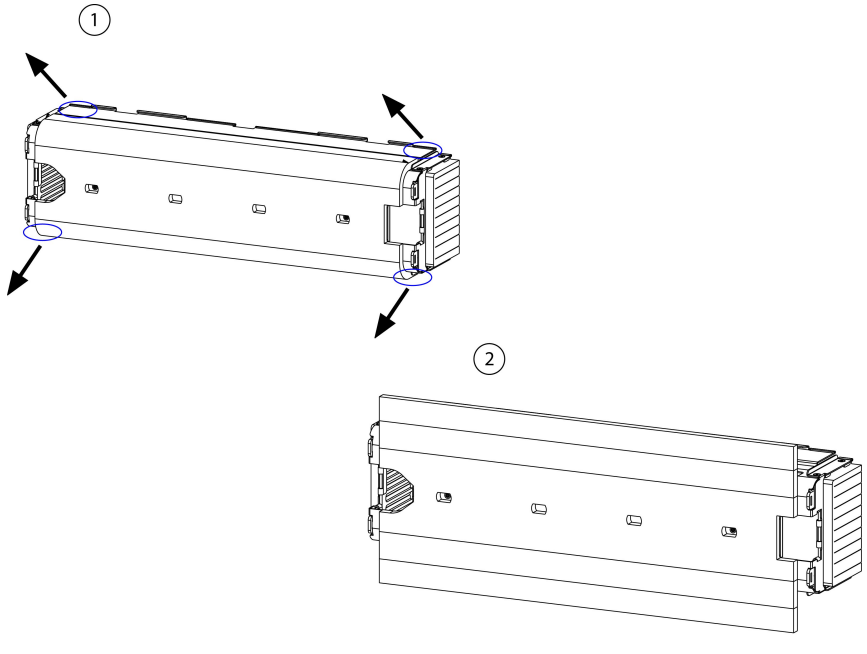
Step 2 (Optional) Replace the filter.

a) At each corner, pull up the foam filter.

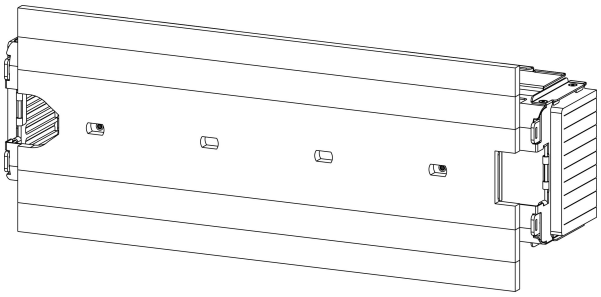


493113

b) Remove the foam filter from the bracket that holds it to the frame.

c) Orient the foam filter so that any sticky parts are facing the frame and can be reattached to the top and bottom of the frame.

d) Insert the filter into the bracket on the frame.



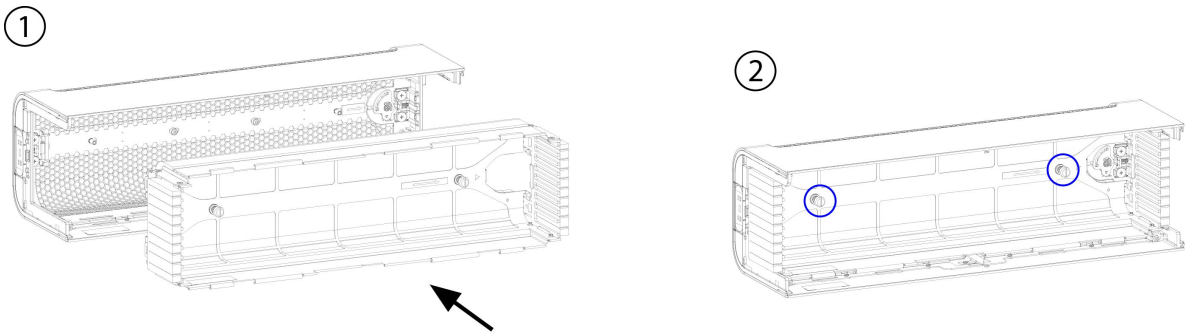
493114

e) Bend the top and bottom edges of the filter and adhere them to the top and bottom edges of the frame.
f) Make sure that the filter sits smooth on the frame to prevent any obstruction when fitting the frame into the bezel.

Step 3 Connect the air filter to the security bezel.

a) Fit the air filter into the bezel, making sure that the screwholes in both line up.
b) Using the #2 Phillips screwdriver, tighten the two thumbscrews to snug.

Caution
Do not overtighten the thumbscrews!



493115

Step 4 Reinstall the security bezel.

Go to Installing the Security Bezel, on page 69.

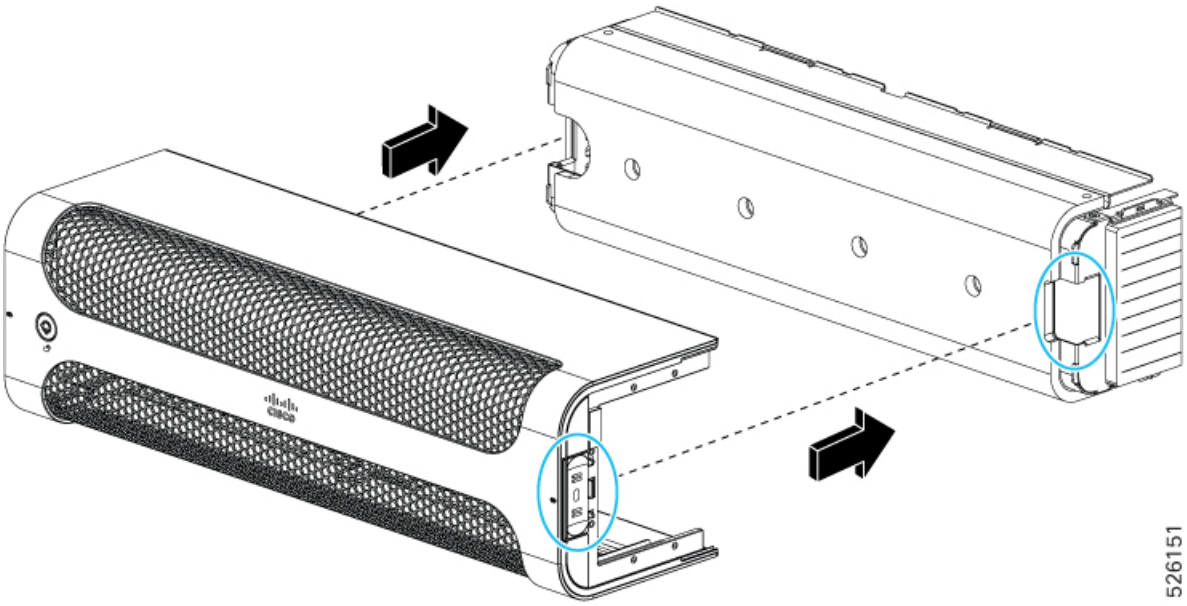
Installing the Air Filter Assembly

The air filter assembly installs into the security bezel by two captive thumbscrews.

Procedure

Step 1 Align the vertical edges of the air filter with the vertical edges of the security bezel.

Step 2 Fit the two parts together.



Step 3 Tighten the two thumbscrews on the air filter to secure it to the bezel.

Step 4 Re-install the bezel onto the chassis and, optionally, use the key to lock the bezel to the chassis.

See Installing the Security Bezel, on page 69.

Replacing E3S Drives

The server's compute nodes can support E3.S EDSFF NVMe drives in varying amounts depending on the number of compute nodes and their configuration options.

The E3.S drives are hot swappable and front-loading. You can remove and install a drive without having to remove the top cover.

To replace an E3.S drive, use the following tasks.

- Removing E3S Drives, on page 107
- Installing E3S Drives, on page 108

Removing E3S Drives

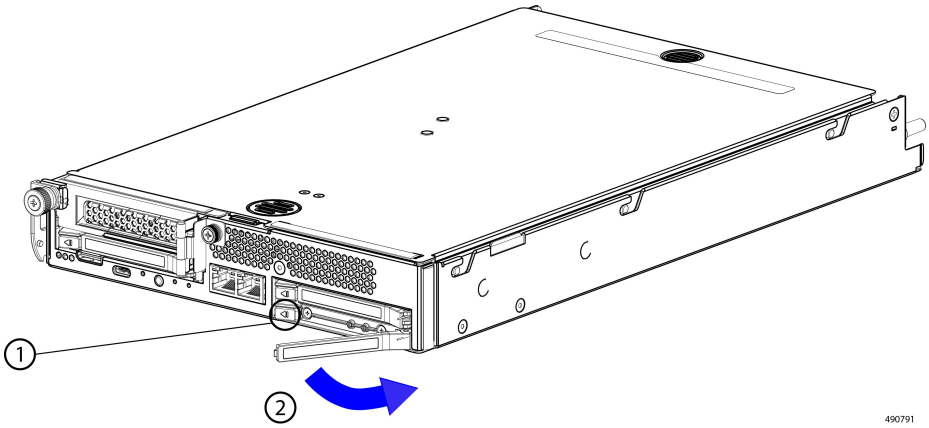
Each E3.S drive is installed in the front of a compute node. Drives are easily accessible and removing them is a toolless task.

Removing an E3.S drive is accomplished by releasing the ejector and sliding the drive out of its drive bay on the compute node. You do not need to remove the top cover to perform this task.

Procedure

Step 1 Press the ejector button to unlock the ejector.

Step 2 Holding the ejector level, swing it to the open position.



Step 3 Grasp the ejector, and keeping the drive level, slide the drive out of the drive bay.

Note
Do not twist or rotate the ejector, or push the ejector up or down while it is in the open position.

Also, while sliding the drive out, you might find it helpful to support the underside of the drive with your other hand.

Installing E3S Drives

Each E3.S drive is installed in the front of a compute node.

Installing an E3.S drive is accessible from the front of the chassis and is a toolless task. You do not need to remove the top cover to perform this task.

Drives are keyed so that they cannot be installed incorrectly.

Procedure

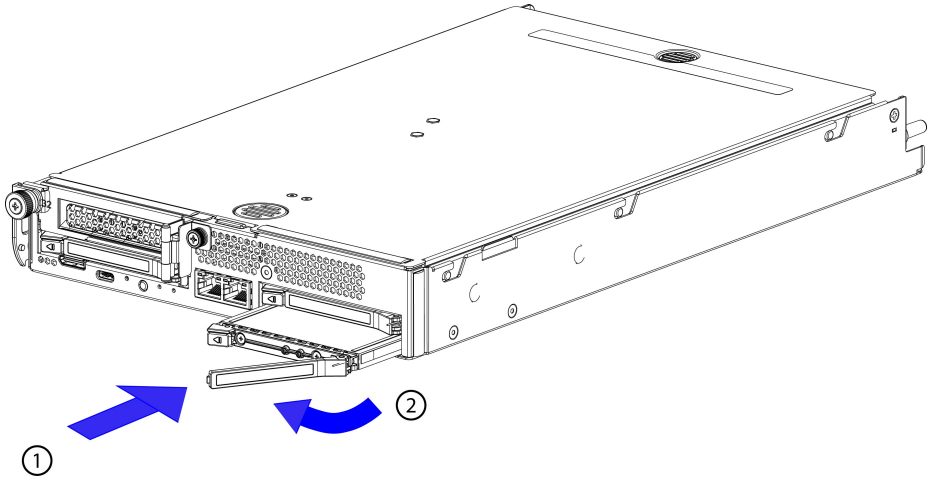
Step 1 Orient the drive so that the ejector button is on the left side.

Step 2 Holding the drive level, gently swing the ejector to the open position.

Note
Do not twist or rotate the ejector, or push the ejector up or down while it is in the open position.

Step 3 Holding the drive level, carefully slide it into the drive bay.

While sliding the drive in, you might find it helpful to support the underside of the drive with your other hand.



Note
When the drive is almost fully installed, you might feel some resistance. This resistance is normal and occurs when the connector at the rear of the drive meets its socket on the inside of the drive bay.

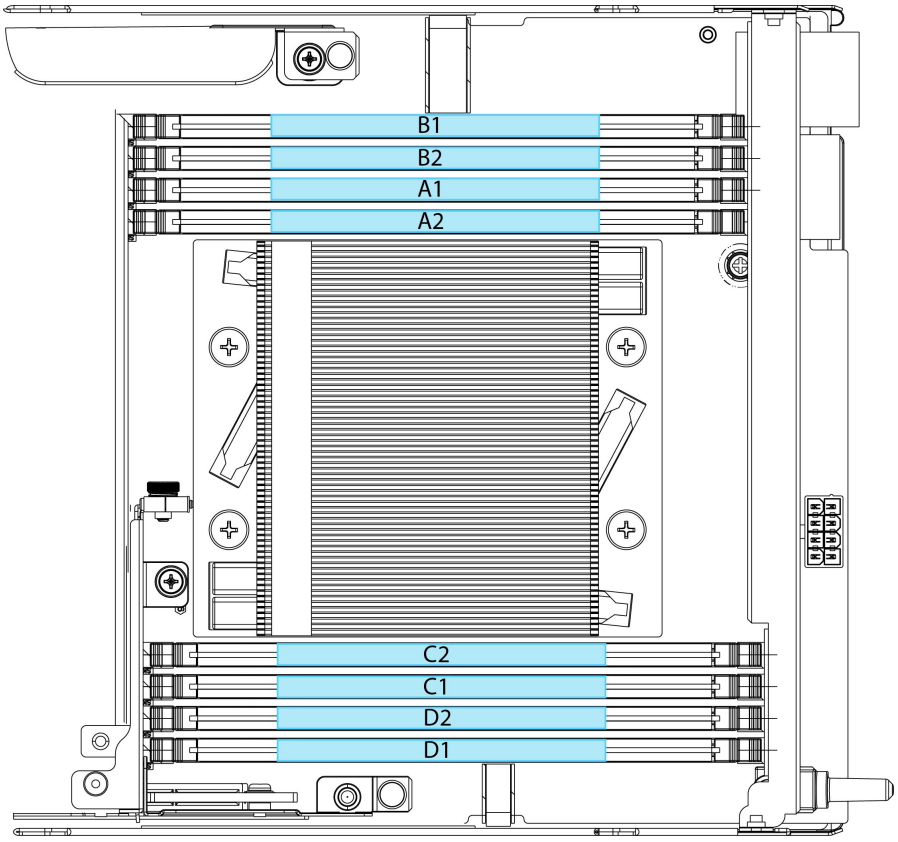
Step 4 Holding the ejector level, swing it horizontally to the closed position.

When fully closed, the ejector should click into place as the drive locks into place.

Replacing DIMMs

Each compute node features eight DIMM sockets that can support DDR5 DIMMs. A given memory channel has 1 or 2 DIMMs installed. DIMM sockets are color coded also for easier loading. DIMM socket 1 is blue, while DIMM socket 2 is black.

The following illustration shows the DIMM slot identifiers.



The following table shows the memory population rules.

Total Number of DIMMS	Blue Socket	Black Socket
2	A1, C1	
4	A1, B1, C1, D1	
8	A1, B1, C1, D1	A2, B2, C2, D2

For additional details, consult the Cisco UCS XE130c M8 Compute Node Memory Guide.

To replace DIMMs on the compute nodes, follow this procedure:

- Removing DIMMs, on page 110
- Installing DIMMs, on page 112

Removing DIMMs

Each Cisco UCS X130c Compute Node has eight memory sockets connected to the CPU that support DDR5 DIMMs. DIMMs are installed in the sockets and held in place by connector latches. You can remove DIMMs by opening the connector latches. Removing DIMMs from the compute node is a tool-less procedure.

Use the following procedure to remove DIMMs from the compute node.

Procedure

Step 1 Remove the compute node.

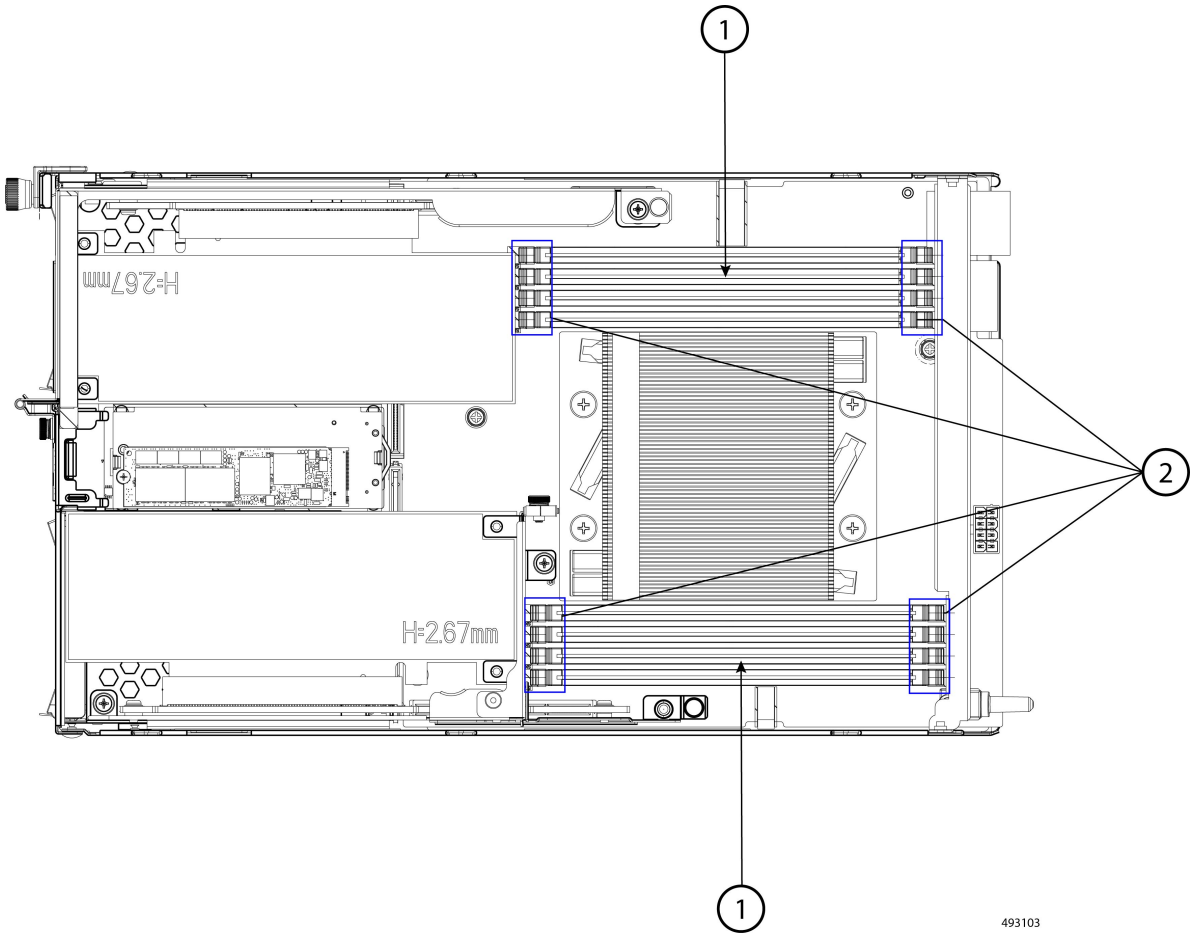
Go to Removing a Compute Node, on page 113.

Step 2 Remove the node's top cover.

Removing a Node Top Cover, on page 86.

Step 3 Remove the DIMM modules from the node.

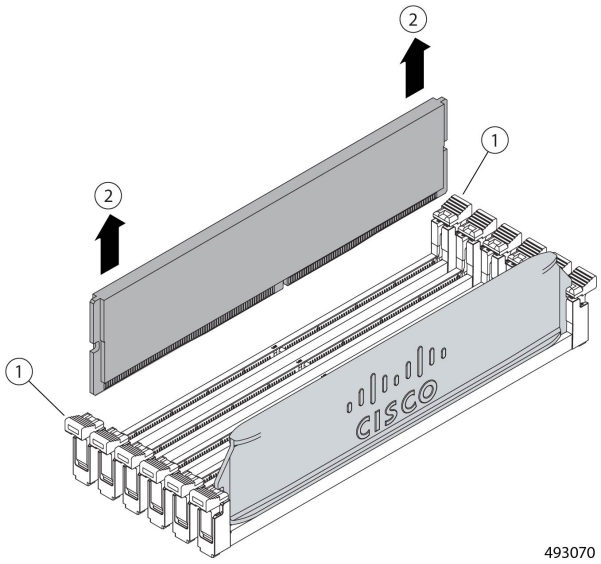
a) Locate the DIMM modules and their connector latches.



1	DIMMs in top and bottom DIMM banks
2	DIMM socket connector latches

b) Simultaneously push the connector latch at each end outward (1). This is the open position.

c) While the connector latch is in the open position, grasp the DIMM module and lift it up to unseat it from its motherboard socket (2) as shown in the following example.



Installing DIMMs

The UCS X130c compute node is shipped with DIMMs pre-installed. However, if you need to install DIMMs, you can do so by installing a DIMM into its socket until it clicks into place. Installing DIMMs is a tool-less process.

Use the following procedure to install a DIMM module into an empty socket on the compute node.

Procedure

Step 1 Push the connector latch at each end of the socket outward. This is the open position.

Step 2 Align the DIMM module with the socket, making sure that the DIMM's connector (golden fingers) are pointing down.

Step 3 Insert the DIMM into the socket and gently press down until the module clicks into place.

Step 4 When you have completely inserted DIMMs as needed, reinsert the compute node.

Go to Installing a Compute Node, on page 115.

Replacing the Compute Nodes

The chassis features three versions of compute node, each based on the number of CPU cores.

- Twelve core version (UCSXE-130C-M8-12)
- Twenty core version (UCSXE-130C-M8-20)

- Thirty-two core version (UCSXE-130C-M8-32)

Each version of compute node is hot-swappable and field-replaceable. When you replace the compute node, you will disconnect it from the power backplane, so the node will power down. When you reinsert the compute node, the node automatically powers on after reconnecting to the power backplane.

When replacing a compute node, you can choose to reinsert it into the same slot, or you can insert it into another slot.

You cannot install a compute node into a Chassis Management Controller slot. Also, you cannot install a Chassis Management Controller module into a compute node slot.

To replace any version of compute node, use the following tasks.

- Removing a Compute Node, on page 113
- Installing a Compute Node, on page 115

Removing a Compute Node

Each compute node is installed in the front of the chassis.

Removing a compute node is accomplished by releasing the ejector and sliding the node out of its slot in the chassis. You do not need to remove the top cover to perform this task.

To keep the chassis operating correctly, do not remove all compute nodes at one time.

Before you begin

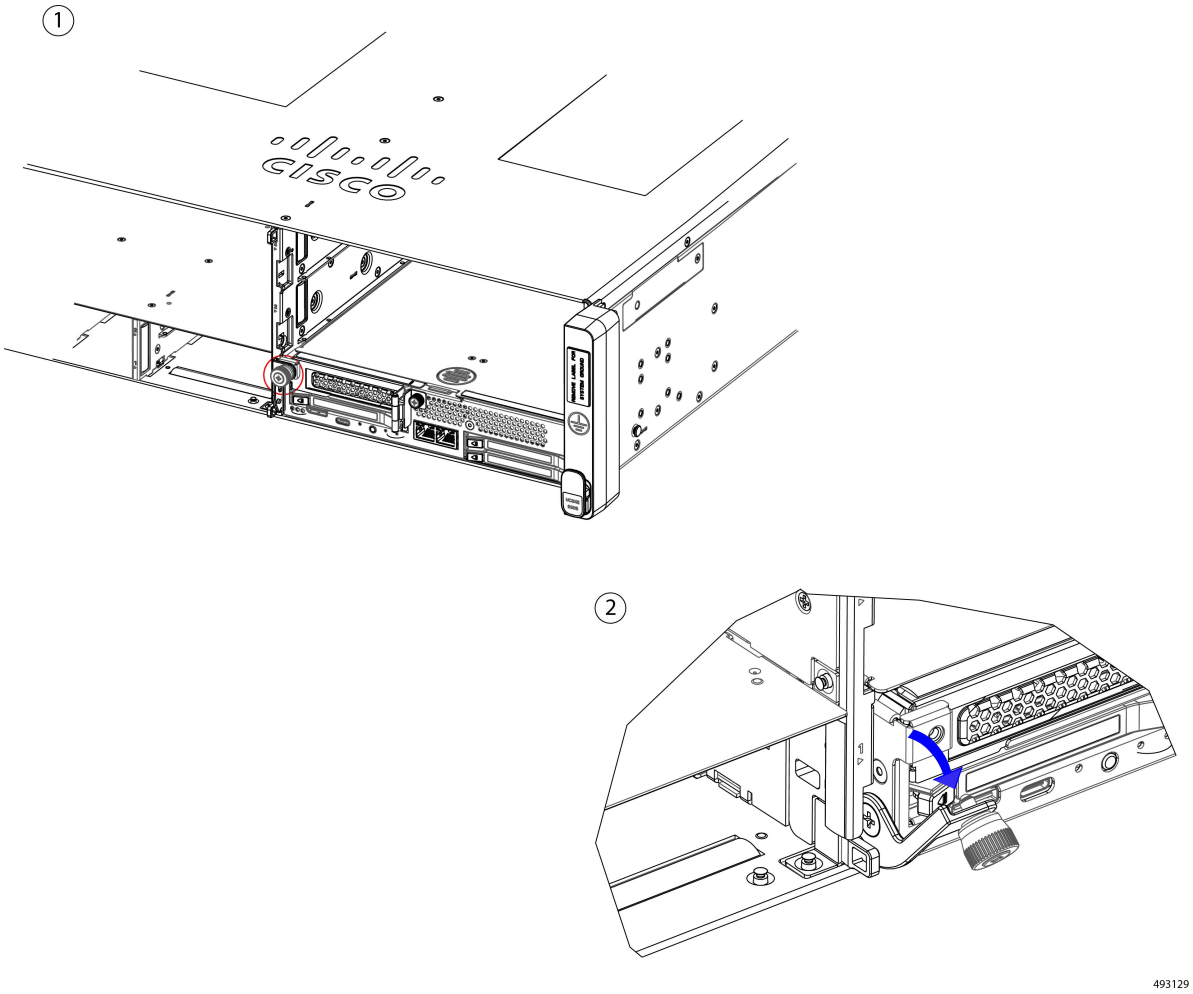
Before attempting this task, gather a #2 Phillips screwdriver.

Procedure

Step 1 Using the screwdriver, loosen the compute node's captive screw.

Step 2 Gently swing the ejector in a 45° downward arc until the ejector stops.

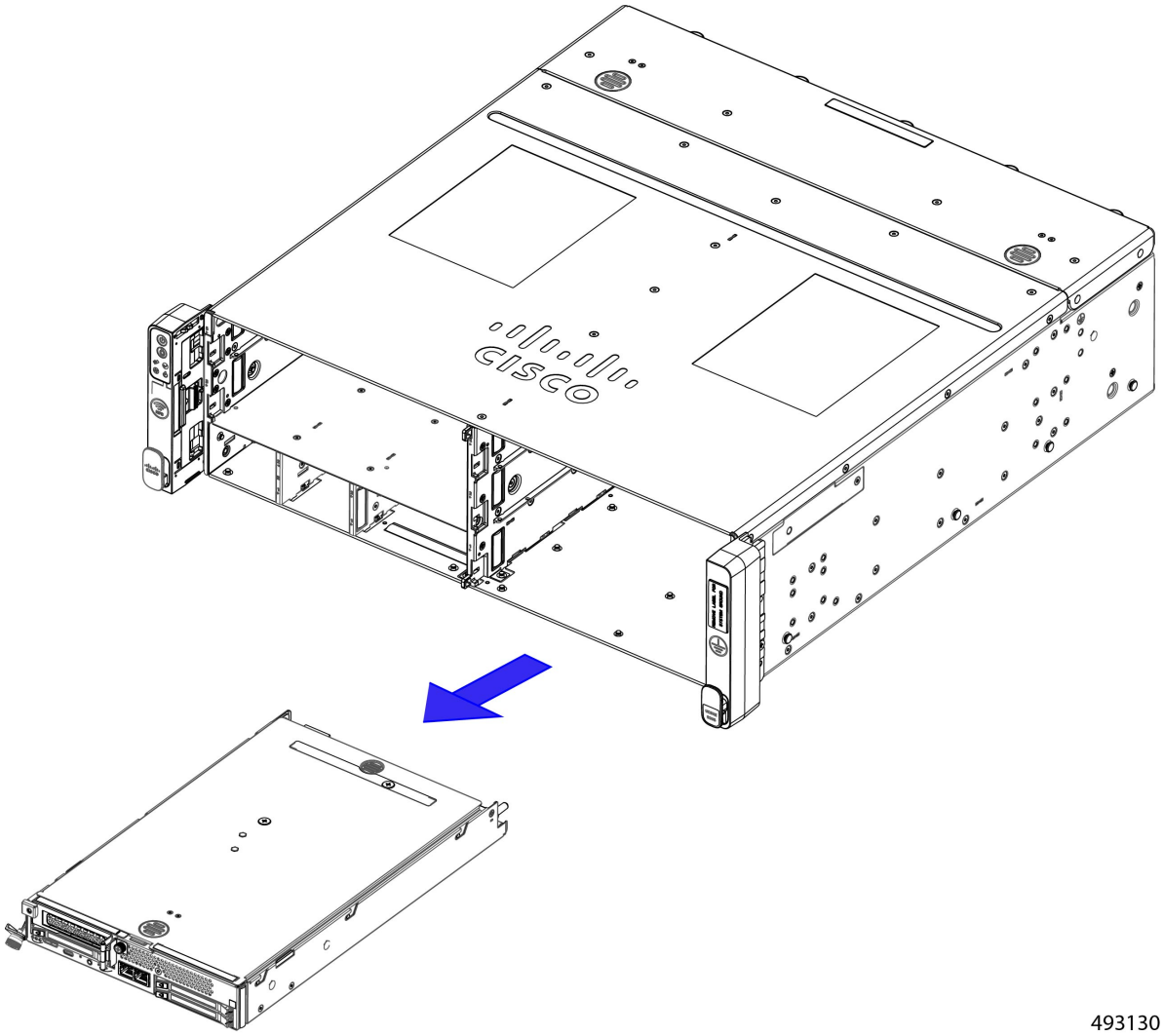
This is the open position.



Step 3 Grasp the ejector and slide the compute node out of the chassis.

Caution
Do not twist or rotate the ejector, or push the ejector up or down while it is in the open position.

Also, while sliding the compute node out, support the underside of the node with your other hand.



Step 4 If you will not be reinstalling a compute node, attach a node blank to the unused slot.

Attention
Do not operate the chassis with any uncovered slots. Always apply a node blank to fill any empty slots.

See Installing a Node Blank, on page 136.

Installing a Compute Node

Each compute node is installed in the front of the chassis. Compute nodes are keyed so that they cannot be installed incorrectly.

Installing a compute node is accomplished by sliding the node into its slot in the chassis. You do not need to remove the top cover to perform this task.

Before you begin

Before attempting this procedure, gather a #2 Phillips screwriver, and a Torque driver or another way to measure the torque on the compute node's captive thumbscrew.

Procedure

Step 1 Verify that the compute node's ejector is in the open position.

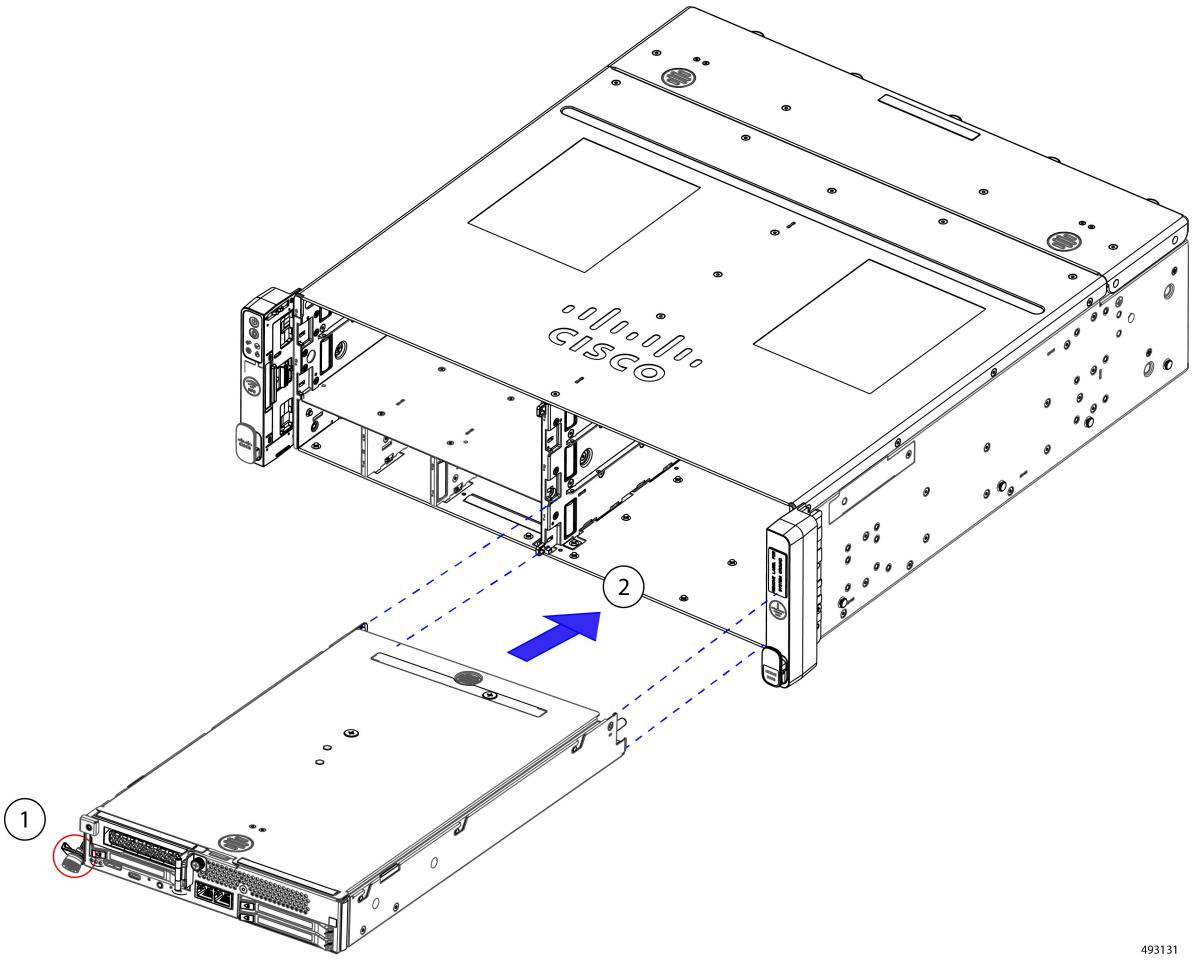
The ejector is in the open position when it is at a 45° angle, not flush with the faceplate.

Step 2 Align the compute node with the slot in the chassis.

When correctly aligned, the top cover is facing up.

Step 3 Support the underside of the compute node with your other hand, insert the compute node into the slot.

Note
When the compute node is almost fully installed, you might feel some resistance. This resistance is normal and occurs when the connector at the rear of the compute node meets its socket on the inside of the slot.

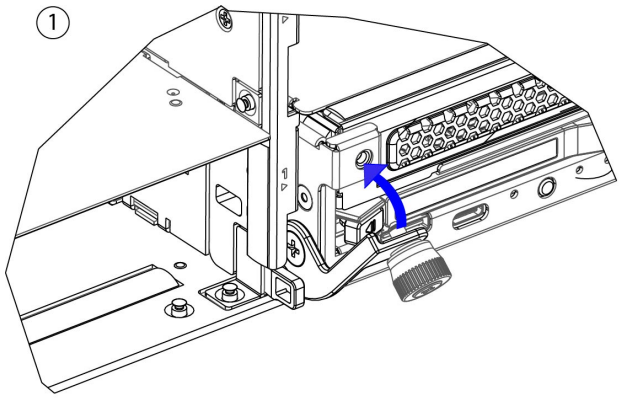


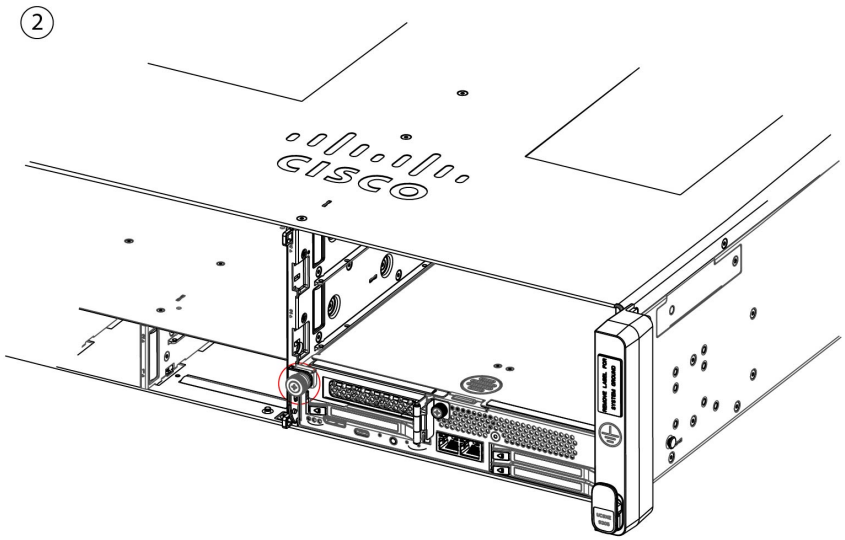
Step 4 When the compute node is almost fully installed, gently swing the ejector to the closed position.

When fully closed, the ejector should click into place as the compute node locks into place. You should feel the ejector seat the compute node into the chassis.

Step 5 Start threading the captive screw into the screwhole by hand.

Step 6 Using a torquedriver, tighten the compute node's captive thumbscrews to the range of 4.2 in-lbs to 5.9 in-lbs (5.1 kg-cm to 6.9 kg-cm) of force.





493132

Replacing the Compute Node RAID Controller

Each compute node contains an optional M.2 SATA RAID controller for compute node OS and boot information (UCSXE-M2-HWRD2).

The module supports a variety of SSD capacities, 240G 480G, or 960G. The following SSD options are available for the compute node, depending on whether standard or boot-optimized SSDs are desired.

- M.2 SATA SSD, 240G capacity (UCSXE-M2-240G)
- M.2 SATA SSD, 480G capacity (UCSXE-M2-480G)
- M.2 SATA SSD, 960G capacity (UCSXE-M2-960G)
- Boot-Optimized M.2 SSD, 240G (UCSXE-M2240OA1V)
- Boot-Optimized M.2 SSD, 240G (UCSXE-M2480OA1V)

A single SSD connects to the module, and the module connects to the eCMC PCB through a USB 2.0 interface. This M.2 module is used as the boot drive for the compute node. RAID 0/1 as well as JBOD mode. Out-of-band management (OOB) is also supported.

The compute nodes E3.S drives can be used as boot devices if no M.2 SSDs are installed. However, M.2 SSDs are the preferred device. When replacing the compute node's M.2 RAID controller, be aware of the following:

- M.2 drives support UEFI boot mode only; legacy boot mode is not supported.
- If M.2 drives are selected, a minimum of 2 drives are required. Drives must be selected in quantities of 0 or 2 (QTY 1 is not allowed). Mixing of different M.2 SATA SSD capacities is not allowed within a single compute node.
- Hot-plug replacement of the RAID controller is not supported. The compute node must be powered off to replace

Removing the Compute Node RAID Controller

The compute node's M.2 RAID controller is installed between the compute node's PCI cages. The controller consists of a module (carrier) and a single M.2 SSD installed onto the module. The module is secured to the compute node by two release clips (one at each end of the controller) that apply pressure to each end of the module, plus two guide pins that catch the module and help hold it in place.

You can remove the M.2 RAID controller from the compute node as well as remove the single M.2 SATA SSD, when present.

Use the following procedure to remove the controller and SSD from the compute node.

Before you begin

Removing the controller is a toolless task, but removing the M.2 SSD requires a #2 Phillips screwdriver.

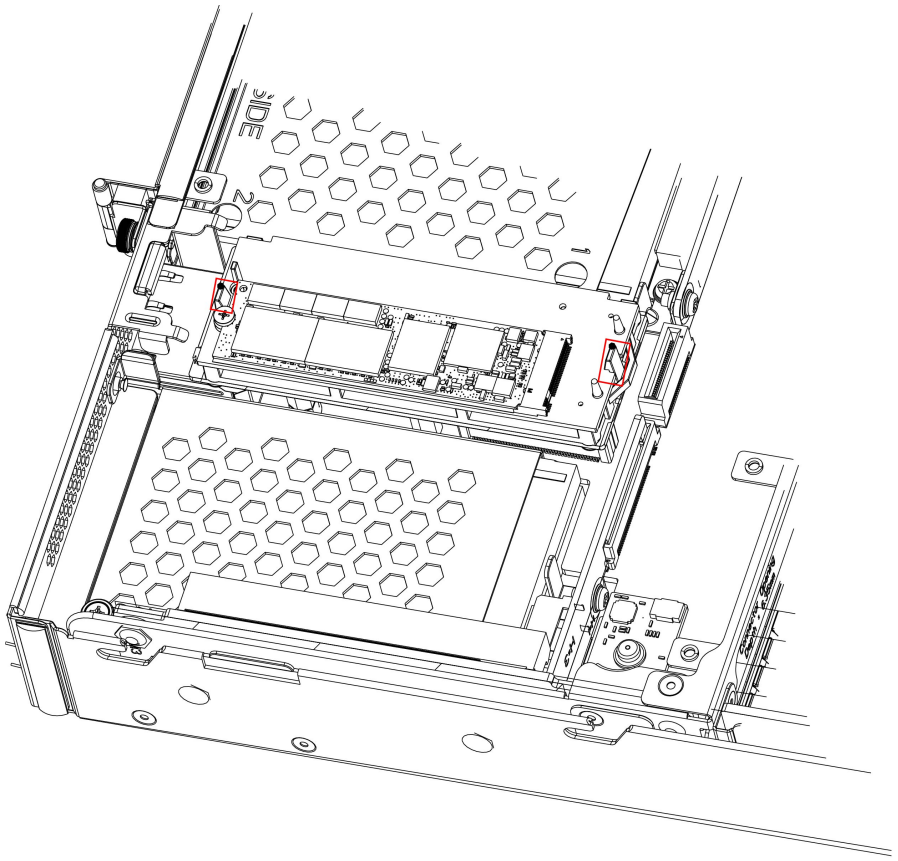
Note Hot-plug replacement of the RAID controller is not supported. The compute node must be powered off to replace the module and SSDs.

Procedure

Step 1 Remove the compute node from the chassis.

Removing a Compute Node, on page 113.

Step 2 Locate the securing clips for the RAID controller.



Step 3 Remove the controller.

a) Simultaneously push each clip way from each other to release the pressure that holds the controller in place.

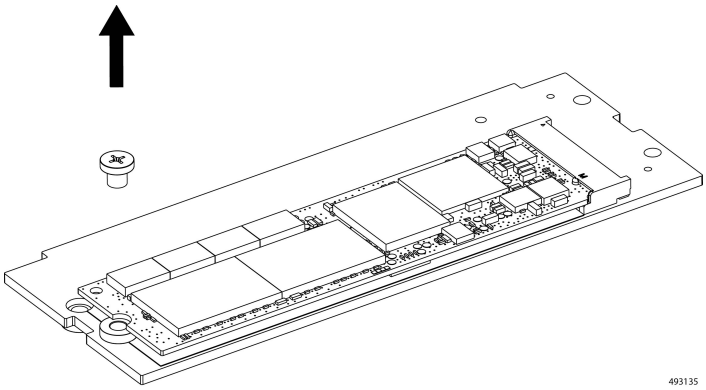
This is the open position.

b) While the release clips are in the open position, lift the controller straight up to remove it from the compute node.

Step 4 If needed, remove the SSD.

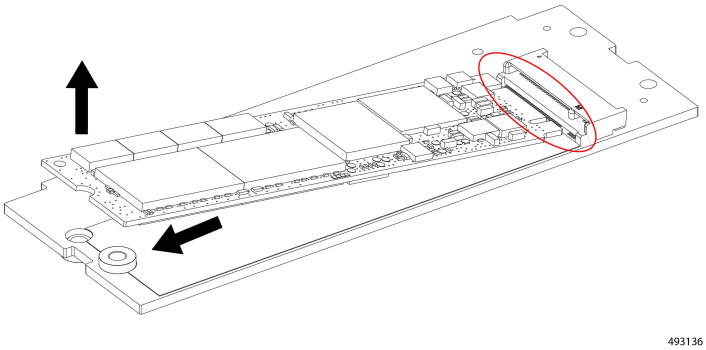
a) Using a #2 Phillips screwdriver, remove the screw at one end of the SSD.

Keep this screw, you will need it to reinstall the SSD.



b) Grasp the end of the SSD, and slide it off of the controller to disconnect it from the keyhole connector on the controller.

As you pull the SSD out of the connector, you might find it helpful to slightly rock the SSD side to side to help it disconnect from the compute node. **Do not tip or lift the SSD or you risk damaging the SSD's golden fingers or the key hole connector (socket) on the compute node.**



What to do next

Reinstall the SSD and controller.

See Installing the Compute Node RAID Controller, on page 120.

Installing the Compute Node RAID Controller

Each compute node contains an M.2 RAID controller used for booting the compute node. The M.2 RAID controller consist of one M.2 SSD that connects to the compute node by a key hole connector (socket) on the compute node.

To facilitate installation, the compute node has two guide pins on the compute node that insert into guide holes on the controller. These alignment features assist with correctly positioning the controller on the node and in the controller in place.

Use the following task to install the RAID controller and the SSD.

Before you begin

As part of this task, you can install a supported M.2 SSD while the RAID controller is removed from the compute node. Installing the RAID controller is a toolless process, but to install the SSD you will need a #2 Phillips screwdriver, torque driver or other tool to measure the torque on the SSD screw.

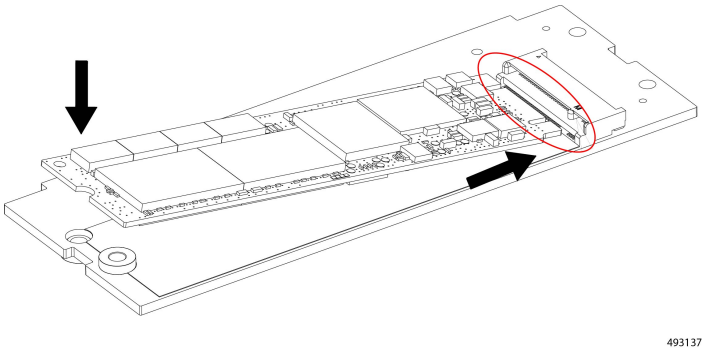
Procedure

Step 1 If needed, insert the SSD onto the controller.

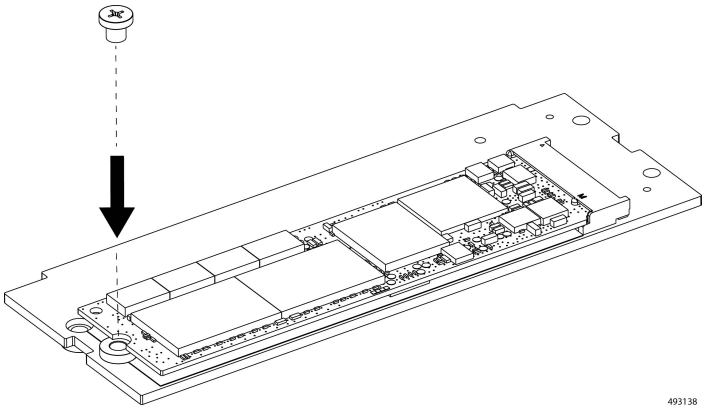
a) Lower the SSD onto the controller.

b) Insert the SSD's golden fingers into the key hole connector.

To help the leading edge of the SSD meet the key connector, you might find it helpful to slightly angle the golden fingers while inserting them into the connector.



c) Using a #2 Phillips screwdriver or torque driver, install the screw at one end of the SSD and tighten the screw to a range of .87 lb-in (1 kg-cm) to 1.13 lb-in (1.3 kg-cm) of force.



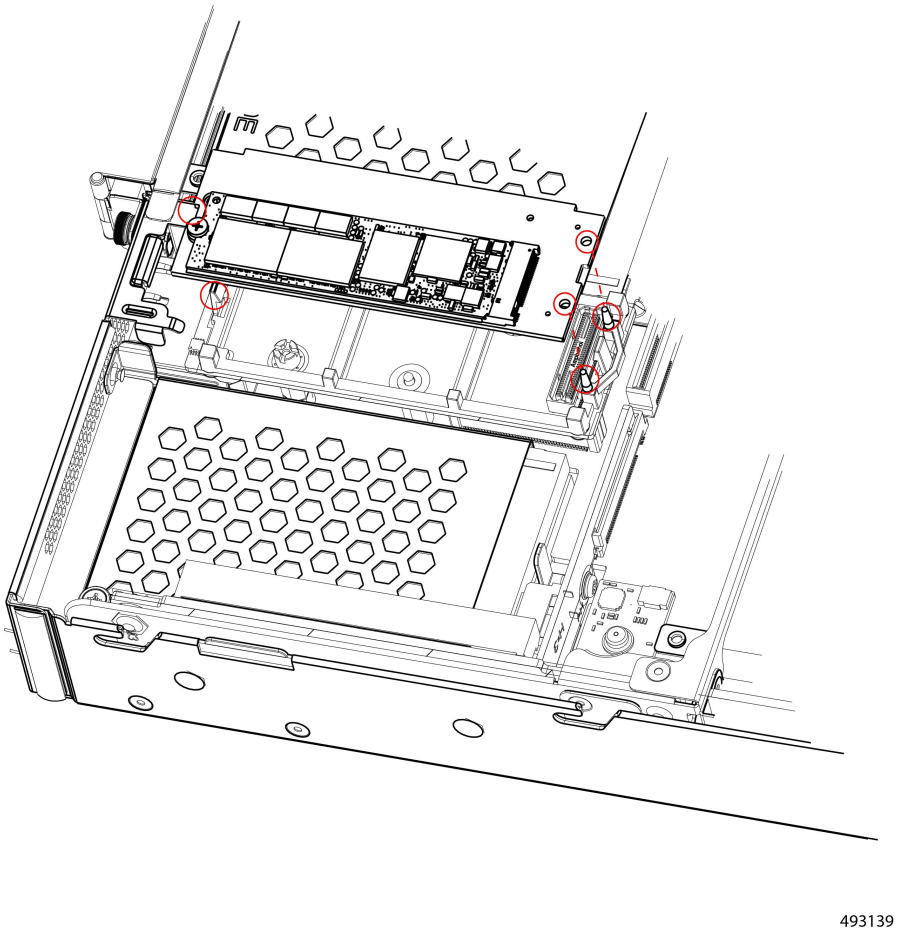
Step 2 Install the controller onto the compute node.

a) Locate and align the guide pins on the compute node and guide holes on the controller.

These features must meet to correctly install the controller.

b) Holding the controller level, install it onto the compute node so that the guide pins insert into the guide holes at one end, and the release tabs at both ends secure the controller to the compute node.

When the controller is correctly installed, it should click into place.



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Step 3 Reinstall the compute node.

Go to Installing a Compute Node, on page 115.

Replacing a PCIe Card or Filler Panel on the Compute Node

The three-slot compute node can host an optional PCIe Gen5 HHHL PCIe adapter or card as a configuration option. For more information, see Supported PCIe Cards, on page 11.

With this configuration, you can install or replace a corresponding PCIe card as a field-serviceable option. Installing or replacing a PCIe card requires you to remove the compute node from the chassis.

To replace a PCIe card on the compute node, use the following procedures.

- Removing a PCIe Card or Filler Panel from the Compute Node, on page 123
- Installing a PCIe Card or Filler Panel on the Compute Node, on page 126

Removing a PCIe Card or Filler Panel from the Compute Node

In a three-drive configuration, slot 4 of the compute node has a PCIe riser cage that can accept a HHHL PCIe Gen5 x16 PCIe card. When you face the compute node, the PCIe cage is the left cage.

The card can be removed or replaced as part of hot-swapping the compute node. Use this task to remove the PCIe card, or a PCIe filler blank, from the PCIe cage.

To facilitate removal, the PCIe cage has supported touch points where you should grasp the cage. For the illustrations in this topic, the touch points are indicated by a solid blue circle. Use the touch points when removing the PCI cage.

Before you begin

Gather a #2 Phillips screwdriver.

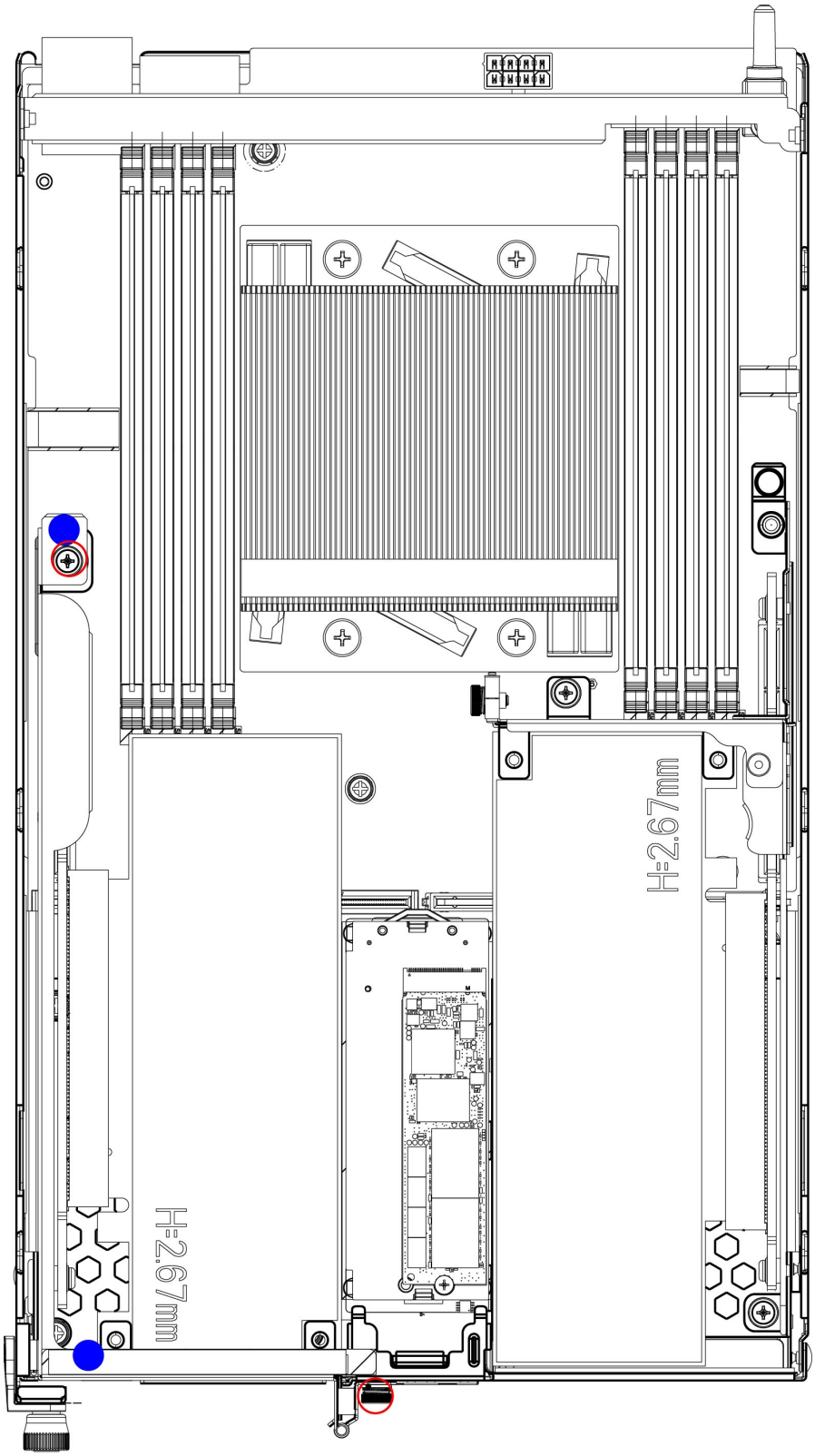
Procedure

Step 1 Remove the compute node from the chassis.

Go to Removing a Compute Node, on page 113.

Step 2 Remove the PCIe cage.

a) Using a screwdriver, remove the two captive thumbscrews.
b) Holding the cage by its touchpoints, left the cage off of the compute node.



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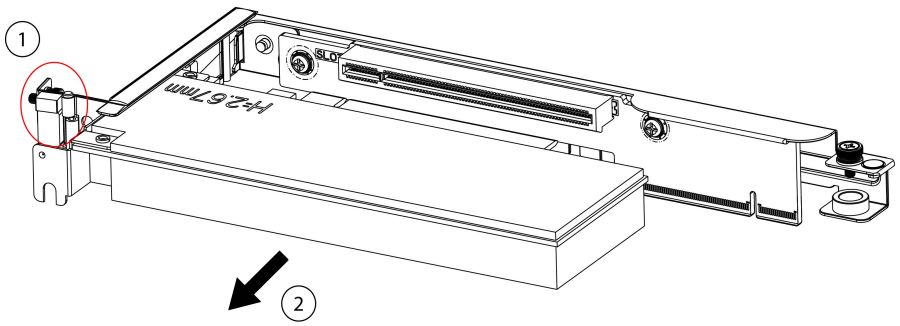
Step 3 Choose the appropriate option.

a) If you are removing a PCIe card, proceed to Step 4.
b) If you are removing a PCIe filler blank, proceed to step 5.

Step 4 Remove the PCIe card.

a) Using the screwdriver, remove the captive screw on the PCIe cage door.
b) Swing the cage door open (1).
c) Grasp the PCIe card, and keeping it level, remove it from the PCIe cage (2).



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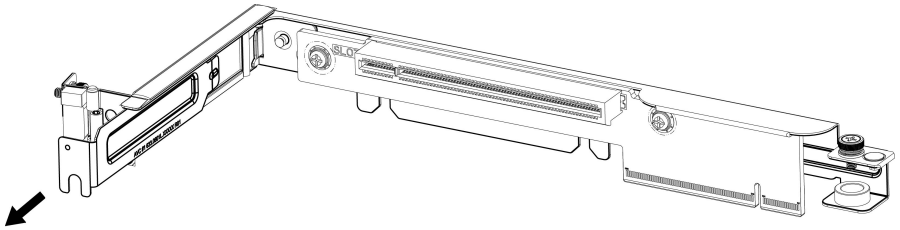
Step 5 Remove the PCIe filler blank.

a) Using the screwdriver, remove the captive screw on the PCIe cage door.
b) Swing the cage door open.
c) Grasp the PCIe card, and keeping it level, remove it from the PCIe cage.



493145

What to do next

Insert PCIe card or filler blank.

Go to Installing a PCIe Card or Filler Panel on the Compute Node, on page 126.

Installing a PCIe Card or Filler Panel on the Compute Node

Each three-drive compute node configuration can be customized by adding a PCIe card, which must support the following.

- Physical form factor: Half height, half-length (HHHL)
- PCIe support: PCIe Gen5 x16 lanes
- Chassis presence: Installed only in the riser cage option for slot 4. As you face the compute node's front panel, this is the left PCIe cage.

To facilitate installing the PCIe cage, it has the following features.

- Supported touch points where you should grasp the cage. For the illustrations in this topic, the touch points are indicated by a solid blue circle. Use the touch points when installing the PCI cage.
- T pins on the inside of the compute node's sheetmetal wall and notches on the bottom of the PCIe cage. The T pins must insert into the notches to successfully seat the PCIe cage.

To install a PCIe card, you will insert the card into the PCIe socket inside the compute node's PCIe cage. The PCIe card can be installed as part of hot-swapping the compute node.

Before you begin

Before attempting this procedure, gather a #2 Phillips screwdriver and a Torque driver or another tool for measuring the torque applied to the PCIe cage screws.

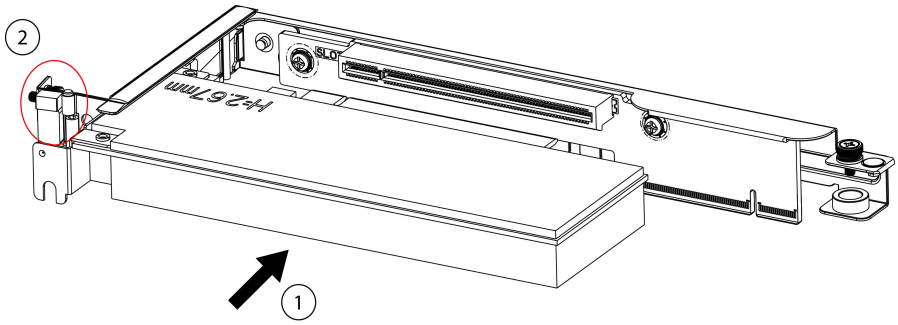
Procedure

Step 1 Choose the following option, as needed.

a) To install, a PCIe card, go to Step 2.
b) To install a PCIe filler panel, go to Step 3.

Step 2 Install the PCIe card.

a) If the PCIe cage door is not open, open it now.
b) Align the golden fingers on the PCIe card with the PCIe socket in the PCIe cage.
c) Holding the PCIe card level, seat it into the socket in the PCIe cage.
d) Close the PCIe cage door.



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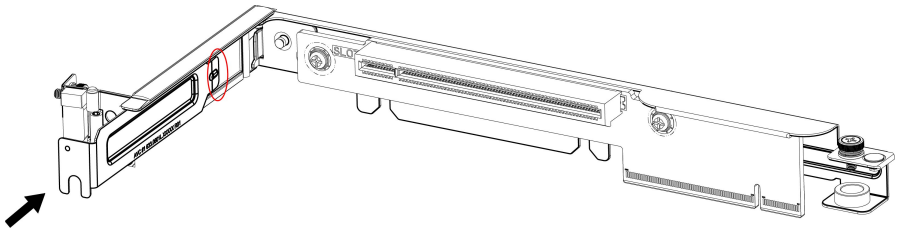
e) Using the screwdriver, tighten the captive thumbscrew on the cage door to snug.
f) Go to Step 4.

Step 3 Install the PCIe filler panel in the cage.

a) If the PCIe cage door is not open, open it now.
b) Orient the filler panel so that the tabbed edge insert into the PCIe cage faceplate.
c) Insert the filler panel so that it fits flush against the PCIe cage faceplate.

Make sure that the filler panel is correctly seated inside the PCIe cage's faceplate.



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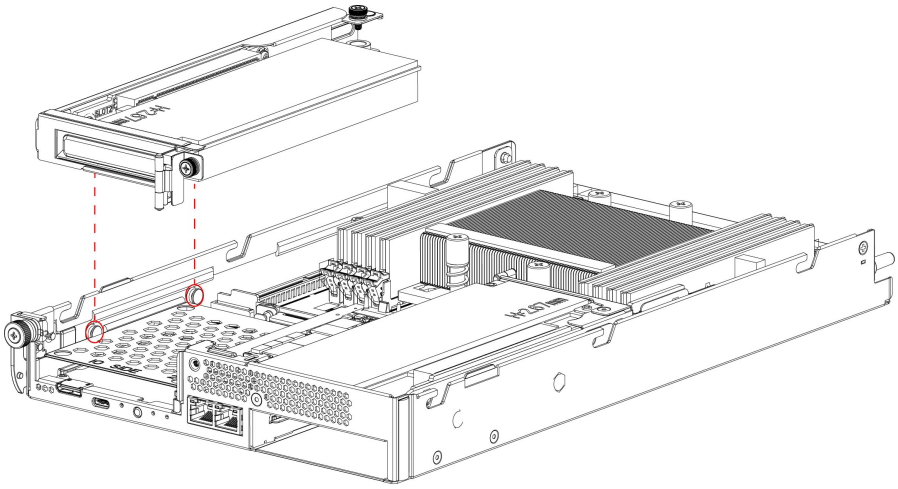
d) Close the PCIe cage door.
e) Using the screwdriver, tighten the captive screw.
f) Go to Step 4.

Step 4 Reinstall the PCIe cage.

a) Locate the T pins on the inside of the compute node wall and the notches on the bottom of the PCIe cage wall.
b) Holding the cage by its touchpoints, lower the cage onto the compute node, making sure that both T pins meet the notches on the bottom of the PCIe cage wall.



c) When the cage sits flush on the node, use a Torque driver to tighten the two captive screws to a range of 4.5 lb-in (5.17 kg-cm) to 5.5 lb-in (6.32 kg-cm) of force.

Step 5 Reinstall the compute node.

Go to Installing a Compute Node, on page 115.

Replacing a GPU on the Compute Node

Each Cisco UCS XE130c M8 Compute Node can support up to one optional half-height-half length GPU (UCSXE-GPU-L4).

The GPU can be installed in a riser cage above slots one and two. This riser cage is on the right side of the compute node. For more information, see Supported GPUs, on page 12.

To replace a GPU on the compute node, use the following procedures.

- Removing a GPU from the Compute Node, on page 128
- Installing a GPU on the Compute Node, on page 131

Removing a GPU from the Compute Node

The compute node supports an optional HHHL GPU in the right PCIe cage. The GPU is field replaceable and can be removed or replaced while hot swapping the compute node. As part of removing the GPU, you must remove the PCIe cage.

To facilitate removal, the PCIe cage has supported touch points where you should grasp the cage. For the illustrations in this topic, the touch points are indicated by a solid blue circle. Use the touch points when removing the PCI cage.

Before you begin

Gather a #2 Phillips screwdriver.

Procedure

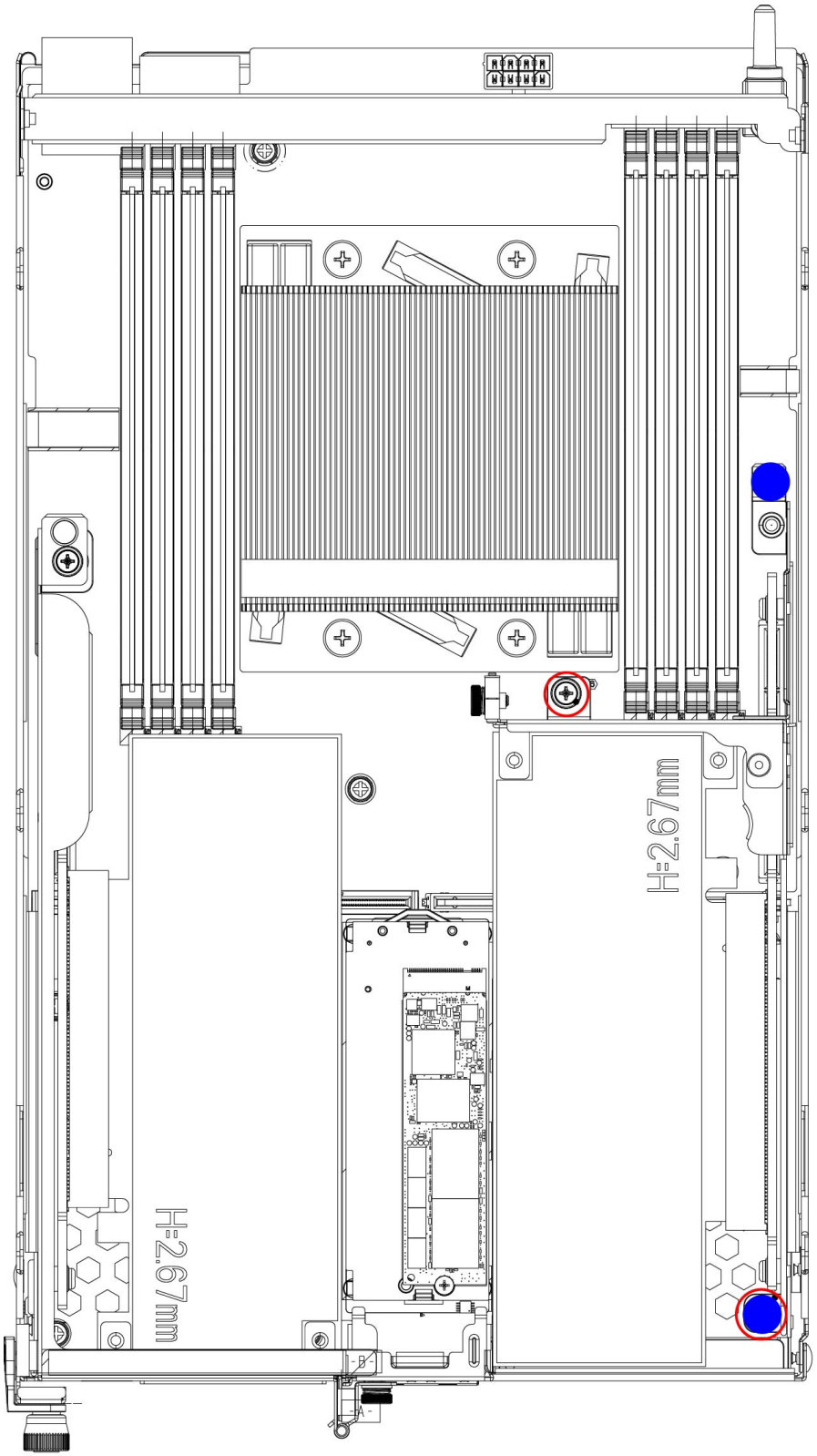
Step 1 Remove the compute node from the chassis.

Go to Removing a Compute Node, on page 113.

Step 2 Remove the PCIe cage.

a) Using a screwdriver, remove the two captive thumbscrews.
b) Holding the cage by its touchpoints, left the cage off of the compute node.

Note
The bottom touchpoint is the folded metal tab for the captive thumbscrew, which is why both the touchpoint and the screw location are indicated in the following illustration.



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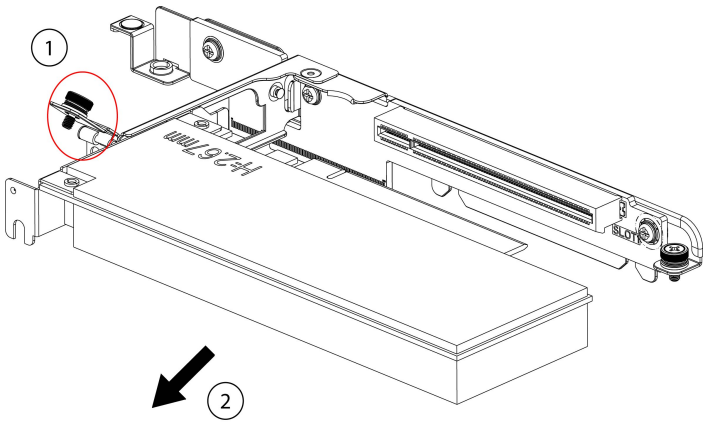
Step 3 Remove the GPU.

a) Using the screwdriver, loosen the captive screw on the PCIe cage door.
b) Swing the cage door open (1).
c) Grasp the GPU, and holding it level, remove it from the PCIe cage (2).

Note
Do not tip or twist the GPU while removing it or you risk damaging the GPU's golden fingers or the PCIe socket.



What to do next

Insert a GPU.

Go to Installing a GPU on the Compute Node, on page 131.

Installing a GPU on the Compute Node

Each compute node can support AI intent (COMPUTE-AI) through an optional HHHL GPU that can be installed in the right PCIe cage on the compute node. The GPU card can be installed as part of hot-swapping the compute node.

Note Do not operate the compute node with an empty PCIe slot. If you will not install a GPU, install a PCIe filler blank.

Before you begin

Before attempting this procedure, gather a #2 Phillips screwdriver and a Torque driver or another tool to measure the torque when tightening the PCIe cage screws.

To facilitate installing the PCIe cage, it has the following features.

- Supported touch points where you should grasp the cage. For the illustrations in this topic, the touch points are indicated by a solid blue circle. Use the touch points when installing the PCI cage.

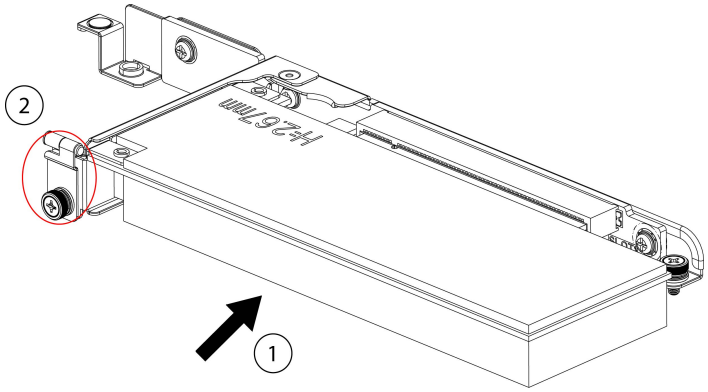
- T pins on the inside of the compute node's sheetmetal wall and notches on the bottom of the PCIe cage. The T pins must insert into the notches to successfully seat the PCIe cage.

Procedure

Step 1 Install the GPU into the PCIe cage.

a) If the PCIe cage door is not open, open it now.
b) Align the golden fingers on the GPU with the PCIe socket in the PCIe cage.
c) Holding the GPU level, seat it into the socket in the PCIe cage.
d) Close the PCIe cage door.

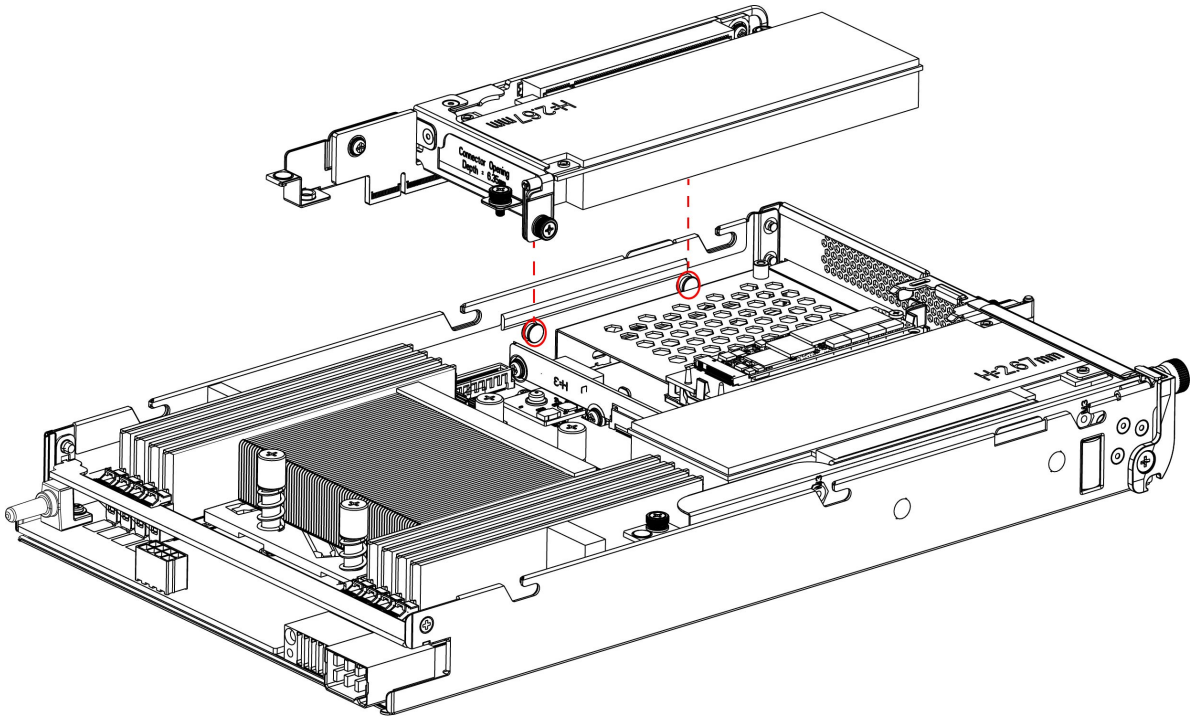
Make sure that the cage door closes fully and sits flush against the PCIe cage.



e) Using the screwdriver, tighten the captive thumbscrew on the cage door to snug.

Step 2 Reinstall the PCIe cage.

a) Locate the T pins on the inside of the compute node wall and the notches on the bottom of the PCIe cage wall.
b) Holding the cage by its touchpoints, lower the cage onto the compute node, making sure that both T pins meet the notches on the bottom of the PCIe cage wall.



c) When the cage sits flush on the node, use a Torque driver to tighten the two captive screws to a range of 4.5 lb-in (5.17 kg-cm) to 5.5 lb-in (6.32 kg-cm) of force.

Step 3 Reinstall the compute node.

Go to Installing a Compute Node, on page 115.

Replacing Node Blanks

The Cisco UCS XE9305 Chassis has five slots for compute nodes. Slots are numbered right to left, bottom up, so slot one is at the bottom right. Slot numbers are silkscreened onto the chassis for easy identification.

When shipped from the factory, slots can be populated with node blanks in slots one through five. Node blanks contain ventilation holes and are installed to protect the slots and ensure proper ventilation.

If your chassis does not have a compute node installed in a slot, that slot must have a node blank installed. Do not operate the chassis without a compute node or node blank installed.

To replace node blanks, use the following topics.

- Removing a Node Blank, on page 133
- Installing a Node Blank, on page 136

Removing a Node Blank

Node blanks are supported in chassis slots one through five, which are silkscreened onto the chassis.

Node blanks are held in place by pressure through a tab on the left of each blank. Each node blank also has a handle on the right side of the node blank. The handle is stationary.

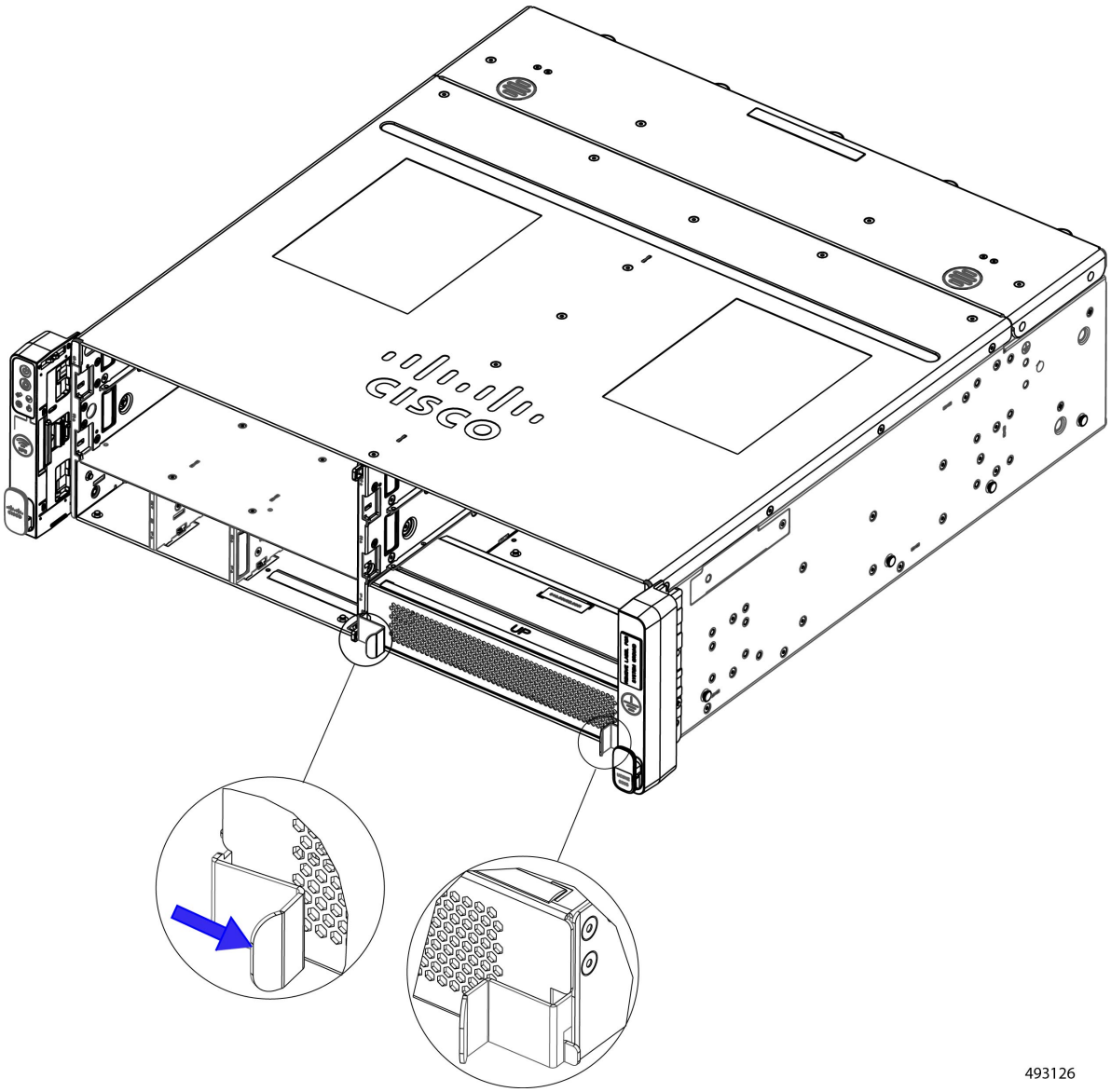
Use this procedure to remove a node blank. Removing a node blank is a toolless procedure. You can complete this procedure with your hands.

Procedure

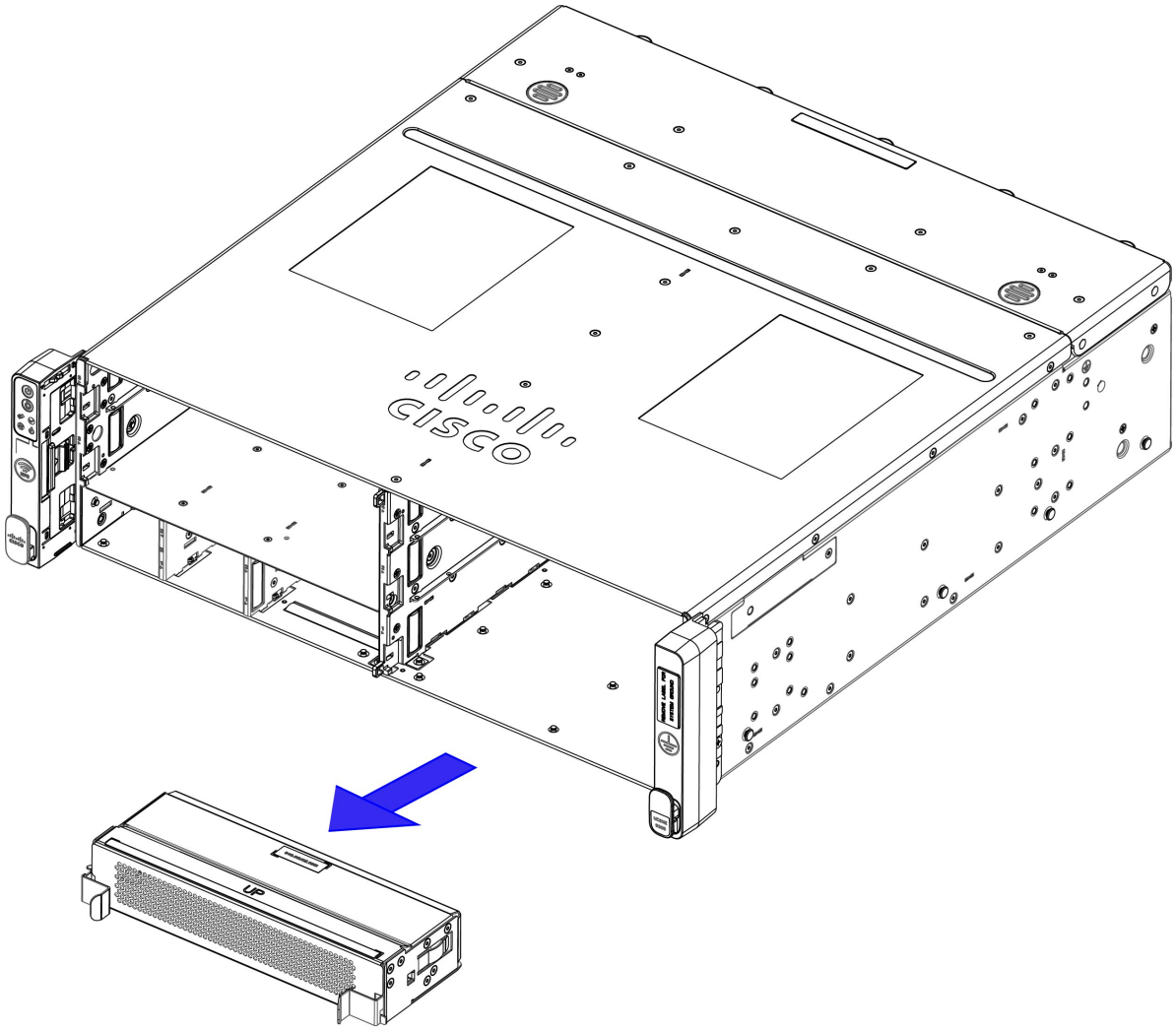
Step 1 Locate the release tab on the left of the node blank.

Step 2 Grasp the handle on the right side of the node blank.

Step 3 While holding the handle, use your fingers to press the release tab inward.



Step 4 While holding the release tab inward, pull the node blank out of the chassis.



Note
Do not operate the chassis with an open chassis slot!

What to do next

Choose the appropriate option to fill the empty node slot:

- Insert a compute node.

  See Installing a Compute Node, on page 115.

- Reinsert a node blank.

  Installing a Node Blank, on page 136.

Installing a Node Blank

The chassis must have either a compute node or node blank covering any empty node slot.

Node blanks are held in place by pressure through a release tab on the left side of the node blank. To facilitate correct orientation, each node blank has the word UP printed on top.

Installing a node blank is a toolless procedure, so you can complete this task with your hands.

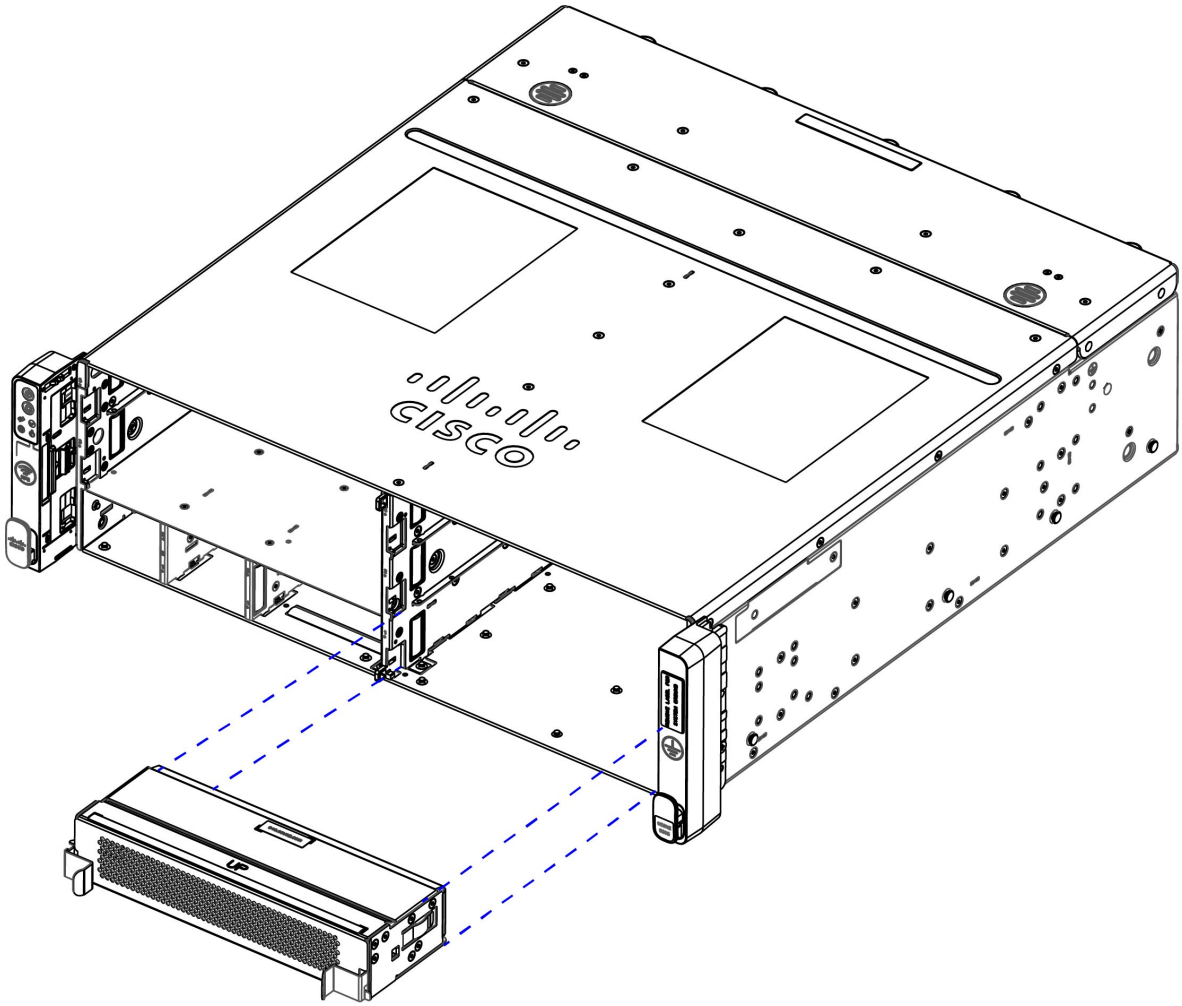
Use this task install a node blank.

Procedure

Step 1 Orient the node blank so that the word UP is facing up.

Step 2 Align the node blank with the slot.

Step 3 Holding the node blank level, slowly insert it into the chassis until it clicks in place.



Replacing the eCMC Node

Each of the Edge Chassis Management Controller (eCMC) nodes is replaceable. When you replace the module, you will disconnect it from the power backplane, so the node will power down. When you reinsert the module, the node automatically powers on after reconnecting to the power backplane.

Chassis Management Controller modules are assigned dedicated slots in the chassis. They must always be installed in those slots.

- You cannot install a compute node into a Chassis Management Controller slot
- You cannot install a Chassis Management Controller module into a standard compute node slot.
- There is no restriction regarding the two Chassis Management Controller module slots. The primary and secondary modules can be installed in either slot.

The chassis can operate with only one Chassis Management Controller module installed, but for full redundancy and fault tolerance, it is strongly recommended that you operate the chassis with both modules installed.

Caution If the chassis is operating with only one Chassis Management Controller module installed, do not remove that module because it is acting as the primary. In this situation, install a secondary before removing the current primary to allow switch over to occur.

To replace a Chassis Management Controller module, use the following tasks.

- Removing a Compute Node, on page 113
- Installing a Compute Node, on page 115

Removing the eCMC Node

Th eCMC ondes are deployed in pairs. For each chassis, there is a maximum of two, which are installed in the front of the chassis. The eCMC modules are easily accessible and removing them is a toolless task.

Removing an eCMC module is accomplished by releasing the ejector and sliding the node out of its slot bay in the chassis. You do not need to remove the top cover to perform this task.

When you remove the primary eCMC module, a switchover event occurs so that the secondary then becomes the primary.

Because the eCMC modules monitor and manage the other parts of the chassis and provide network connectivity, you should always keep at least one module installed to keep the chassis online and operating. If you need to replace both modules, replace the secondary first. When it is online and operating correctly, then replace the current primary.

Procedure

Step 1 Pinch the end of the ejector handle to disengage the locking mechanism.

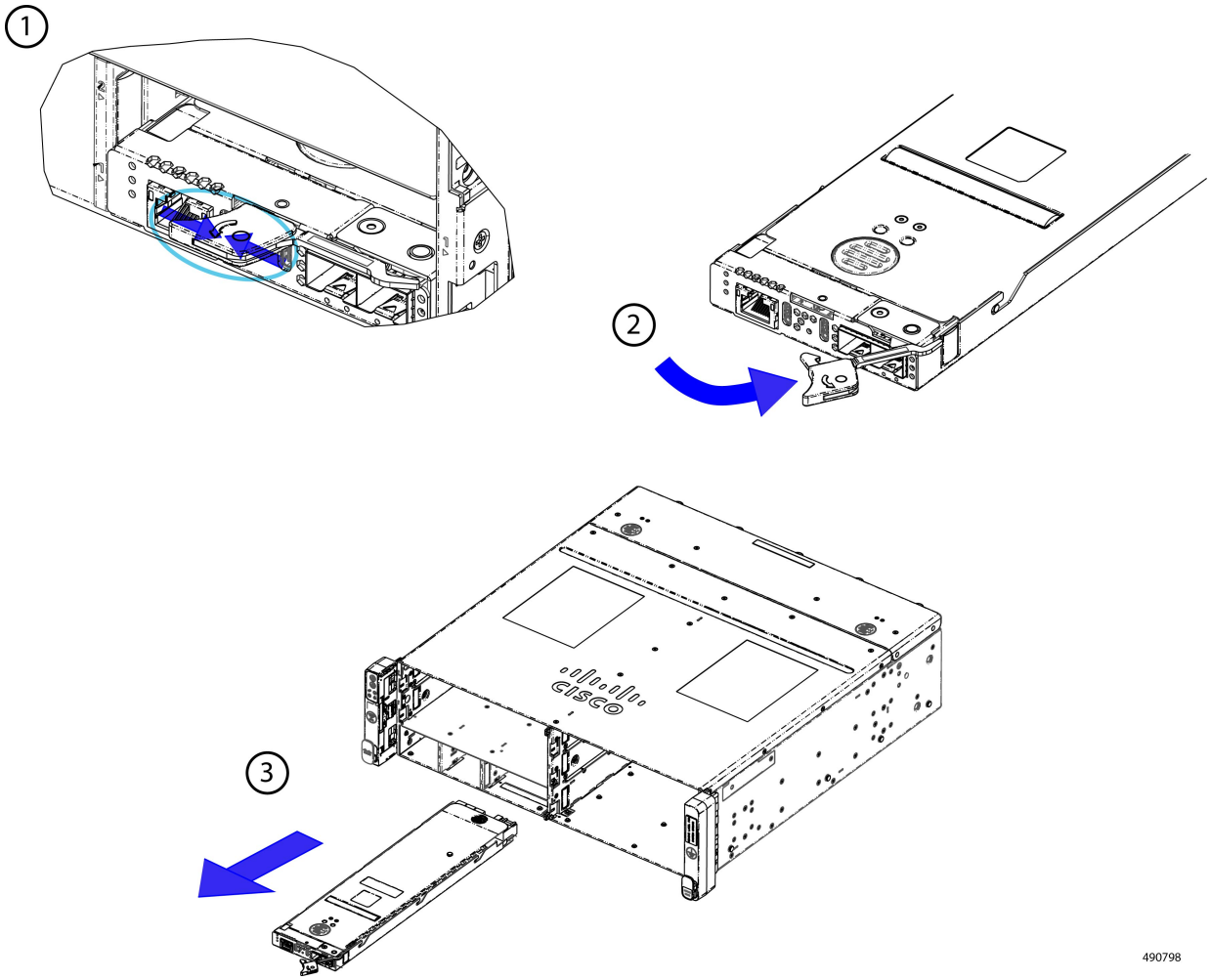
This step unlocks the ejector and allows it to move.

Step 2 Gently swing the ejector to the open position.

Step 3 Grasp the ejector and slide the eCMC module out of the chassis.

Caution
Do not twist or rotate the ejector, or push the ejector up or down while it is in the open position.

Also, while sliding the module out, support the underside of it with your other hand.



Step 4 If you will not be reinstalling an eCMC module, attach a node blank to the unused slot.

Attention
Do not operate the chassis with any uncovered slots. Always apply a node blank to fill any empty slots.

Installing the eCMC Node

The Edge Chassis Management Controller (eCMC) nodes are installed in pairs. For each chassis, there is a maximum of two, which are installed in the front of the chassis. Chassis Management Controller modules are easily accessible and installing them is a toolless task.

Chassis management controller modules are keyed so that they cannot be installed incorrectly.

Because the Chassis Management Controller modules monitor and manage the other parts of the chassis and provide network connectivity, you should always keep at least one module installed to keep the chassis online and operating. If you need to replace both modules, replace the secondary first. When it is online and operating correctly, then replace the current primary.

Procedure

Step 1 Align the module with the slot in the chassis.

The module is correctly aligned when the top cover is facing up.

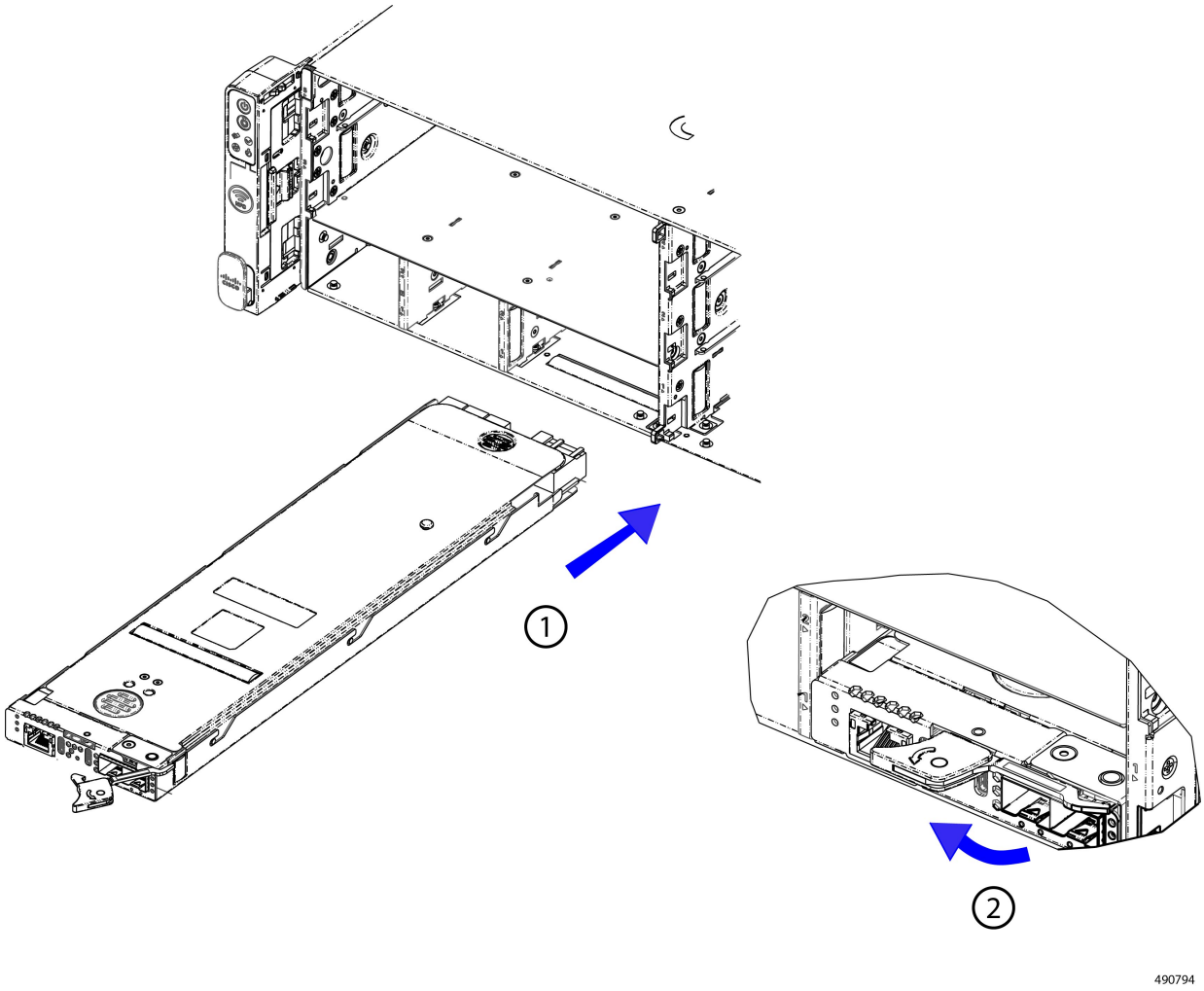
Step 2 Gently swing the ejector to the open position.

Caution
Do not twist or rotate the ejector, or push the ejector up or down while it is in the open position.

Step 3 Support the underside of the Chassis Management Controller module with your other hand and insert the Chassis Management Controller module into the slot.

Note
When the Chassis Management Controller module is almost fully installed, you might feel some resistance. This resistance is normal and occurs when the connector at the rear of the Chassis Management Controller module meets its socket on the inside of the slot.

Step 4 When the Chassis Management Controller module is almost fully installed, gently swing the ejector to the closed position.



When fully closed, the ejector should click into place as the Chassis Management Controller module locks into place.

Replacing the eCMC Boot-Optimized M2 Module

The chassis supports one internal boot-optimized RAID card, the Cisco M.2 NVMe BOOT RAID Controller. This card is a standard half-height, half-length PCIe x8 NVMe RAID adapter card.

The card is a boot-optimized RAID card, so it controls striping and mirroring (RAID 0/1) of data for chassis boot up, OS loading, and logging. Because the card is boot-optimized, it does not control user data I/O, such as reads and writes to the chassis EDSFF local storage.

To replace the eCMC's M.2 module, use the following procedures:.

- Removing the Boot Optimized M2 Module, on page 142
- Installing the Boot Optimized M.2 Module, on page 142

Removing the Boot Optimized M2 Module

You can remove the boot-optimized M.2 drive from the eCMC module.

Before you begin

If you have not already removed the Chassis Management Controller module, do so now.

Gather a #2 Phillips screwdriver.

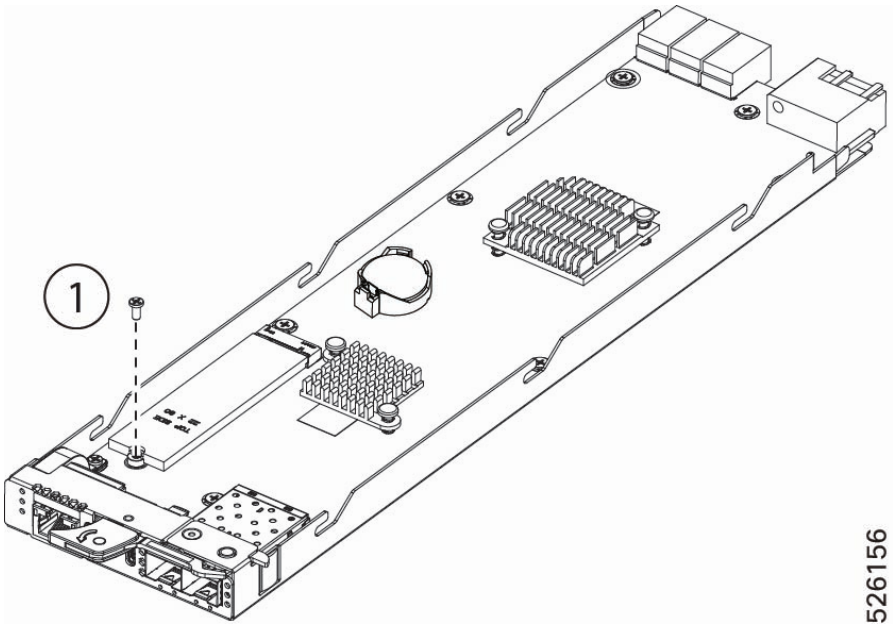
Procedure

Step 1 If you have not already done so, remove the top cover.

Go to Removing a Node Top Cover, on page 86.

Step 2 Remove the M.2 drive from the module.

a) Using a #2 Phillips screwdriver, loosen the securing screw from the Chassis Management Controller module.



b) Slide the drive forward slightly to disconnect it from the motherboard socket, then lift the carrier off of the module.

You might find it helpful to slightly tilt the drive while removing it.

Installing the Boot Optimized M.2 Module

Use this task to install a boot-optimized M.2 module onto the Chassis Management Controller module.

Before you begin

The M.2 module installs onto the Chassis Management Controller module through a connector and a securing screw.

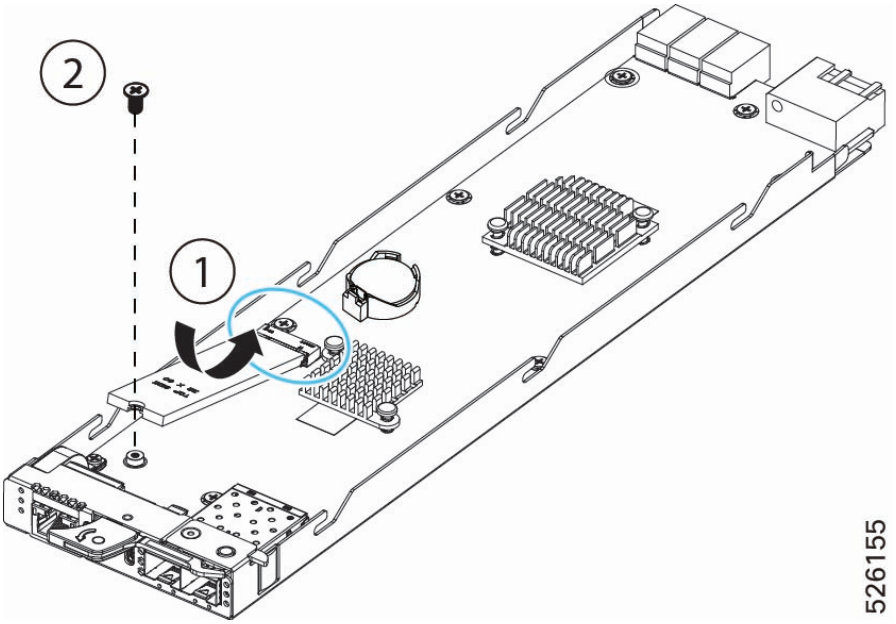
Procedure

Step 1 Align the M.2 drive with the connector.

Step 2 Lower the M. 2 drive into place and install it into the connector.

You will find it helpful to tilt the drive so that it connector correctly meets and seats into the motherboard socket.

Step 3 Using a #2 Phillips screwdriver, install and tighten the securing screw.



Replacing the Fan Modules

The chassis has five 80mm hot-swappable dual rotor fans modules located at the rear of the chassis. Each fan draws air from the cool aisle across the interior of the chassis. The heated exhaust air from the chassis is vented into the hot aisle.

Fan modules are individually hot-swappable, but a minimum of two fans is required to provide proper airflow and cooling. To avoid any overtemp condition for the chassis, we recommend that you replace a maximum of two fans simultaneously.

Two different fan replacement options are supported, either through direct access or by access through the rear top cover of the chassis. The option you choose depends on your ability to access the rear of the chassis.

- Direct access to the fans is typically occurs when the chassis is installed in an open-frame rack with no rear wall.

- Access through the rear top cover of the chassis typically occurs when the chassis is installed in a closed-frame rack (cabinet) with a rear wall the prevents easy access.

To replace fan modules, use the following tasks.

- Direct access to fan modules.
  - Removing Rear-Loading Fan Modules, on page 144
  - Installing Rear-Loading Fan Modules, on page 146
- Access to fans through the rear of the chassis.
  - Removing Fan Modules Through the Rear Cover, on page 147
  - Installing Fan Modules Through the Rear Cover, on page 149

Fan Replacement Options

The chassis offers two options for replacing fan modules: front-loading or through the rear cover. Each option depends on whether you can access the rear of the chassis where the fans are installed.

Equipment Rack	Access to Rear of chassis?	Service Method
Four-Post Open Frame or Two-Post Open Frame	Yes	Either: • Rear-Loading Removal • Rear-Loading Installation or: • Fan Removal Through the Rear Cover • Fan Installation Through the Rear Cover
Four-Post Closed Frame (cabinet) or Two-Post Closed Frame (cabinet)	No	• Fan Removal Through the Rear Cover • Fan Installation Through the Rear Cover

Removing Rear-Loading Fan Modules

If you have rear access to your chassis, the fan modules are individually hot-swappable through the rear of the chassis. However, in some cases (for example, if the chassis is in a closed-frame equipment rack), you might not have access to the rear of the chassis. In this case, you must use the other fan replacement option. See Removing Fan Modules Through the Rear Cover, on page 147.

To remove a fan module, you use the release buttons and the handle.

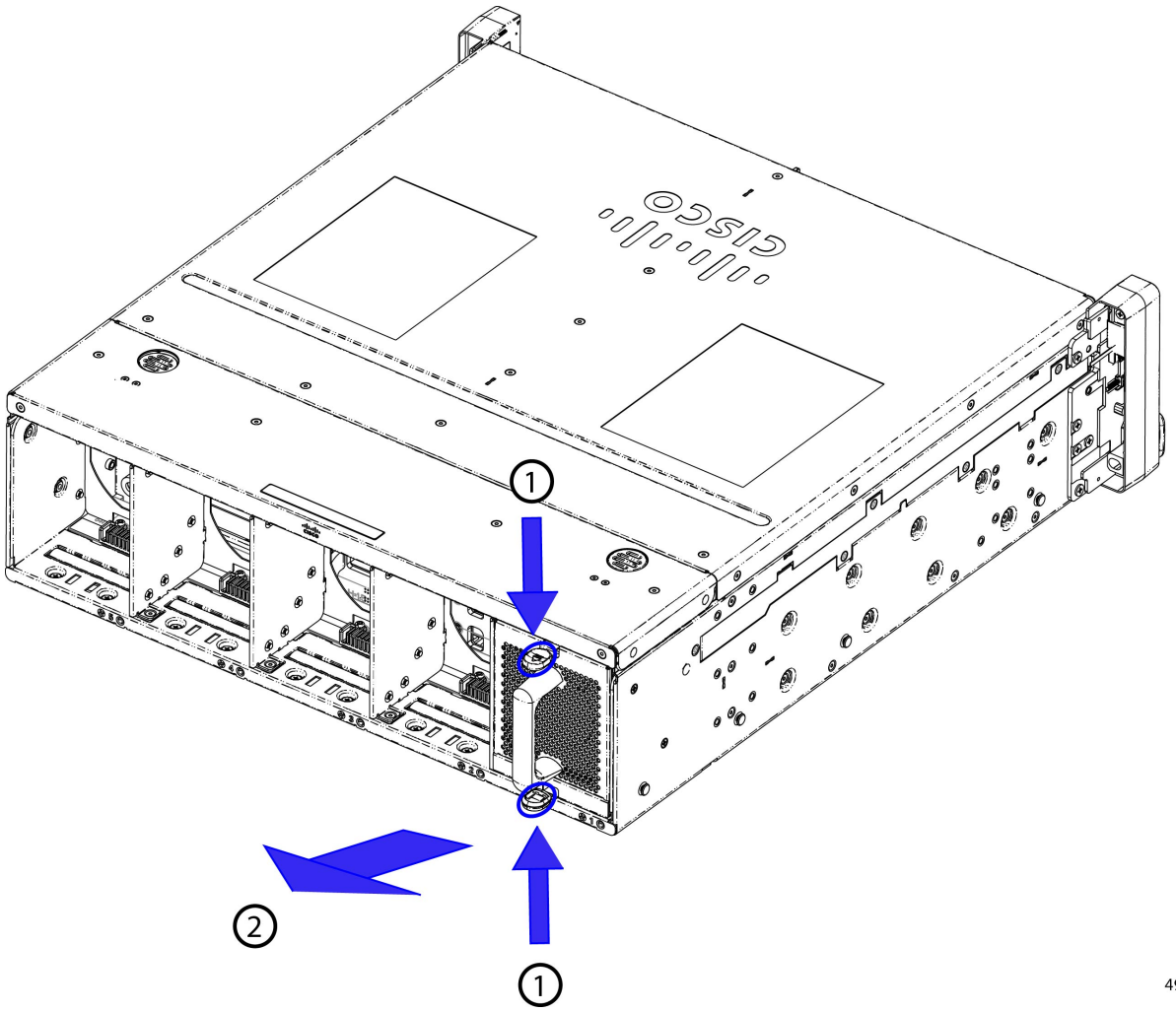
Before you begin

While performing fan replacement, be aware that at least three fans must be installed and operating in the chassis. For this reason, we strongly suggest that if multiple fan modules must be replaced, you should replace one fan at a time.

Procedure

Step 1 Using your fingers, simultaneously press on both the release buttons to disengage the locking mechanism.

Step 2 While locking mechanism is disengaged, grasp the handle and slide the fan module straight out of the chassis.



Note
Depending on the ambient temperature and the load on the chassis, you might hear the other fans accelerate to maintain airflow. This behavior is normal.

Installing Rear-Loading Fan Modules

If you have rear access to your chassis, the fan modules are individually hot-swappable through the rear of the chassis. However, in some cases (for example, if the chassis is in a closed-frame equipment rack, you might not have access to the rear of the chassis. In this case, you must use the other fan replacement option. See Installing Rear-Loading Fan Modules, on page 146.

There are no restrictions for installing fan modules. Any fan module can be installed in any fan module slot. However, if you will not be re-installing a fan module, you must insert a fan module blank to ensure proper airflow.

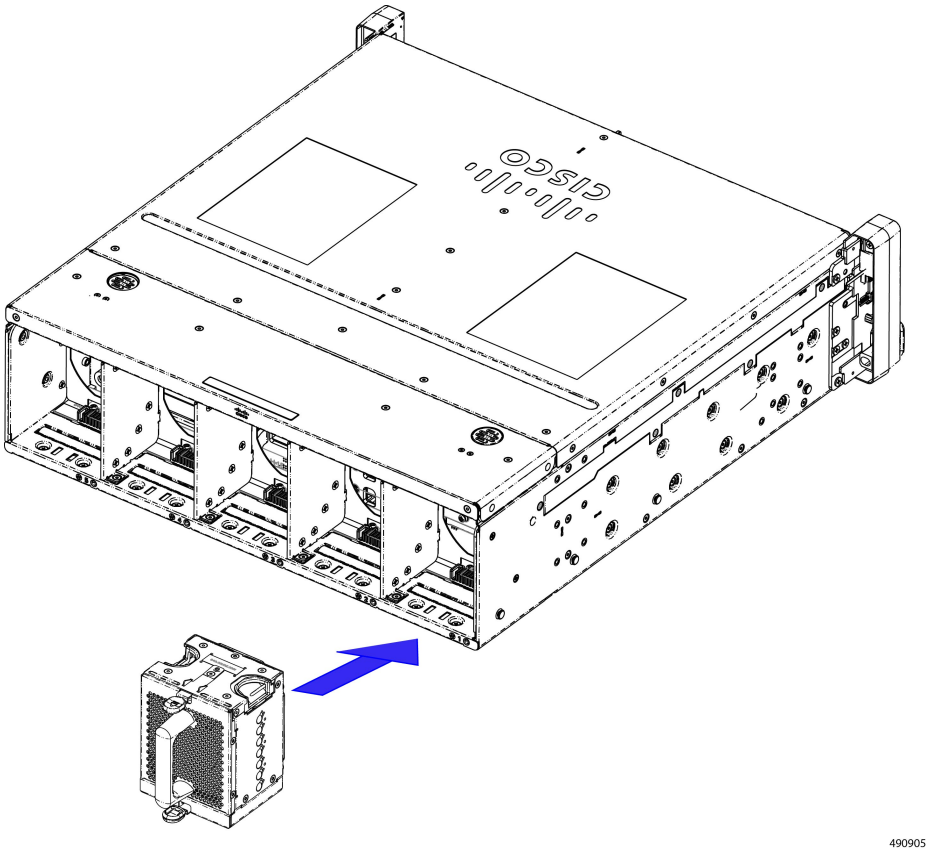
Fan modules are keyed so that they cannot be installed incorrectly, and they have no power switch. When a fan is installed, it will automatically power up.

To install a fan module, use the following procedure.

Procedure

Step 1 Align the fan module with the empty slot in the chassis.

Step 2 Holding the fan module level, gently slide it in.



Note
You might feel some resistance as you insert the fan module. This resistance is normal, and it occurs because the connector on the rear of the fan module connects with the power backplane.

When the fan is completely installed, it will power up.

Accessing the Rear of the Chassis

In some cases, you will not have direct access to the rear of the chassis. For example, in a closed-frame equipment rack (cabinet), sheet metal walls enclose the rear of the chassis, making it impossible to directly access the rear panel. Or, perhaps a wall, furniture or other obstruction prevents access to the rear of the chassis.

In cases such as these, you can access fan modules by removing the rear top cover of the chassis. Use this procedure to gain access to the top rear of the chassis.

Procedure

Step 1 Choose the appropriate option:

- For a four-post rack, go to the next step.
- For a two-post rack, skip the next step.

Step 2 For a four-post equipment rack, access the chassis.

a) If the securing screw is installed, use a #10 Phillips screwdriver to remove the securing screw from each front mounting bracket.
b) Disengage the retaining latch on the front mounting bracket by pushing it outside of the front post of the rack.
c) While the retaining latch is disengaged, pull the chassis out of the rack.

The chassis should easily slide out of the equipment rack, and the slide rail kit should bear the weight of the chassis while the rails are extended.

Step 3 For a two-post rack, access the chassis.

a) Remove the top five securing screws from the front mounting bracket.
b) Remove the set screws from the front mounting bracket.
c) Slowly slide the chassis out of the rack until you can reach the chassis top cover.

Step 4 Remove the fans at the rear of the chassis.

Go to Removing Fan Modules Through the Rear Cover, on page 147.

Removing Fan Modules Through the Rear Cover

- If you do not have rear access to the chassis, you will need to replace fans by removing the rear top cover.
- If you do have rear access to the chassis, you can replace the fan modules directly through the rear-loading option. See Removing Rear-Loading Fan Modules, on page 144.

To remove a fan module through the top cover, use this procedure.

Note Depending on the ambient temperature and the load on the chassis, you might hear the other fans accelerate to maintain airflow when you remove the required fan. This behavior is normal.

Before you begin

While performing fan replacement, be aware that at least three fans must be installed and operating in the chassis. For this reason, we strongly suggest that if multiple fan modules must be replaced, you should replace one fan at a time.

For this procedure, you will need a small ESD-safe work space to temporarily store the chassis rear top cover.

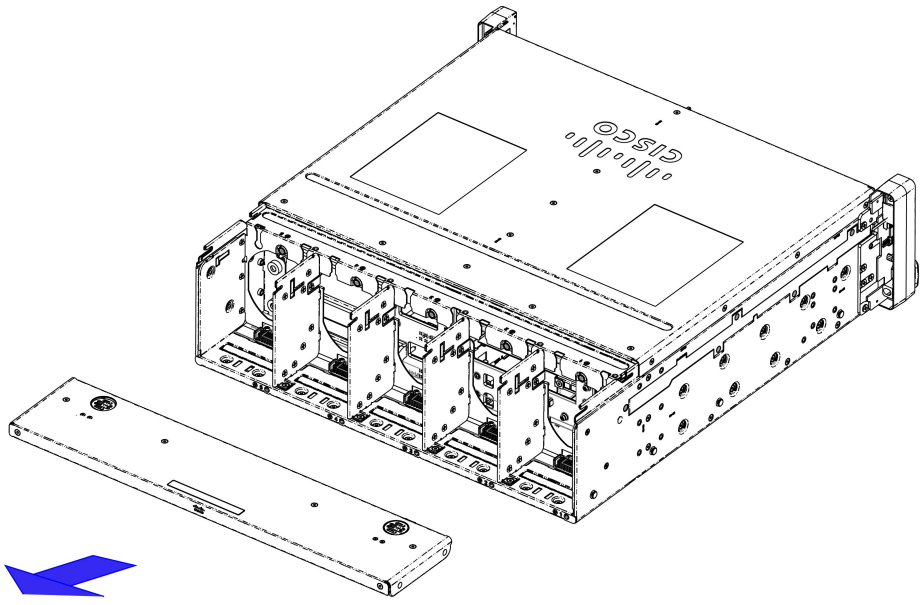
To complete this procedure, you will need clearance to work on the top rear of the chassis. See Accessing the Rear of the Chassis, on page 147

Procedure

Step 1 Remove the top rear cover of the chassis.

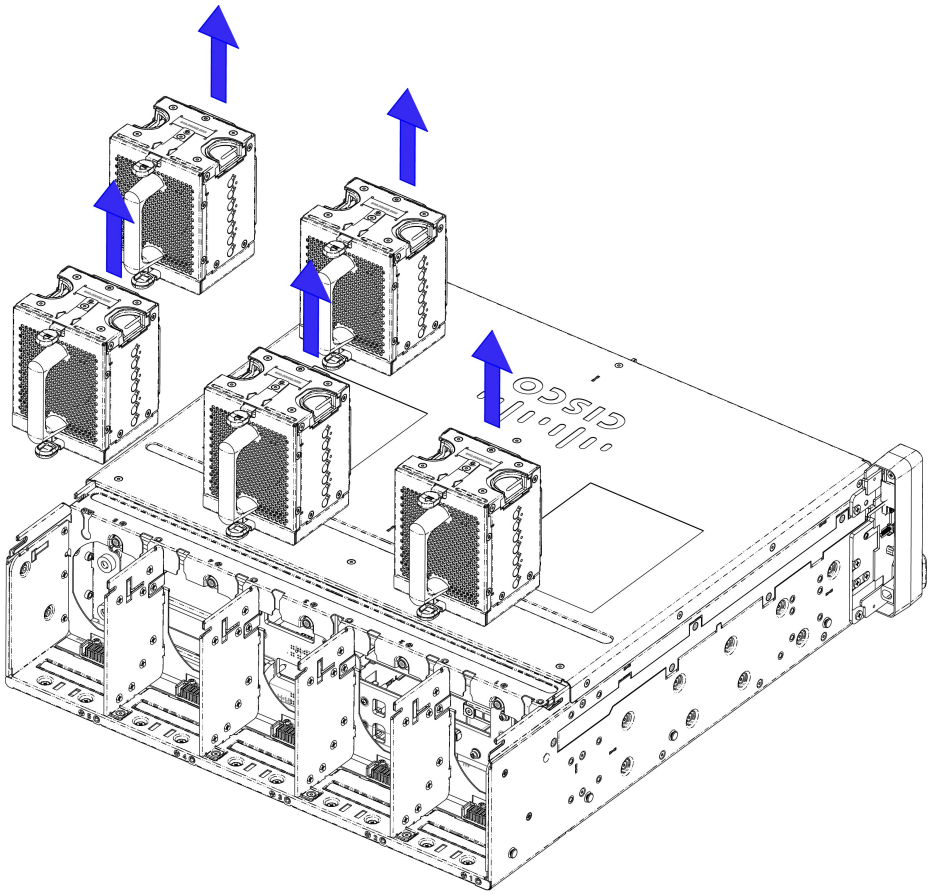
a) Press both release buttons to unlock the top rear cover.

b) While holding the release buttons down, slide the top cover towards you to remove it.



Step 2 Using your fingers, simultaneously press on both the release buttons to disengage the locking mechanism for each fan.

Step 3 While locking mechanism is disengaged, grasp the handle and lift the fan module straight up to remove it from the chassis.



Note
Depending on the ambient temperature and the load on the chassis, you might hear the other fans accelerate to maintain airflow. This behavior is normal.

The illustration shows removing all fans at once, but a minimum of three fans is required to keep the chassis operational without causing an overtemp condition. We strongly recommend replacing only one fan at a time.

Installing Fan Modules Through the Rear Cover

Fan modules can be installed through the top rear of the chassis for cases where you do not have direct access to the rear of the chassis.

Installing a fan is a toolless task.

There are no restrictions on which fan must be installed in which slot. For typical field-replacement procedures, you will install a fan into the same slot that the previous fan occupied. However, you can install any fan into any slot.

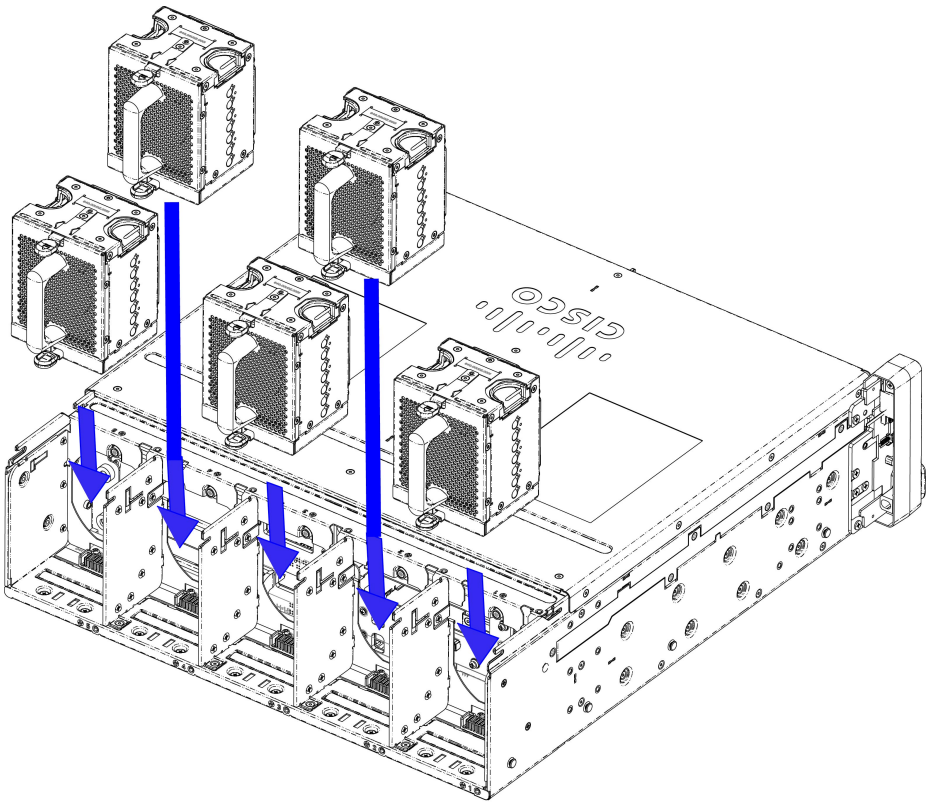
Attention Do not operate the chassis with an empty fan slot. If you remove a fan module and will not install another fan into that slot, cover the slot with a fan module blank.

Procedure

Step 1 Align the fan with its slot.

Step 2 Holding the fan module vertical, lower it straight down into the slot.

Note
You might feel some resistance as the fan is seated into the slot. This resistance is due to the fan's connector meeting the socket in the slot.



Step 3 Check the bottom and sides of the slot to verify that the fan is seated flush into the slot.

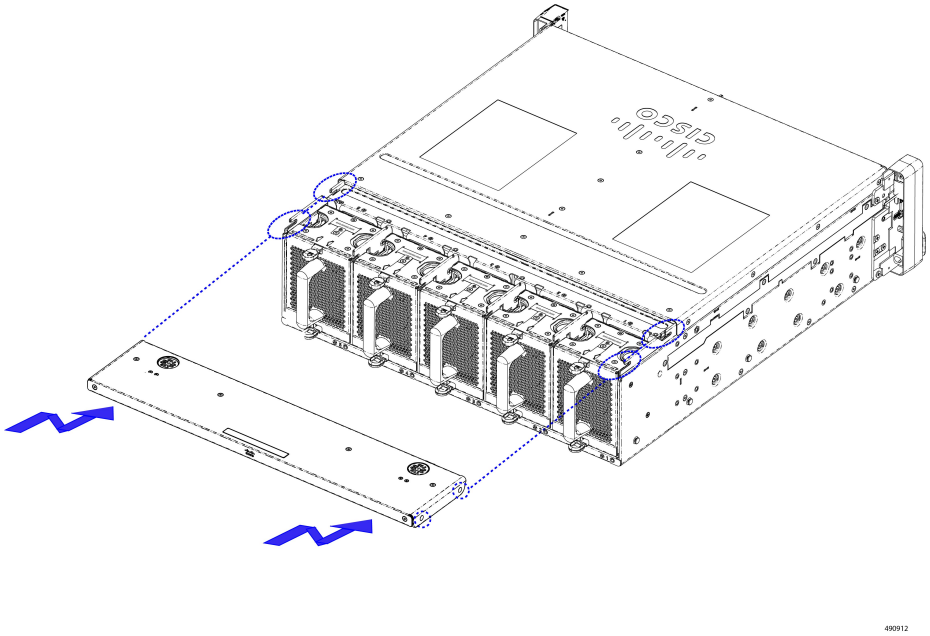
If the fan is not correctly seated, it can obstruct installing the top rear cover.

Step 4 When the fan is correctly installed, attach the top rear cover.

a) Holding the cover level, slightly tip the leading edge downward.

This edge will tuck under the sheet metal top of the chassis.

b) Lower the top rear cover onto the chassis making sure that the catch pins in the top rear cover slide into the retaining grooves in the top of the chassis sidewalls.



c) Fully slide the top cover into place until both release buttons click to lock the top cover in place.

Replacing the Power Supplies

The chassis features two power supply units (PSUs) in the front of the chassis. Each PSU supplies 2400W of AC power (UCSXE-PSU-2400W), and each is hot swappble.

A PSU is numbered either one or two based on the slot that it occupies. PSU numbering is right to left.

- PSU 1 is installed in slot 1 (the right slot)
- PSU 2 is installed in slot 2 (the left slot)

PSUs are interchangeable, so you can install either PSU in any slot.

PSUs support 1+1 power redundancy (grid), so the chassis can operate on only one PSU. However, for full power redundancy and fault tolerance, we strongly recommend having both PSUs installed during normal operation.

As a best practice, we recommend inserting a PSU within one minute of removal.

To replace a PSU, use the following tasks.

- Removing Power Supply Units, on page 152
- Installing Power Supply Units, on page 152

Removing Power Supply Units

PSUs are installed in the front of the chassis. They support 1+1 power redundancy and are hot swappable. If both PSUs need to be replaced, remove and install one at a time.

Procedure

Step 1 Disconnect facility power cables that are plugged in to the PSU.

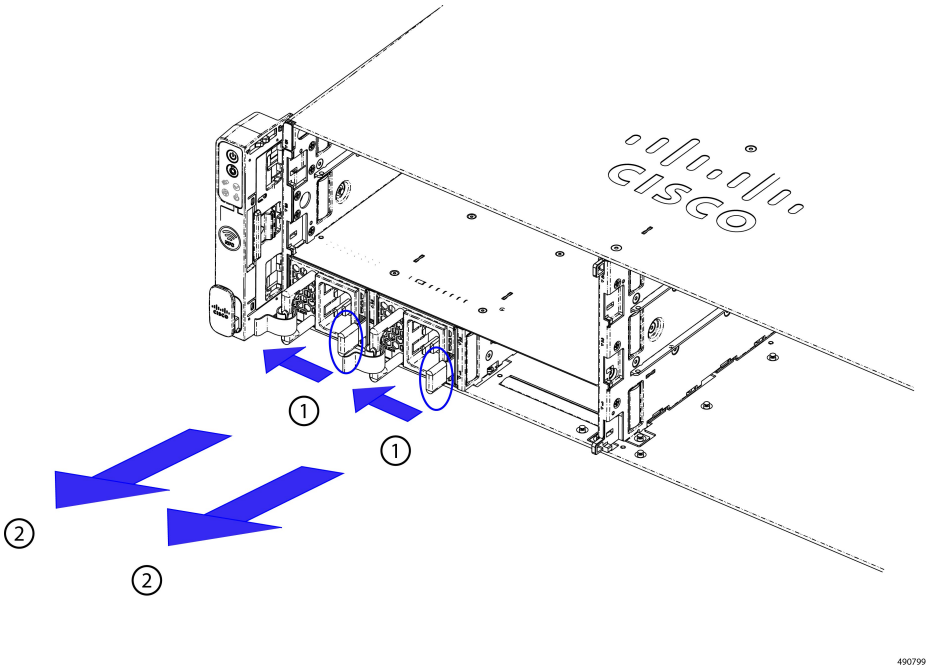
Step 2 Grasp the PSU handle and using your finger, press the release tab inward (toward the handle) to disengage the locking mechanism

Step 3 While the lock is disengaged, pull the PSU straight towards you and slide it partially out of the chassis.

Step 4 While the PSU is still partially installed in the chassis, place your other hand on the underside of the PSU to support its weight.

Note
PSUs can be heavy, so be ready to handle the PSU when it clears the chassis.

Step 5 Completely remove the PSU from the chassis.



Installing Power Supply Units

Use this procedure to install a PSU. There are no restrictions on the slot (1 or 2) into which a PSU can be installed.

PSUs are keyed, so they cannot be installed incorrectly.

PSUs have no power switch, so the PSU automatically powers on when it is installed and connects to chassis power.

Procedure

Step 1 Place your other hand on the underside of the PSU to support its weight.

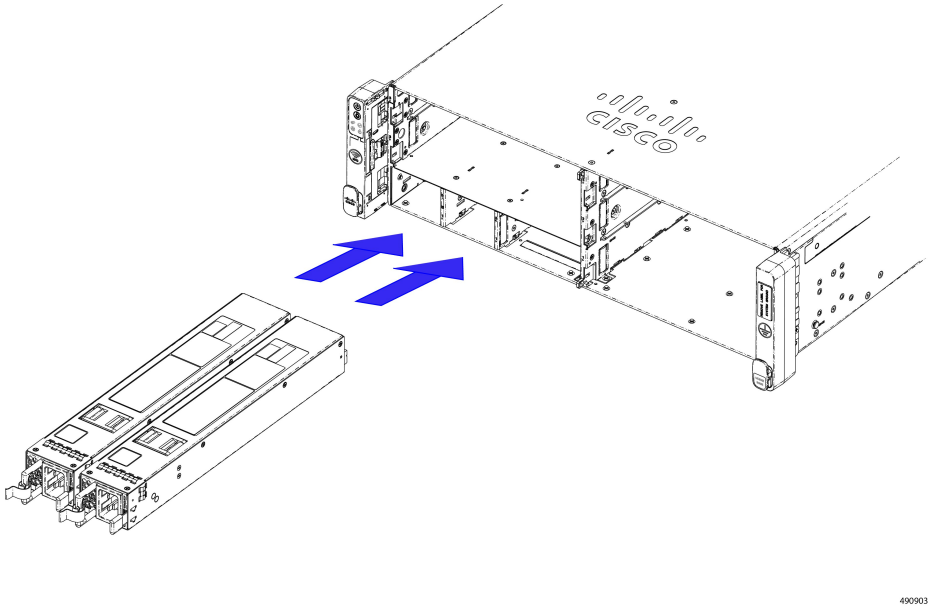
Step 2 Orient the PSU correctly and align it with its slot.

The PSU is oriented correctly when the release tab is on the right.

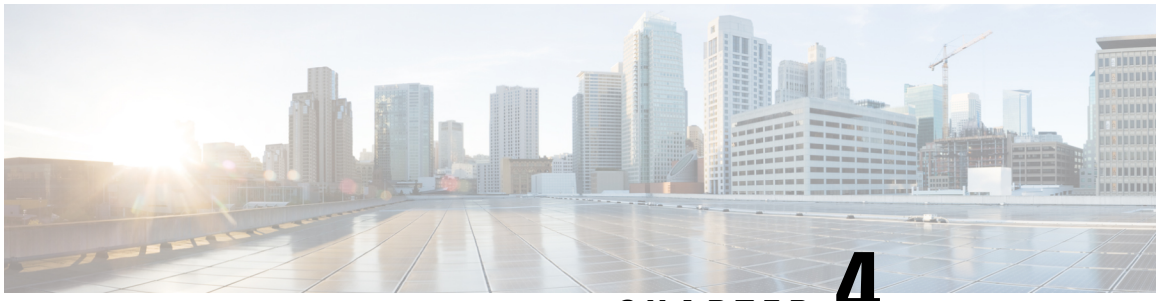
Step 3 Slide the PSU into the slot.

Note
When the PSU is almost completely installed, you might feel some resistance. This resistance is normal, and it occurs because the connector on the PSU meets its socket inside the chassis.

Step 4 Holding the handle, push the PSU all the way into the chassis to fully seat it into the chassis.



Step 5 Reconnect any facility power cables that need to be plugged into facility power.



CHAPTER 4

Recycling Chassis Components

This chapter contains the following topics:

Recycling Chassis Components

The Cisco UCS XE9305 Chassis and some of its nodes have printed circuit boards (PCBs) and other components that must be disposed of in compliance with your appropriate recycling and ewaste regulations, including, but not limited to Commission Regulation (EU) 2019/424.

The following procedures are not standard field-service options. They should be used only by certified or approved recyclers.

Recycling Batteries

The Cisco UCS XE9305 Chassis has two batteries that are included when the product is shipped.

Each battery is a coin-style lithium battery (CR2032) that retains system settings when the chassis is disconnected from power.

- One battery is inside the left mounting bracket. This battery is called the chassis battery, and it is mounted on the LED board.
- One battery is on the eCMC module. This battery is called the eCMC battery, and it is mounted directly on the module's motherboard.

Each battery sits in a clip that is accessible after removing some components. After components are removed, you can remove the battery with your fingers.

The battery is not a FRU, so remove it for recycling purposes only.

Warning **Recyclers:** Do not shred the battery! Make sure you dispose of the battery according to appropriate regulations for your country or locale.

Use the following tasks to recycle the batteries.

- Recycling the Chassis Battery, on page 156
- Recycling the eCMC Battery, on page 161

Recycling the Chassis Battery

The Cisco UCS XE9305 modular system has a chassis battery built into the left mounting bracket. This component contains latch and LED board, and the chassis battery is located on the LED board.

Caution The chassis battery is not a standard field-service procedure. This procedure is intended for recyclers only!

To remove the chassis battery, you will need to disassemble different parts of the chassis to enable access to the battery.

Before you begin

If you have not already disconnected the chassis from facility power, do so now.

Gather the following tools:

- One #2 Phillips screwdriver
- One hexhead wrench or hex nut driver

Warning **Recyclers:** Do not shred the battery! Make sure you dispose of the battery according to appropriate regulations for your country or locale.

To complete this procedure, the fan module, fan tray, and the chassis backplane must already be removed to enable access the component that contains the chassis battery.

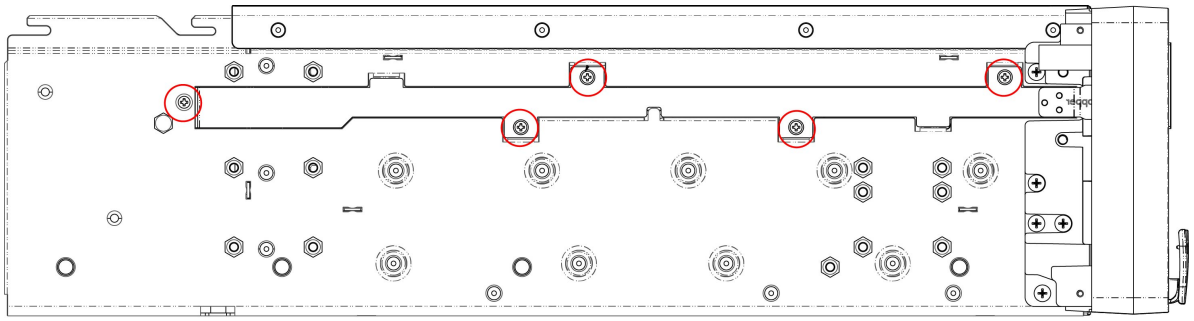
Procedure

Step 1 If you have not already removed the fan module, fan tray, and the chassis backplane, do so now.

Go to Recycling the Chassis Motherboard PCB, on page 184.

Step 2 Remove the FFC cable cover from the left side of the chassis.

a) Using the #2 Phillips screwdriver, remove the five screws on the left side of the chassis.



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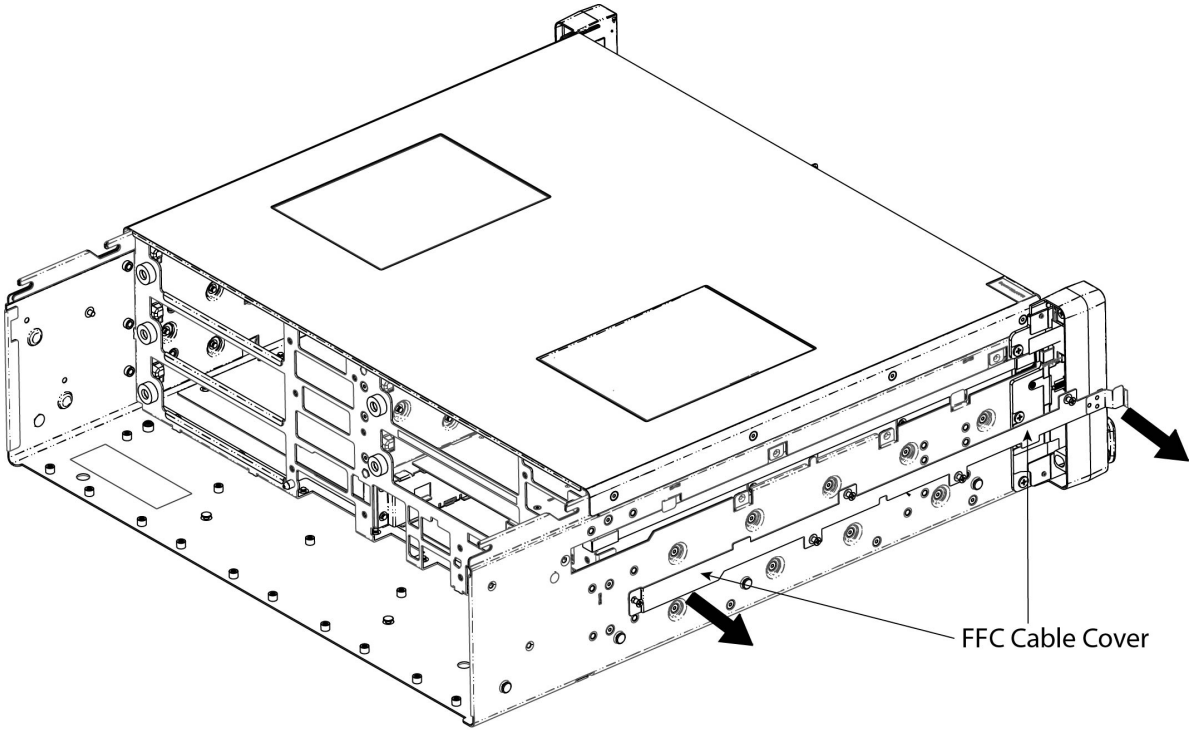
b) Grasp and remove the FFC cable cover.



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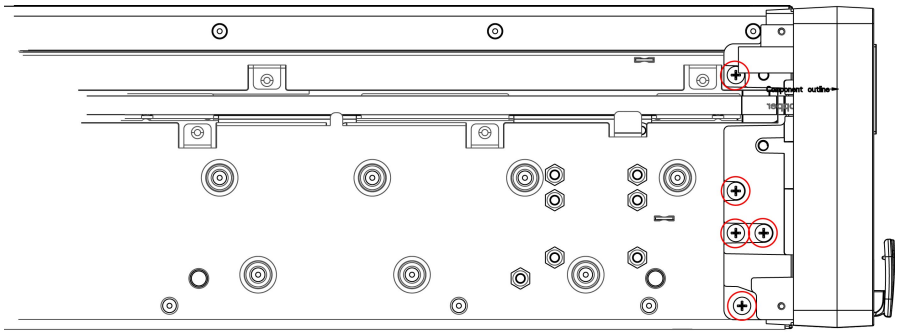
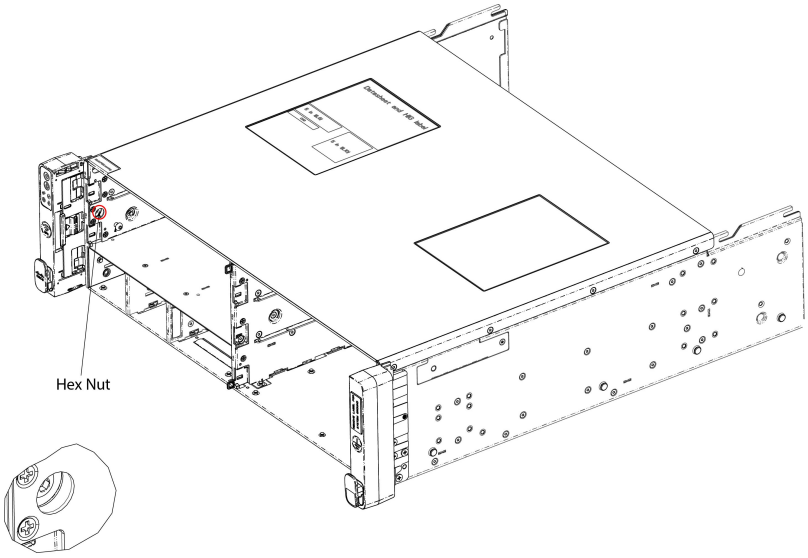
Step 3 Remove the left side mounting bracket (latch).

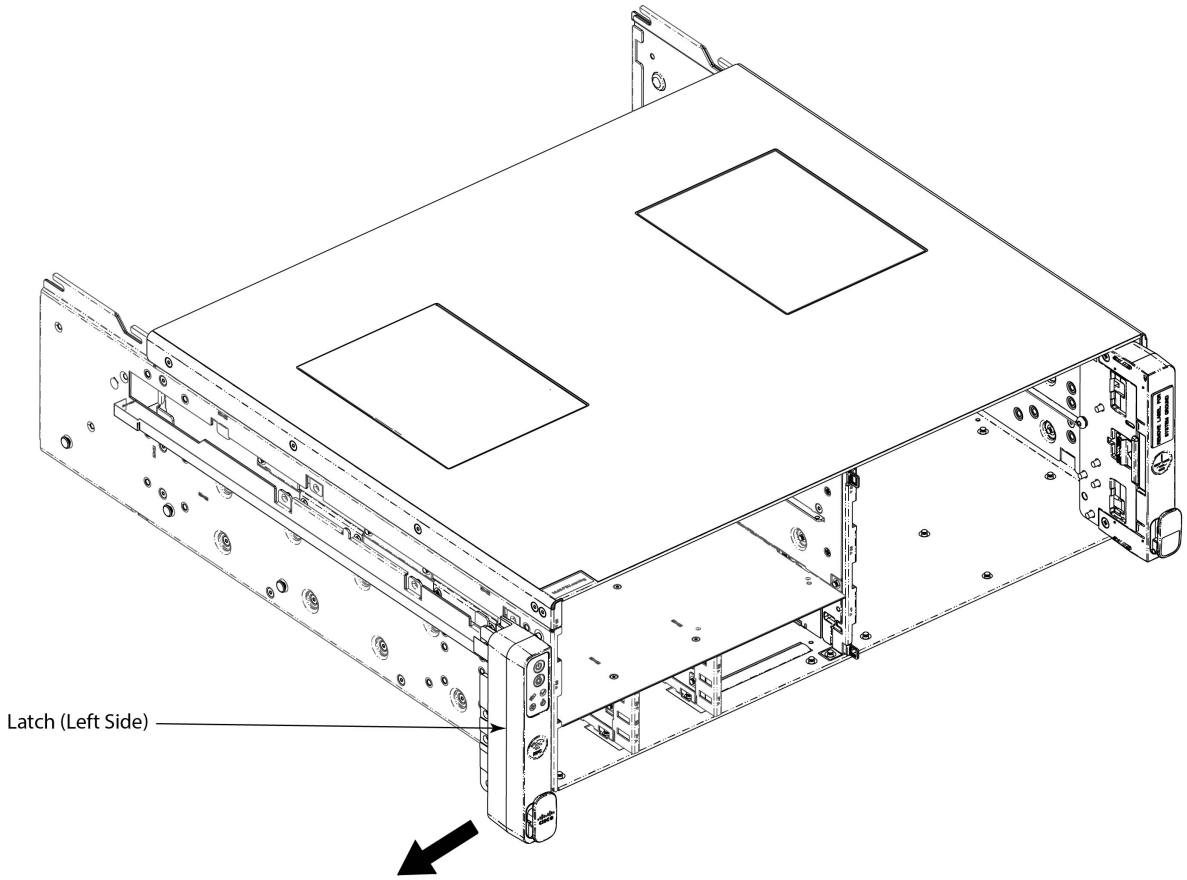
a) Using the #2 Phillips screwdriver, remove the f five screws that secure the mounting bracket (latch) to the chassis.



b) Using the hex driver, remove the hex screw on the interior left wall of the chassis.



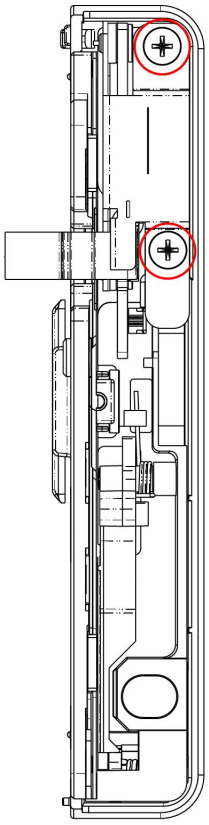
c) Grasp the left side bracket (latch) and detach it from the chassis.



Step 4 Remove the battery.

a) Turn the bracket (latch) around so that the rear of the part is facing you. In this position, the LED cluster is not visible.

b) Using the #2 Phillips screwdriver, remove the two screws that attach the LED board to the bracket (latch).



Latch, Left Side (Rear View)

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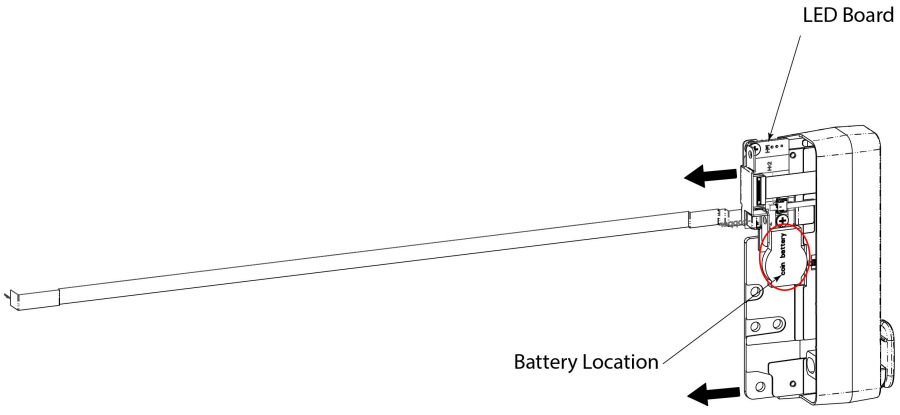
c) Grasp the LED board and slide it out of the bracket (latch) to expose the battery slot.



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d) Grasp the battery and remove it from battery slot.

Step 5 Dispose of the chassis battery in compliance with your local ewaste and recycling regulations.

Recycling the eCMC Battery

The eCMC module has a battery that sits horizontally on the module's PCB.

Caution Recycling the eCMC battery is not a standard field-service procedure. This procedure is intended for recyclers only!

Use the following task to recycle the eCMC module's battery.

Before you begin

Warning **Recyclers:** Do not shred the battery! Make sure you dispose of the battery according to appropriate regulations for your country or locale.

Procedure

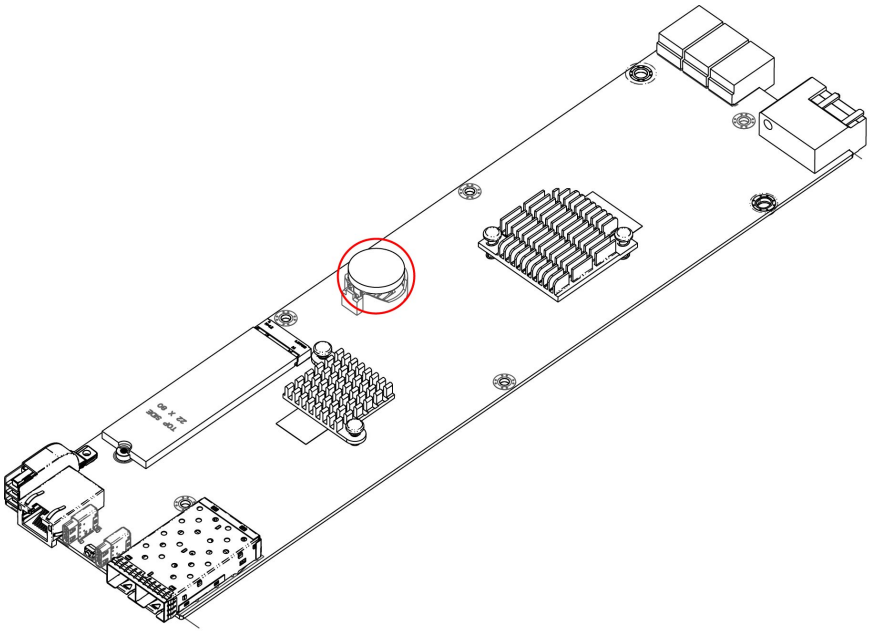
Step 1 Remove the eCMC module.

Go to Removing the eCMC Node, on page 138.

Step 2 Remove the module's top cover.

Removing a Node Top Cover, on page 86.

Step 3 Locate the battery.



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Step 4 Open the battery slot and remove the battery.

Step 5 Dispose of the chassis battery in compliance with your local ewaste and recycling regulations.

Recycling PCB Assemblies

The Cisco UCS XE9305 Chassis has multiple printed circuit board (PCB) assemblies that must be recycled in compliance with your local ewaste and recycling regulations.

Use the following tasks to recycle the chassis PCBAs (PCB assemblies):

- Recycling the Cisco UCS XE130c Compute Node PCB, on page 162
- Recycling the Cisco UCS eCMC Module PCB, on page 182
- Recycling the Chassis Motherboard PCB, on page 184

Recycling the Cisco UCS XE130c Compute Node PCB

The Cisco UCS XE130c Compute Node contains a PCB. To remove the PCB for recycling, you must also remove additional components such as PCIe cards, DIMM modules, the CPU and heatsink.

Use this procedure to recycle the XE130c compute node's PCB.

Before you begin

Gather the following tools:

- One #1 Phillips (cross-head) screwdriver

- One #2 Philips (cross-head) screwdriver
- One #8 hexhead wrench or hex nut driver

Some components on the XE130c compute node have designated touch points where you should grasp the component. Touch points are indicated in these illustrations as a solid blue circle. When indicated, use the touch point. Do not grasp the component at any other locations than the touch point when the touch point is shown.

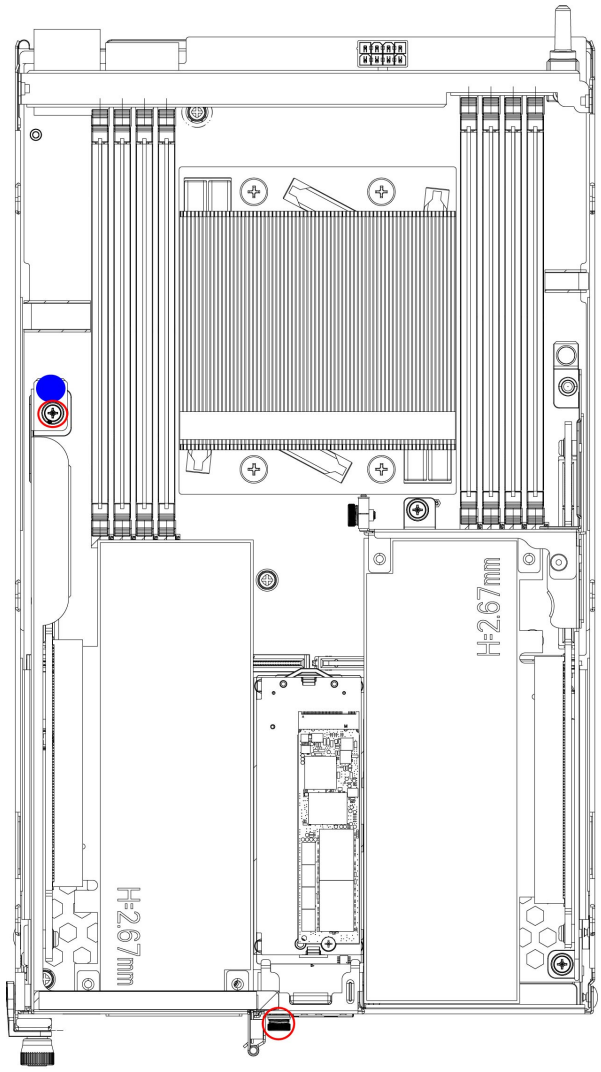
Procedure

Step 1 Remove the node's top cover.

Go to Removing a Node Top Cover, on page 86.

Step 2 Remove the left PCIe module.

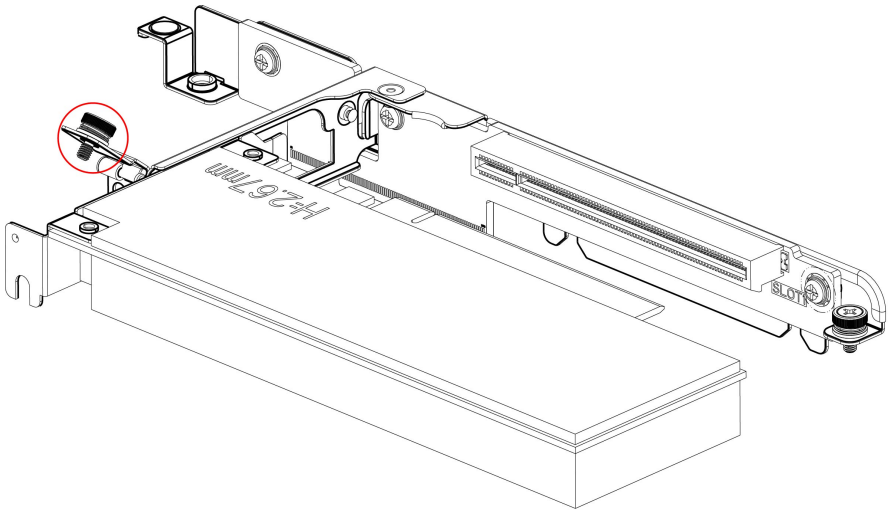
a) Using a #2 Phillips screwdriver, remove the two captive screws.
b) Using the touch point, lift the module off of the node.



Step 3 If the compute node is configured for a PCIe card, remove the PCIe module from the left PCIe cage.

a) Using the #2 Phillips screwdriver, loosen the captive screw and open the cage door.

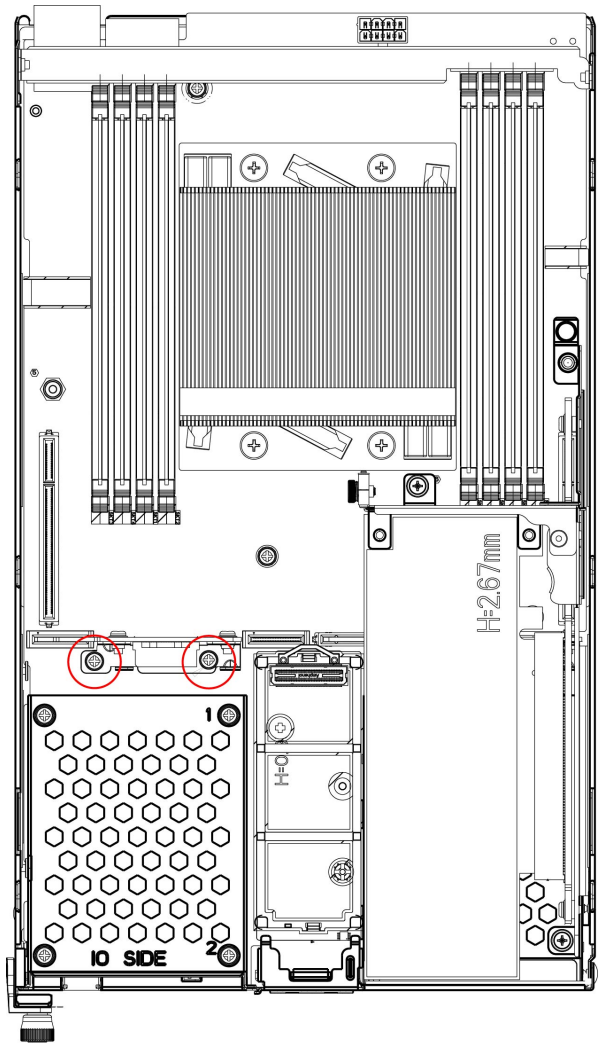
b) Grasp the module and remove it from the cage.



492839

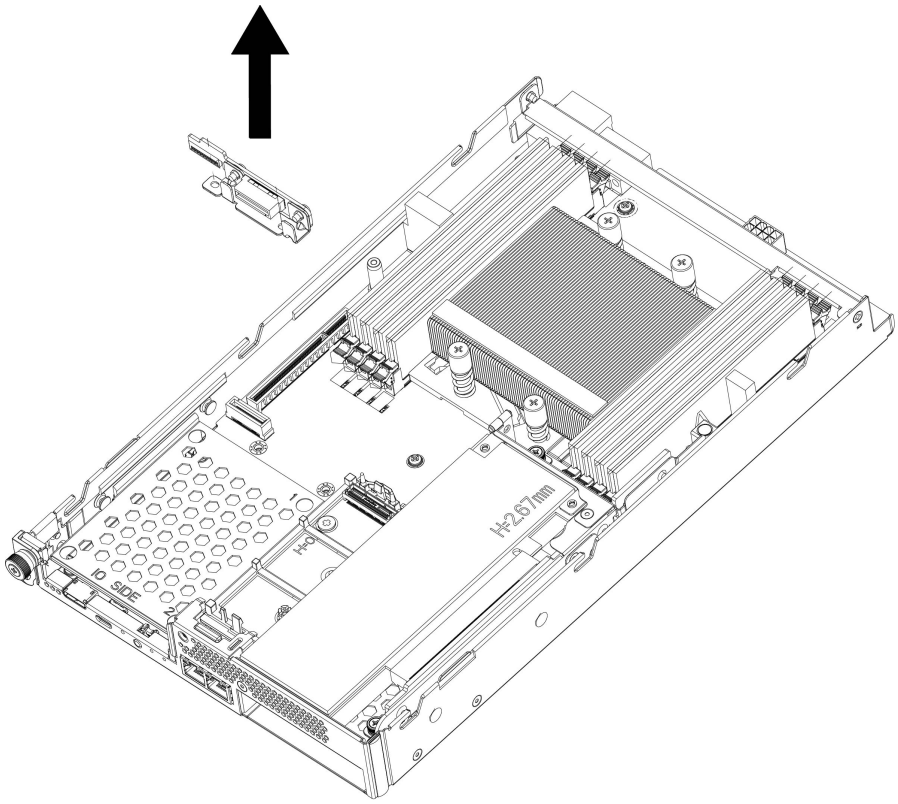
Step 4 Remove the left ES.3 backplane module.

a) Using a #2 Phillips screwdriver, remove the two captive screws.



492836

b) Grasp the E3.S backplane module and remove it from the node.

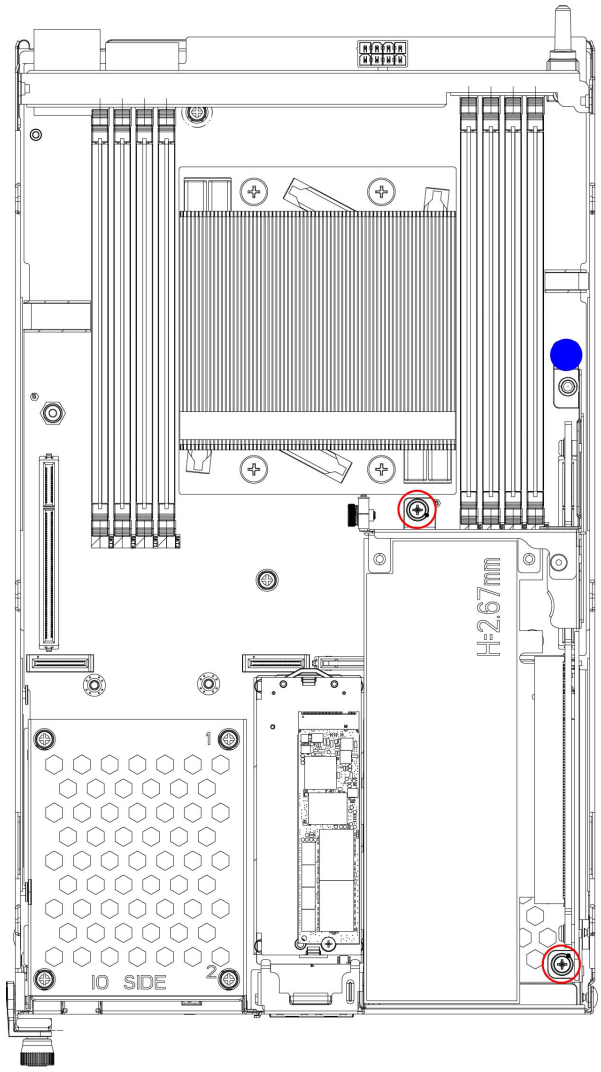


492837

Step 5 Remove the right PCIe module.

a) Using a #2 Phillips screwdriver, remove the two captive screws.

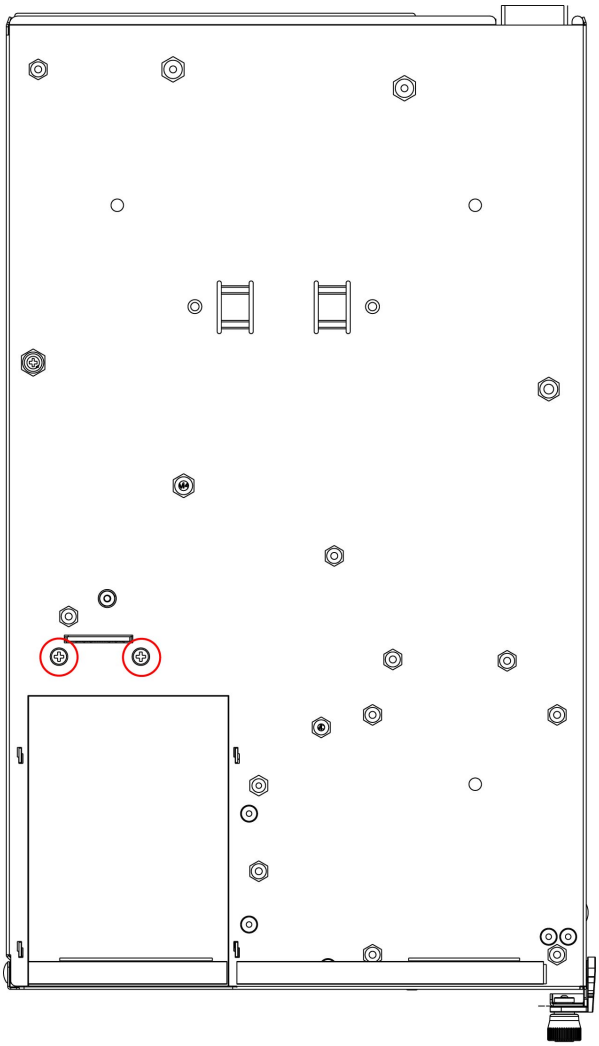
b) Using the touch point, lift the module off of the node.



492838

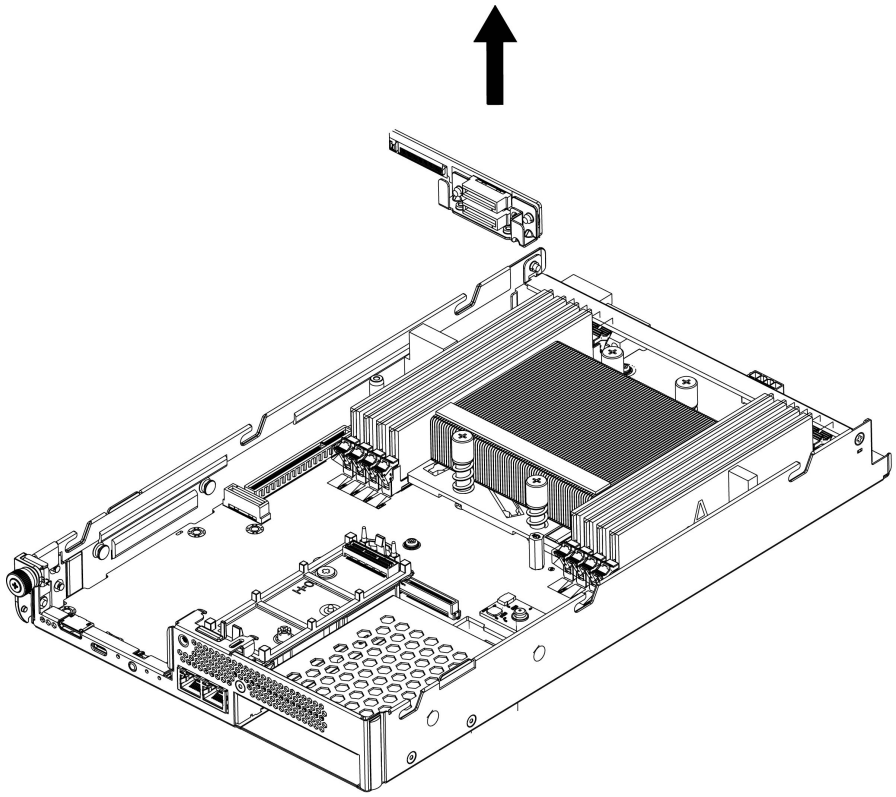
Step 6 Remove the right ES.3 backplane module.

a) Remove the two backplane module screws.



492840

b) Grasp the backplane module and remove it from the node.

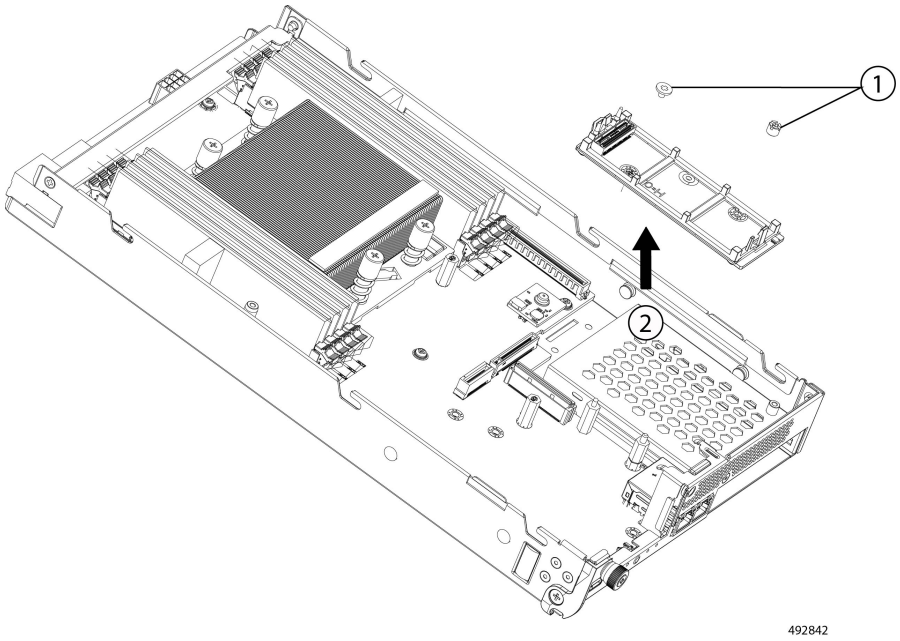


492841

Step 7 Remove the M.2 module.

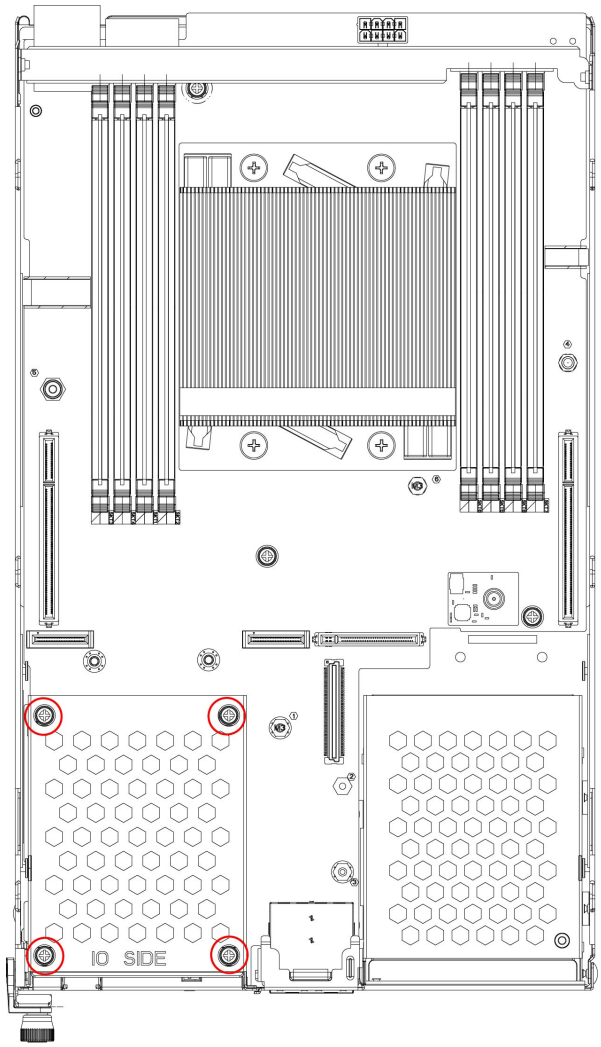
a) Using a #2 Phillips screwdriver, remove the two screws.

b) Grasp the M.2 module and remove it from the node.



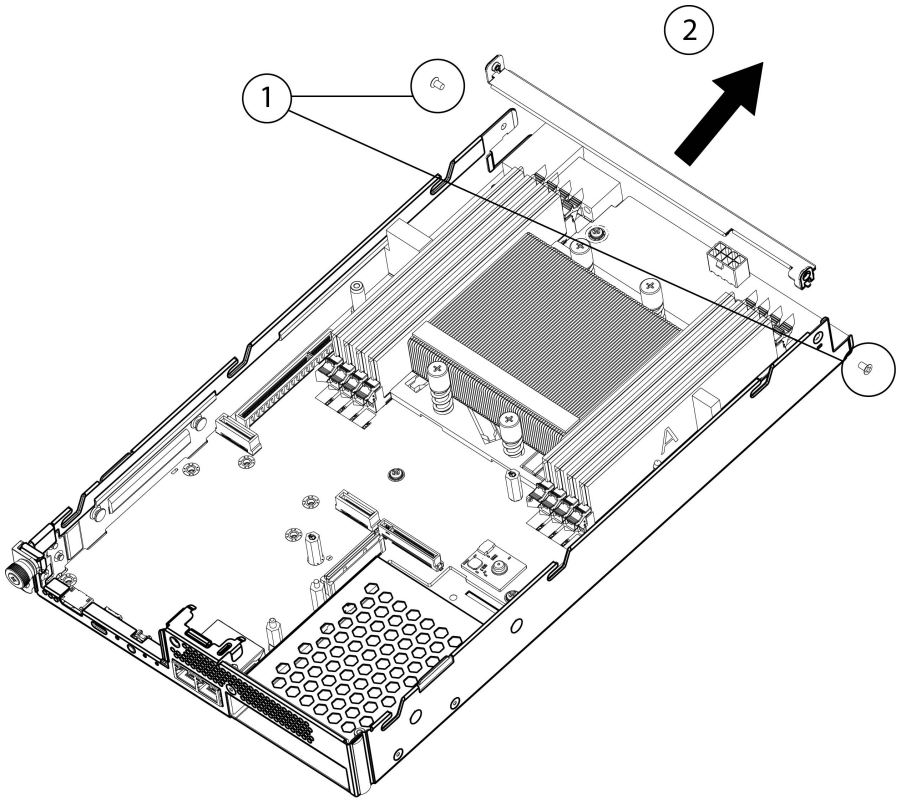
Step 8 Remove the node PCB.

a) Using a #2 Phillips screwdriver, remove the four screws on the left E3.S cage.



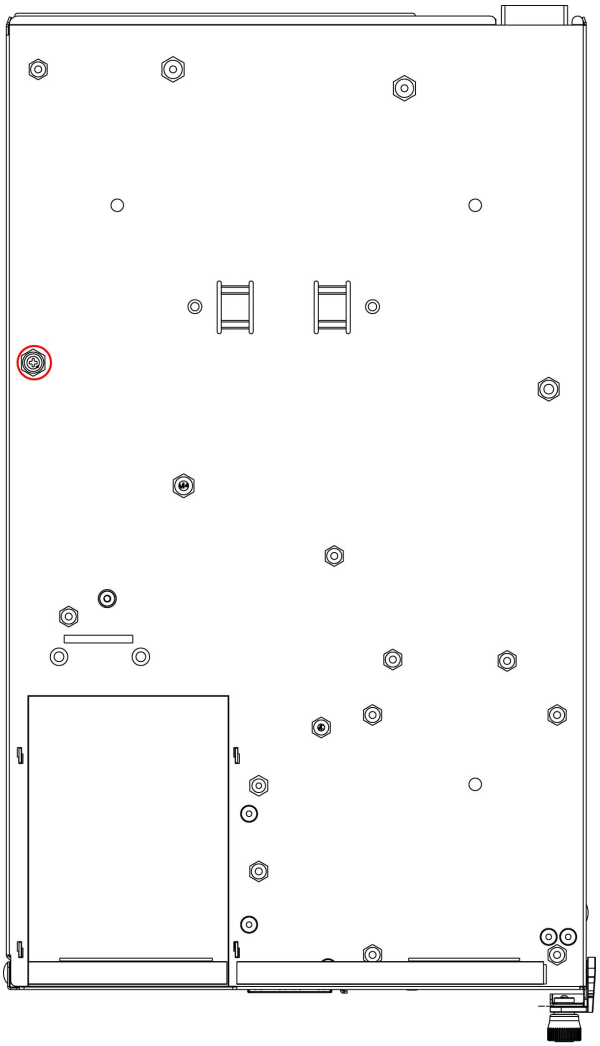
492843

b) Using a 2 Phillips screwdriver, remove the two captive screws, then remove the node's rear wall.



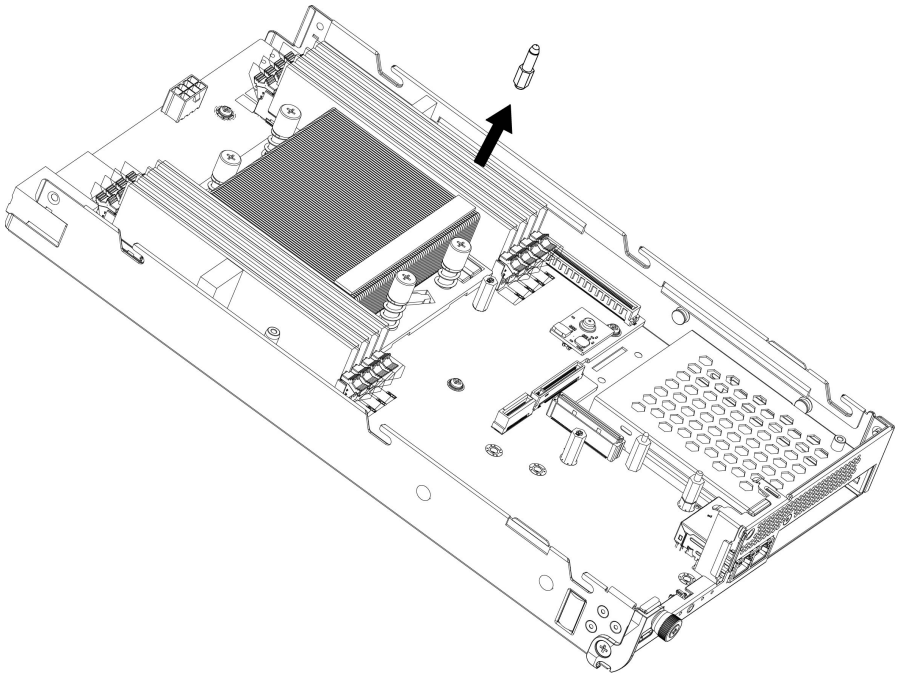
c) Turn the node over so that the bottom is facing up.
d) Using a #1 Phillips screwdriver, remove the guide pin screw on the bottom of the node.

   This screw secures a guide pin on the top of the node.



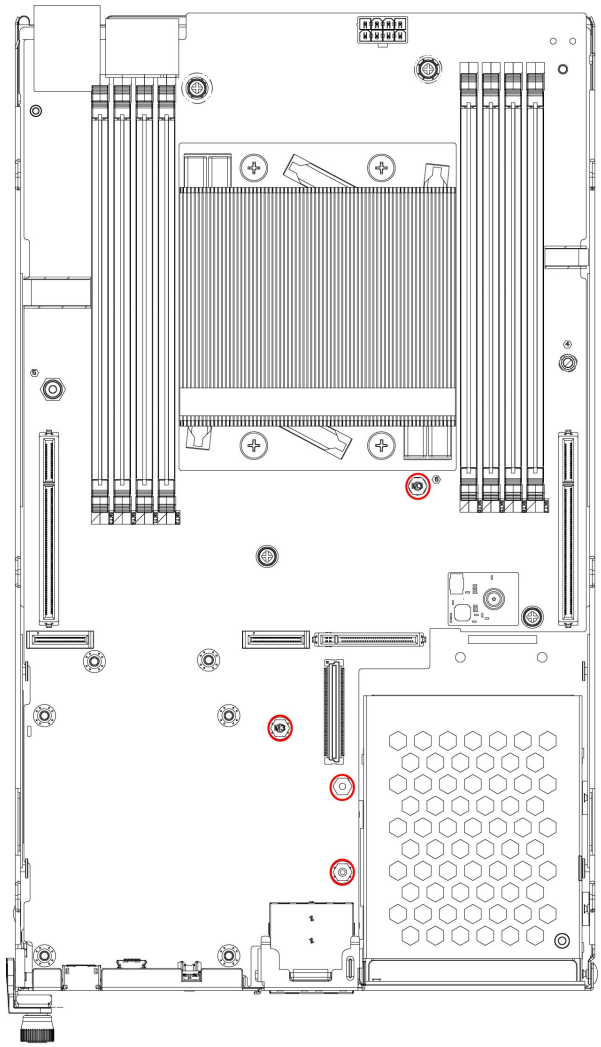
492845

e) Turn the node over so that the top (component side) is facing up.
f) Remove the guide pin.



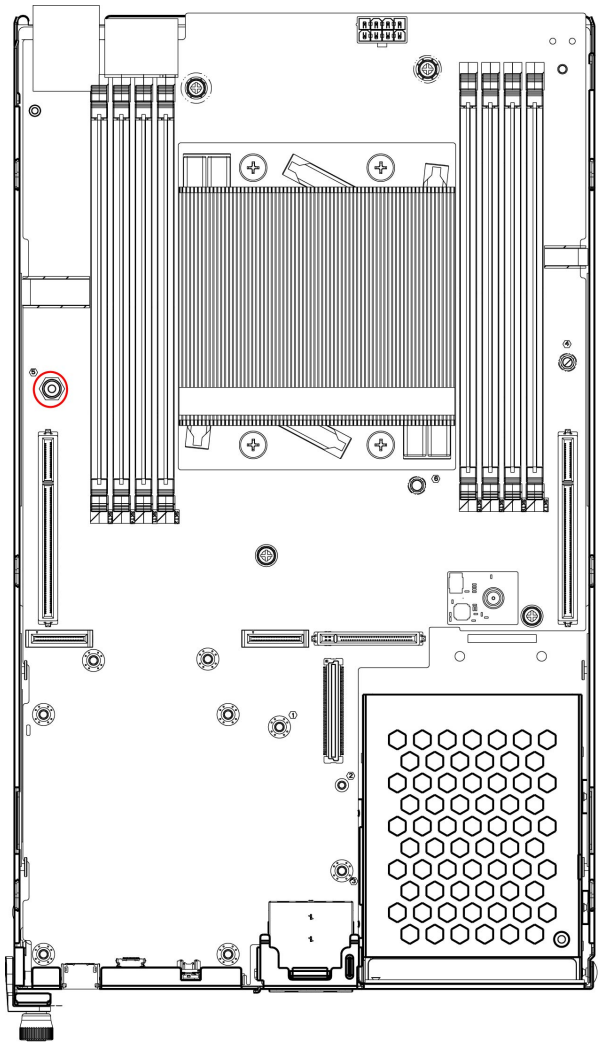
492846

g) Using a #6 hex nut driver or hexhead wrench, remove the four standoffs.



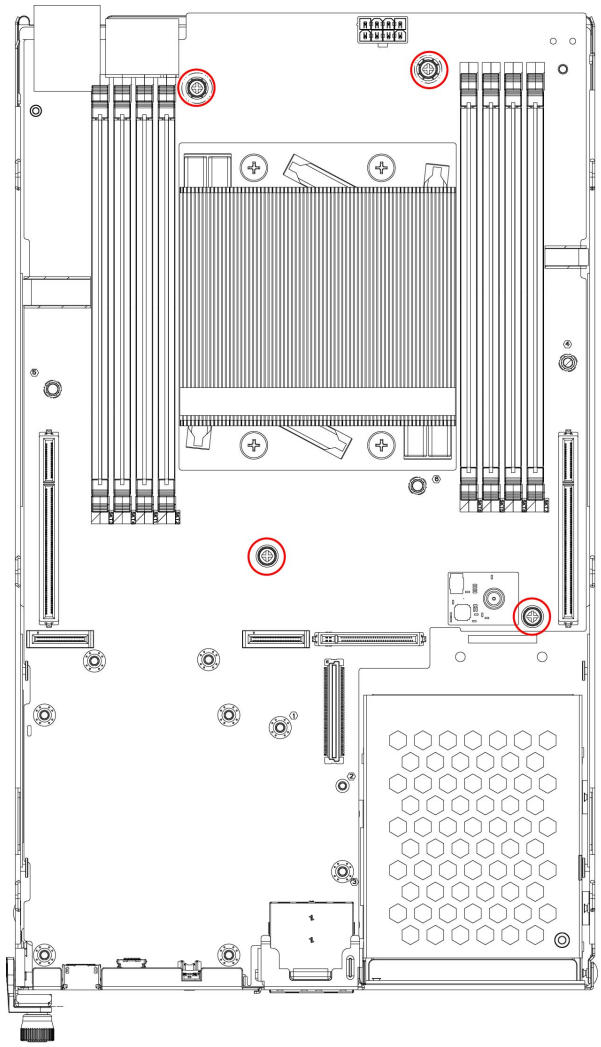
493068

h) Using a #8 hex nut driver or hexhead wrench, remove the standoff.



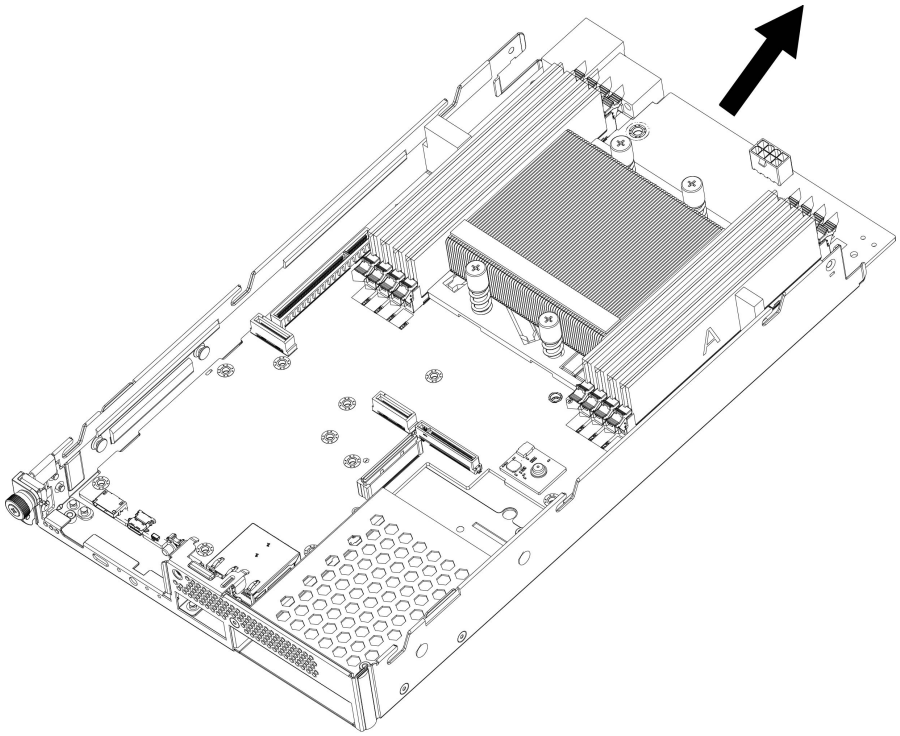
493069

i) Using a #2 Phillips screwdriver, remove the following four screws.



493071

j) Grasp the node PCB and slide it partially out of the node's sheetmetal tray.

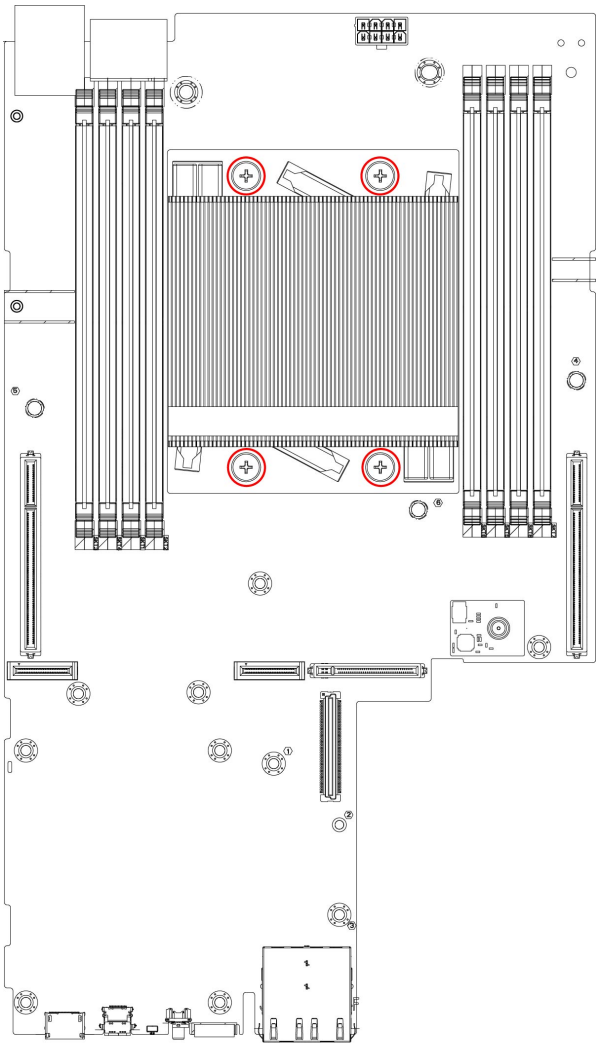


493072

k) Detach the node's PCB from the sheetmetal tray.

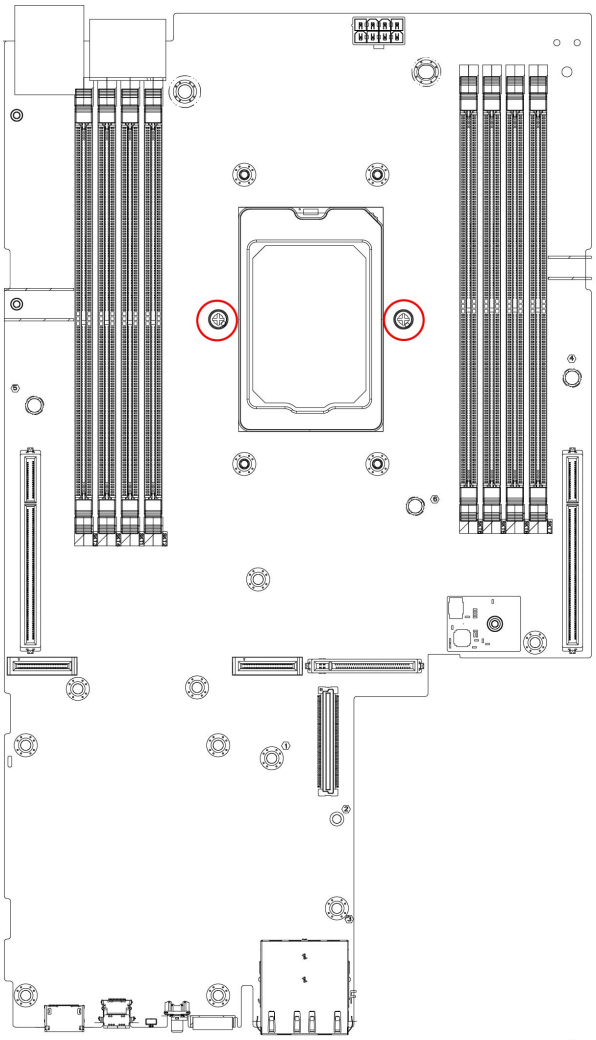
Step 9 Remove the remaining components from the node's PCB.

a) Using a #2 Phillips screwdriver, remove the four standoffs for the heatsink.



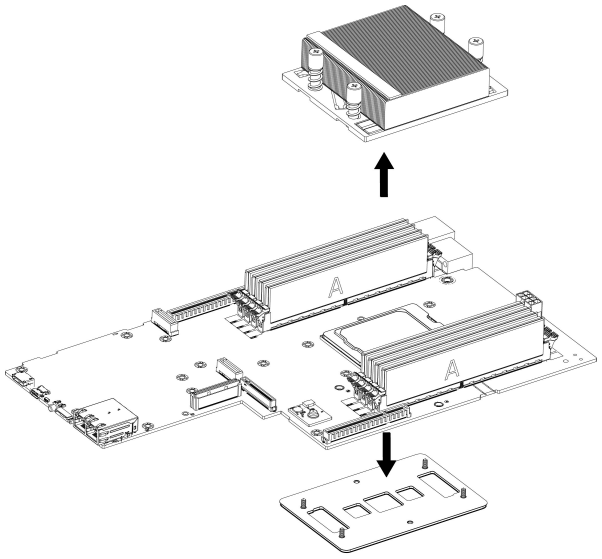
493073

b) Grasp the heatsink and remove it from the node.
c) Turn the node over so that the sheetmetal bottom is facing up.
d) Using a #2 Phillips screwdriver, remove the two backplate screws from the CPU socket.



e) Remove the CPU backplate from the node.

Verify that the both the CPU backplate and heatsink have been removed. Removal of these parts occurs from different sides of the node.



Step 10 Recycle the DIMM modules.

Go to Recycling the Compute Node DIMM Modules, on page 191.

Step 11 Dispose of the compute node PCB and related components in compliance with your local ewaste and recycling regulations.

Recycling the Cisco UCS eCMC Module PCB

The eCMC module contains a PCB. To remove the PCB for recycling, you must also remove additional components such as the M.2 Module and a battery.

Use this procedure to recycle the eCMC module's PCB.

Before you begin

Gather a #2 Philips (cross-head) screwdriver

Warning **Recyclers:** This module contains a CR2032 coin-style battery. Do not shred the battery! Make sure you dispose of the battery according to appropriate regulations for your country or locale.

Procedure

Step 1 Remove the eCMC module from the chassis.

Go to Removing the eCMC Node, on page 138.

Step 2 Remove the module's top cover.

Removing a Node Top Cover, on page 86.

Step 3 If you have nor already removed the eCMC battery, do so now.

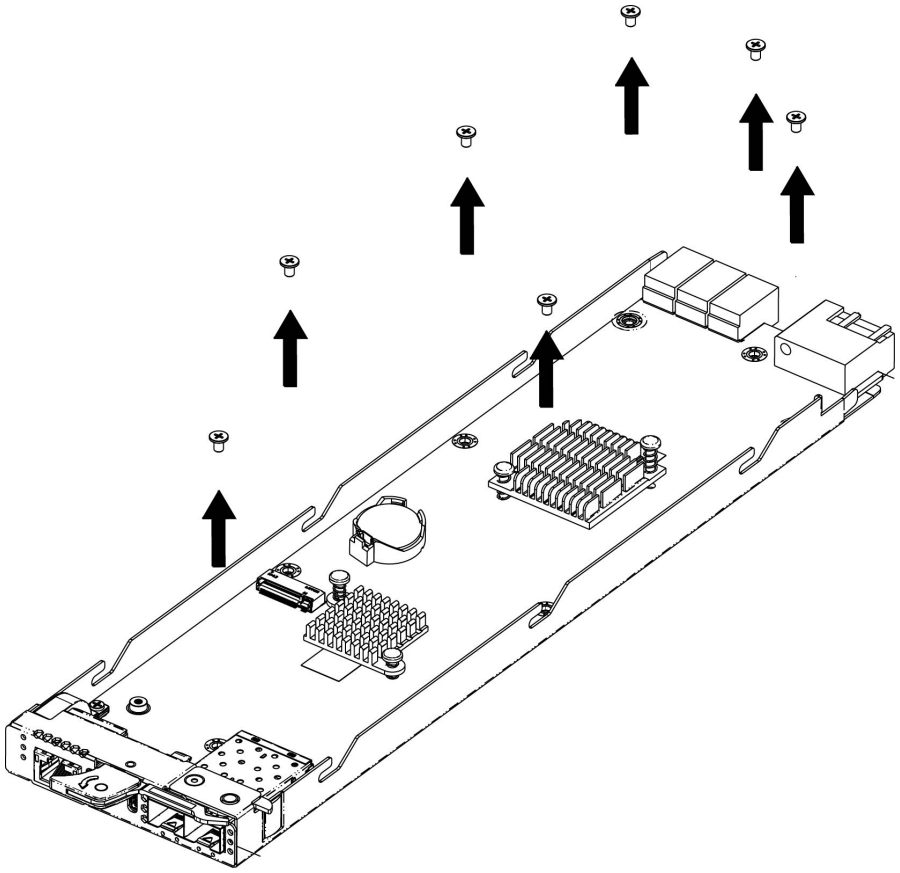
Go to Recycling the eCMC Battery, on page 161.

Step 4 Remove the M.2 module.

Removing the Boot Optimized M2 Module, on page 142.

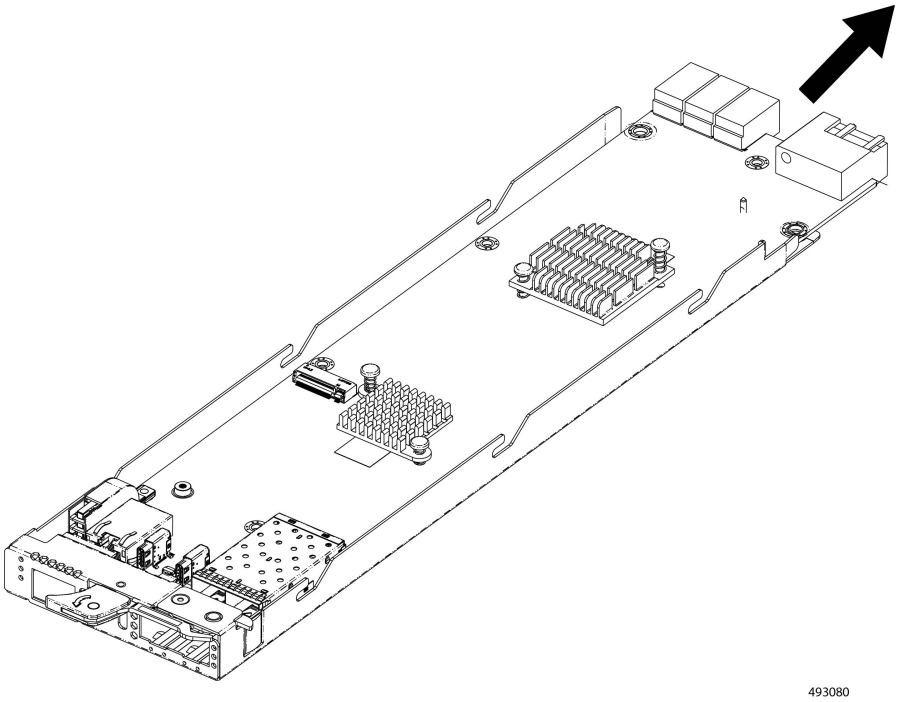
Step 5 When the M.2 SSD is removed, detach the PCB from the sheetmetal tray.

a) Using a #2 Phillips screwdriver, remove the seven screws that secure the PCB to the sheetmetal tray.



493077

b) Grasp the rear of the PCB and slide it partially out of the sheetmetal tray.



c) Remove the PCB from the sheetmetal tray.
d) Dispose of the PCB in compliance with your local ewaste and recycling regulations.

Recycling the Chassis Motherboard PCB

The chassis has a main PCB, the backplane PCB, that interconnects various subsystems. To remove the backplane PCB, you will need to disassemble different parts of the chassis to enable access to the PCB.

Before you begin

If you have not already disconnected the chassis from facility power, do so now.

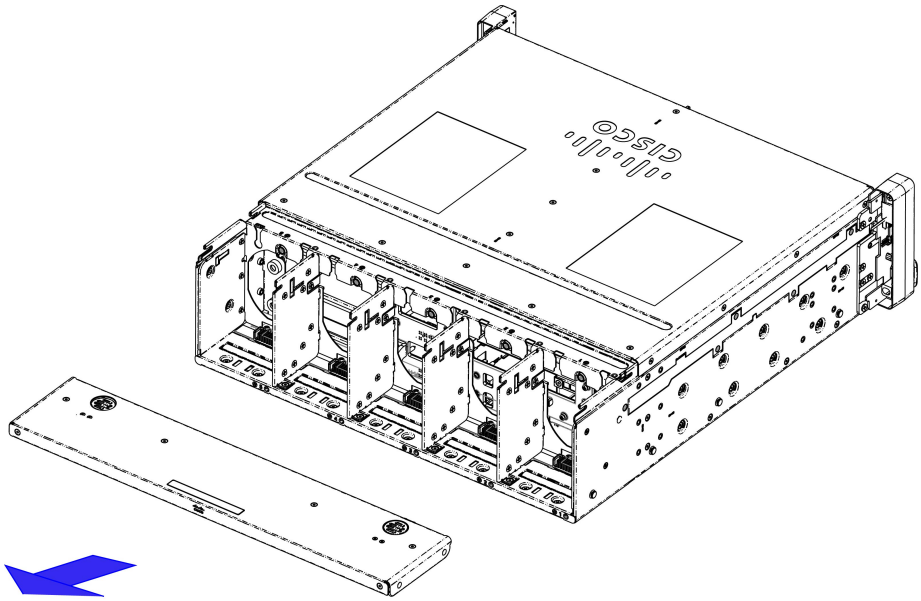
Gather the following tools:

- One #2 Phillips screwdriver
- One 7mm socket wrench or nut driver

Procedure

Step 1 Remove the top rear cover of the chassis.

a) Press both release buttons to unlock the top rear cover.
b) While holding the release buttons down, slide the top cover towards you to remove it.



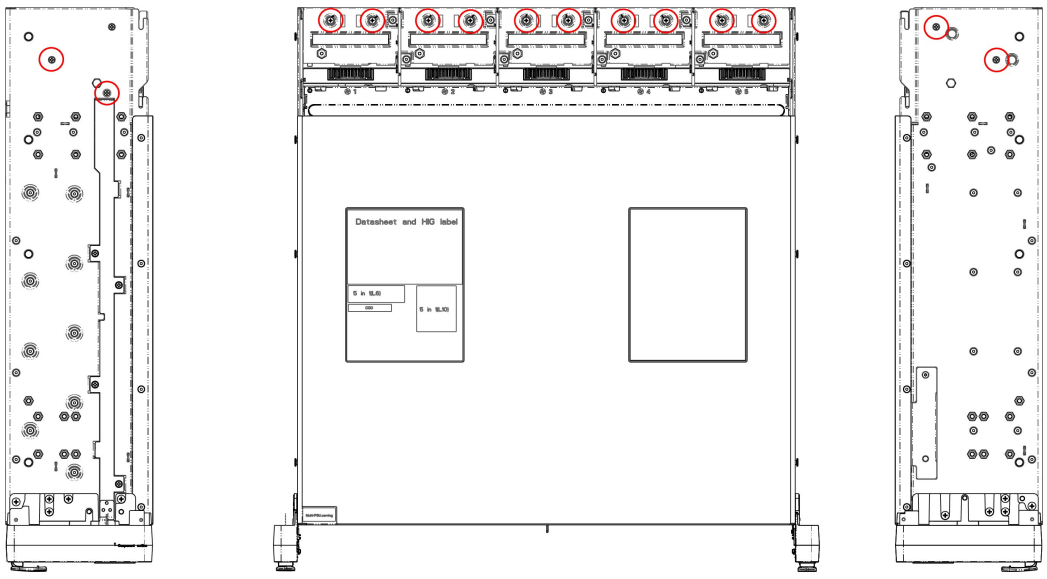
Step 2 Remove the fan module.

Go to Removing Rear-Loading Fan Modules, on page 144.

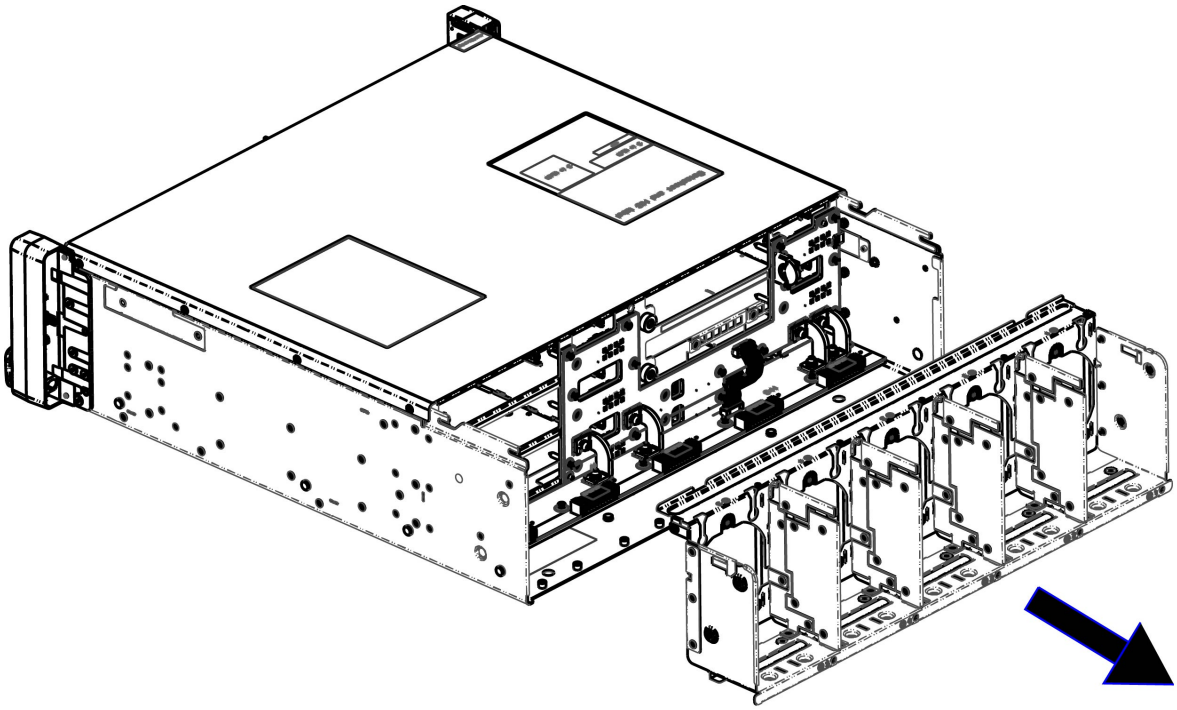
Step 3 When the fan modules are removed, remove the fan tray.

a) Use a #2 Phillips screwdriver, remove the fan tray screws.

The fan tray has a total of 14 screws, two per side and 10 on the fan tray.



Step 4 Grasp the fan tray, and detach it from the chassis.

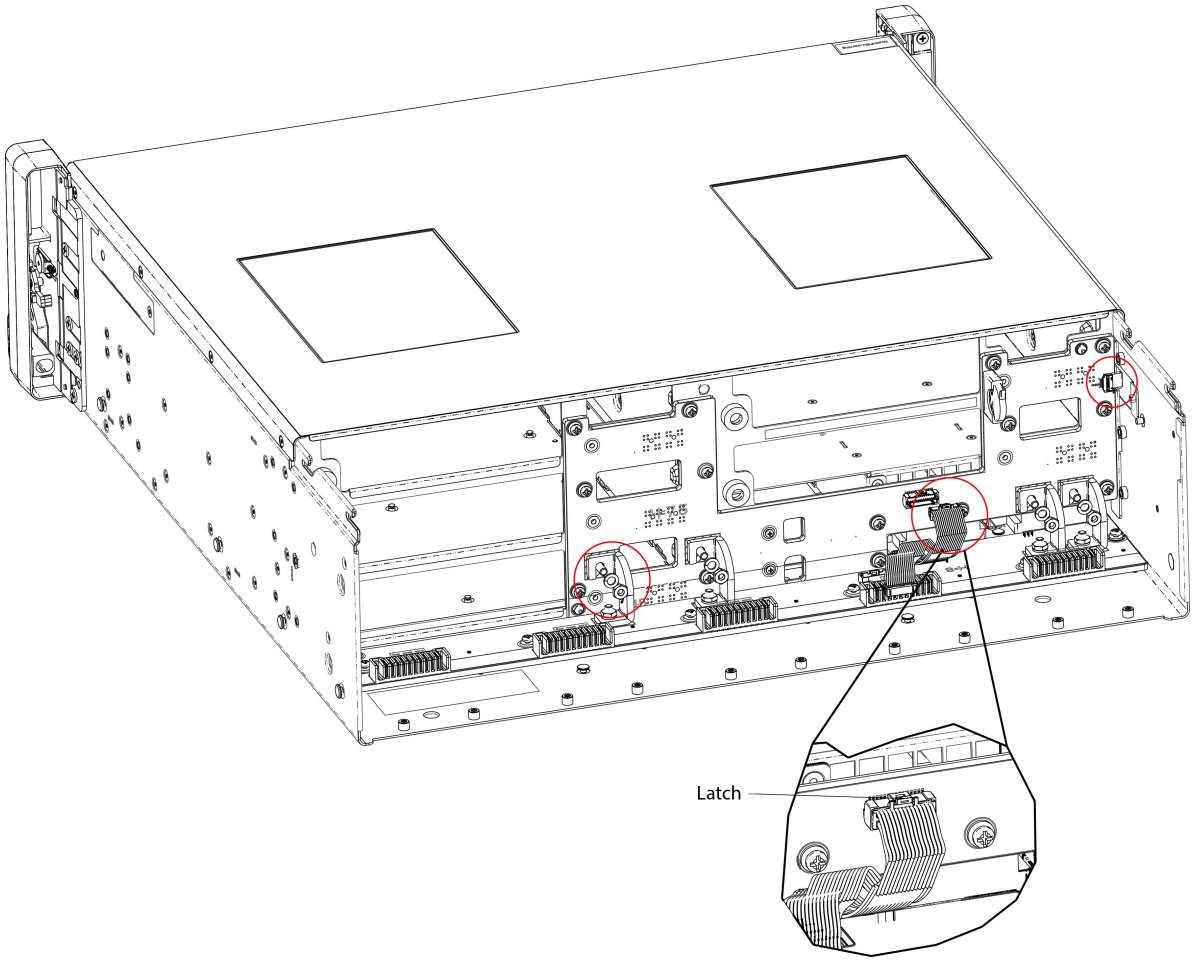


492826

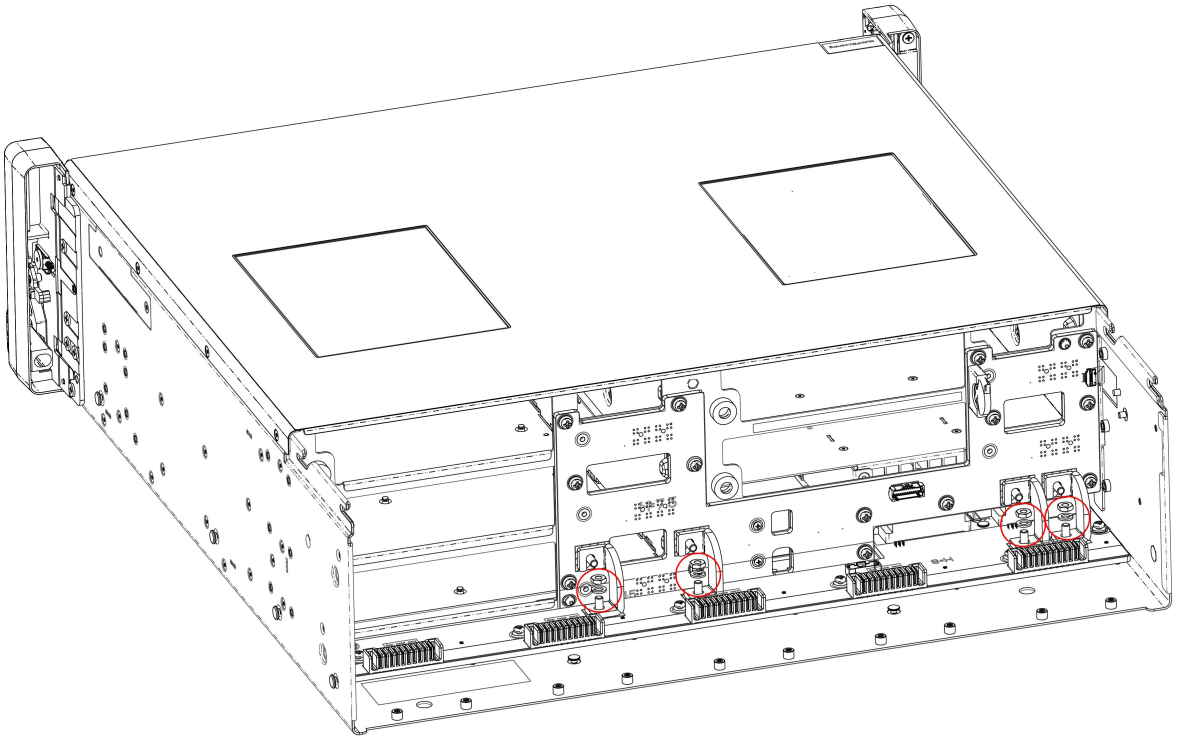
Step 5 Remove the bus bar nuts and FFC Cable.

a) Using the 7mm socket wrench or nut driver, remove the M4 nut and washer.

b) Grasp and disconnect the FFC by pressing the connector latch at one end, and lifting the cable connector cover and pulling the cable at the other end.

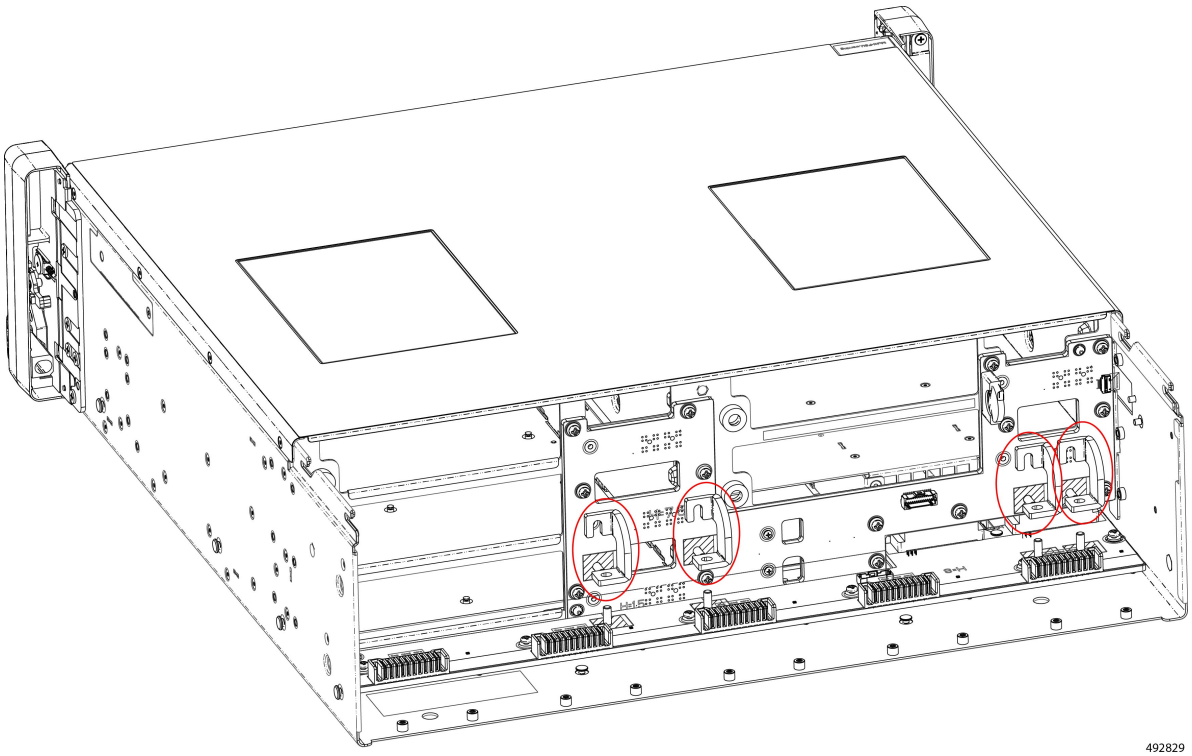


c) Using the 7mm socket wrench or nut driver, remove the remaining four M4 nuts and washers.



492828

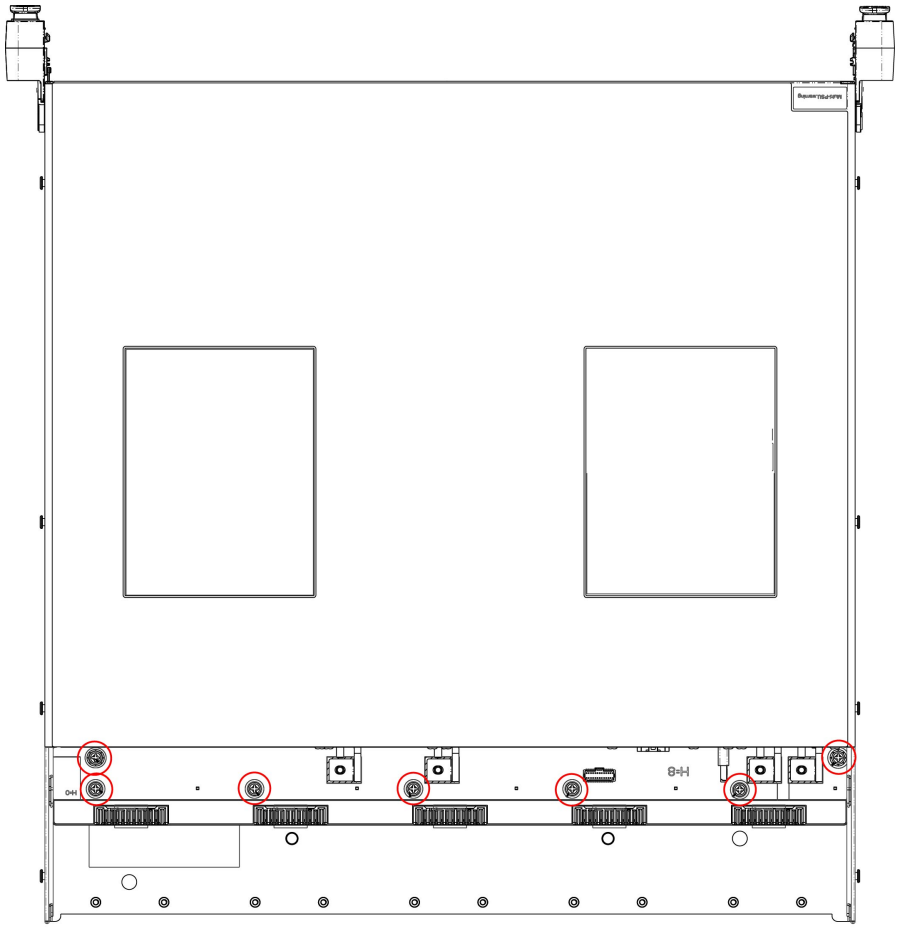
Step 6 Grasp and remove the bus bar.



492829

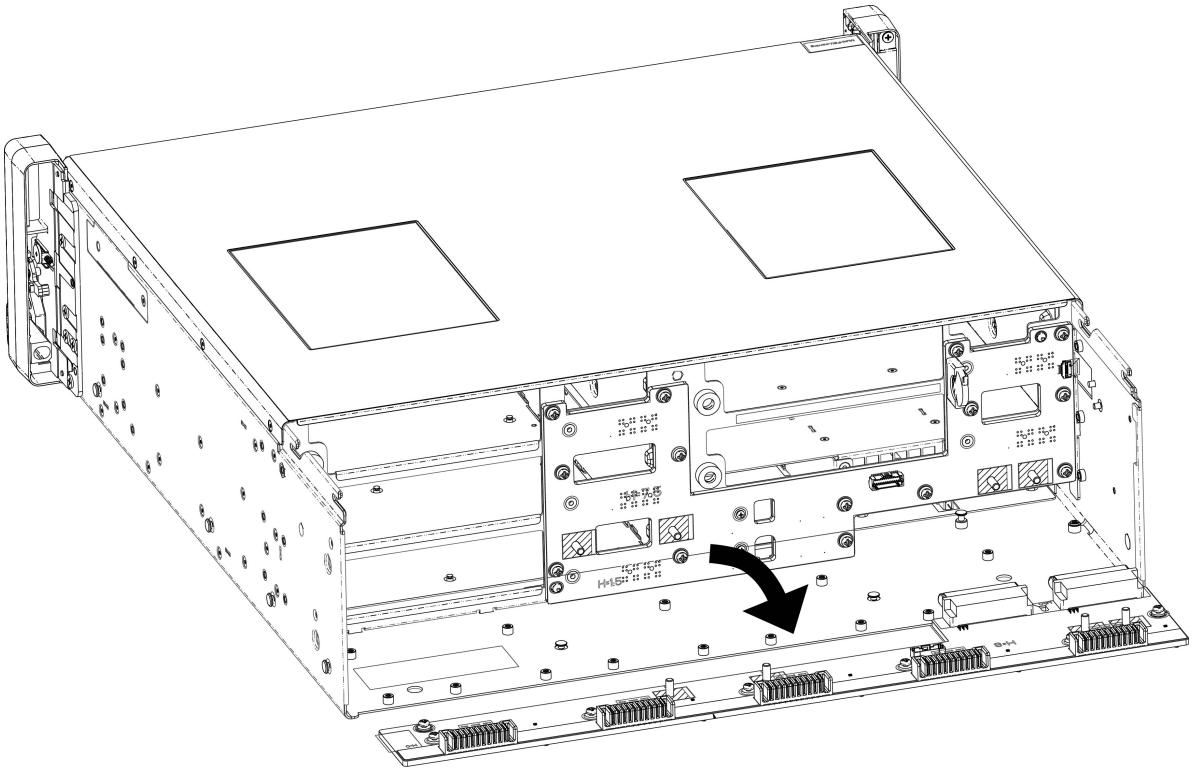
Step 7 Remove the power bar.

a) Using a #2 Phillips screwdriver, remove the seven power bar screws.



492830

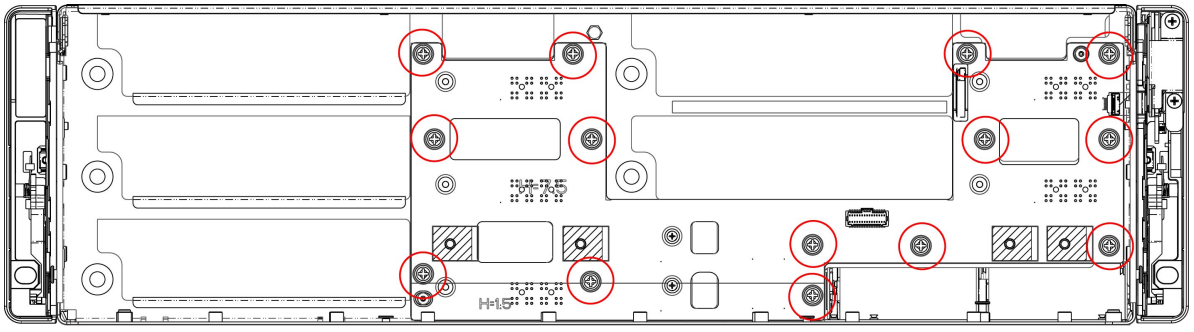
b) Detach the power bar from the chassis.



492831

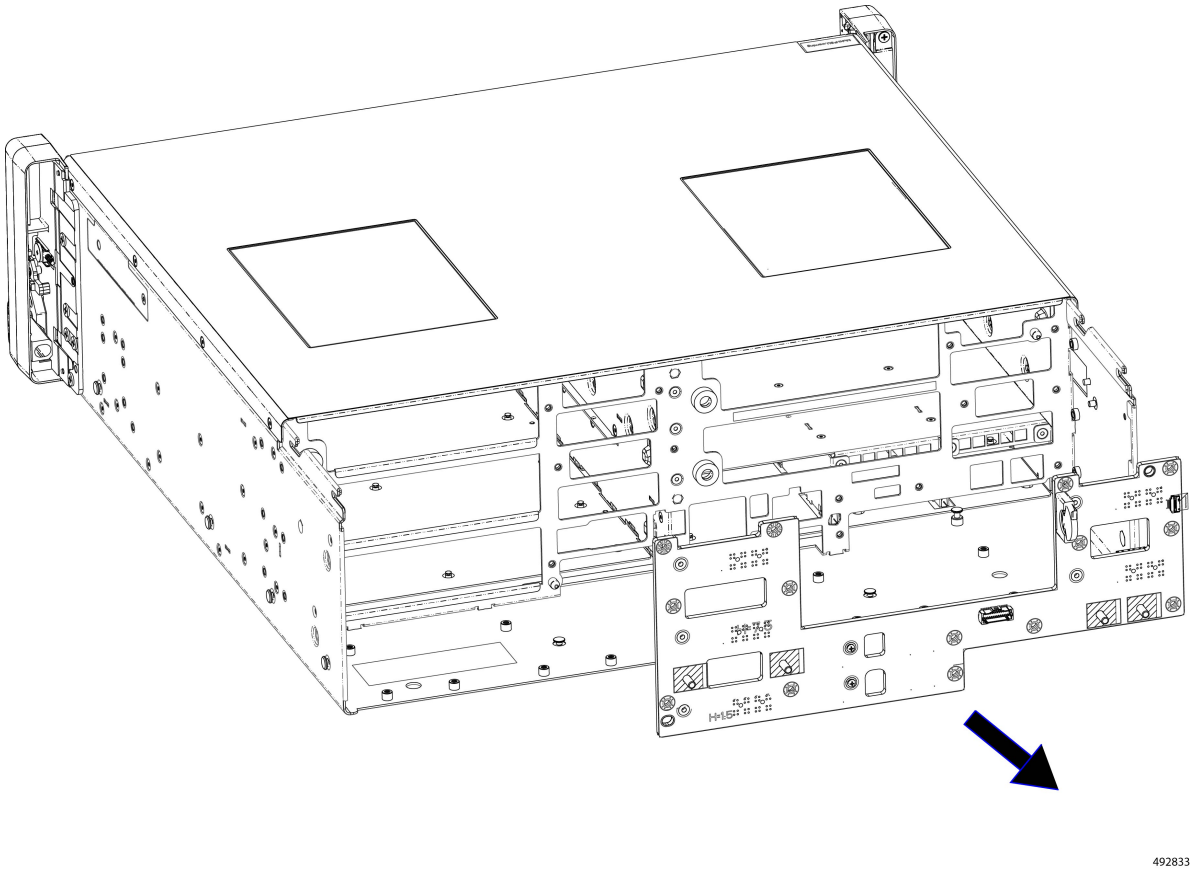
Step 8 Remove the PCB.

a) Using the #2 Phillips screwdriver, remove the 14 PCB screws.



492832

b) Grasp the backplane PCB and detach it from the chassis.



Step 9 Dispose of the backplane PCB in compliance with your local ewaste and recycling regulations.

Recycling DIMMs

The Cisco UCS XE130c Compute Node contains DIMM memory modules that must be recycled in compliance with your local ewaste and recycling regulations.

DIMMs are arranged in banks connected to the node's CPU. Each DIMM module occupies one slot in the DIMM bank, and the DIMM module is held in place by connector latches.

Use the following tasks to recycle the DIMM modules.

- Recycling the Compute Node DIMM Modules, on page 191

Recycling the Compute Node DIMM Modules

DIMM modules must be recycled in compliance with your local ewaste and recycling laws. DIMMs are installed in slots on the compute node and held in place by connector latches.

Use this procedure to recycle DIMM memory modules.

Before you begin

Gather a #2 Phillips screwdriver.

Procedure

Step 1 Remove the compute node.

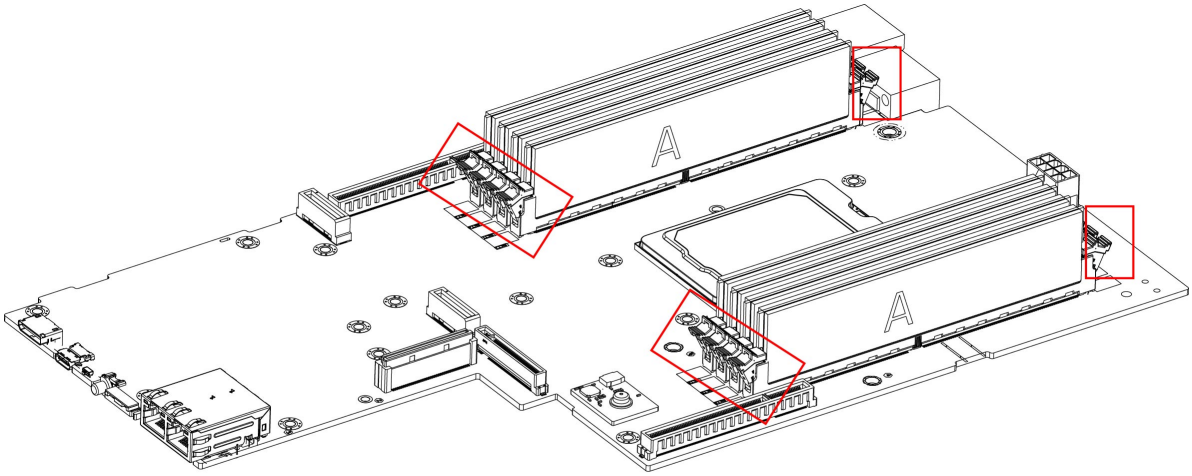
Go to Removing a Compute Node, on page 113.

Step 2 Remove the node's top cover.

Removing a Node Top Cover, on page 86.

Step 3 Remove the DIMM modules from the node.

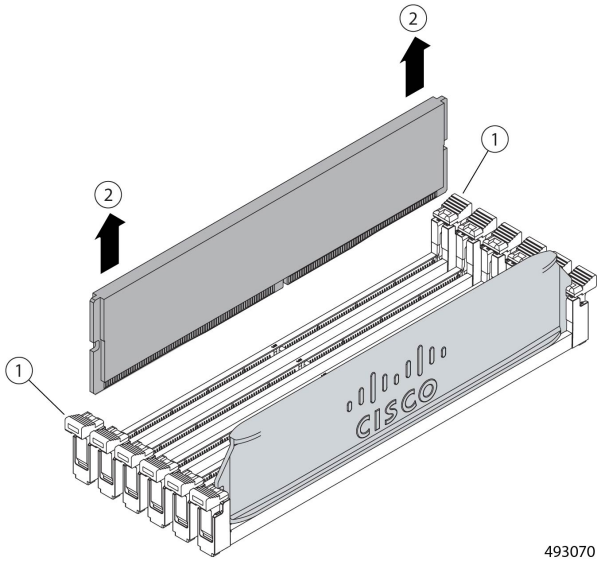
a) Locate the DIMM modules and their connector latches.



493076

b) Simultaneously push the connector latch at each end outward (1). This is the open position.

c) While the connector latch is in the open position, grasp the DIMM module and lift it up to unseat it from its motherboard socket (2) as shown in the following example.



Step 4 Dispose of the DIMMs in compliance with your local regulations for recycling and ewaste.

Recycling Power Supplies

The Cisco UCS XE9305 Chassis features two hot-swappable 2400 W Titanium AC power supply units (PSUs) providing N+N redundancy. The PSUs are accessible from the front of the chassis.

PSUs must be recycled in compliance with your local ewaste and recycling regulations.

Recycling PSUs is a tool less process. You do not need to power down the chassis to recycle the PSUs, because when you remove enough PSUs, the chassis power management features will begin gracefully powering down the Cisco UCS XE9305 Modular System. However, it is a best practice to power down the chassis before recycling power supplies.

Recycling Power Supplies

The chassis has two PSUs that are accessible from the front of the chassis. You do not need any tools to recycle the power supplies.

Procedure

Step 1 Remove the PSUs

Go to Removing Power Supply Units, on page 152.

Step 2 Recycle the PSUs in compliance with your local ewaste and recycling regulations.

Recycling CPUs

Each Cisco UCS XE130c Compute Node contains a CPU that is connected to, and sits between, DIMM memory banks. The CPU is accessible by removing each compute node.

To recycle the CPU, you will need to remove the CPU's heatsink and disconnect the CPU from the socket. The CPU is not field-serviceable or easliy replaceable, so recycling it is a destructive process.

Recycling the XE130c Compute Node CPU

Each XE130c Compute Node has a CPU that must be recycled in compliance with your local ewaste and recycling regulations.

To recycle the CPU, you will need to remove the CPU's heatsink and disconnect the CPU from the socket. Each compute node features a BGA (Ball Grid Array) type CPU, which requires a hot air gun, soldering gun, or other equipment to heat the CPU and desolder it from the motherboard.

Before you begin

Gather a #2 Phillips (cross head) screwdriver.

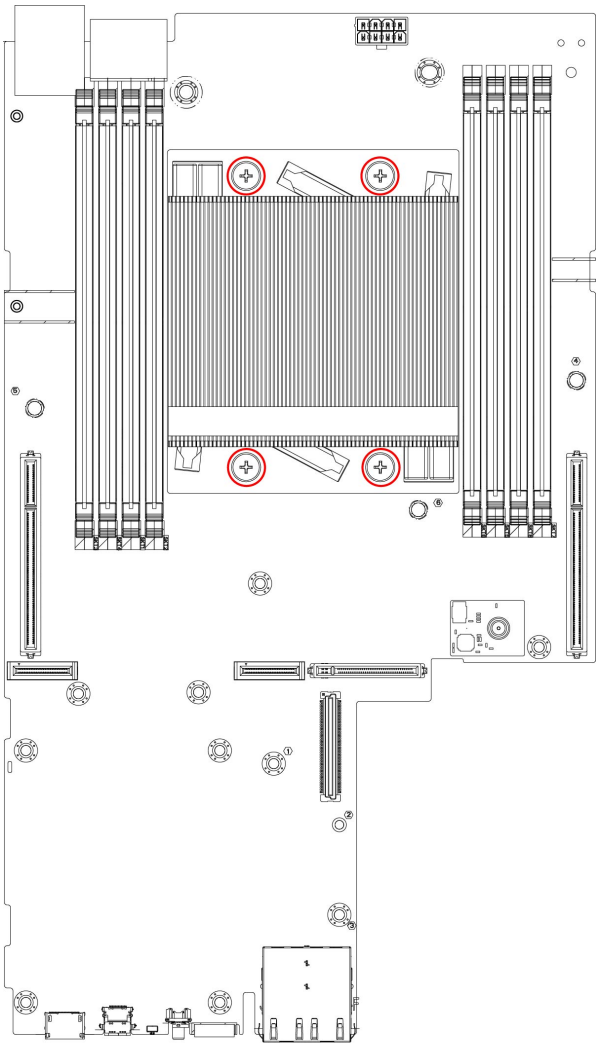
A soldering gun, hot air gun, or similar tool to heat the connections between the CPU and the motherboard.

Procedure

Step 1 Remove the compute node.

Go to Removing a Compute Node, on page 113.

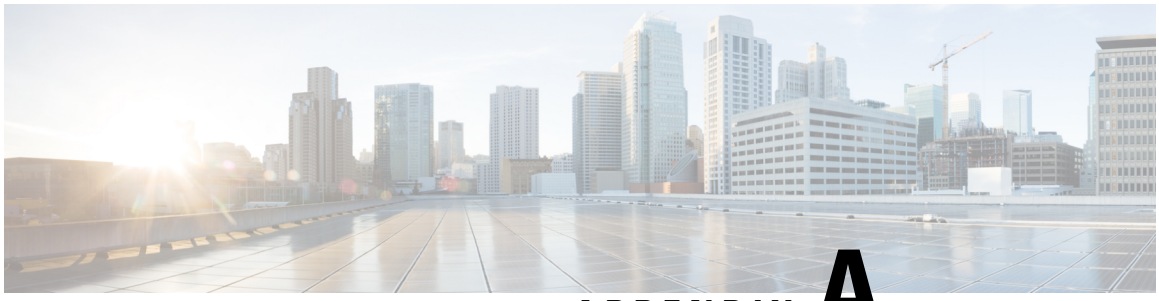
Step 2 Using a #2 Phillips screwdriver, remove the heatsink from the node.



493073

Step 3 Using a soldering gun, or other heating tool, desolder the CPU from the socket.

Step 4 Dispose of the heatsink and CPU in compliance with your local ewaste and recycling regulations.



APPENDIX A

Technical Specifications

This appendix contains the following topics:

Technical Specifications

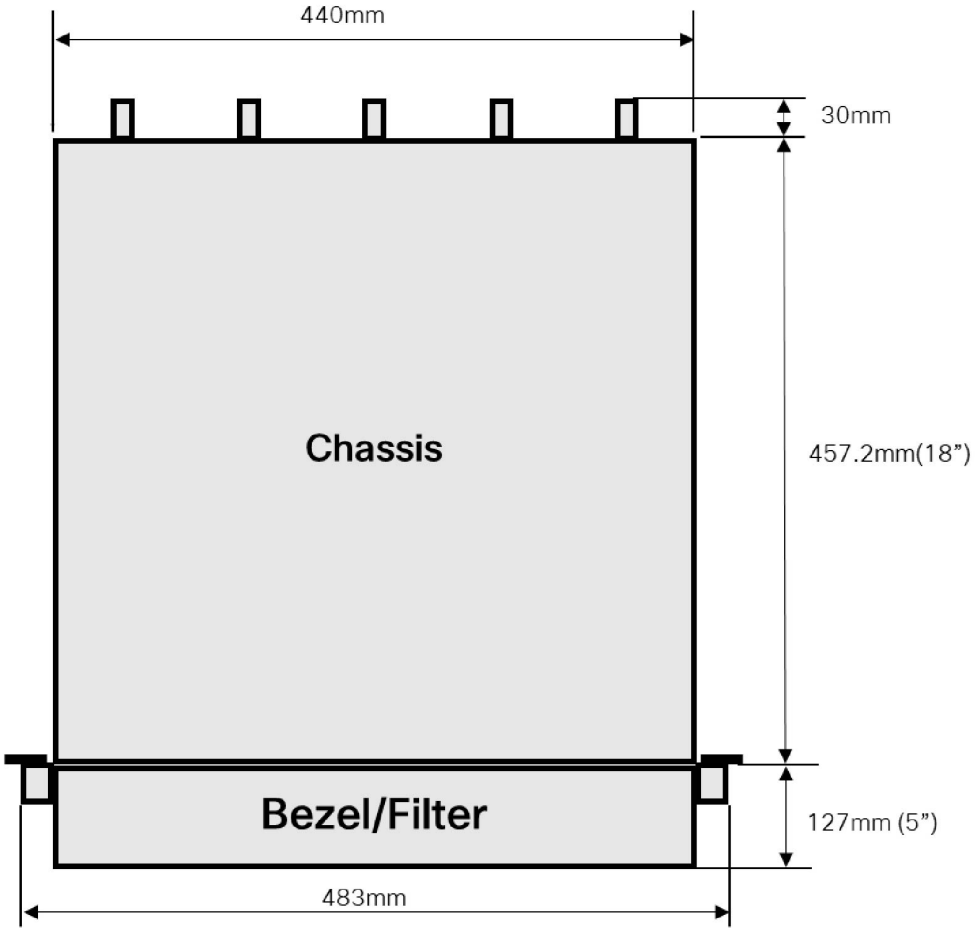
The Cisco UCS XE9305 Chassis has the following technical specifications.

- Physical Specifications
- Environmental Specifications
- Acoustic Specifications

Physical Specifications

The Cisco UCS XE9305 Chassis has the following dimensions.

Technical Specifications



490993

Specification	Value
Height	5.12 in (13 cm), 3 RU
Width	17.32 in (44 cm)
Depth	• Chassis only: 18 in. (45.7cm) • Chassis with security bezel or air filter: 23 in. (58.4cm)
Weight	The weight depends on the components installed. • Empty chassis with five fans, two PSUs, and two eCMC modules: 37.94 lb (17.21 kg) • Fully populated chassis: Approximately 82.23 lbs (37.3 kg) depending on models and options selected.

Specification	Value
Compute Node Slots	Five half-width slots
Fan Module Slots	Five slots for 80 mm hot-swappable dual-rotor fans
Power Supply Slots	2

Environmental Specifications

The Cisco UCS XE9305 Chassis has been tested for operational performance and rated at the following:

Specification	Value
Temperature, Operating	23 to 113°F (5 to 45°C) (as altitude increases, maximum temperature decreases by 1°C per 300m) Supported operating temperatures depend on the compute node's configuration.
Temperature, Non-Operating	-40° to 185° F (–40° to 85° C); maximum altitude is 40,000 ft
Humidity, Operating	5% to 85% noncondensing
Humidity, Non-Operating	5% to 93% noncondensing
Altitude, Operating	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1°C per 300m
Altitude, Non-Operating	40,000 ft (12,000m)

Power Specifications

The Cisco UCS XE9305 Chassis has been tested and rated at the following with 2400W Titanium certified power supplies.

Specification	Value
Input Voltage	100 to 127 V AC 200 to 240 V AC
Maximum Input V A	3840 VA at 230 VAC
Maximum Output Power per Power Supply	2400 W AC at 200-240 VAC Nominal 1300 W at 100-127 VAC Nominal
Frequency	47 to 63 Hz
Output Voltage	12 V
Power Connector	IEC320 C20

Acoustical Specifications

The Cisco UCS XE9305 Chassis has been tested for ambient noise levels and rated at the following:

- Sound Pressure Level: 40s dBA – at < 20% load and at 25°C operating temperature

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