Cisco UCS X24g Trimode M1 Installation and Service Guide

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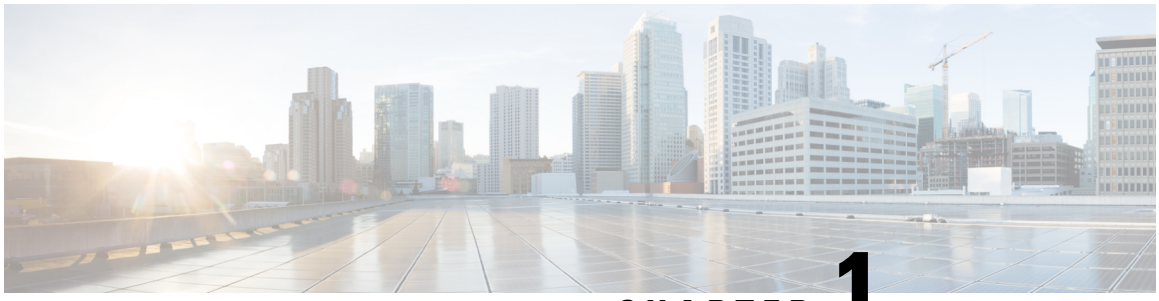
Preface

This chapter includes the following topics:

Bias-Free Documentation

Note The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on standards documentation, or language that is used by a referenced third-party product.

Preface



CHAPTER 1

Front Mezzanine Module Overview

This chapter includes the following topics:

Overview

The UCSC X24g tri-mode M1 front mezzanine module intended for use in Cisco UCS X-Series compute nodes, starting with Cisco UCS X210c M8.

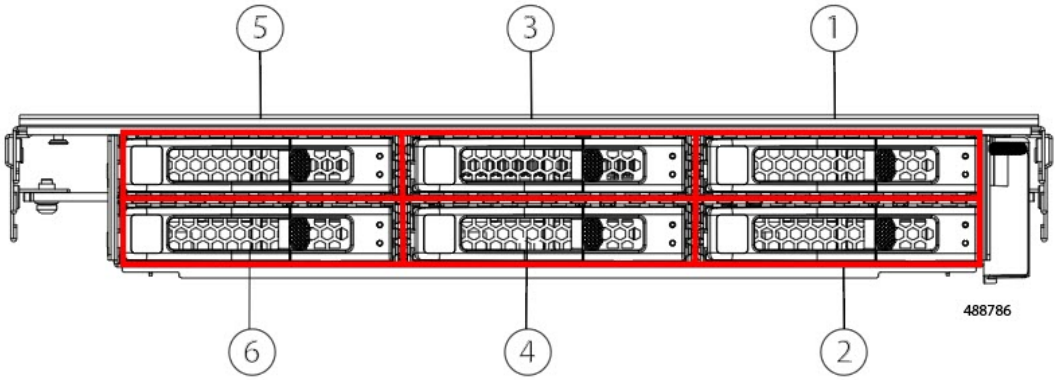
Each Cisco UCS X24g tri-mode M1 front mezzanine module consists of the following components:

- UCS X24g tri-mode RAID controller
- Up to six (6) SAS/SATA/NVMe SSD drives. Each drive slot supports either SAS, SATA or NVMe U.3 SSDs (RAID Controller)
  - SAS: 12G, 24G in a x1 config
  - SATA: 6G in a x1 config
  - NVMe: Gen 4 in a x2 config
- Supercap
  - FBU345 or smaller size (TBD)

Front Mezzanine Module

The Cisco UCS X24g Tri-mode M1 front mezzanine module supports up to six (6) SAS/SATA/NVMe SSD drives. Each drive slot supports either SAS, SATA or NVMe U.3 SSDs (RAID Controller).

The following illustration shows the location of the drives.



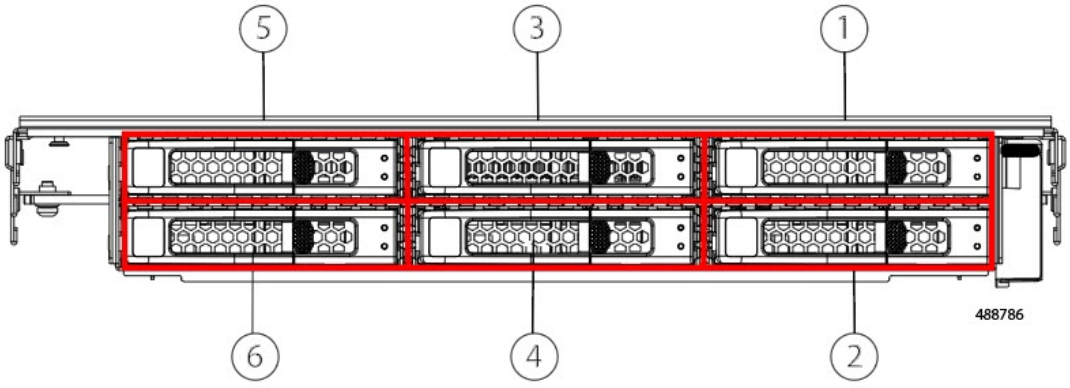
1	drive slot 1
2	drive slot 2
3	drive slot 3
4	drive slot 4
5	drive slot 5
6	drive slot 6

Drive Bays

Each Cisco UCS X24g M1 front mezzanine drive slot can support local storage drives of different types and quantities of 2.5-inch SAS, SATA, or NVMe drives. A drive blank panel (UCSC-BBLKD-S2) must cover all empty drive bays.

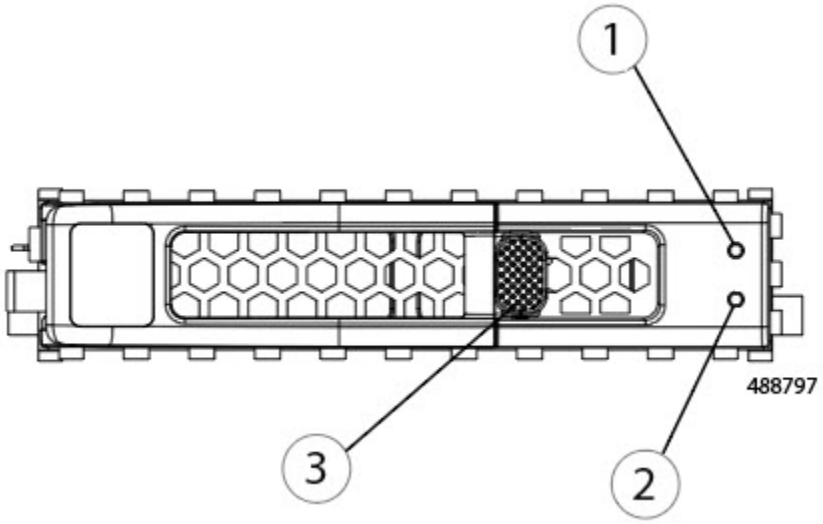
Drive bays are numbered sequentially from 1 through 6 as shown.

Figure 1: Front Loading Drives



Drives and Drive LEDs

Each 24g Tri-mode drive is a front loading drive that slides into and out of the front mezzanine module's storage cage.

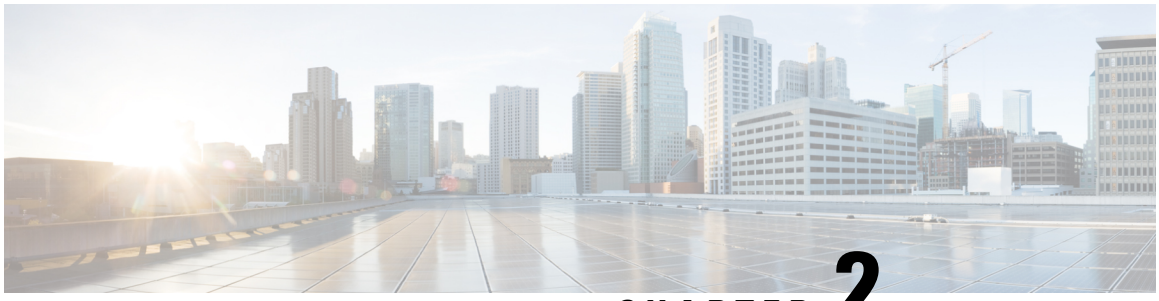


1	Drive Health LED	2	Drive Activity LED
3	Ejector button		

Each 24g Tri-mode drive also has LED's that indicate drive health and activity.

Table 1: Drive LEDs

LED	Color	Description
Drive Activity 	Off	Drive Not Present.
	On	Green ON for presence and Green Flashing for I/O activity.



CHAPTER 2

Installing the Front Mezzanine Module

This chapter includes the following topics:

Installing and Removing The UCS X24g M1 Front Mezzanine Module

The front mezzanine module installs into the front mezzanine slot of Cisco UCS X-Series compute nodes.

Required Equipment

There is no special kit required to install the Cisco UCS X24g M1 front mezzanine module. However make the following items are available during installation:

- The front mezzanine including:
  - Support for a maximum of 6 SAS/SATA/U.3 NVMe drives.
  - Filler blanks.

Note If you order the Cisco UCS X24g M1 front mezzanine module with one U.3 drive, the unused drive slots are pre-populated with filler blanks. You can purchase additional filler blanks from Cisco UCSC-BBLKD-S2.

The following additional equipment, which is not provided by Cisco, is required to install or remove the UCS X24g M1 front mezzanine module.

- T8 Torx screwdriver
- #2 Phillips screwdriver
- Torque driver

Removing and Installing the Compute Node Cover

The top cover for the Cisco UCS X-series compute node can be removed to allow access to internal components, some of which are field-replaceable. The green button on the top cover releases the compute node so that it can be removed from the chassis.

- Removing a Compute Node Cover, on page 6
- Installing a Compute Node Cover , on page 7

Removing a Compute Node Cover

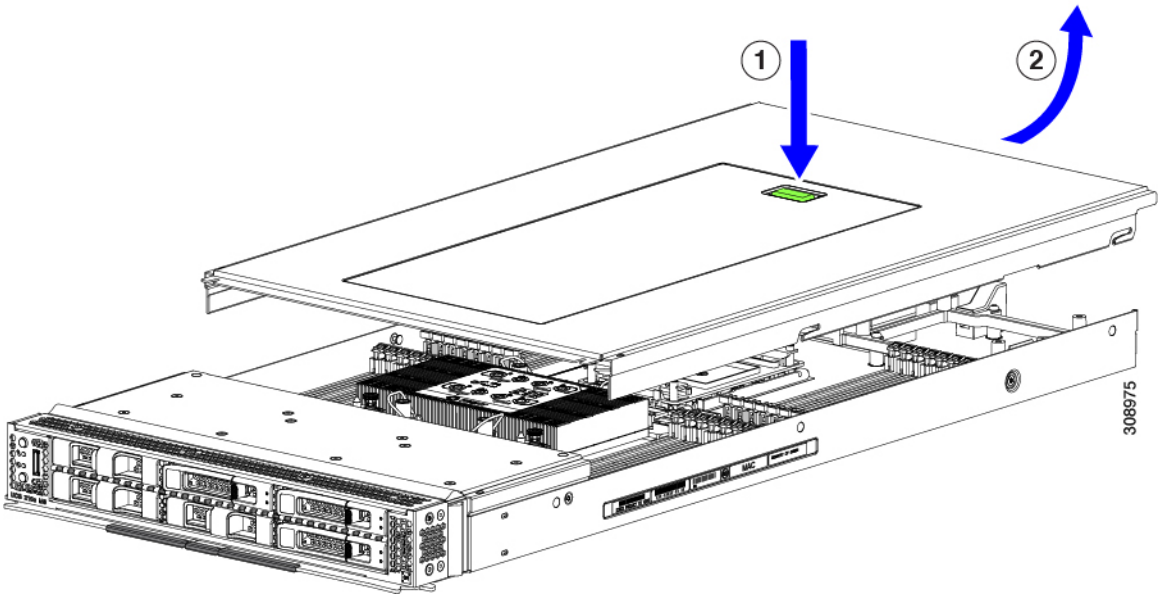
To remove the cover of a UCS X-Series compute node, follow these steps:

Procedure

Step 1 Press and hold the button down (1, in the figure below).

Step 2 While holding the back end of the cover, slide it back, then pull it up (2).

By sliding the cover back, you enable the front edge to clear the metal lip on the rear of the front mezzanine module.



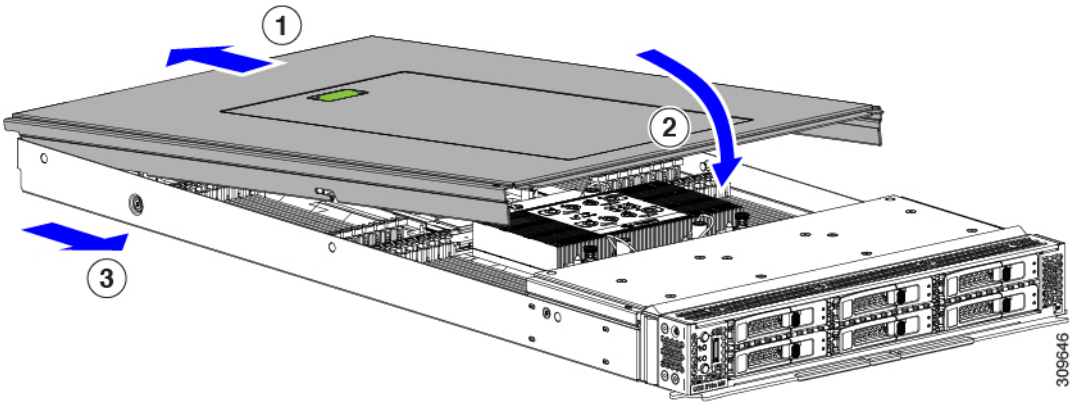
Installing a Compute Node Cover

Use this task to install a removed top cover for the UCS X-Series compute node.

Procedure

Step 1 Insert the cover angled so that it hits the stoppers on the base.

Step 2 Lower the compute node's cover until it reaches the bottom.



Step 3 Keeping the compute node's cover flat, slide it forward until the release button clicks.

Removing the Front Mezzanine Module

Use the following procedure to remove the front mezzanine module. This procedure applies to the following modules:

- RAID Controller module (UCSX-RAID-M1L6)

Before you begin

To remove the front mezzanine module, you need a T8 screwdriver and a #2 Phillips screwdriver.

Procedure

Step 1 If the compute node's cover is not already removed, remove it now.

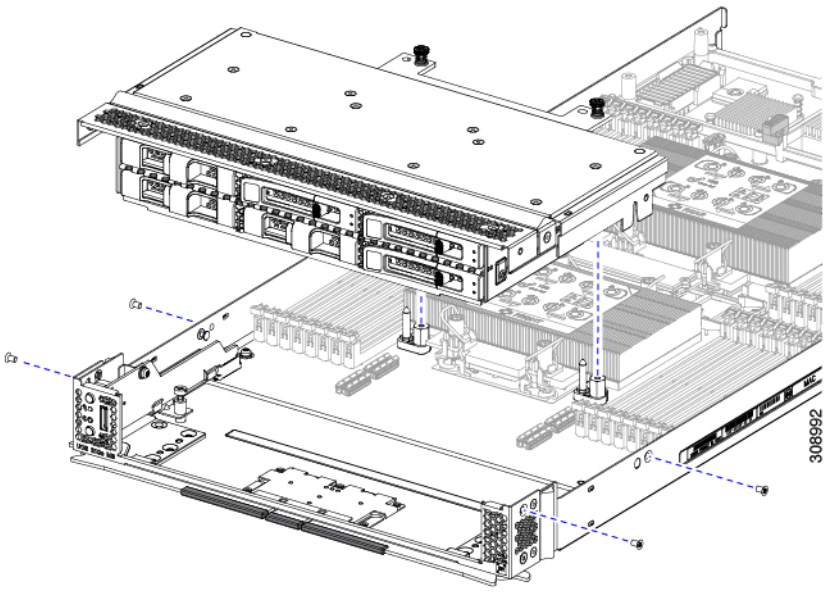
See Removing a Compute Node Cover, on page 6.

Step 2 Remove the securing screws:

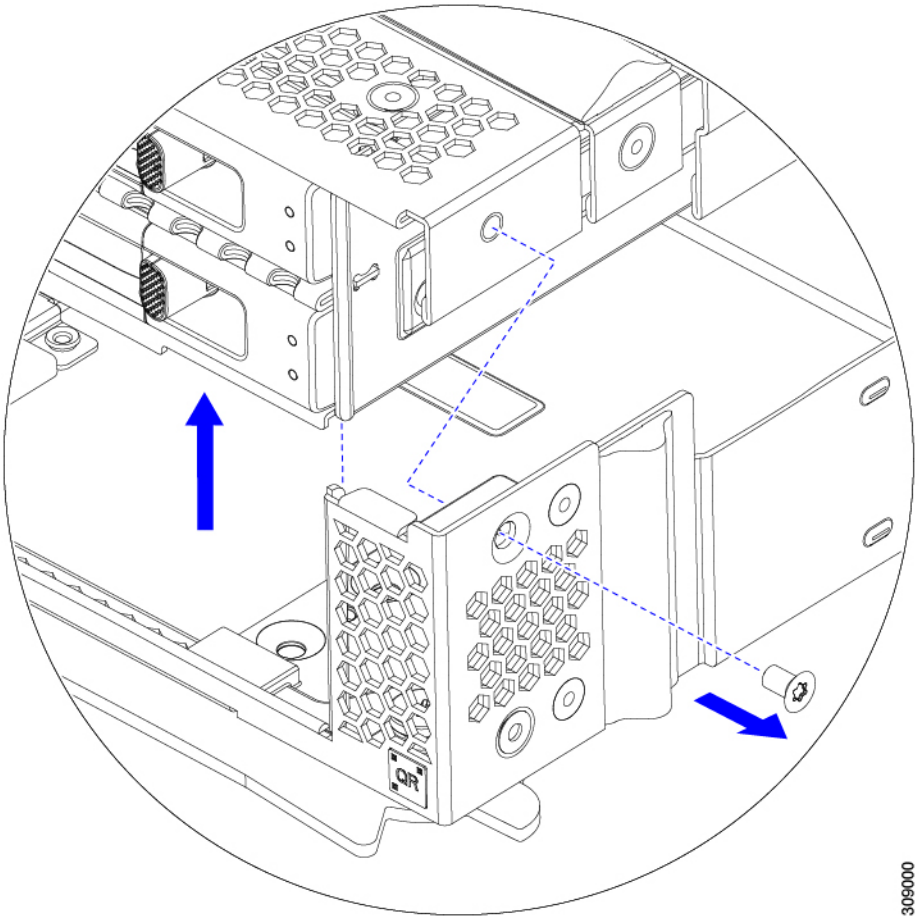
a) Using a #2 Phillips screwdriver, loosen the two captive screws on the top of the front mezzanine module.

Note
This step may be skipped if removing the front mezzanine blank (UCSX-M8A-FMEZZBLK).

b) Using a T8 screwdriver, remove the two screws on each side of the compute node that secure the front mezzanine module to the sheet metal.



Step 3 Making sure that all the screws are removed, lift the front mezzanine module to remove it from the compute node.



What to do next

To install the front mezzanine module, see Installing the Front Mezzanine Module.

Installing the Front Mezzanine Module

Use the following procedure to install the front mezzanine module. This procedure applies to the following modules:

- RAID Controller Module (UCSX-RAID-M1L6)

Before you begin

To install the front mezzanine module, you need a T8 screwdriver and a #2 Phillips screwdriver.

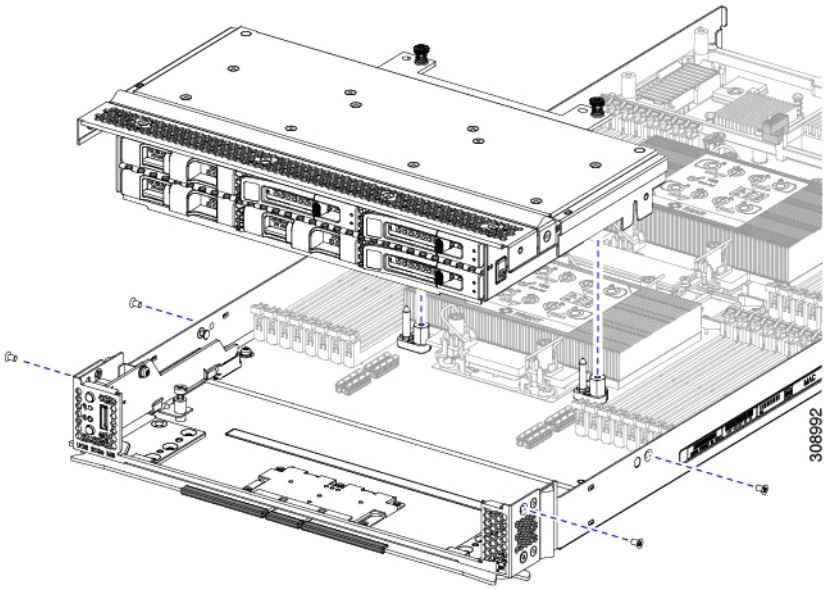
Procedure

Step 1 Align the front mezzanine module with its slot on the compute node.

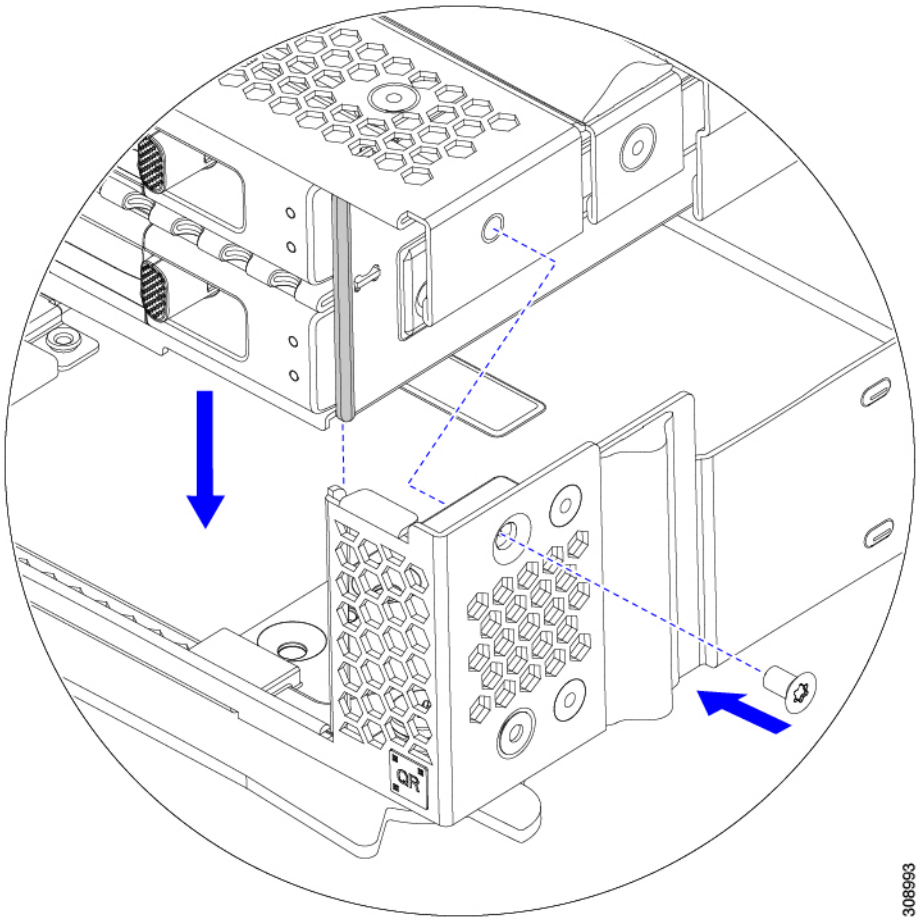
Step 2 Lower the front mezzanine module onto the compute node, making sure that the screws and screwholes line up.

Step 3 Secure the front mezzanine module to the compute node.

a) Using a #2 Phillips screwdriver, tighten the captive screws on the top of the front mezzanine module.



b) Using a T8 screwdriver, insert and tighten the four screws, two on each side of the sever node.

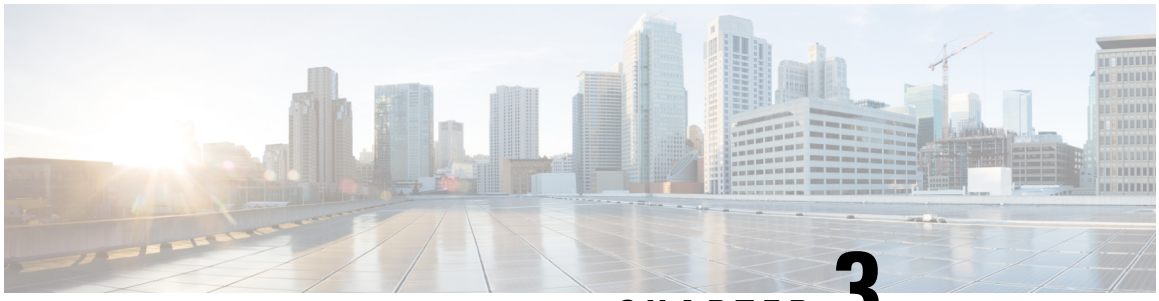


What to do next

If you removed the drives from the front mezzanine module, reinstall them now. See Replacing a Drive.

Front Mezzanine Drive Configuration

The Cisco UCS X24g M1 front mezzanine U.3 drives can be configured and managed using the Cisco Intersight management platform in Intersight Managed Mode (Cisco Intersight Managed Mode). For details, see the *Cisco Intersight Managed Mode Configuration Guide*, which is available at the following URL: Cisco Intersight Managed Mode Configuration Guide



CHAPTER 3

Servicing the Front Mezzanine Module

This chapter includes the following topics:

Replacing a Drive

You can remove and install some drives without removing the compute node from the chassis. All drives have front-facing access, and they can be removed and inserted by using the ejector handles.

The SAS/SATA or NVMe drives supported in this compute node come with the drive sled attached. Spare drive sleds are not available.

Before upgrading or adding a drive to a running compute node, check the service profile through Cisco UCS management software and make sure the new hardware configuration will be within the parameters allowed by the management software.

Caution To prevent ESD damage, wear grounding wrist straps during these procedures.

NVMe SSD Requirements and Restrictions

For 2.5-inch NVMe SSDs, be aware of the following:

- NVMe 2.5 SSDs support booting only in UEFI mode. Legacy boot is not supported.

  UEFI boot mode can be configured through Cisco UCS management software.
- NVME U.3 SSDs connect to the RAID controller so RAID is supported for these drives.
- UEFI boot is supported in all supported operating systems.

Removing a Drive

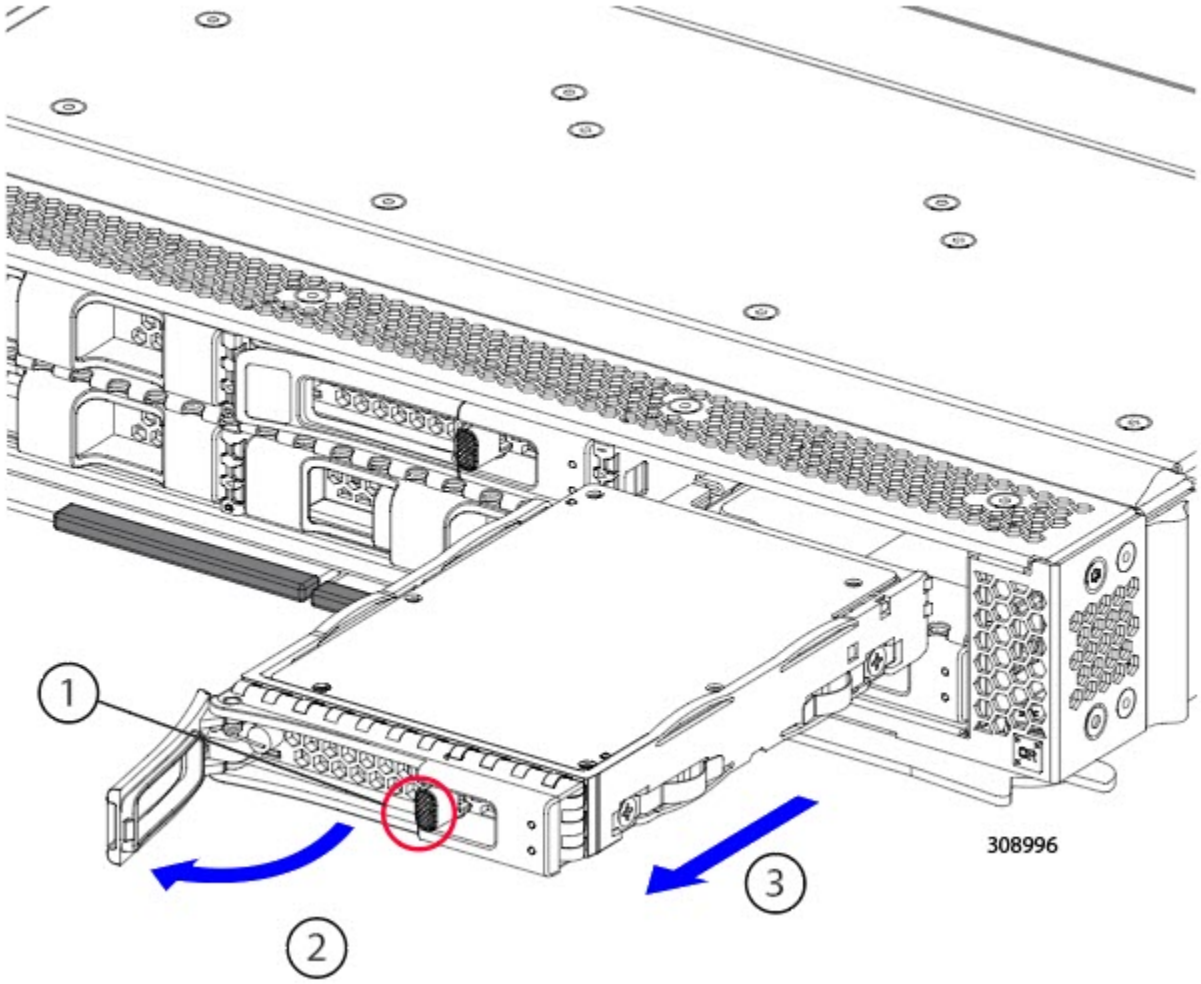
Use this task to remove a SAS/SATA or NVMe drive from the compute node.

Caution Do not operate the system with an empty drive bay. If you remove a drive, you must reinsert a drive or cover the empty drive bay with a drive blank.

Procedure

Step 1 Push the release button to open the ejector, and then pull the drive from its slot.

Caution
To prevent data loss, make sure that you know the state of the system before removing a drive.



Step 2 Place the drive on an antistatic mat or antistatic foam if you are not immediately reinstalling it in another compute node.

Step 3 Install a drive blanking panel to maintain proper airflow and keep dust out of the drive bay if the drive bay will remain empty.

What to do next

Cover the empty drive bay. Choose the appropriate option:

- Installing a Drive, on page 15
- Installing a Drive Blank, on page 19

Installing a Drive

Caution For hot installation of drives, after the original drive is removed, you must wait for 20 seconds before installing a drive. Failure to allow this 20-second wait period causes the Cisco UCS management software to display incorrect drive inventory information. If incorrect drive information is displayed, remove the affected drive(s), wait for 20 seconds, then reinstall them.

To install a SAS/SATA or NVMe drive in the compute node, follow this procedure:

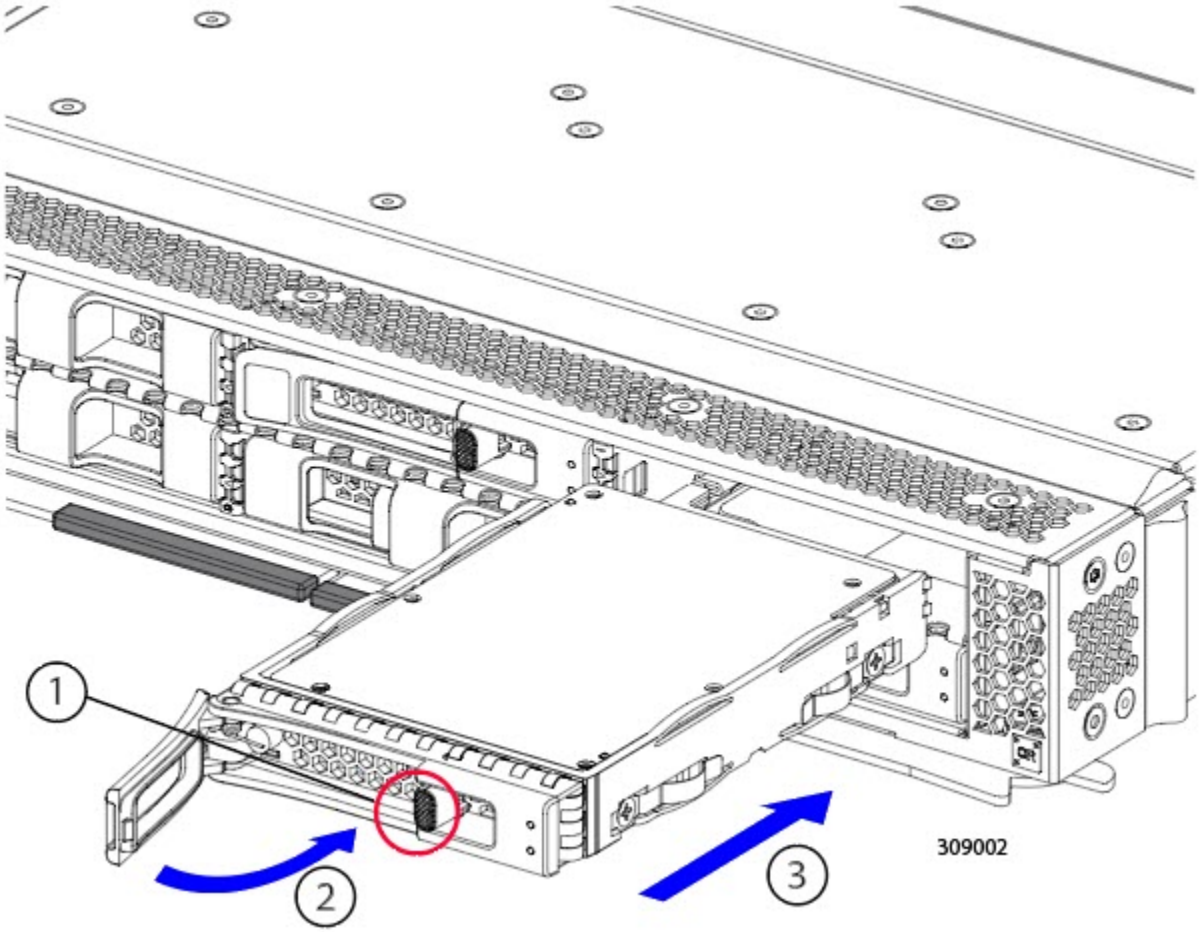
Procedure

Step 1 Place the drive ejector into the open position by pushing the release button.

Step 2 Gently slide the drive into the empty drive bay until it seats into place.

Step 3 Push the drive ejector into the closed position.

You should feel the ejector click into place when it is in the closed position.



Basic Troubleshooting: Reseating a SAS/SATA Drive

Sometimes it is possible for a false positive `UBAD` error to occur on SAS/SATA HDDs installed in the compute node.

- Drives can be affected regardless of whether they are configured for hot plug or not.
- The `UBAD` error is not always terminal, so the drive is not always defective or in need of repair or replacement. However, it is also possible that the error is terminal, and the drive will need replacement.

Before submitting the drive to the RMA process, it is a best practice to reseat the drive. If the false `UBAD` error exists, reseating the drive can clear it. If successful, reseating the drive reduces inconvenience, cost, and service interruption, and optimizes your compute node uptime.

Note Reseat the drive only if a UBAD error occurs. Other errors are transient, and you should not attempt diagnostics and troubleshooting without the assistance of Cisco personnel. Contact Cisco TAC for assistance with other drive errors.

To reseat the drive, see Reseating a SAS/SATA Drive, on page 17.

Reseating a SAS/SATA Drive

Sometimes, SAS/SATA drives can throw a false UBAD error, and reseating the drive can clear the error.

Use the following procedure to reseat the drive.

Caution This procedure might require powering down the server. Powering down the server will cause a service interruption.

Before you begin

Before attempting this procedure, be aware of the following:

- Before reseating the drive, it is a best practice to back up any data on it.
- When reseating the drive, make sure to reuse the same drive bay.
  - Do not move the drive to a different slot.
  - Do not move the drive to a different server.
  - If you do not reuse the same slot, the Cisco UCS management software (for example, Cisco IMM) might require a rescan/rediscovery of the server.
- When reseating the drive, allow 20 seconds between removal and reinsertion.

Procedure

Step 1 Attempt a hot reseat of the affected drive(s).

For a front-loading drive, see Removing a Drive, on page 13.

Note
While the drive is removed, it is a best practice to perform a visual inspection. Check the drive bay to ensure that no dust or debris is present. Also, check the connector on the back of the drive and the connector on the inside of the server for any obstructions or damage.

Also, when reseating the drive, allow 20 seconds between removal and reinsertion.

Step 2 During boot up, watch the drive's LEDs to verify correct operation.

Step 3 If the error persists, cold reseat the drive, which requires a server power down. Choose the appropriate option:

a) Use your server management software to gracefully power down the server.

   See the appropriate Cisco UCS management software documentation.

b) If server power down through software is not available, you can power down the server by pressing the power button.

   See Front Mezzanine Module, on page 1.

c) Reseat the drive as documented in Step 1.
d) When the drive is correctly reseated, restart the server, and check the drive LEDs for correct operation as documented in Step 2.

Step 4 If hot and cold reseating the drive (if necessary) does not clear the `UBAD` error, choose the appropriate option:

a) Contact Cisco Systems for assistance with troubleshooting.
b) Begin an RMA of the errored drive.

Removing a Drive Blank

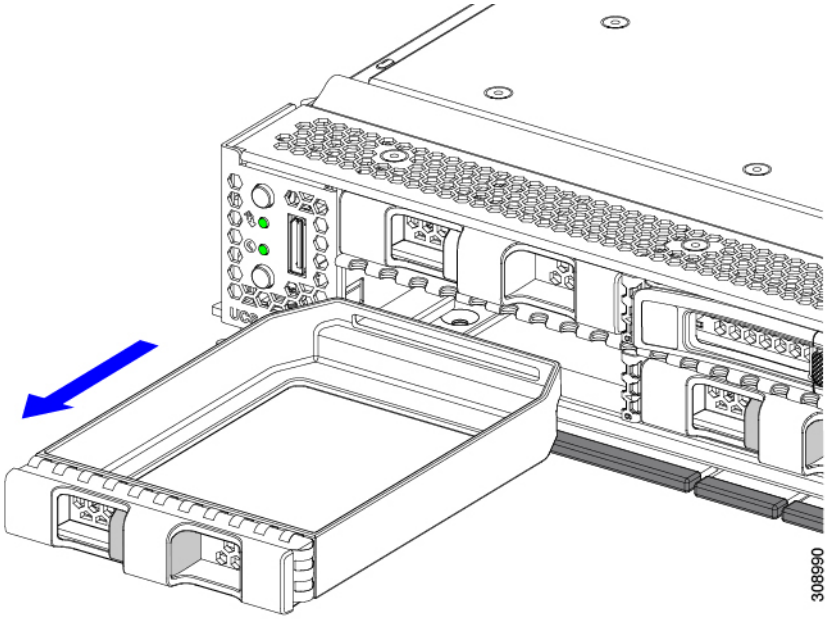
A maximum of six SAS/SATA or NVMe drives are contained in the front mezzanine storage module as part of the drive housing. The drives are front facing, so removing them does not require any disassembly.

Use this procedure to remove a drive blank from the compute node.

Procedure

Step 1 Grasp the drive blank handle.

Step 2 Slide the drive blank out of the slot.



What to do next

Cover the empty drive bay. Choose the appropriate option:

- Installing a Drive, on page 15
- Installing a Drive Blank, on page 19

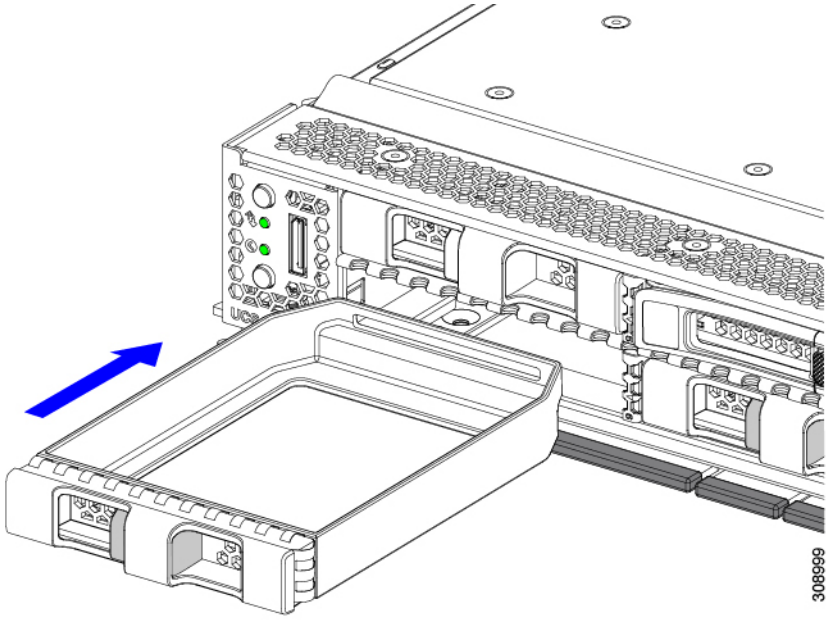
Installing a Drive Blank

Use this task to install a drive blank.

Procedure

Step 1 Align the drive blank so that the sheet metal is facing down.

Step 2 Holding the blank level, slide it into the empty drive bay.



Replacing the SuperCap Module

The SuperCap module (UCSX-SCAPM1C) is a battery bank which connects to the front mezzanine storage module board and provides power to the RAID controller if facility power is interrupted. The front mezzanine with the SuperCap module installed is UCSX-RAID-M1L6.

Note To remove the SuperCap Module you must remove the front mezzanine module.

To replace the SuperCap module, use the following topics:

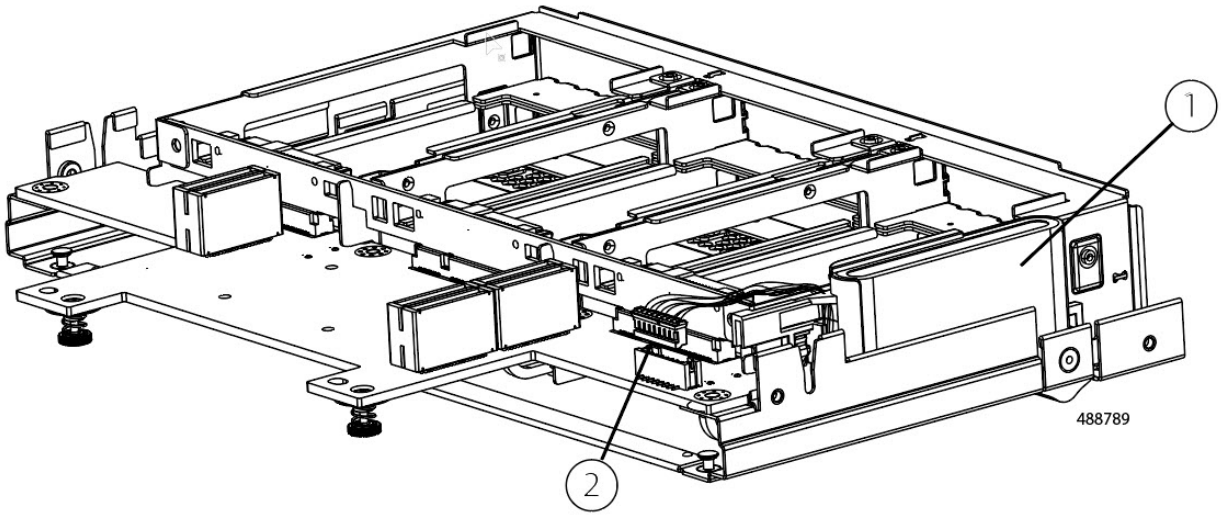
- Removing the SuperCap Module, on page 20
- Installing the SuperCap Module, on page 22

Removing the SuperCap Module

The SuperCap module is part of the Front Mezzanine Module, so the Front Mezzanine Module must be removed from the compute node to provide access to the SuperCap module.

The SuperCap module sits in a plastic tray on the underside of the front mezzanine module. The SuperCap module connects to the board through a ribbon cable with one connector to the module.

Figure 2: Location of the SuperCap Module



1	SuperCap Module	2	SuperCap Module Connector

To replace the SuperCap module, follow these steps:

Procedure

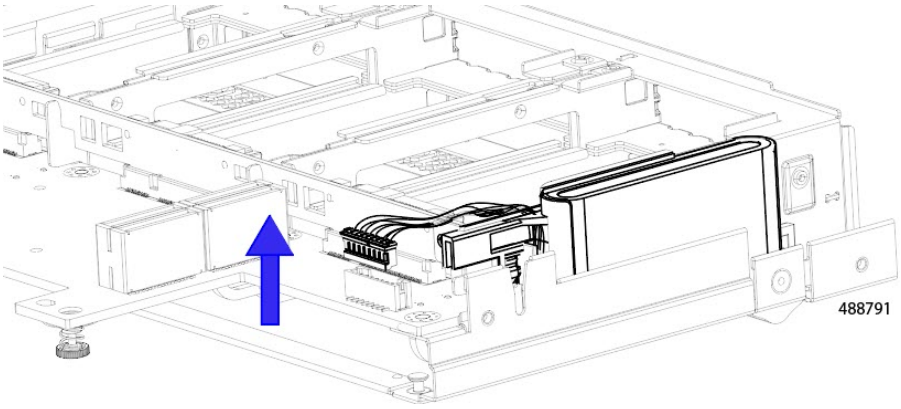
Step 1 If you have not already removed the Front Mezzanine module, do so now.

See Removing the Front Mezzanine Module, on page 8.

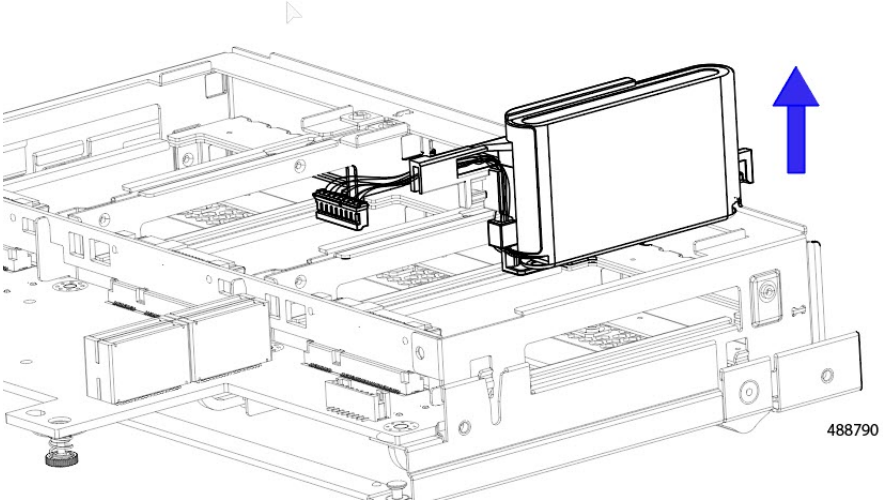
Step 2 Before removing the SuperCap module, note its orientation in the tray as shown in the previous image.

When correctly oriented, the SuperCap connection faces downward so that it easily plugs into the socket on the board. You will need to install the new SuperCap module with the same orientation.

Step 3 Grasp the cable connector at the board and gently pull to disconnect the connector.



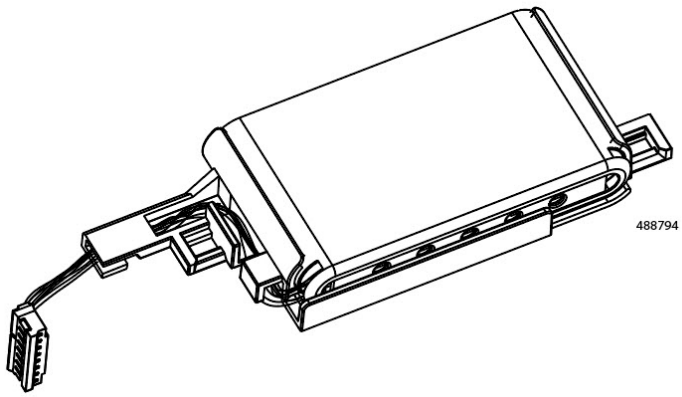
Step 4 Grasp the sides of the SuperCap module, and lift the SuperCap module out of the tray.



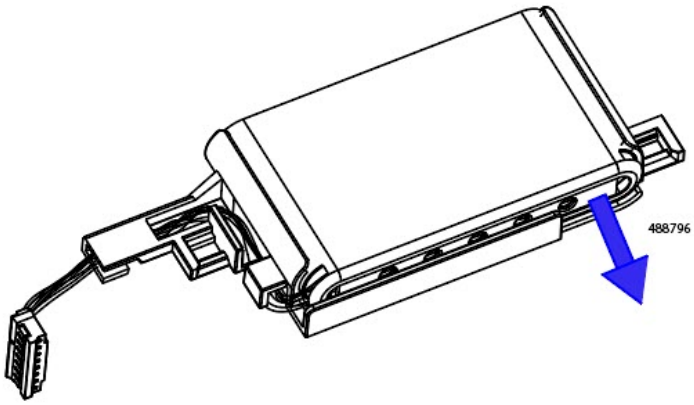
You might feel some resistance because the tray is curved to secure the module.

Step 5 Disconnect the ribbon cable from the SuperCap module:

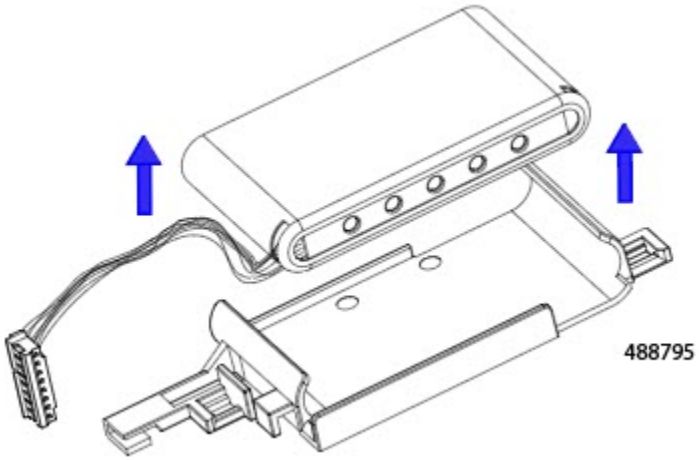
a) On the SuperCap module, locate the lever that secures the ribbon cable to the battery pack.



b) Gently pivot the securing lever downward to release the ribbon cable connection from the SuperCap module.



Step 6 Remove the existing battery pack from its case, and insert a new one, making sure to align the new battery pack so that the connector aligns with the ribbon cable.



What to do next

Installing the SuperCap Module, on page 22

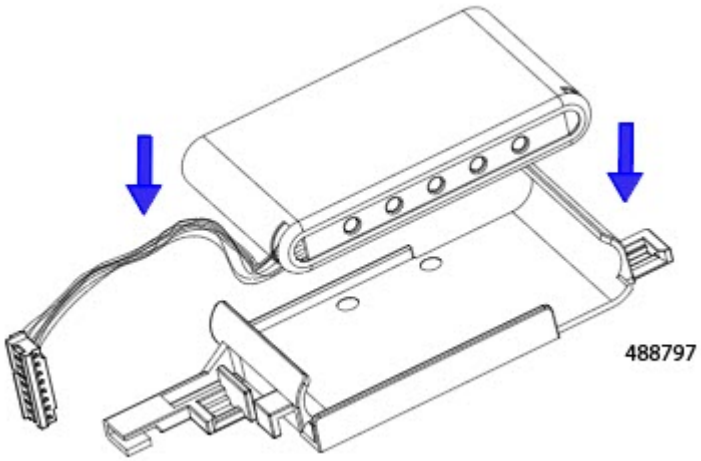
Installing the SuperCap Module

If you removed the SuperCap module, use this procedure to reinstall and reconnect it.

Procedure

Step 1 Insert the Super Cap module into its case.

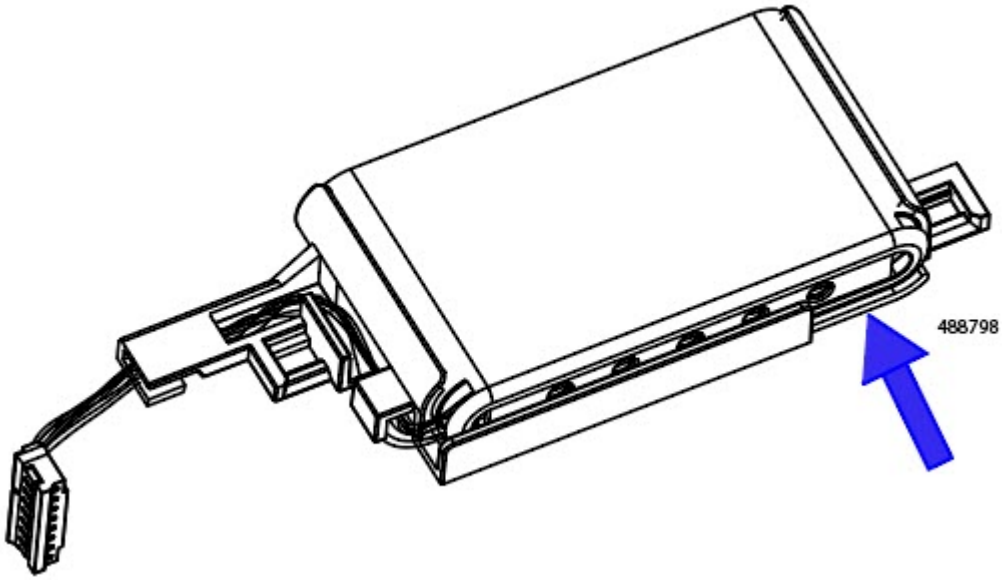
a) Align the SuperCap module so that the connector will meet the connector.



b) Before seating the SuperCap module, make sure that the ribbon cable is not in the way. You do not want to pinch the ribbon cable when you install the SuperCap.
c) When the ribbon cables are clear of the case, press the SuperCap module until it is seated in the case.

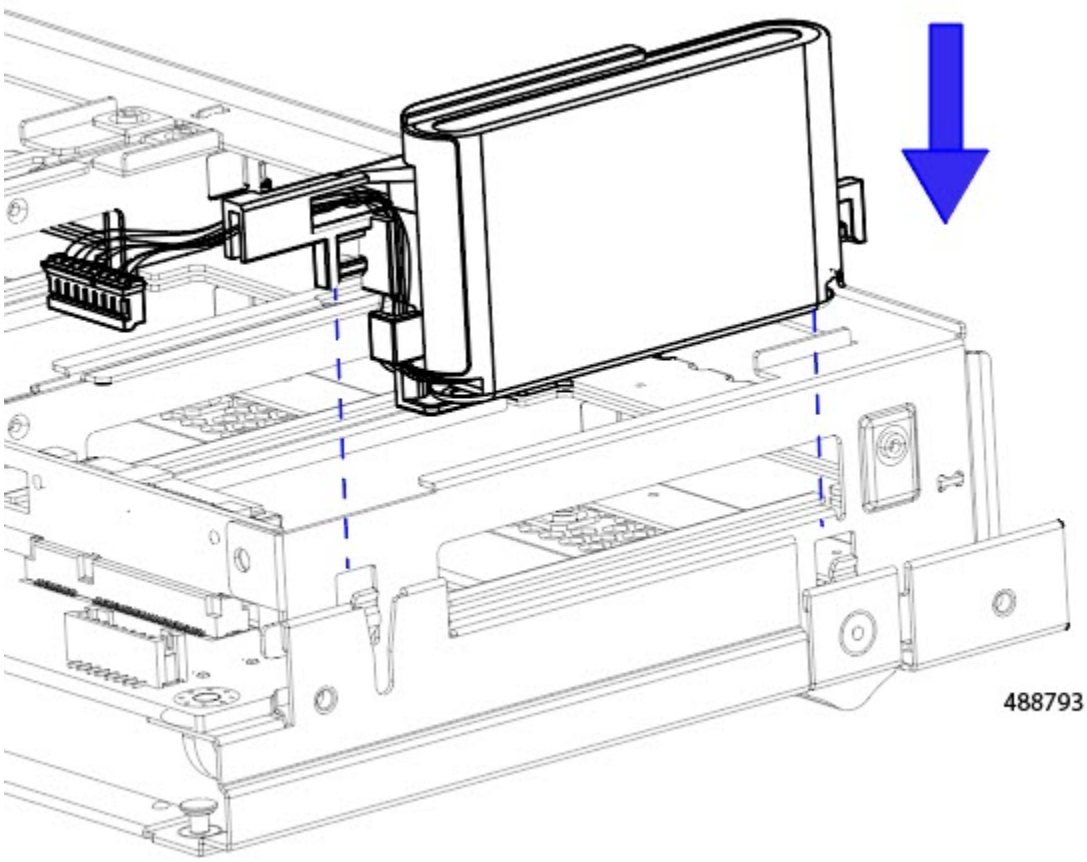
   You might feel some resistance as the SuperCap snaps into place.

Step 2 When the SuperCap module is completely seated in its plastic case, pivot the securing lever to connect the ribbon cable to the SuperCap module.



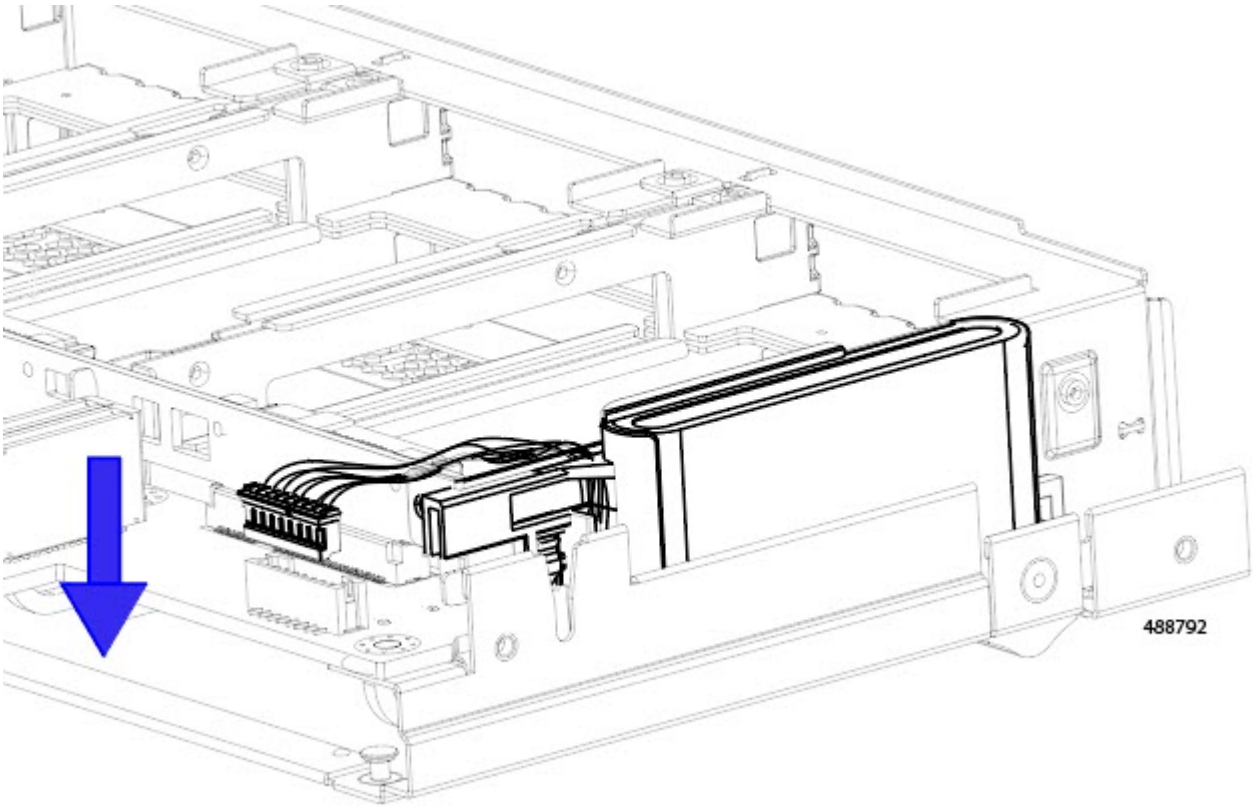
Step 3 Align the SuperCap module with its slot on the module and seat the module into the slot.

Caution
Make sure not to pinch the ribbon cable while inserting the SuperCap module into the slot.



When the SuperCap is securely seated in the slot, the module does not rock or twist.

Step 4 After the SuperCap module is seated, reconnect the ribbon cable to the board.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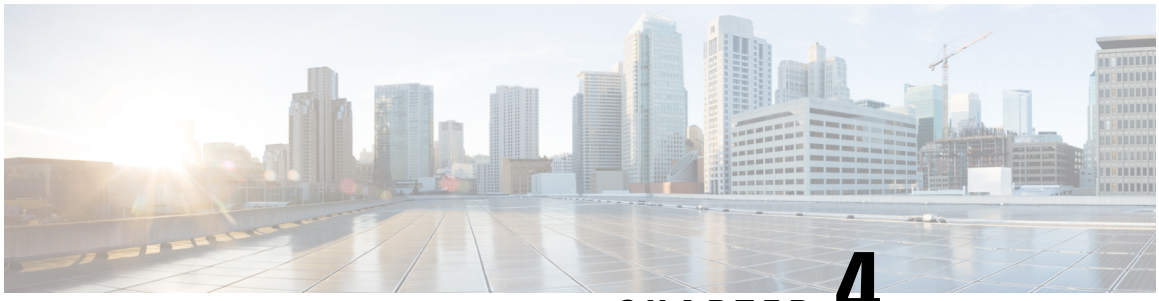


CHAPTER 4

Recycling Front Mezzanine Module Components

This chapter includes the following topics:

Front Mezzanine Recycling Overview

This chapter documents the procedures to disassemble key front mezzanine components for recycling and e-waste. When recycling your Cisco UCS hardware, always make sure to follow local e-waste and recycling regulations.

Note **For Recyclers Only!** The procedures in this chapter are not standard field-service options. These procedures are for recyclers who will be reclaiming the electronics for proper disposal to comply with local eco design and e-waste regulations.

To disassemble compute node component parts, see the following topics:

Recycling the Component PCB Assemblies (PCBAs)

The front mezanine module, some key components also contain PCBAs that need to be recycled. Always comply with your local regulations governing recycling and e-waste.

Use the following procedures to recycle the appropriate components.

Recycling the Front Mezzanine Module PCBA

The front mezzanine module contains one PCBA, which sits horizontally and connects the drive backplane to the main motherboard. The PCBA is attached to the front mezzanine module's sheetmetal by four T8 screws.

You must disconnect the PCBA from the sheetmetal before recycling the PCBA.

Before you begin

Note **For Recyclers Only!** This procedure is not a standard field-service option. This procedure is for recyclers who will be reclaiming the electronics for proper disposal to comply with local eco design and e-waste regulations.

To remove the printed circuit board assembly (PCBA), the following requirements must be met:

- The compute node must be removed from the chassis.
- The compute node's top cover must be removed.

Gather the following tools:

- A T8 Torx screwdriver
- A #2 Phillips screwdriver

Procedure

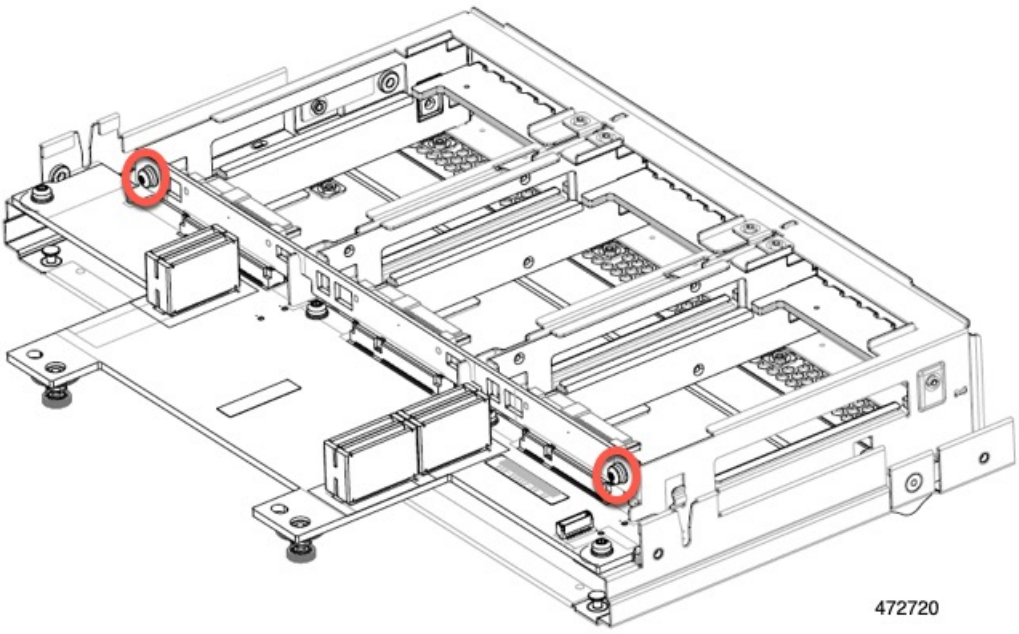
Step 1 Remove the front mezzanine module from the compute node.

a) Go to Removing the Front Mezzanine Module, on page 8.

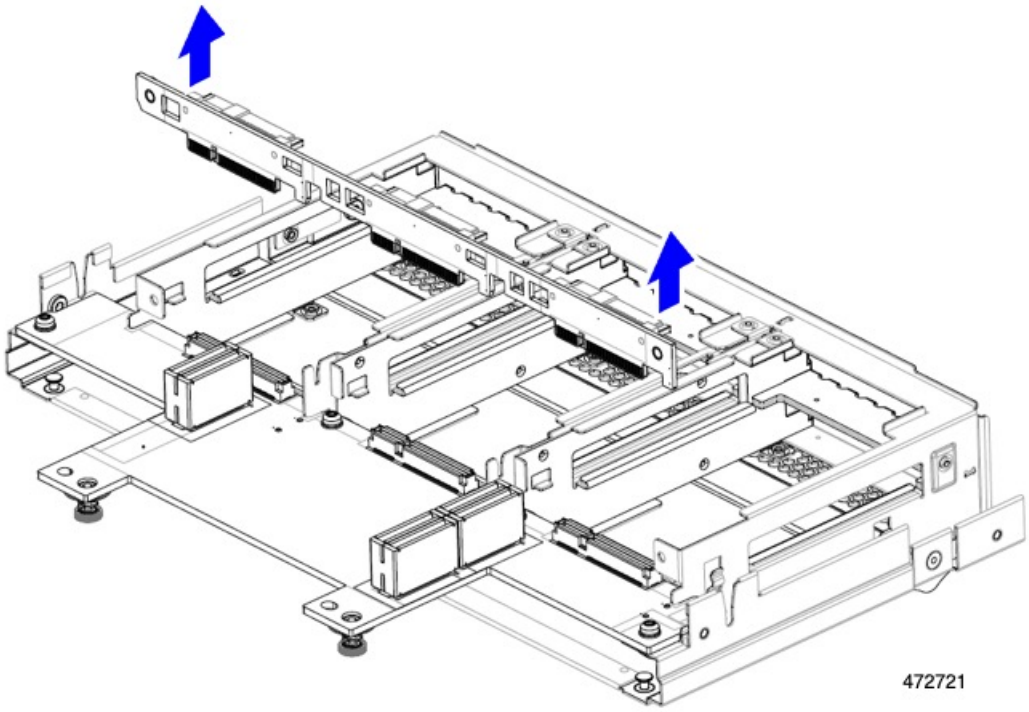
b) Place the front mezzanine module upside down on a rubberized mat or other ESD-safe work surface.

Step 2 Disconnect the drive backplane.

a) Using a #2 Phillips screwdriver, remove the two screws on the drive backplane.

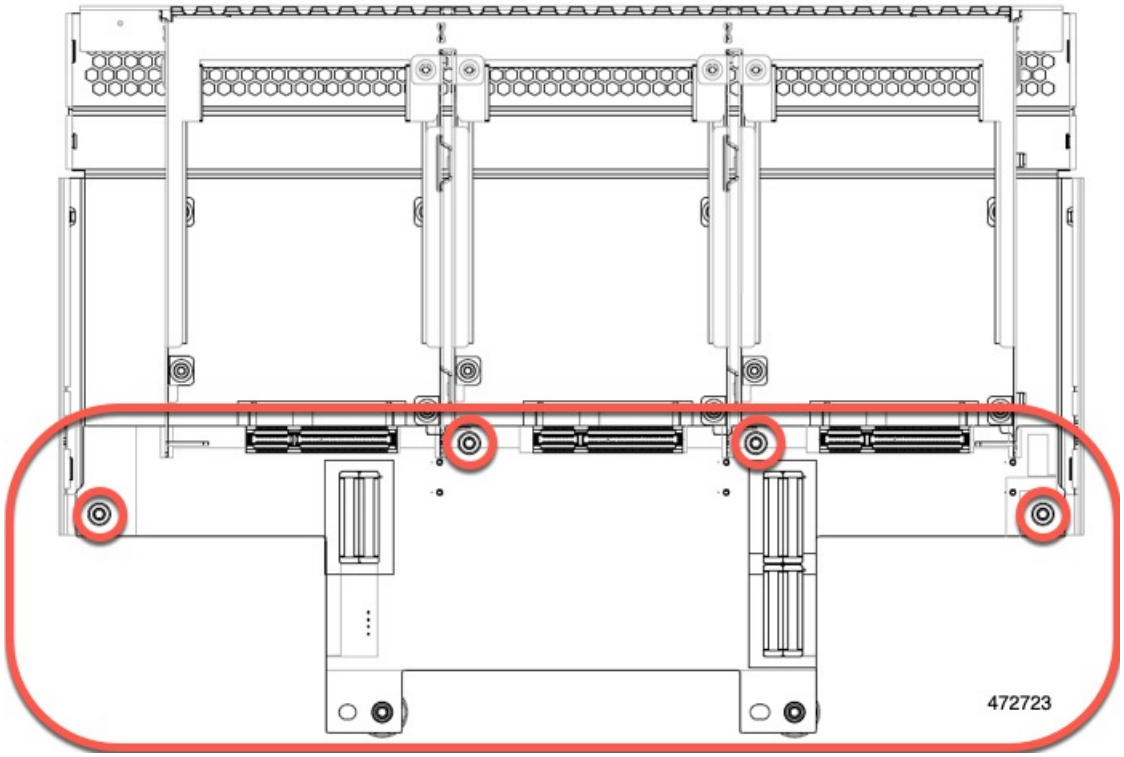


b) Grasp the drive backplane and lift it off of the sheetmetal frame.

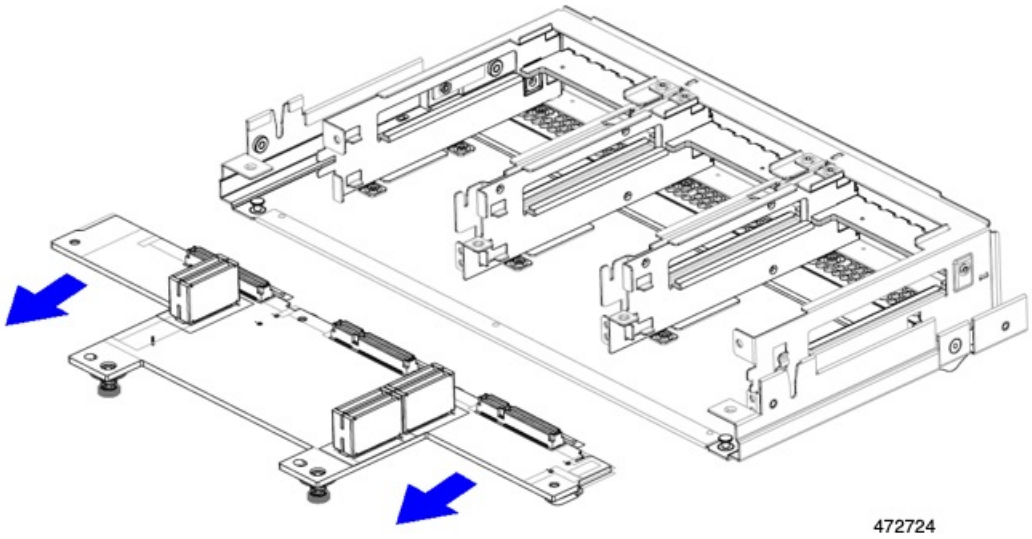


Step 3 Disconnect the PCBA from the sheetmetal frame.

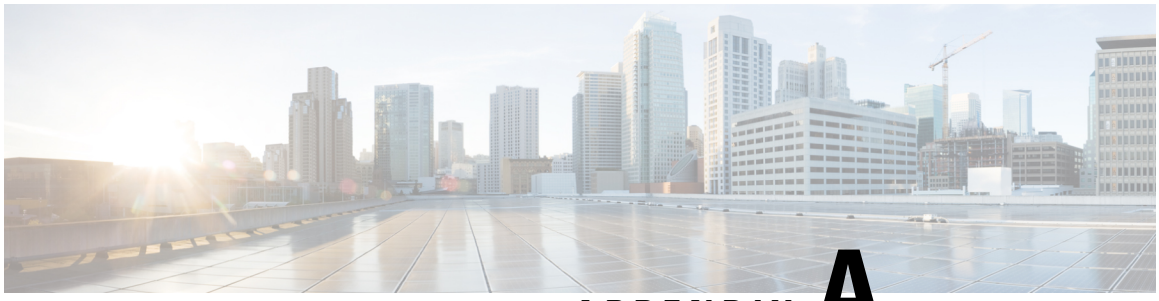
a) Locate the PCBA and use a T8 Torx screwdriver to remove the four screws that secure the PCBA to the sheetmetal frame.



b) Grasp the PCBA and detach it from the front mezzanine module.



Step 4 Dispose of the PCBA properly in accordance with your local recycling and e-waste laws.



APPENDIX A

Technical Specifications

This chapter includes the following topics:

Front Mezzanine Specifications

Physical Specifications

Specification	Value
Height	1.76 inches (44.70 mm)
Width	11.28 inches (286.51 mm)
Depth	8.11inches (205.99 mm)
Weight	The weight depends on the components installed. • Minimally configured front mezzanine weight: 2 lb (0.9 kg) • Fully configured front mezzanine weight: 4.7 lb (2.13 kg)

Environmental Specifications

The Cisco UCS X24g M1 Front Mezzanine Module installs into a supported X210c M8 compute node. Therefore, the Front Mezzanine module itself inherits the environmental and power specifications from the compute node that is hosting the Front Mezzanine module.

- For the Cisco UCS X210c M8 Compute Node, go to:https://www.cisco.com/content/dam/en/us/td/docs/unified_computing/ucs/x/hw/x210c-m8/install .

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