



## **Cisco UCS C240 M8 Server Installation and Service Guide**

**First Published:** 2024-05-10

**Last Modified:** 2026-06-04

### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883







## CONTENTS

---

### PREFACE

|                                                      |           |
|------------------------------------------------------|-----------|
| <b>Preface</b>                                       | <b>xi</b> |
| Bias-Free Documentation                              | xi        |
| Full Cisco Trademarks with Hardware License          | xi        |
| Communications, Services, and Additional Information | xiii      |

---

### CHAPTER 1

|                                 |          |
|---------------------------------|----------|
| <b>Overview</b>                 | <b>1</b> |
| Overview                        | 1        |
| External Features               | 3        |
| PCIe Risers                     | 14       |
| Serviceable Component Locations | 23       |
| Summary of Server Features      | 25       |

---

### CHAPTER 2

|                                                                |           |
|----------------------------------------------------------------|-----------|
| <b>Installing the Server</b>                                   | <b>31</b> |
| Preparing for Installation                                     | 31        |
| Installation Warnings and Guidelines                           | 31        |
| Rack Requirements                                              | 33        |
| Installing the Server in a Rack                                | 34        |
| Installing the Cable Management Arm (Optional)                 | 37        |
| Reversing the Cable Management Arm (Optional)                  | 39        |
| Initial Server Setup                                           | 39        |
| Connecting to the Server Locally For Setup                     | 40        |
| Connecting to the Server Remotely For Setup                    | 41        |
| Setting Up the System With the Cisco IMC Configuration Utility | 43        |
| NIC Mode and NIC Redundancy Settings                           | 45        |
| Updating the BIOS and Cisco IMC Firmware                       | 46        |
| Accessing the System BIOS                                      | 47        |

Smart Access Serial 47

Smart Access USB 48

## CHAPTER 3

### **Servicing the Server 49**

Status LEDs and Buttons 49

Front-Panel LEDs 50

Rear-Panel LEDs 53

Internal Diagnostic LEDs 55

Preparing For Component Installation 55

Required Equipment For Service Procedures 55

Shutting Down and Removing Power From the Server 56

Removing the Server Top Cover 56

Serial Number Location 57

Hot Swap vs Hot Plug 58

Removing and Replacing Components 58

Serviceable Component Locations 59

Replacing the Air Duct 61

Removing the Air Duct 64

Installing the Air Duct 65

Replacing the RV Baffle 66

Removing the RV Baffle 67

Installing the RV Baffle 67

Replacing Front-Loading SAS/SATA Drives 68

Front-Loading SAS/SATA Drive Population Guidelines 68

4K Sector Format SAS/SATA Drives Considerations 69

Setting Up UEFI Mode Booting in the BIOS Setup Utility 69

Setting Up UEFI Mode Booting in the Cisco IMC GUI 70

Replacing a Front-Loading SAS/SATA Drive 70

Replacing Rear-Loading SAS/SATA Drives 71

Rear-Loading SAS/SATA Drive Population Guidelines 71

Replacing a Rear-Loading SAS/SATA Drive 72

Basic Troubleshooting: Reseating a SAS/SATA Drive 73

Reseating a SAS/SATA Drive 74

Replacing Front-Loading NVMe SSDs 75

|                                                                           |     |
|---------------------------------------------------------------------------|-----|
| Front-Loading NVMe SSD Population Guidelines                              | 75  |
| Front-Loading NVMe SSD Requirements and Restrictions                      | 75  |
| Enabling Hot-Plug Support in the System BIOS                              | 76  |
| Replacing a Front-Loading NVMe SSD                                        | 76  |
| Replacing an E3.S Drive                                                   | 78  |
| Replacing Mid-Mounted SAS/SATA Drives (LFF Server)                        | 83  |
| Replacing Rear-Loading NVMe SSDs                                          | 85  |
| Rear-Loading NVMe SSD Population Guidelines                               | 85  |
| Rear-Loading NVMe SSD Requirements and Restrictions                       | 86  |
| Replacing a Rear-Loading NVMe SSD                                         | 86  |
| Replacing Fan Modules                                                     | 88  |
| Replacing the Fan Tray                                                    | 89  |
| Removing the Fan Tray                                                     | 90  |
| Installing the Fan Tray                                                   | 91  |
| Replacing CPUs and Heatsinks                                              | 91  |
| CPU Configuration Rules                                                   | 92  |
| Tools Required For CPU Replacement                                        | 93  |
| Removing CPUs and Heat Sinks                                              | 93  |
| Installing the CPUs and Heatsinks                                         | 99  |
| Additional CPU-Related Parts to Order with RMA Replacement CPUs           | 103 |
| Additional CPU-Related Parts to Order with RMA Replacement System Chassis | 104 |
| Cabling For RAID Cards                                                    | 105 |
| Cisco Trimode M1 24G RAID Controller With 4GB FBWC32 Drives               | 105 |
| Cisco Trimode M1 24G HBA Controller with 4GB FBWC 16 Drives               | 106 |
| Replacing RAID Card and Cables                                            | 107 |
| Removing Cisco Trimode M1 24G RAID Controller W/4GB FBWC 32 Drives        | 107 |
| Installing Cisco Trimode M1 24G RAID Controller W/4GB FBWC 32 Drives      | 111 |
| Replacing Cisco Trimode M1 HBA Controller W/4GB FBWC 16 Drives            | 112 |
| Installing Cisco Trimode M1 24G HBA Controller W/GB FBWC 16 Drives        | 117 |
| Replacing Memory DIMMs                                                    | 117 |
| Replacing DIMMs                                                           | 118 |
| Replacing the RTC Battery                                                 | 119 |
| Replacing Power Supplies                                                  | 120 |
| Supported Power Supplies                                                  | 120 |

|                                                               |     |
|---------------------------------------------------------------|-----|
| Replacing AC Power Supplies                                   | 120 |
| Replacing DC Power Supplies                                   | 121 |
| Installing DC Power Supplies (First Time Installation)        | 123 |
| Grounding for DC Power Supplies                               | 124 |
| Replacing a PCIe Riser                                        | 124 |
| Replacing a PCIe Card                                         | 125 |
| PCIe Slot Specifications                                      | 125 |
| Replacing a PCIe Card                                         | 126 |
| Cisco Virtual Interface Card (VIC) Considerations             | 128 |
| Replacing an mLOM Card                                        | 129 |
| Replacing an OCP Card                                         | 130 |
| Cisco VIC mLOM and OCP Card Replacement Considerations        | 130 |
| Removing an OCP Card                                          | 132 |
| Installing an OCP Card                                        | 134 |
| Replacing a Storage Controller Card (RAID or HBA)             | 136 |
| Storage Controller Card Firmware Compatibility                | 136 |
| Backplane Connectors                                          | 137 |
| Removing the Dual Storage Controller Cards                    | 138 |
| Installing the Dual Storage Controller Cards                  | 143 |
| Removing the Storage Controller Card                          | 146 |
| Installing the Storage Controller Card                        | 150 |
| Verify Cabling                                                | 153 |
| Replacing the Supercap (RAID Backup)                          | 181 |
| Replacing a Boot-Optimized M.2 RAID Controller Module         | 185 |
| Cisco Boot-Optimized M.2 RAID Controller Considerations       | 186 |
| Installing the UCSC-M2RR-240M8 Boot Optimized RAID Controller | 187 |
| Removing the UCSC-M2RR-240M8 Boot Optimized RAID Controller   | 190 |
| Removing UCSC-M2RR-240M8 Boot Controller M2 Modules           | 193 |
| Installing the UCSC-M2RR-240M8 Boot Controller M2 Modules     | 194 |
| Installing the UCSC-M2RM-M8 Boot RAID Controller              | 196 |
| Removing the UCSC-M2RM-M8 Boot RAID Controller                | 200 |
| Installing UCSC-M2RM-M8 Boot RAID Controller M.2 Modules      | 203 |
| Removing UCSC-M2RM-M8 Boot RAID Controller M.2 Modules        | 205 |
| Replacing Boot-Optimized M2 SSDs                              | 206 |

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
| Replacing the Internal Boot-Optimized M.2 RAID Controller                           | 208        |
| Cisco Boot-Optimized M.2 RAID Controller Considerations                             | 210        |
| Removing Internal Boot-Optimized RAID Controller From SFF and E3S Servers           | 211        |
| Installing the Internal Boot-Optimized RAID Controller in SFF and E3S Servers       | 215        |
| Removing Internal Boot RAID Controller SSDs from SFF and E3S Servers                | 217        |
| Installing Internal Boot RAID Controller SSDs for SFF and ES3 Servers               | 218        |
| Removing the Internal Boot-Optimized RAID Controller from LFF Servers               | 219        |
| Installing the Internal Boot-Optimized RAID Controller in LFF Servers               | 222        |
| Removing Internal Boot RAID Controller SSDs from LFF Servers                        | 223        |
| Installing the Internal Boot RAID Controller SSDs for an LFF Server                 | 224        |
| Replacing the Rear SATA Controller Card                                             | 225        |
| Removing the Rear SATA Controller Card                                              | 225        |
| Installing the Rear SATA Controller Card                                            | 226        |
| Replacing a Chassis Intrusion Switch                                                | 228        |
| Installing a Trusted Platform Module (TPM)                                          | 230        |
| TPM Considerations                                                                  | 230        |
| Installing TPM Hardware                                                             | 230        |
| Enabling the TPM in the BIOS                                                        | 231        |
| Enabling the Intel TXT Feature in the BIOS                                          | 231        |
| Service Headers and Jumpers                                                         | 232        |
| Using the Clear CMOS Switch (SW4, Switch 9)                                         | 233        |
| Using the Clear BIOS Password Switch (SW4, Switch 6)                                | 234        |
| Using the Boot Alternate Cisco IMC Image Header (CN5, Pins 1-2)                     | 235        |
| <b>CHAPTER 4</b>                                                                    |            |
| <b>Recycling Server Components</b>                                                  | <b>237</b> |
| Server Recycling and E-Waste                                                        | 237        |
| Battery Warning                                                                     | 237        |
| Recycling the UCSC-240-M8SX and UCSC-240-M8E3S Main Motherboard PCB Assembly (PCBA) | 238        |
| Recycling the UCSC-240-M8L Main Motherboard PCB Assembly (PCBA)                     | 240        |
| Recycling the UCSC-240-M8E3S Front Mezzanine Module PCBA (NVMe Backplane)           | 242        |
| Recycling the UCSC-240-M8SX Front Mezzanine Module PCBA (SAS Backplane)             | 245        |
| Recycling the UCSC-240-M8L Front Mezzanine Module PCBA (SAS Backplane)              | 248        |
| Recycling the USB Board                                                             | 251        |

|                                       |     |
|---------------------------------------|-----|
| Recycling the Server KVM PCBA         | 252 |
| Recycling the Server Front Panel PCBA | 256 |

---

**APPENDIX A**

|                              |            |
|------------------------------|------------|
| <b>Server Specifications</b> | <b>261</b> |
| Power Specifications         | 261        |
| 1050 W DC Power Supply       | 261        |
| 1200 W AC Power Supply       | 262        |
| 1600 W AC Power Supply       | 263        |
| 2300 W AC Power Supply       | 264        |
| Server Specifications        | 265        |
| Physical Specifications      | 265        |
| Environmental Specifications | 266        |
| Power Cord Specifications    | 268        |

---

**APPENDIX B**

|                                                    |            |
|----------------------------------------------------|------------|
| <b>Storage Controller Considerations</b>           | <b>269</b> |
| Supported Storage Controllers and Cables           | 269        |
| Storage Controller Card Firmware Compatibility     | 270        |
| RAID Backup (Supercap)                             | 271        |
| Mixing Drive Types in RAID Groups                  | 271        |
| Storage Controller Cable Connectors and Backplanes | 271        |
| For More RAID Utility Information                  | 272        |

---

**APPENDIX C**

|                                                               |            |
|---------------------------------------------------------------|------------|
| <b>GPU Card Installation</b>                                  | <b>275</b> |
| Server Firmware Requirements                                  | 275        |
| GPU Card Configuration Rules                                  | 275        |
| Requirement For All GPUs: Memory-Mapped I/O Greater Than 4 GB | 277        |
| Installing a Double-Wide GPU Card                             | 277        |
| Enabling GPU Display Ports                                    | 280        |
| GPU Display Port Considerations                               | 281        |
| Understanding the displaymodeselector Tool                    | 281        |
| Enabling or Disabling GPU Display Ports                       | 282        |
| Creating the xconf File for Linux Servers                     | 284        |
| Reverting Display Mode to KVM                                 | 285        |
| Replacing the GPU Air Blocker                                 | 285        |

|                                                                                 |     |
|---------------------------------------------------------------------------------|-----|
| Removing the Riser 2 GPU Air Blocker                                            | 286 |
| Installing the Riser 2 GPU Air Blocker                                          | 287 |
| Removing the Riser 3 GPU Air Blocker                                            | 289 |
| Installing the Riser 3 GPU Air Blocker                                          | 290 |
| Installing GRID Licenses From the NVIDIA Licensing Portal to the License Server | 291 |
| Reading Your License Server's MAC Address                                       | 291 |
| Installing Licenses From the Licensing Portal                                   | 292 |
| Viewing Available GRID Licenses                                                 | 292 |
| Viewing Current License Usage                                                   | 292 |
| Managing GRID Licenses                                                          | 293 |
| Acquiring a GRID License on Windows                                             | 293 |
| Acquiring a GRID License on Linux                                               | 294 |
| Using gpumodeswitch                                                             | 294 |
| Installing Drivers to Support the GPU Cards                                     | 295 |
| 1. Updating the Server BIOS                                                     | 295 |
| 2. Updating the GPU Card Drivers                                                | 296 |

---

**APPENDIX D**

|                                                 |            |
|-------------------------------------------------|------------|
| <b>Installation for UCS Software Management</b> | <b>297</b> |
| Installation For Cisco UCS Manager Integration  | 297        |
| Installation For Cisco Intersight               | 297        |







## Preface

---

This preface contains the following topics:

- [Bias-Free Documentation](#), on page xi
- [Full Cisco Trademarks with Hardware License](#), on page xi
- [Communications, Services, and Additional Information](#), on page xiii

## 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.

## Full Cisco Trademarks with Hardware License

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and,

if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications to this product not authorized by Cisco could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/c/en/us/about/legal/trademarks.html>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

# Communications, Services, and Additional Information

- To receive timely, relevant information from Cisco, sign up at [Cisco Profile Manager](#).
- To get the business results you're looking for with the technologies that matter, visit [Cisco Services](#).
- To submit a service request, visit [Cisco Support](#).
- To discover and browse secure, validated enterprise-class apps, products, solutions and services, visit [Cisco Marketplace](#).
- To obtain general networking, training, and certification titles, visit [Cisco Press](#).
- To find warranty information for a specific product or product family, access [Cisco Warranty Finder](#).

## Cisco Bug Search Tool

[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.





# CHAPTER 1

## Overview

---

This chapter contains the following topics:

- [Overview, on page 1](#)
- [External Features, on page 3](#)
- [Serviceable Component Locations, on page 23](#)
- [Summary of Server Features, on page 25](#)

## Overview

The Cisco UCS C240 M8 is a 2U rack server chassis that can operate in both standalone environments and as part of the Cisco Unified Computing System (Cisco UCS).

Each Cisco UCS C240 M8 has two CPU sockets that can support the Intel® Xeon® 6 Scalable Processors, in either one or two CPU configurations. These processors feature 86 cores per CPU, 350W TDP per socket, 4xUPI 2.0 at up to 24 GT/s, 8 distinct channels of DDR5 DIMMs, and support a maximum of 88 PCIe version 5.0 lanes.

Additionally, the server supports the following features with one CPU or two identical CPUs:

- 32 DDR5 DIMMs (RDIMM) are supported on a dual-CPU server, and 16 DDR5 DIMMs (RDIMM) in a single-CPU server:
  - Up to 6400 MT/s for 1 DPC
  - Up to 5200 MT/s for 2DPC
  - Up to 8000 MT/S MR DIMMs
  - 16 DIMMs are supported per CPU for a total system memory of 8 TB (up to 256 GB DDR5 DIMMs).
- DDR5 DIMM capacities vary based on the CPU type for the compute node. For more information see the [Cisco UCS Intel M8 Memory Guide](#).
- Intel Xeon 6 Scalable Processors support 16, 32, 48, 64, 96, 128, and 256 GB DDR5 DIMMs per CPU socket.

The servers have different supported configurations, which differ based on the number and type of storage drives installed.

- The servers can support small form factor (SFF), EDSFF (E3.S), and large form-factor (LFF) drives, most of which are front-loading into the server's drive cage, but one model of server supports mid-mount LFF drives.
- Support for M.2 SSDs:
  - The server supports up to 2x M.2 SATA drives.
  - For boot RAID M.2 support: One M.2 Boot-Optimized RAID controller which can be internal or rear accessible. Rear M.2 RAID Controllers can be installed in either the mLOM slot or near Riser 3.
- Rear PCIe risers support the following PCIe options:
  - Up to 7 PCIe Gen 5 slots (3 slots x16, plus 4 slots x8)
  - Up to 5 PCIe Gen 5 x16 slots
- Optionally, GPUs can be installed in the rear PCIe risers:
  - Up to 3 double-wide GPUs.
  - Up to 8 single-wide GPUs
- Internal slot for a 24 G Tri-Mode RAID controller with SuperCap for write-cache backup, or for up to two 24G tri-mode HBA controllers.
- One mLOM/VIC card provides 10/25/40/50/100/200 Gbps.
- Two power supplies (PSUs) that support N+1 power configuration and cold redundancy.
- Six modular, hot swappable fans.

### Server Configurations, UCSC-C240-M8SX

The Cisco UCS C240 M8SX server offers a hybrid backplane that supports the following:

- Front-loading drive bays 1 through 24 support 2.5-inch SAS/SATA/U.3 NVMe drives.
- U.3 drives are supported in all 24 slots when using in conjunction with the tri-mode RAID controller
- Slots 1 through 4 and 21 through 24 can support direct attach NVMe SSDs (either U.2 or U.3)
- Optionally, the rear-loading drive bays support for 2.5-inch SAS/SATA or NVMe drives.

### Server Configurations, UCSC-C240-M8E3S

The 32 NVMe configuration (UCSC-C240-M8E3S) can be ordered as an E3.S NVMe-only server. This server has an NVMe backplane that supports the following:

- Front-loading drive bays 1 through 32 support 2.5-inch EDSFF NVMe drives
- Front-loading drives support a flexible EDSFF drive config as either 32 E3.S 1TB drives or 16 E3.S 2TB drives.
- Optionally, the rear-loading drive bays support up to four E3.S 1TB or 2TB drives.



---

**Note** NVMe drives are supported only on a dual CPU server and are not RAID controlled.

---

### Server Configurations, UCSC-X240 M8L

The server is orderable with the following configuration for large form factor (LFF) drives.

- Cisco UCS C240 M8 LFF 16 (UCSC-C240-M8L)—Large form-factor (LFF) drives, with a 24-drive backplane.
  - Front-loading drive bays 1—12 support 3.5-inch SAS3/SAS4 drives (HDD)
  - The midplane drive cage supports up to four 3.5-inch SAS-only drives (HDD)
  - Optionally, rear-loading drive bays support either two or four SFF SAS3/SAS4 or ES.3 NVMe drives. With the rear drives installed, this configuration is the storage-centric server config.

## External Features

This topic shows the external features of the different configurations of the server.

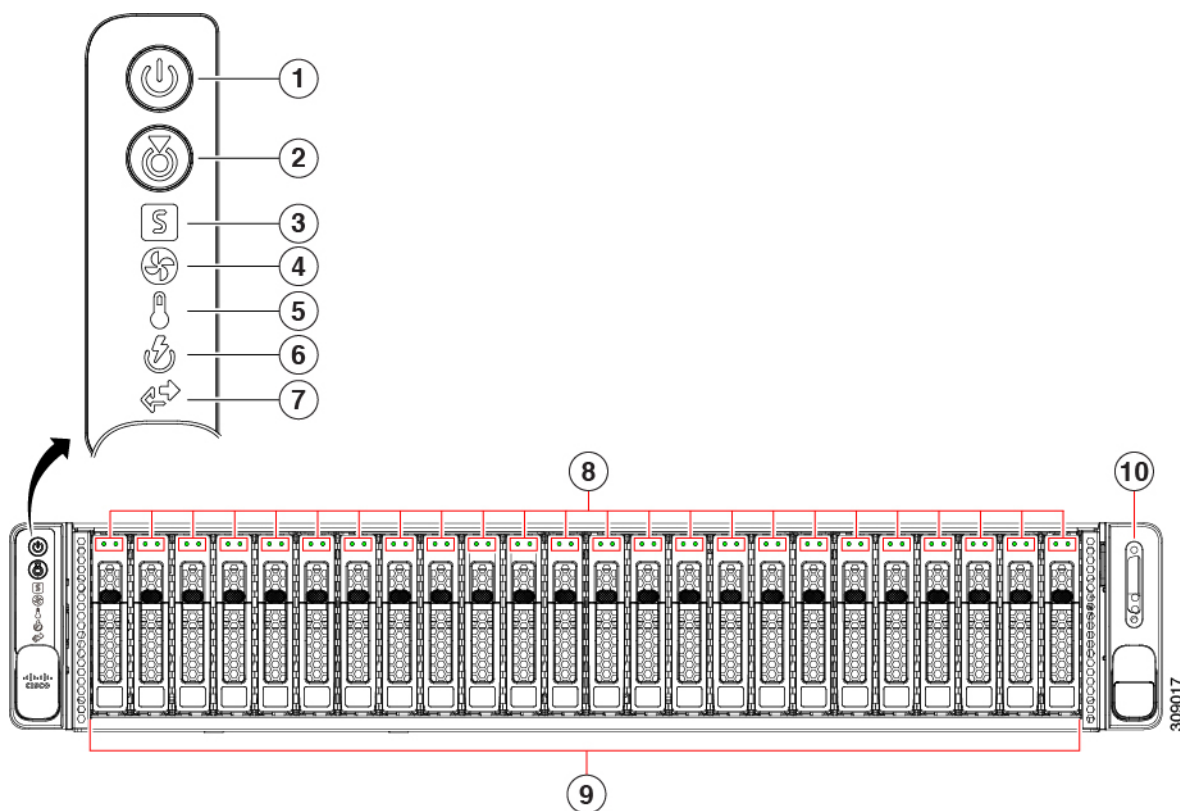
For definitions of LED states, see [Front-Panel LEDs, on page 50](#).

### Cisco UCS C240 M8 Server 24 SAS/SATA Front Panel Features

The following figure shows the front panel features of Cisco UCS C240 M8S, which is the small form-factor (SFF), 24 SAS/SATA/U.3 drive version of the server. Front-loading drives can be mix and match in slots 1 through 4 to support up to four SFF NVMe or SFF SAS/SATA drives. UCS C240 M8 servers with any number of NVMe drives must be dual CPU systems.

This configuration can support up to 4 optional universal HDD drives in the rear PCIe slots (riser 1 and Riser 3).

Figure 1: Cisco UCS C240 M8 Server 24 SAS/SATA Front Panel



|   |                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |                                                                                                                     |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------------------------------------|
| 1 | Power Button/Power Status LED                                                                                                                                                                                                                                                                                                                                                                                                          | 2  | Unit Identification Button/Unit Identification LED                                                                  |
| 3 | System Status LEDs                                                                                                                                                                                                                                                                                                                                                                                                                     | 4  | Fan Status LED                                                                                                      |
| 5 | Temperature Status LED                                                                                                                                                                                                                                                                                                                                                                                                                 | 6  | Power Supply Status LED                                                                                             |
| 7 | Network Link Activity LED                                                                                                                                                                                                                                                                                                                                                                                                              | 8  | Drive Status LEDs                                                                                                   |
| 9 | <p>NVMe Drive Bays, front loading</p> <p>Drive bays 1—24 support front-loading SFF SAS/SATA/U.3 NVMe drives.</p> <p>Drive bays 1 through 4 can support SAS/SATA hard drives and solid-state drives (SSDs) or NVMe PCIe drives. Any number of NVMe drives up to 4 can reside in these slots.</p> <p>Drive bays 5 - 24 support SAS/SATA/U.3 NVMe drives.</p> <p>Drive bays are numbered 1 through 24 with bay 1 as the leftmost bay.</p> | 10 | <p>KVM connector (used with KVM cable that provides one DB-15 VGA, one DB-9 serial, and two USB 2.0 connectors)</p> |



### Cisco UCS C240 M8 Server 32 NVMe Drives Front Panel Features

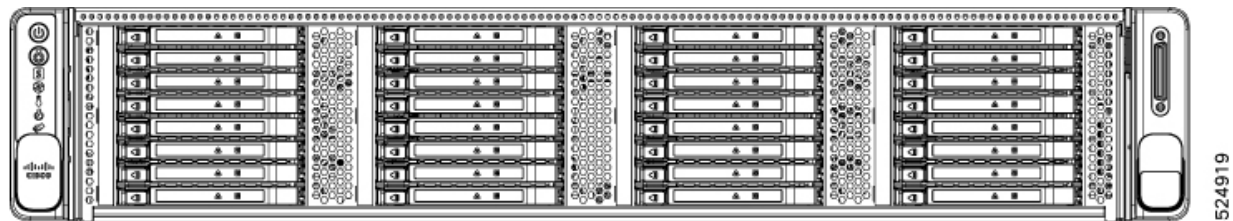
The following figure shows the front panel features of Cisco UCS C240 M8E3S, which is the 32 E3.S NVMe drive version of the server. Front-loading drives are all NVMe; SAS/SATA drives are not supported. UCS C240 M8 servers with any number of NVMe drives must be dual CPU systems.

This configuration has up to 32 E3.S front-loading NVMe drives arranging in columns. Drive bays are numbered top-down, left to right, so column one contains drives one through eight.

This configuration can support up to 4 optional E3.S NVMe drives in the rear PCIe slots (riser 1 and riser 3). Rear drive bays are numbered top-down in columns.

- In riser 1, drive 101 is the top, and drive 102 is the bottom drive.
- In riser 3, drive 103 is the top and drive 104 is the bottom.

**Figure 2: Cisco UCS C240 M8 Server 32 NVMe Front Panel**

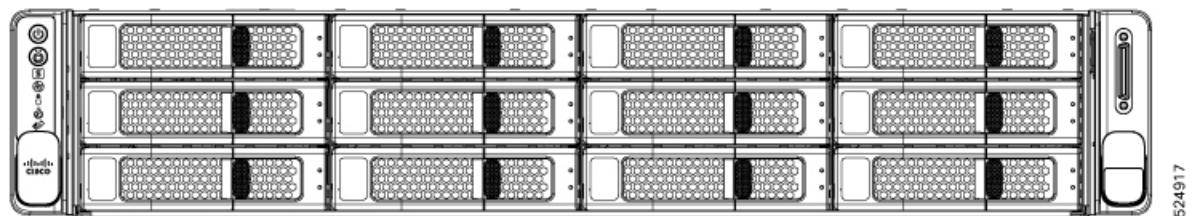


### Cisco UCS C240 M8 Server 16 LFF Drives Front Panel Features

The following figure shows the front panel features of Cisco UCS C240 M8L which is the large form-factor (LFF), 16 drive version of the server. Front-loading drive bays support up to 12 LFF SAS/SATA drives. Optionally, up to four additional mid mount LFF drives can be installed to attach to the server's midplane.

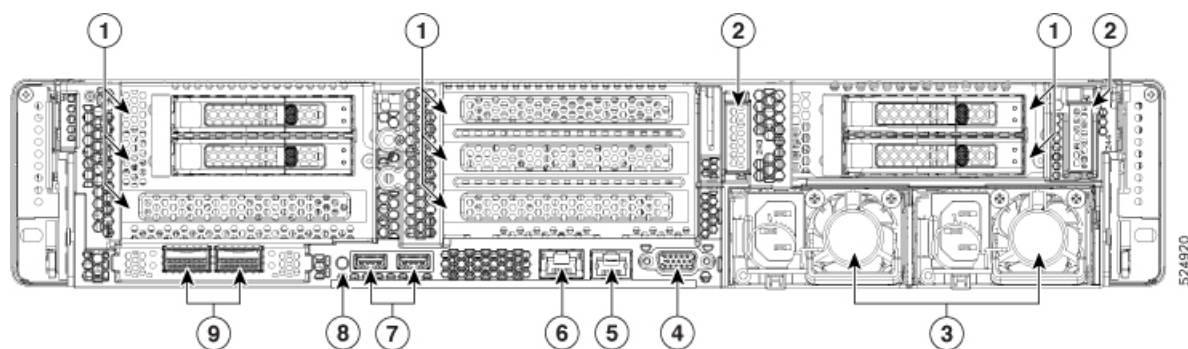
This configuration can support up to 4 optional universal HDD drives in the rear PCIe slots (riser 1 and Riser 3).

**Figure 3: Cisco UCS C240 M8 Server 16 SAS/SATA Front Panel**



### Common Rear Panel Features

The following illustration shows the rear panel hardware features that are common across all models of the server.



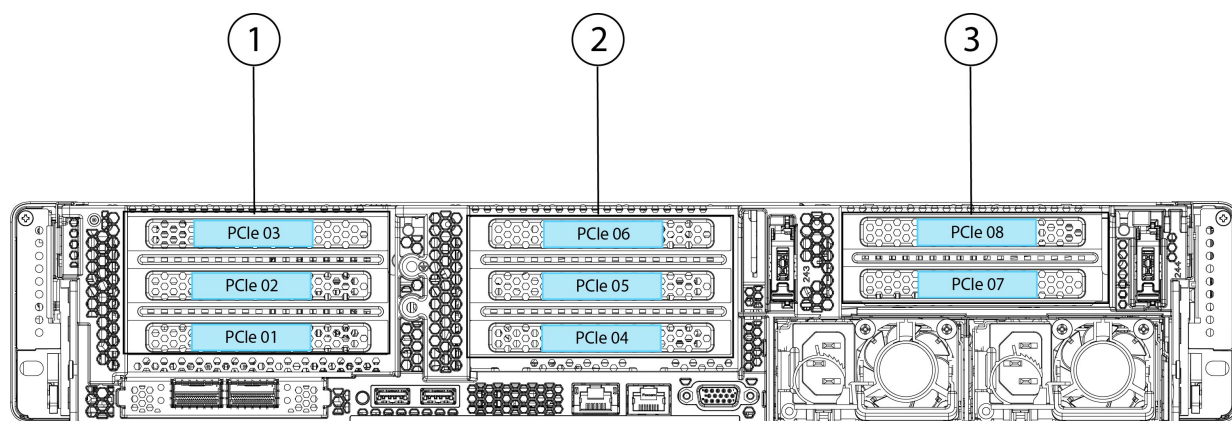
|   |                                                                                                                                                                                                                                                                               |   |                                                                                                  |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------|
| 1 | <p>Rear hardware configuration options:</p> <ul style="list-style-type: none"> <li>• For I/O-Centric, these are PCIe slots.</li> <li>• For Storage-Centric, these are storage drives bays.</li> </ul> <p>This illustration shows the slots populated with two SFF drives.</p> | 2 | <p>Rear M.2 boot-optimized module slots. Each slot supports one M.2 module with one M.2 SSD.</p> |
| 3 | <p>Power supplies (two, redundant as 1+1)</p> <p>See <a href="#">Power Specifications, on page 261</a> for specifications and supported options.</p>                                                                                                                          | 4 | <p>VGA video port (DB-15 connector)</p>                                                          |
| 5 | <p>Serial port (RJ-45 connector)</p>                                                                                                                                                                                                                                          | 6 | <p>One dedicated 1Gbps management port</p>                                                       |
| 7 | <p>USB 3.0 ports, 2</p>                                                                                                                                                                                                                                                       | 8 | <p>Rear unit identification button/LED</p>                                                       |
| 9 | <p>Modular LAN-on-motherboard (mLOM) or OCP card slot (x16).</p> <p>This slot can contain either a Cisco mLOM or an Intel X710 OCP 3.0 card.</p>                                                                                                                              |   |                                                                                                  |

### Cisco UCS C240 M8 Server 24 Drive Rear Panel, I/O Centric

The Cisco UCS C240 M8 24 SAS/SATA SFF version has a rear configuration option, for either I/O (I/O Centric) or Storage (Storage Centric) with the I/O Centric version of the server offering PCIe slots and the Storage Centric version of the server offering drive bays.

The following illustration shows the rear panel features for the I/O Centric version of the Cisco UCS C240 M8SX.

- For features common to all versions of the server, see [Common Rear Panel Features](#).
- For definitions of LED states, see [Rear-Panel LEDs, on page 53](#).



487373

|          |                |          |                |
|----------|----------------|----------|----------------|
| <b>1</b> | Riser 1A or 1C | <b>2</b> | Riser 2A or 2C |
| <b>3</b> | Riser 3A or 3C | -        | -              |

The following table shows the riser options for this version of the server.

**Table 1: Cisco UCS C240 M8 24 SFF SAS/SATA/NVMe (UCSC-C240-M8S)**

| Riser                                                                | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Riser 1</b><br>This riser is I/O-centric and controlled by CPU 1. | Riser 1A supports three PCIe slots numbered bottom to top: <ul style="list-style-type: none"> <li>• Slot 1 is full-height, <math>\frac{3}{4}</math> length, x8, NCSI</li> <li>• Slot 2 is full-height, full-length, x16, NCSI</li> <li>• Slot 3 is full-height, full-length, x8, no NCSI</li> </ul> Riser 1C supports two PCIe slots numbered bottom to top: <ul style="list-style-type: none"> <li>• Slot 1 is full-height, <math>\frac{3}{4}</math>-length, x16 Gen5, NCSI</li> <li>• Slot 2 is full-height, full-length, x16 Gen5, no NCSI</li> </ul> |

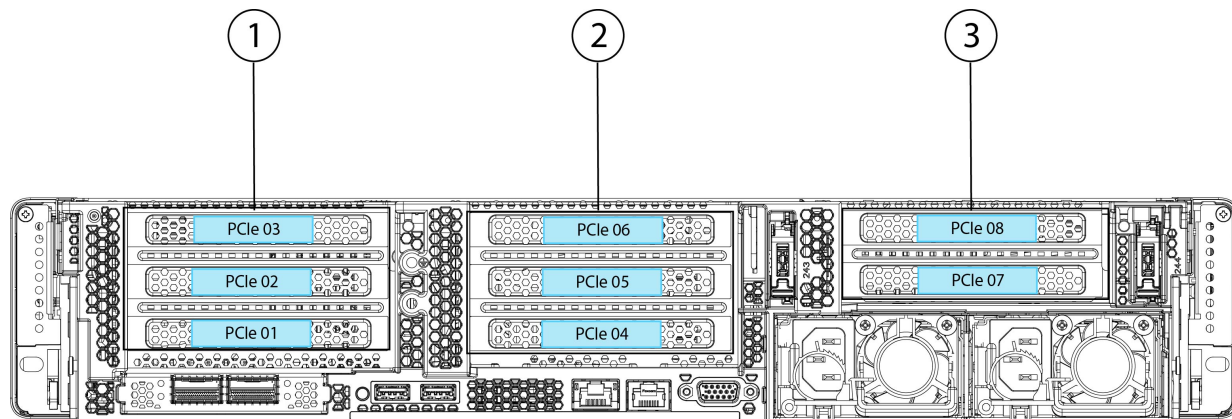
| Riser                                                                | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Riser 2</b><br>This riser is I/O-centric and controlled by CPU 2. | Riser 2A supports three PCIe slots: <ul style="list-style-type: none"> <li>• Slot 4 is full-height, <math>\frac{3}{4}</math> length, x8, NCSI</li> <li>• Slot 5 is full-height, full-length, x16, NCSI</li> <li>• Slot 6 is full-height, full-length, x8, no NCSI</li> </ul> Riser 2C supports two PCIe slots, numbered bottom to top: <ul style="list-style-type: none"> <li>• Slot 4 is full-height, <math>\frac{3}{4}</math>-length, x16 Gen5, NCSI</li> <li>• Slot 5 is full-height, full-length, x16 Gen5, no NCSI</li> </ul> |
| <b>Riser 3</b><br>This riser is I/O-centric and controlled by CPU 2. | Riser 3A supports two PCIe slots: <ul style="list-style-type: none"> <li>• Slot 7 is full-height, full-length, x8</li> <li>• Slot 8 is full-height, full-length, x8</li> </ul> Riser 3C supports a GPU only. <ul style="list-style-type: none"> <li>• Supports one full-height, full-length, double-wide GPU (PCIe slot 7 only), x16</li> <li>• Slot 8 is blocked by double-wide GPU</li> </ul>                                                                                                                                    |

### Cisco UCS C240 M8 Server 24 NVMe Drive Rear Panel, I/O Centric

The Cisco UCS C240 M8 24 NVMe version has a rear configuration option, for either I/O (I/O Centric) or Storage (Storage Centric) with the I/O Centric version of the server offering PCIe slots and the Storage Centric version of the server offering drive bays.

The following illustration shows the rear panel features for the I/O Centric version of the Cisco UCS C240 M8SN.

- For features common to all versions of the server, see Common Rear Panel Features.
- For definitions of LED states, see [Rear-Panel LEDs, on page 53](#).



487374

The following table shows the riser options for this version of the server.

|          |                 |          |                |
|----------|-----------------|----------|----------------|
| <b>1</b> | Riser 1A or 1C  | <b>2</b> | Riser 2A or 2C |
| <b>3</b> | Riser 3A, or 3C | -        |                |

**Table 2: Cisco UCS C240 M8 24 SFF NVMe (UCSC-C240-M8S)**

| Riser                                                                | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Riser 1</b><br>This riser is I/O-centric and controlled by CPU 1. | Riser 1A supports three PCIe slots: <ul style="list-style-type: none"> <li>Slot 1 is full-height, <math>\frac{3}{4}</math> length, x8, NCSI</li> <li>Slot 2 is full-height, full-length, x16, NCSI</li> <li>Slot 3 is full-height, full-length, x8, no NCSI</li> </ul> Riser 1C supports two PCIe slots numbered bottom to top: <ul style="list-style-type: none"> <li>Slot 1 is full-height, <math>\frac{3}{4}</math>-length, x16 Gen5, NCSI</li> <li>Slot 2 is full-height, full-length, x16 Gen5, no NCSI</li> </ul> |
| <b>Riser 2</b><br>This riser is I/O-centric and controlled by CPU 2. | Riser 2A supports three PCIe slots: <ul style="list-style-type: none"> <li>Slot 4 is full-height, <math>\frac{3}{4}</math> length, x8</li> <li>Slot 5 is full-height, full-length, x16</li> <li>Slot 6 is full-height, full-length, x8</li> </ul> Riser 2C supports two PCIe slots numbered bottom to top: <ul style="list-style-type: none"> <li>Slot 4 is full-height, <math>\frac{3}{4}</math>-length, x16 Gen5, NCSI</li> <li>Slot 5 is full-height, full-length, x16 Gen5, no NCSI</li> </ul>                      |

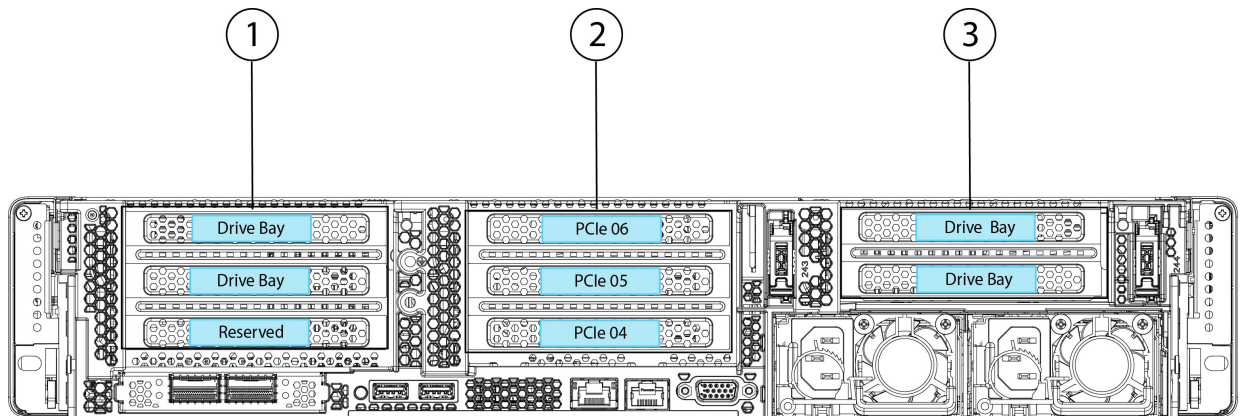
| Riser   | Options                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Riser 3 | <p>Riser 3A supports two PCIe slots numbered bottom to top:</p> <ul style="list-style-type: none"> <li>Slot 7 is full-height, full-length, x8</li> <li>Slot 8 is full-height, full-length, x8</li> </ul> <p>Riser 3C supports a GPU only:</p> <ul style="list-style-type: none"> <li>Supports one full-height, full-length, double-wide GPU (PCIe slot 7 only), x16</li> <li>Slot 8 is blocked by double-wide GPU</li> </ul> |

### Cisco UCS C240 M8 Server 24 Drive Rear Panel, Storage Centric

The Cisco UCS C240 M8 24 SAS/SATA SFF version has a rear configuration option, for either I/O (I/O Centric) or Storage (Storage Centric) with the I/O Centric version of the server offering PCIe slots and the Storage Centric version of the server offering drive bays.

The following illustration shows the rear panel features for the Storage Centric version of the Cisco UCS C240 M8S.

- For features common to all versions of the server, see Common Rear Panel Features.
- For definitions of LED states, see [Rear-Panel LEDs, on page 53](#).



The following table shows the riser options for this version of the server.

|   |          |   |                |
|---|----------|---|----------------|
| 1 | Riser 1B | 2 | Riser 2A or 2C |
| 3 | Riser 3B | - |                |

**Table 3: Cisco UCS C240 M8 24 SFF SAS/SATA/NVMe (UCSC-C240-M8S)**

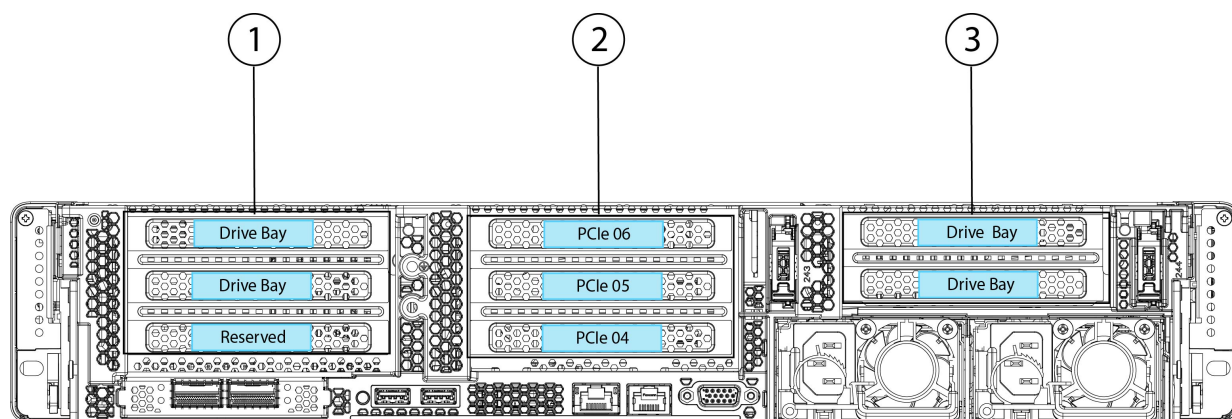
| Riser                                                                        | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Riser 1</p> <p>This riser is Storage-centric and controlled by CPU 1.</p> | <p>Riser 1B supports two SFF SAS/SATA/NVMe drives</p> <ul style="list-style-type: none"> <li>• Slot 1 is reserved</li> <li>• Slot 2 (drive bay 102), x16</li> <li>• Slot 3 (drive bay 101), x8</li> </ul> <p>When the server uses a hardware RAID controller card, SAS/SATA HDDs or SSDs, or NVMe PCIe SSDs are supported in the rear bays.</p>                                                                                                                                                                                                                                                                                            |
| <p>Riser 2</p> <p>This riser is I/O-centric and controlled by CPU 2.</p>     | <p>Riser 2A and 2C are supported for the Storage-centric version of the server.</p> <p>Riser 2A supports three slots:</p> <ul style="list-style-type: none"> <li>• Slot 4 is full-height, <math>\frac{3}{4}</math> length, x8, NCSI</li> <li>• Slot 5 is full-height, full-length, x16, NCSI</li> <li>• Slot 6 is full-height, full-length, x8</li> </ul> <p>Riser 2C supports two slots:</p> <ul style="list-style-type: none"> <li>• Slot 4 is full-height, <math>\frac{3}{4}</math>-length, x16, Gen 5, NCSI</li> <li>• Slot 5 is full-height, full-length, x16, Gen 5</li> </ul> <p>NCSI support is limited to one slot at a time.</p> |
| <p>Riser 3</p> <p>This riser is controlled by CPU 2.</p>                     | <p>Riser 3B has two drive slots that can support two universal HDD or NVMe SFF drives.</p> <ul style="list-style-type: none"> <li>• Slot 7 (drive bay 107), x4</li> <li>• Slot 8 (drive bay 106), x4</li> </ul> <p>When the server uses a hardware RAID controller card, SAS/SATA HDDs or SSDs, or NVMe PCIe SSDs, are supported in the rear bays.</p>                                                                                                                                                                                                                                                                                     |

### Cisco UCS C240 M8 Server 24 NVMe Drive Rear Panel, Storage Centric

The Cisco UCS C240 M8 24 NVMe SFF version has a rear configuration option, for either I/O (I/O Centric) or Storage (Storage Centric) with the I/O Centric version of the server using PCIe slots and the Storage Centric version of the server offering drive bays.

The following illustration shows the rear panel features for the Storage Centric version of the Cisco UCS C240 M8SN.

- For features common to all versions of the server, see Common Rear Panel Features.
- For definitions of LED states, see [Rear-Panel LEDs, on page 53](#).



487375

The following table shows the riser options for this version of the server.

**Table 4: Cisco UCS C240 M8 24 SFF NVMe (UCSC-C240-M8S)**

| Riser                                                                         | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Riser 1B</p> <p>This riser is Storage centric and controlled by CPU 1.</p> | <p>Riser 1B supports two universal HDD/NVMe SFF drive slots:</p> <ul style="list-style-type: none"> <li>Slot 1 is reserved. and does not support HDD or NVMe drives. This slot does support one M.2 NVMe RAID card.</li> <li>Slot 2 (drive bay 102), x4</li> <li>Slot 3 (drive bay 101), x4</li> </ul> <p>When the server uses a hardware RAID controller card, NVMe PCIe SSDs are supported in the rear bays.</p>                                                                                                                                                                                                               |
| <p>Riser 2</p>                                                                | <p>Riser 2A and 2C are supported for the Storage-centric version of the server.</p> <p>Riser 2A supports three slots:</p> <ul style="list-style-type: none"> <li>Slot 4 is full-height, <math>\frac{3}{4}</math> length, x8, NCSI</li> <li>Slot 5 is full-height, full-length, x16, NCSI</li> <li>Slot 6 is full-height, full-length, x8</li> </ul> <p>Riser 2C supports two slots:</p> <ul style="list-style-type: none"> <li>Slot 4 is full-height, <math>\frac{3}{4}</math>-length, x16, Gen 5, NCSI</li> <li>Slot 5 is full-height, full-length, x16, Gen 5</li> </ul> <p>NCSI support is limited to one slot at a time.</p> |



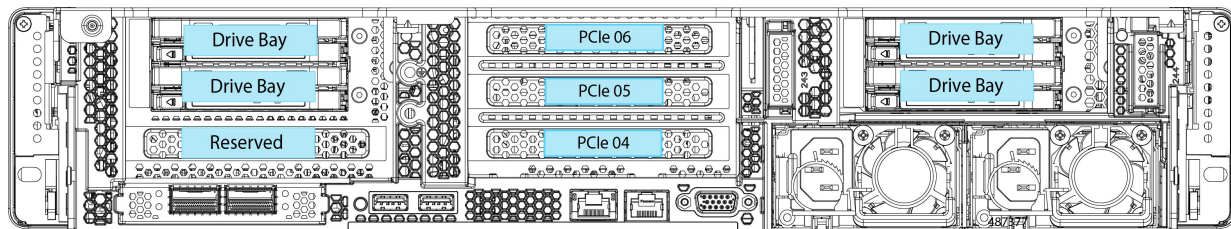
| Riser   | Options                                                                                                                                                                                                                                  |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Riser 3 | <p>In the Storage-Centric configuration, Riser 3B has two slots that can support two universal HDD/NVMe SFF drives.</p> <ul style="list-style-type: none"> <li>Slot 7 (drive bay 107), x4</li> <li>Slot 8 (drive bay 106), x4</li> </ul> |

### Cisco UCS C240 M8 Server E3.S NVMe Drive Rear Panel, Storage Centric

The Cisco UCS C240 M8 E3.S version has a rear configuration option, for either I/O (I/O Centric) or Storage (Storage Centric) with the I/O Centric version of the server using PCIe slots and the Storage Centric version of the server offering drive bays.

The following illustration shows the rear panel features for the Storage Centric version of the Cisco UCS C240 M8E3S.

- For features common to all versions of the server, see Common Rear Panel Features.
- For definitions of LED states, see [Rear-Panel LEDs, on page 53](#).



487377

The following table shows the riser options for this version of the server.

**Table 5: Cisco UCS C240 M8 E3.S NVMe (UCSC-C240-M8E3S)**

| Riser                                                                         | Options                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Riser 1B</p> <p>This riser is Storage centric and controlled by CPU 1.</p> | <p>Riser 1B supports two E3.S drive slots:</p> <ul style="list-style-type: none"> <li>Slot 1 is reserved. and does not support NVMe drives. This slot does support one M.2 NVMe RAID card.</li> <li>Slot 2 (drive bay 102), x4</li> <li>Slot 3 (drive bay 101), x4</li> </ul> <p>When the server uses a hardware RAID controller card, NVMe PCIe SSDs are supported in the rear bays.</p> |

| Riser   | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Riser 2 | <p>Riser 2A and 2C are supported for the Storage-centric version of the server.</p> <p>Riser 2A supports three slots:</p> <ul style="list-style-type: none"> <li>• Slot 4 is full-height, <math>\frac{3}{4}</math> length, x8, NCSI</li> <li>• Slot 5 is full-height, full-length, x16, NCSI</li> <li>• Slot 6 is full-height, full-length, x8</li> </ul> <p>Riser 2C supports two slots:</p> <ul style="list-style-type: none"> <li>• Slot 4 is full-height, <math>\frac{3}{4}</math>-length, x16, Gen 5, NCSI</li> <li>• Slot 5 is full-height, full-length, x16, Gen 5</li> </ul> <p>NCSI support is limited to one slot at a time.</p> |
| Riser 3 | <p>In the Storage-Centric configuration, Riser 3B has two slots that can support two universal HDD/NVMe SFF drives.</p> <ul style="list-style-type: none"> <li>• Slot 7 (drive bay 107), x4</li> <li>• Slot 8 (drive bay 106), x4</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                               |

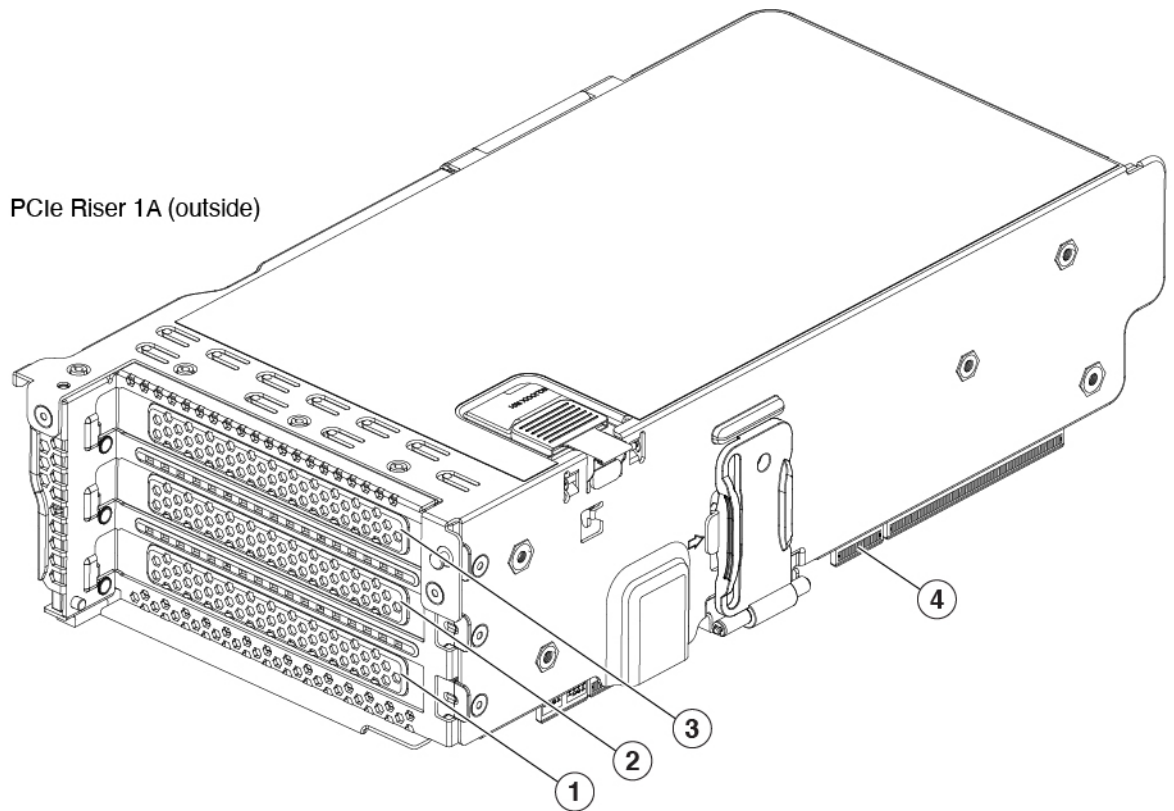
## PCle Risers

The following different PCIe riser options are available.

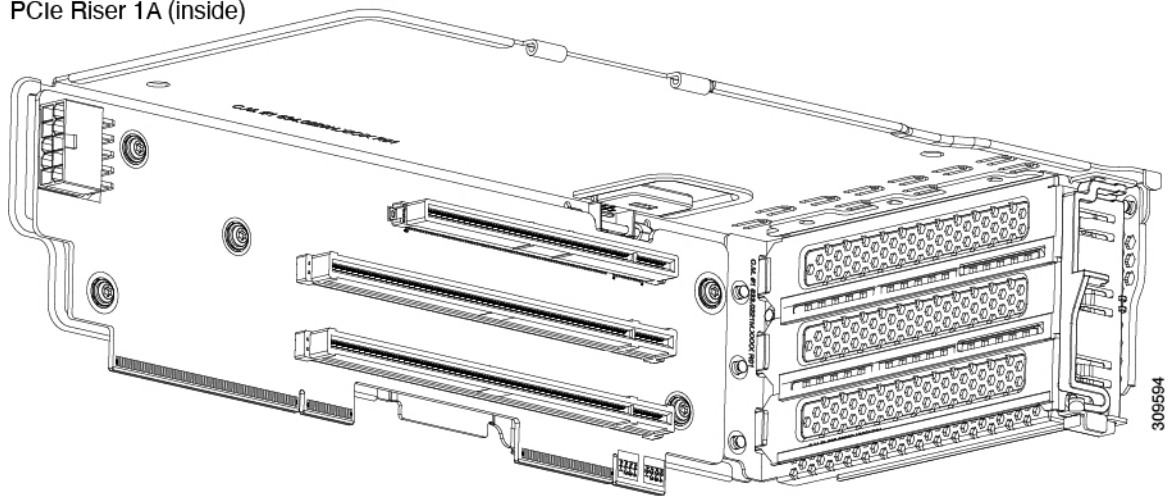
### Riser 1 Options

This riser supports the following options, Riser 1A, 1B (two HDDs only), and 1C.

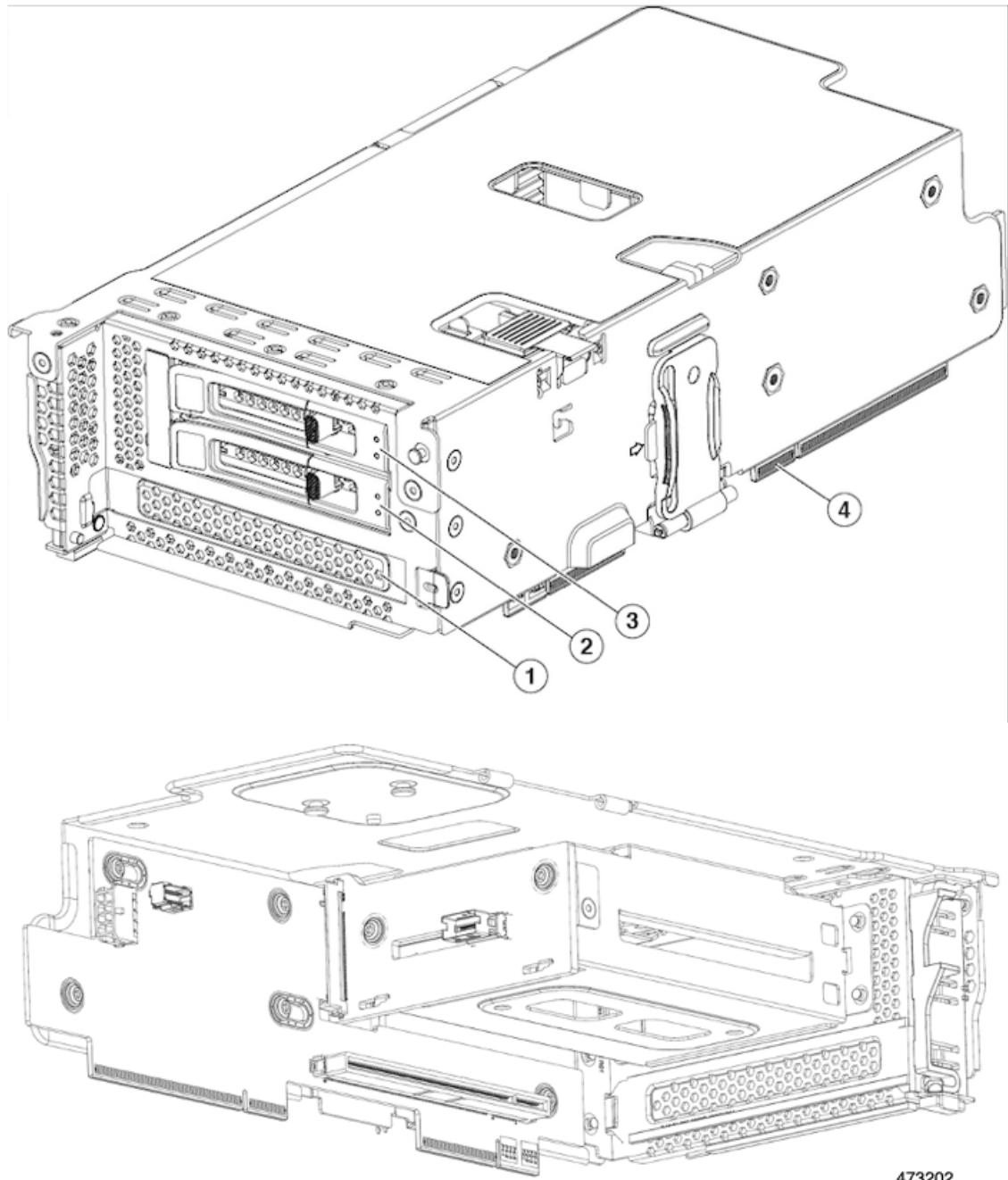
PCIe Riser 1A (outside)



PCIe Riser 1A (inside)



|   |                                                                                                         |   |                                                                                                     |
|---|---------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------|
| 1 | PCIe slot 1, supports full-height, $\frac{3}{4}$ length, x8, Gen 4, NCSI support for one slot at a time | 2 | PCIe slot 2, full height, full length, x16, Gen 4, GPU capable, NCSI support for one slot at a time |
| 3 | PCIe slot 3, full height, full length, x8, Gen 4, no NCSI                                               | 4 | Edge Connectors                                                                                     |

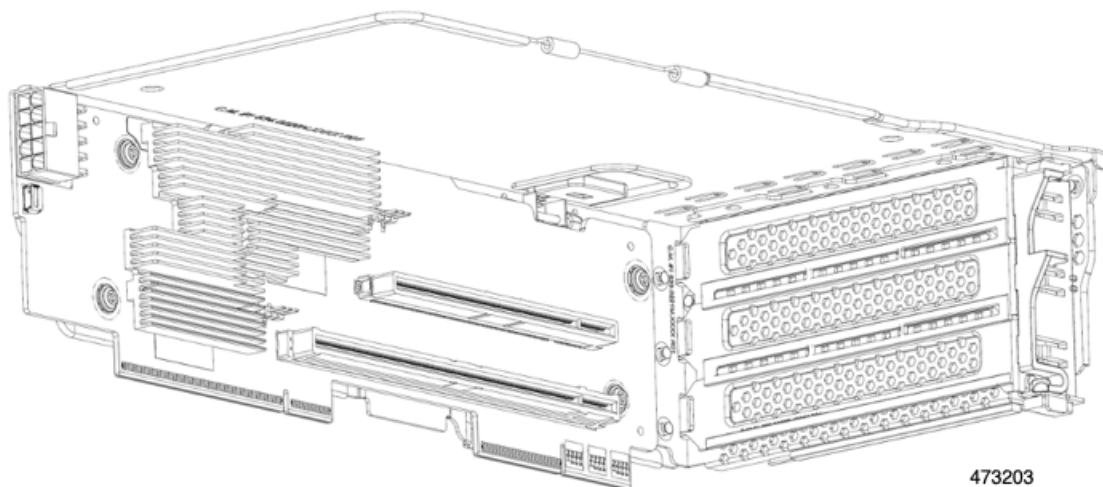


473202

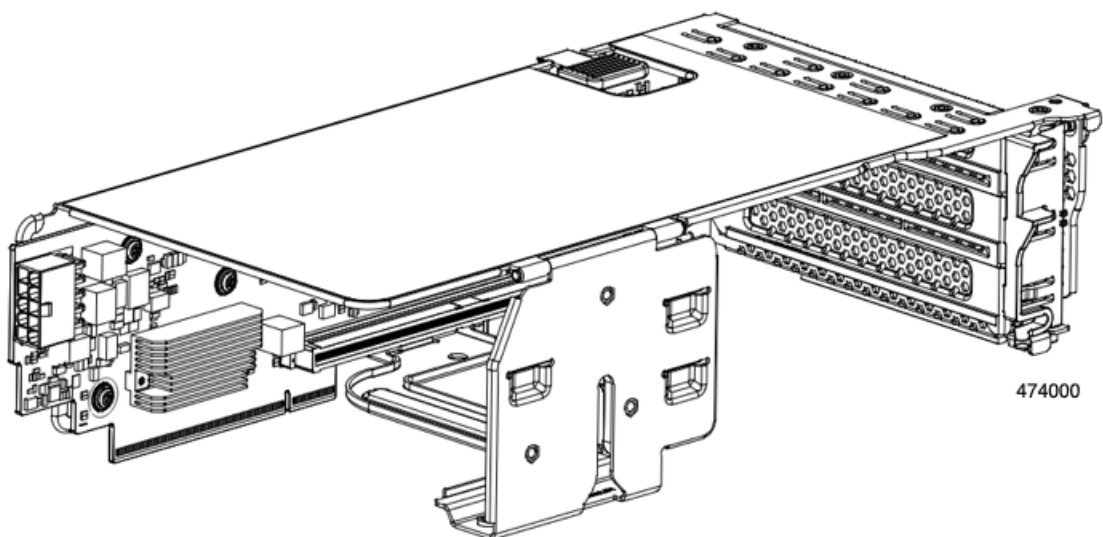
|   |                                                                       |   |                                                                |
|---|-----------------------------------------------------------------------|---|----------------------------------------------------------------|
| 1 | PCIe slot 1, Reserved for drive controller (NVMe M.2 RAID controller) | 2 | Drive Bay 102, x4, Gen 4, 2.5-inch Universal HDD, SSD, or NVMe |
| 3 | Drive 101, x4, Gen 4, 2.5-inch Universal HDD, SSD, or NVMe            | 4 | Edge Connectors                                                |

Riser 1C supports two PCIe Gen5 x16 Slots.

The following illustration shows Riser 1C (inside)



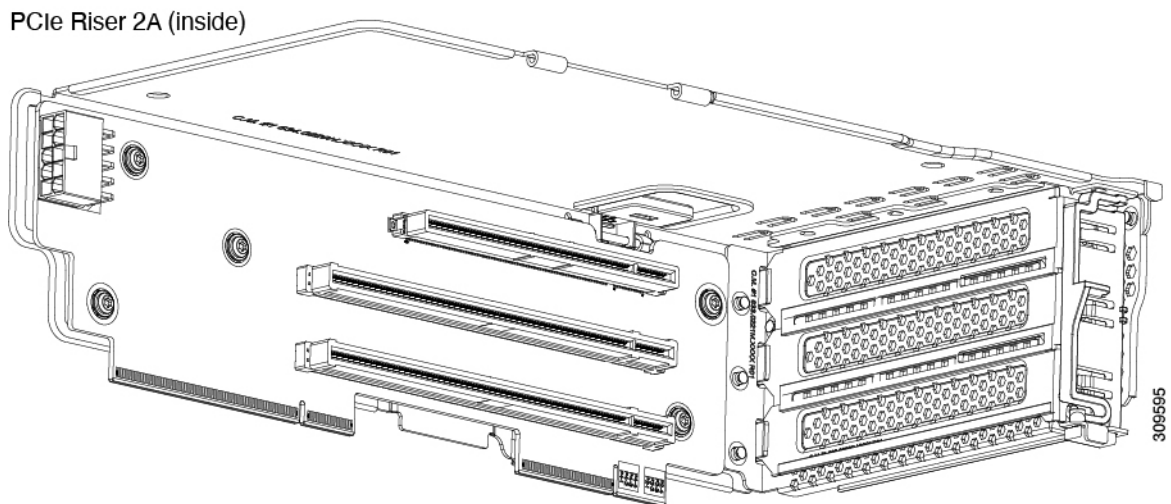
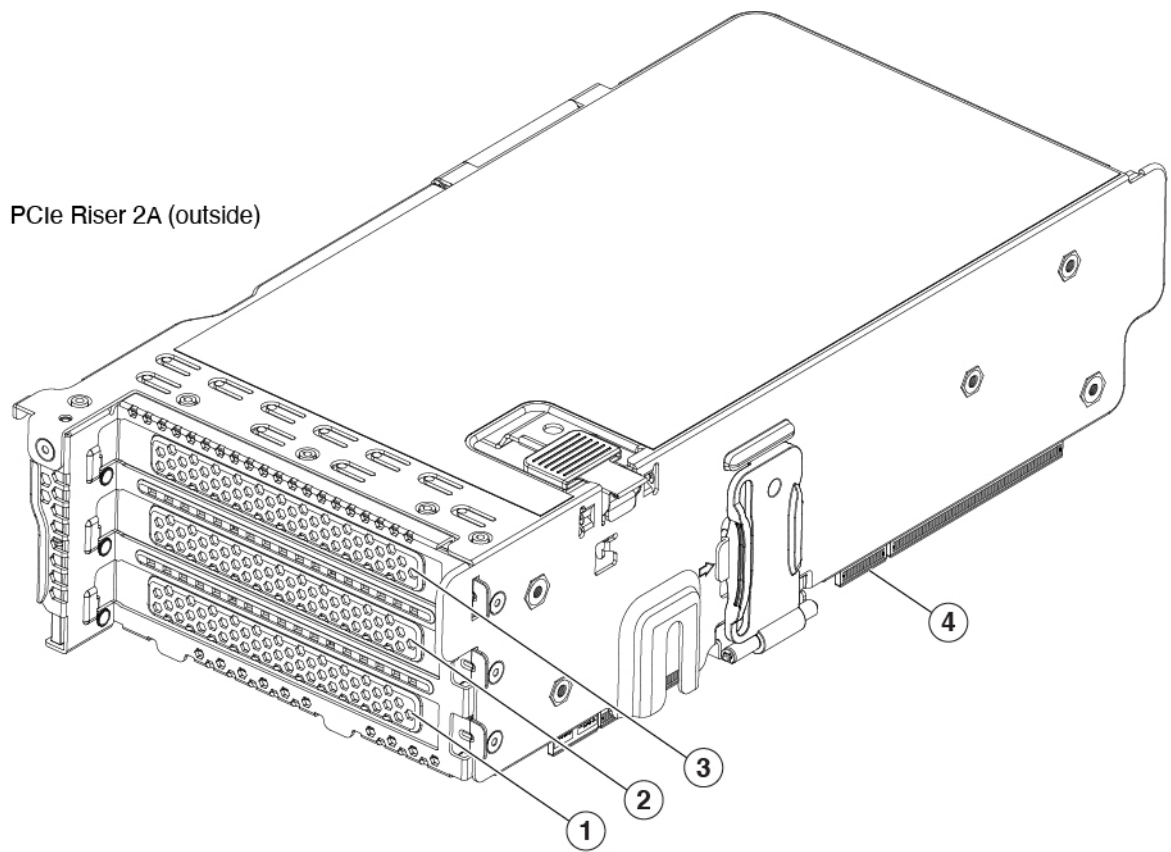
The following illustration shows Riser 1C (outside).



|   |                                                                                                         |   |                                                                     |
|---|---------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------|
| 1 | PCIe slot 1, supports full-height, $\frac{3}{4}$ length, x16, Gen 5, NCSI support on one slot at a time | 2 | PCIe slot 2, supports full-height, full length, x16, Gen 5, no NCSI |
|---|---------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------|

## Riser 2

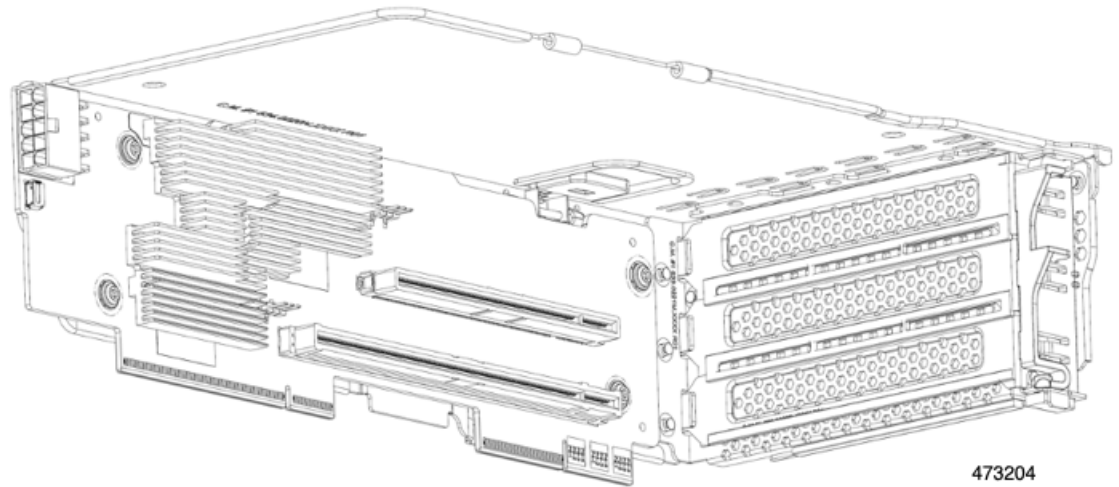
This riser supports options Riser 2A and 2C, which have the same electrical and mechanical properties as Riser 1A and Riser 1C, but Riser 2 has a different mechanical holder.



|   |                                                                                                        |   |                                                                                                    |
|---|--------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------|
| 1 | PCIe slot 4, supports full-height, $\frac{3}{4}$ length, x8, Gen 4, NCSI support on one slot at a time | 2 | PCIe slot 5, full height, full length, x16, Gen 4, GPU capable, NCSI support on one slot at a time |
| 3 | PCIe slot 6, full height, full length, x8, Gen 4, no NCSI                                              | 4 | Edge Connectors                                                                                    |



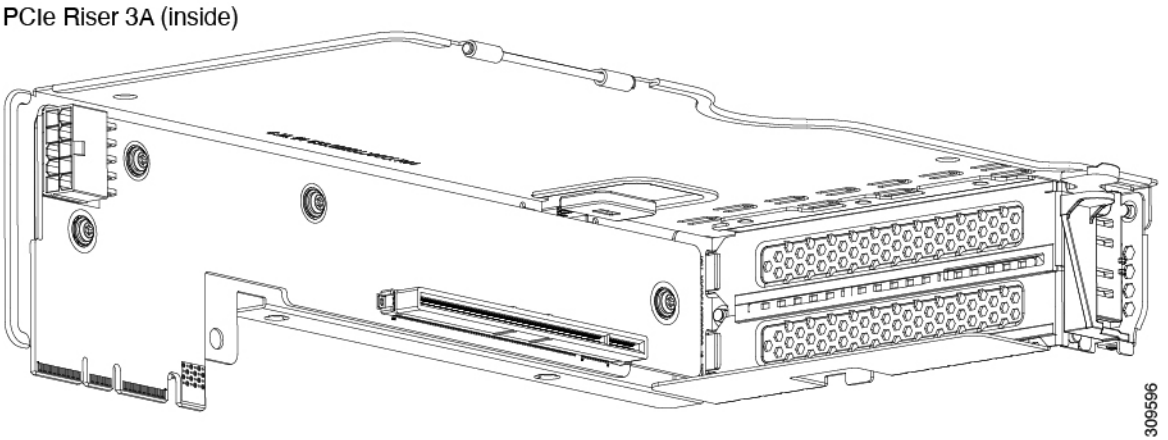
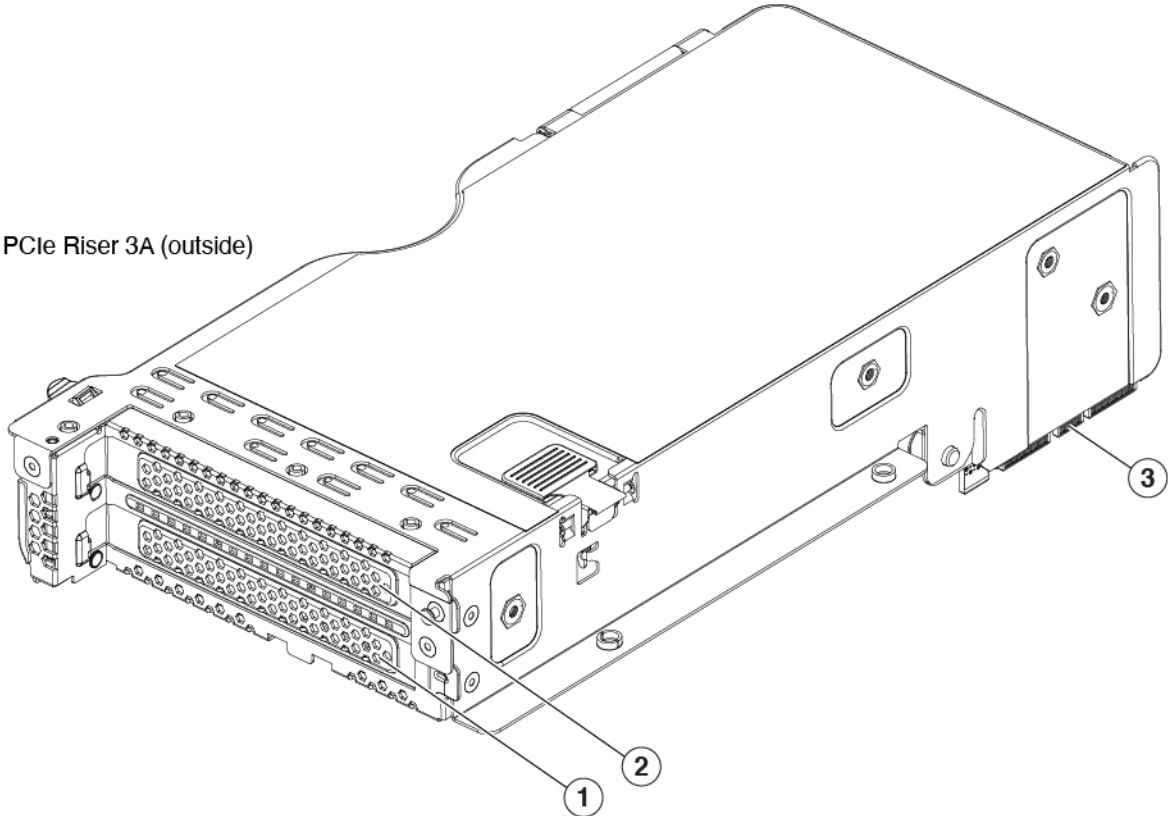
Riser 2C supports two PCIe Gen5 x16 Slots.



|   |                                                                                                         |   |                                                                     |
|---|---------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------|
| 1 | PCIe slot 4, supports full-height, $\frac{3}{4}$ length, x16, Gen 5, NCSI support on one slot at a time | 2 | PCIe slot 5, supports full-height, full length, x16, Gen 5, no NCSI |
|---|---------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------|

### Riser 3

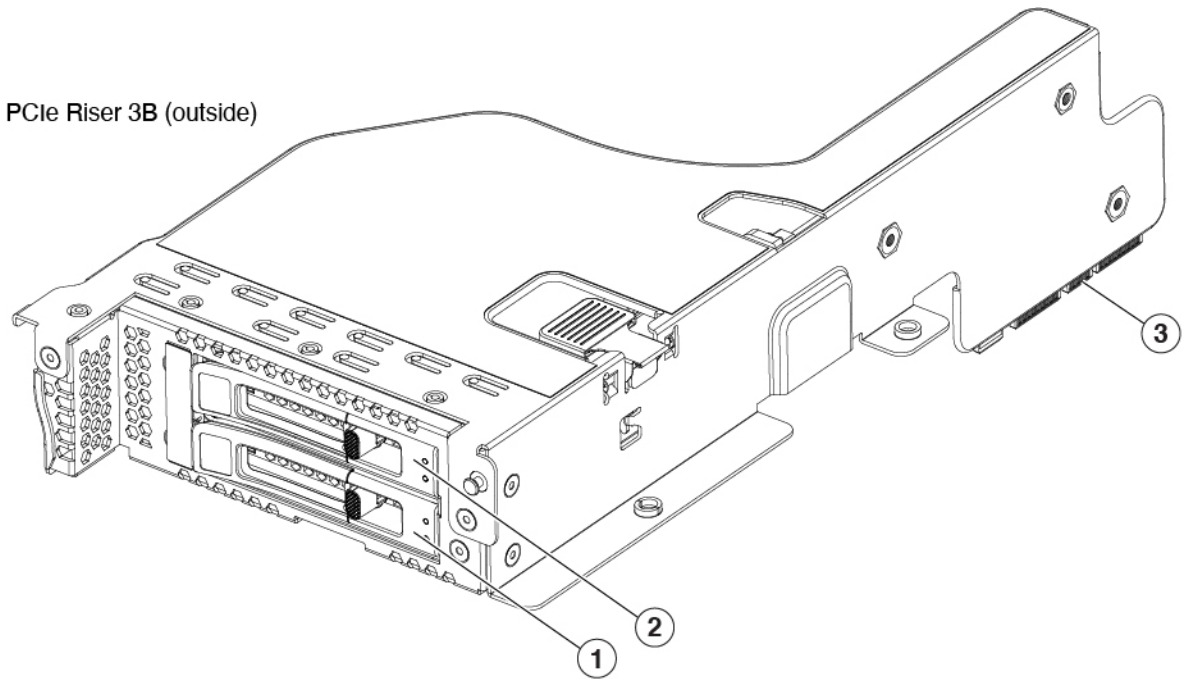
This riser supports three options, 3A, 3B (supports HDD, SSD, and NVMe), and 3C.



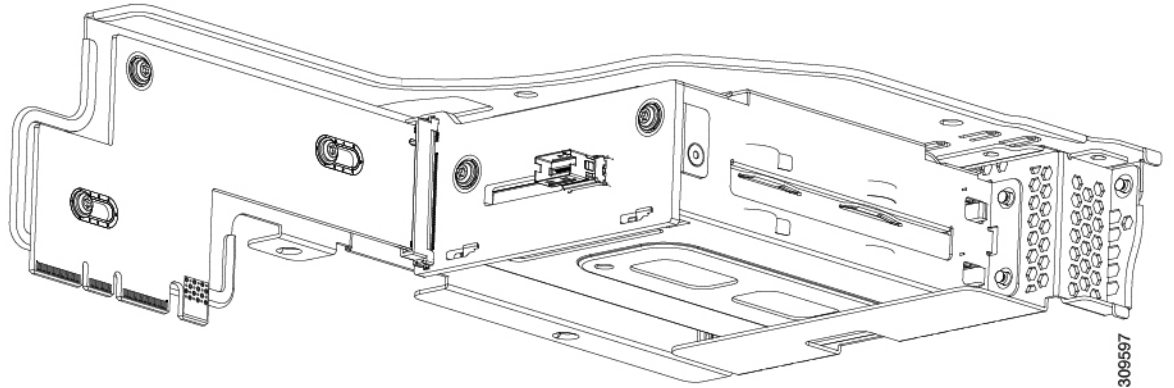
|   |                                                             |   |                                                              |
|---|-------------------------------------------------------------|---|--------------------------------------------------------------|
| 1 | PCIe slot 7, full height, full length<br>x8, Gen 4, no NCSI | 2 | PCIe slot 8, full height, full length,<br>x8, Gen 4, no NCSI |
| 3 | Edge Connectors                                             |   |                                                              |



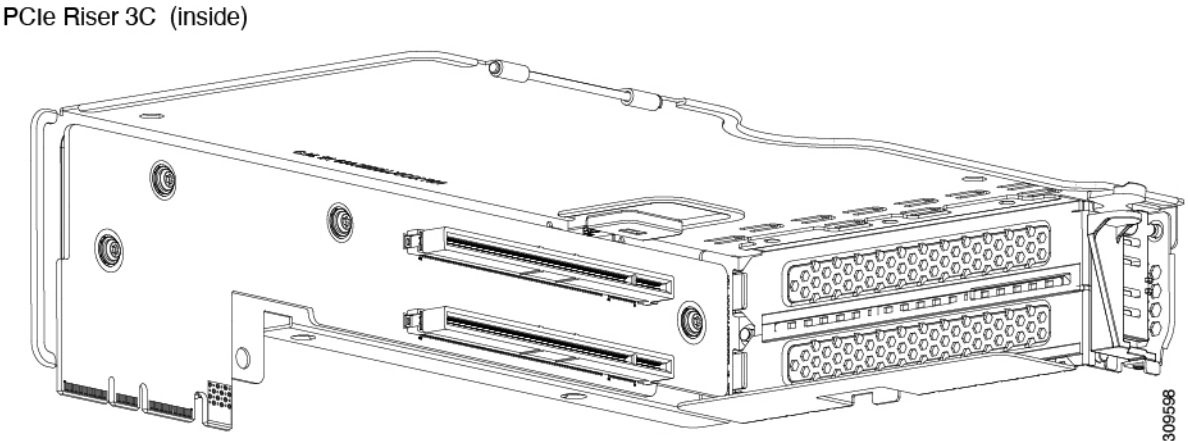
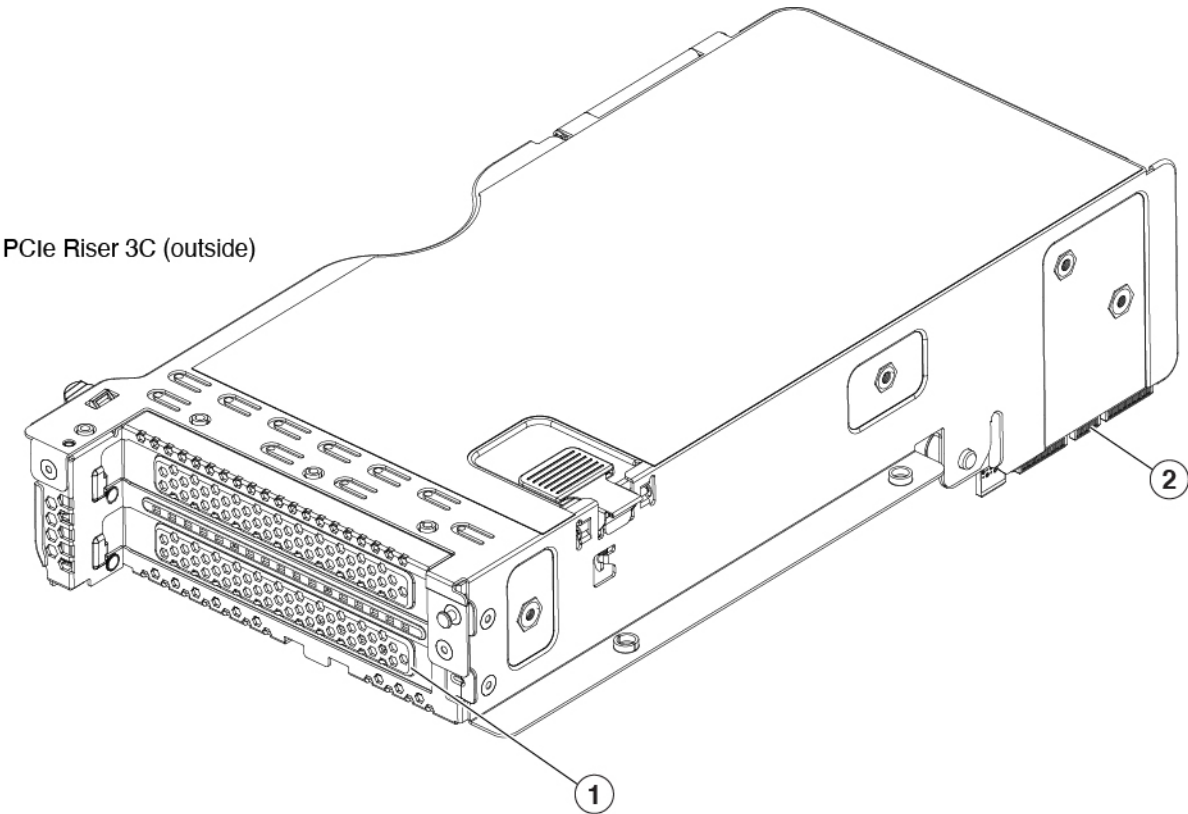
PCIe Riser 3B (outside)



PCIe Riser 3B (inside)



|   |                                                |   |                                                |
|---|------------------------------------------------|---|------------------------------------------------|
| 1 | PCIe Slot 7, Drive Bay 104, x4, Gen 4, no NCSI | 2 | PCIe Slot 8, Drive Bay 103, x4, Gen 4, no NCSI |
| 3 | Edge Connectors                                |   |                                                |

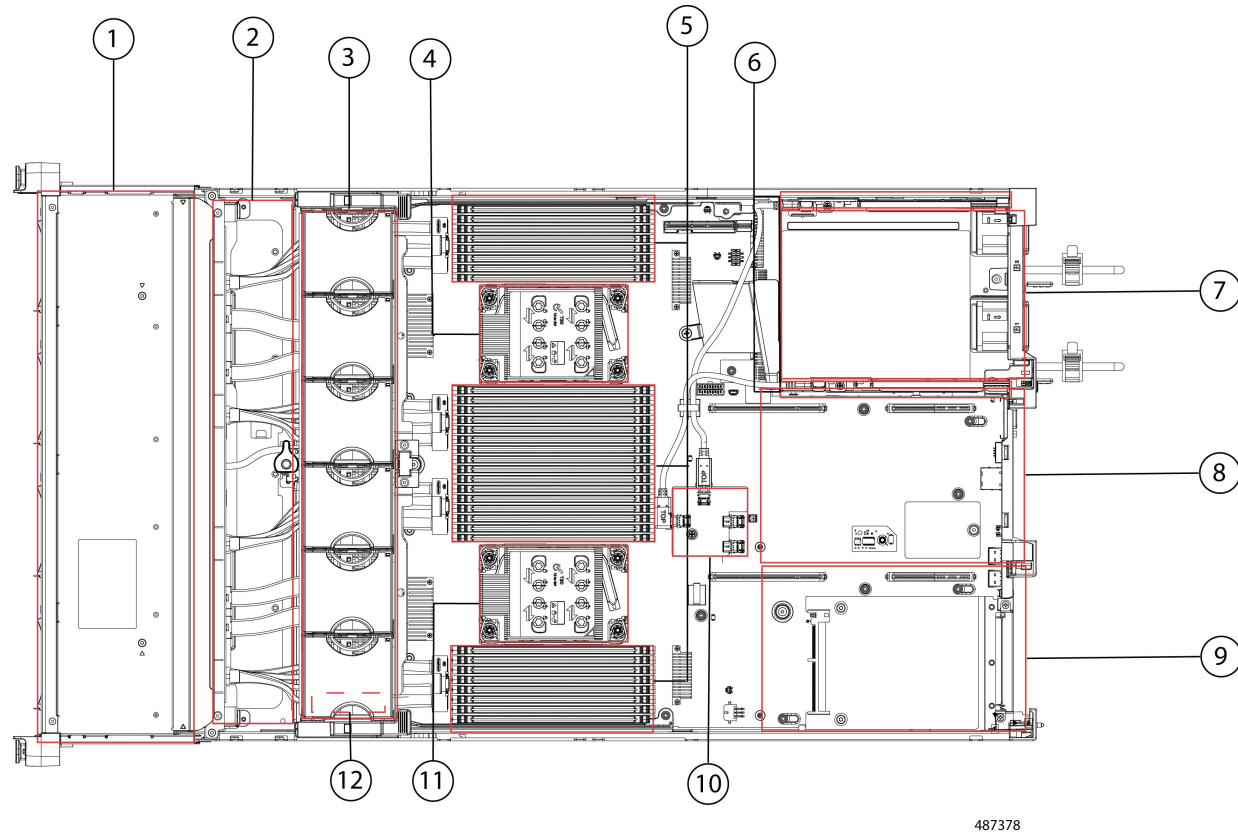


|   |                                                                                                                                                                                |   |                 |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------|
| 1 | PCIe Slot 7, supports one full height, full length, double-wide GPU (slot 7 only), x16, Gen 4, no NCSI<br><br><b>Note</b><br>The other slot is non configurable with hardware. | 2 | Edge Connectors |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------|

# Serviceable Component Locations

This topic shows the locations of the field-replaceable components and service-related items. The view in the following figure shows the server with the top cover removed.

**Figure 4: Cisco UCS C240 M8 Server, Serviceable Component Locations**



487378



**Note**

The preceding illustration shows a server with three half-height rear risers. The server supports also supports two full-height, full-width risers (not shown).

|   |                                                                           |   |                   |
|---|---------------------------------------------------------------------------|---|-------------------|
| 1 | Front-loading drive bays.                                                 | 2 | RAID Module slot. |
| 3 | Cooling fan modules (six, hot-swappable fan modules in a single fan tray) | 4 | CPU socket 2      |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | <p>DIMM sockets on motherboard (16 per CPU)</p> <p>See the <a href="#">Cisco UCS Intel M8 Memory Guide</a> for DIMM slot numbering.</p> <p><b>Note</b><br/>An air baffle rests on top of the DIMM and CPUs when the server is operating. The air baffle is not displayed in this illustration.</p>                                                                                                                                                                                                                                                | 6 | M.2 RAID Controllers, two individual pieces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7 | <p>PCIe riser 3 (PCIe slots 7 and 8 numbered from bottom to top), with the following options:</p> <ul style="list-style-type: none"> <li>• 3A (Default Option)—Slot 7 (x24 mechanical, x8 electrical, Gen 4)<br/>Slot 8 (x16 mechanical, x8 electrical, Gen 4)</li> <li>• 3B (Storage Option)—Slots 7 and 8, both support x4 electrical, Gen 4.<br/>Both slots can accept universal SFF HDDs or NVMe SSDs.</li> <li>• 3C (GPU Option)—Slot 7 (x24 mechanical, x16 electrical). Slot 7 can support a full height, full length GPU card.</li> </ul> | 8 | <p>PCIe riser 2 (PCIe slots 4, 5, 6 numbered from bottom to top), with the following options:</p> <ul style="list-style-type: none"> <li>• 2A (Default Option)—Slot 4 (x24 mechanical, x8 electrical, Gen 4). NCSI is supported on one slot at a time. Supports a full height, <math>\frac{3}{4}</math> length card.<br/>Slot 5 (x24 mechanical, x16 electrical, Gen 4). NCSI is supported on one slot at a time. Supports one full height, full length card.<br/>Slot 6 (x16 mechanical, x8 electrical, Gen 4). Supports a full height, full length card.</li> <li>• 2C— Slots 4 (x24 mechanical, x16 electrical, Gen 5) NCSI supported on one slot at a time. Supports a full-height, full-length card.<br/>Slot 5 (x24 mechanical, x16 electrical Gen 5) Supports full-height, full-length drive.</li> </ul> |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |                                  |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------|
| 9  | <p>PCIe riser 1 (PCIe slot 1, 2, 3 numbered bottom to top), with the following options:</p> <ul style="list-style-type: none"> <li>1A (Default Option)—Slot 1 (x24 mechanical, x8 electrical, Gen 4) NCSI is supported on one slot at a time. Supports full height, <math>\frac{3}{4}</math> length card.</li> <li>Slot 2 (x24 mechanical, x16 electrical, Gen 4). NCSI is supported on one slot at a time. Supports full height, full length GPU card.</li> <li>Slot 3 (x16 mechanical, x8 electrical, Gen 4) Supports full height, full length card.</li> <li>1B (Storage Option)—Slot 1 supports an M.2 NVMe RAID card</li> <li>Slot 2 (x4 electrical), supports universal 2.5-inch HDD NVMe drive</li> <li>Slot 3 (x4 electrical), supports universal 2.5-inch HDD NVMe drive</li> <li>1C — (x24 mechanical, x16 electrical, Gen 5) NCSI supported on one slot at a time. Supports a full-height, <math>\frac{3}{4}</math>-length card.</li> <li>Slot 2 (x24 mechanical, x16 electrical, Gen 5) Supports a full-height, full-length card.</li> </ul> | 10 | RAID controller card             |
| 11 | CPU socket 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 12 | SuperCap Module (under fan tray) |

The Technical Specifications Sheets for all versions of this server, which include supported component part numbers, are at [Cisco UCS Servers Technical Specifications Sheets](#) (scroll down to *Technical Specifications*).

## Summary of Server Features

The following tables list a summary of the server features.

**Table 6: Server Features, SFF**

| Feature                    | Description                                               |
|----------------------------|-----------------------------------------------------------|
| Chassis                    | Two rack-unit (2RU) chassis                               |
| Central Processor          | One or two 6th Generation Intel Xeon Scalable processors. |
| Chipset                    | Intel® C741 chipset                                       |
| Memory                     | 32 slots for registered DIMMs (RDIMMs)                    |
| Multi-bit error protection | Multi-bit error protection is supported                   |

| Feature                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Video                      | The Cisco Integrated Management Controller (CIMC) provides video using the Aspeed AST2600 video/graphics controller.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Network and management I/O | <p>Rear panel:</p> <ul style="list-style-type: none"> <li>• One 10-Gb/100-G/1000-Gb Ethernet dedicated management port (RJ-45 connector)</li> <li>• One RS-232 serial port (RJ-45 connector)</li> <li>• One VGA video connector port (DB-15 connector)</li> <li>• Two USB 3.0 ports</li> <li>• Identification Button/Identification LED</li> <li>• (Optional) Four mLOM ports, 1-Gb/10-GB Ethernet</li> </ul> <p>Front panel:</p> <ul style="list-style-type: none"> <li>• One front-panel keyboard/video/mouse (KVM) connector that is used with the KVM breakout cable. The breakout cable provides two type A USB 2.0 connectors, one VGA (DB-15) connector, and one DB-9 serial connector.</li> </ul> |
| Power                      | <p>Two of the following Platinum-efficiency hot-swappable power supplies:</p> <ul style="list-style-type: none"> <li>• 1050 W (DC)</li> <li>• 1200 W (AC), Titanium</li> <li>• 1600 W (AC)m Platinum</li> <li>• 2300 W (AC), Titanium</li> </ul> <p>Two power supplies are mandatory, and power supplies must be the same. Cold redundancy and 1 + 1 redundancy are supported as long power supplies are the same.</p> <p>For additional information, see <a href="#">Supported Power Supplies, on page 120</a></p>                                                                                                                                                                                       |
| ACPI                       | The advanced configuration and power interface (ACPI) 4.0 standard is supported.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Front Panel                | The front panel controller provides status indications and control buttons KVM connector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Cooling                    | Six hot-swappable fan modules for front-to-rear cooling.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| InfiniBand                 | The PCIe bus slots in this server support the InfiniBand architecture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Feature         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expansion Slots | <p>For the SFF versions of the server, the following expansion slots are supported:</p> <ul style="list-style-type: none"><li>• Riser 1A (Three PCIe slots)</li><li>• Riser 1B (Two drive bays)</li><li>• Riser 1C (Two PCIe Gen5 slots)</li><li>• Riser 2A (Three PCIe slots)</li><li>• Riser 2C (Two PCIe Gen5 slots)</li><li>• Riser 3A (Two PCIe slots)</li><li>• Riser 3B (Two drive bays)</li><li>• Riser 3C (One PCIe slot)</li></ul> <p><b>Note</b><br/>Not all risers are available in every server configuration option.</p>                                                                                                                    |
| Interfaces      | <p>Rear panel:</p> <ul style="list-style-type: none"><li>• One 10/100/1000 Base-T RJ-45 management port</li><li>• One RS-232 serial COM port (RJ45 connector)</li><li>• One DB15 VGA connector</li><li>• Two Type A USB 3.0 port connectors</li><li>• One flexible modular LAN on motherboard (mLOM) slot that can accommodate various interface cards</li><li>• Identification Button/Identification LED</li></ul> <p>Front panel supports one KVM console connector that supplies:</p> <ul style="list-style-type: none"><li>• two Type A USB 2.0 connectors</li><li>• one DB-15 VGA video connector</li><li>• one DB-9 serial port connector</li></ul> |

| Feature                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage                         | <ul style="list-style-type: none"> <li>• UCSC-C240-M8S:               <ul style="list-style-type: none"> <li>• Up to 24 front SFF SAS/SATA hard drives (HDDs) or U.3 SFF solid state drives (SSDs).</li> <li>• Optionally, up to four front SFF NVMe PCIe SSDs. These drives must be placed in front drive bays 1, 2, 3, and 4 only. The rest of the bays (5 - 24) can be populated with SAS/SATA/U.3 SSDs or HDDs. Two CPUs are required in a server that has any number of NVMe drives.</li> <li>• Up to 8 direct-attach U.2/U3 SSDs</li> <li>• Optionally, up to four 2.5-inch rear-facing universal drives (SAS/SATA HDDs or SSDs, or NVMe SSDs)</li> </ul> </li> <li>• UCSC-C240-M8E3S:               <ul style="list-style-type: none"> <li>• Up to 32 direct-attached front NVMe drives (Gen 5x2 or Gen 5x4).</li> <li>• Optionally, up to 4 direct-attached E3.S NVMe drives (Gen 5x4)</li> <li>• Two CPUs are required</li> </ul> </li> <li>• UCSC-C240-M8L               <ul style="list-style-type: none"> <li>• Up to 16 large form factor (LFF) HDDs configured as 12 front loading drives and 4 mid-mount drives.</li> <li>• Optionally, up to four SFF HDD/SSD/NVMe drives</li> <li>• GPUs are not supported in this configuration</li> </ul> </li> <li>• Other Storage:               <ul style="list-style-type: none"> <li>• An optional mini-storage module connector on the motherboard supports a boot-optimized RAID controller. The controller can support up two Dual M.2 2280 SATA SSDs which can be used as boot volumes with corresponding interposer/controller cards.</li> </ul> <p>Mixing different capacity SATA M.2 SSDs is not supported.</p> </li> </ul> |
| Integrated Management Processor | <p>Baseboard Management Controller (BMC) running Cisco Integrated Management Controller (CIMC) firmware.</p> <p>Depending on your CIMC settings, the CIMC can be accessed through the 1GE dedicated management port, the 1GE/10GE LOM ports or a Cisco virtual interface card (VIC).</p> <p>CIMC manages certain components within the server, such as the Cisco 12G SAS HBA.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



| Feature                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage Controllers                      | <ul style="list-style-type: none"><li>• One Cisco M7 12G SAS RAID controller with 4GB FBWC (for UCSC-240-M7SX server)<ul style="list-style-type: none"><li>• RAID support (RAID 0, 1, 5, 6, 10, 50, and 60) and SRAID0</li><li>• Supports up to 28 internal drives</li></ul></li><li>• Two Cisco M7 12G SAS HBA (for UCSC-240-M7SX servers)<ul style="list-style-type: none"><li>• JBOD/Pass-through Mode support</li><li>• Each HBA supports up to 14 SAS/SATA internal drives</li></ul></li><li>• Two Cisco 24G Tri-Mode RAID Controller with 4GB cache (UCSC-RAID-HP):<ul style="list-style-type: none"><li>• Supports up to 24 front-loading SFF SAS/SATA or U.3 NVMe drives plus four rear-loading SFF SAS/SATA or U.3 NVMe drives.</li><li>• Provides RAID 0/1/5/6/10/50/60</li><li>• Supports RAID for U.3 NVMe drives only</li><li>• Drives behind this controller are hot swappable regardless of media type</li></ul></li></ul> |
| Modular LAN over Motherboard (mLOM) slot | The dedicated mLOM slot on the motherboard can flexibly accommodate the Cisco Virtual Interface Cards (VICs), Series 15xxx                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Server Management                        | Cisco Intersight provides server management.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CIMC                                     | Cisco Integrated Management Controller (CIMC) 4.3(1) or later is required for the server.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |





## CHAPTER 2

# Installing the Server

---

This chapter contains the following topics.

- [Preparing for Installation, on page 31](#)
- [Installing the Server in a Rack, on page 34](#)
- [Initial Server Setup, on page 39](#)
- [NIC Mode and NIC Redundancy Settings, on page 45](#)
- [Updating the BIOS and Cisco IMC Firmware, on page 46](#)
- [Accessing the System BIOS, on page 47](#)
- [Smart Access Serial, on page 47](#)
- [Smart Access USB, on page 48](#)

## Preparing for Installation

This section contains the following topics:

## Installation Warnings and Guidelines



### Note

Before you install, operate, or service a server, review the [Regulatory Compliance and Safety Information for Cisco UCS C-Series Servers](#) for important safety information.



### 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

**Warning**

**To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 35° C (95° F).**

Statement 1047

**Warning**

**The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.**

Statement 1019

**Warning**

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 15 A.**

Statement 1005

**Warning**

**Installation of the equipment must comply with local and national electrical codes.**

Statement 1074

**Warning**

**This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock, and key, or other means of security.**

Statement 1017

**Caution**

To ensure proper airflow it is necessary to rack the servers using rail kits. Physically placing the units on top of one another or “stacking” without the use of the rail kits blocks the air vents on top of the servers, which could result in overheating, higher fan speeds, and higher power consumption. We recommend that you mount your servers on rail kits when you are installing them into the rack because these rails provide the minimal spacing required between the servers. No additional spacing between the servers is required when you mount the units using rail kits.

**Caution**

Avoid uninterruptible power supply (UPS) types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations from fluctuating data traffic patterns.

When you are installing a server, use the following guidelines:

- Plan your site configuration and prepare the site before installing the server. See the [Cisco UCS Site Preparation Guide](#) for the recommended site planning tasks.

- Ensure that there is adequate space around the server to allow for accessing the server and for adequate airflow. The airflow in this server is from front to back.
- Ensure that the air-conditioning meets the thermal requirements listed in the [Environmental Specifications, on page 266](#).
- Ensure that the cabinet or rack meets the requirements listed in the [Rack Requirements, on page 33](#).
- Ensure that the site power meets the power requirements listed in the [Power Specifications, on page 261](#). If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

## Rack Requirements

The rack must be of the following type:

- A standard 19-in. (48.3-cm) wide, four-post EIA rack, with mounting posts that conform to English universal hole spacing, per section 1 of ANSI/EIA-310-D-1992.
- 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 when you use the Cisco-supplied slide rails.
- The minimum vertical rack space per server must be two rack units (RUs), equal to 3.5 in. (88.9 mm).

### Supported Cisco Slide Rail Kits

The server supports the following rail kit options:

- Cisco part UCSC-RAIL-D (Ball bearing rail kit for C220 & C240 M8 rack servers)
- Cisco part UCSC-CMA-C220-D (Reversible CMA for ball bearing rail kit)

### Rack Installation Tools Required

The slide rails sold by Cisco Systems for this server do not require tools for installation.

### Slide Rail and Cable Management Arm Dimensions

The slide rails for this server have an adjustment range of 24 to 36 inches (610 to 914 mm).

The optional cable management arm (CMA) adds additional length requirements:

- The additional distance from the rear of the server to the rear of the CMA is 5.4 inches (137.4 mm).
- The total length of the server including the CMA is 35.2 inches (894 mm).

# Installing the Server in a Rack



**Warning** To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

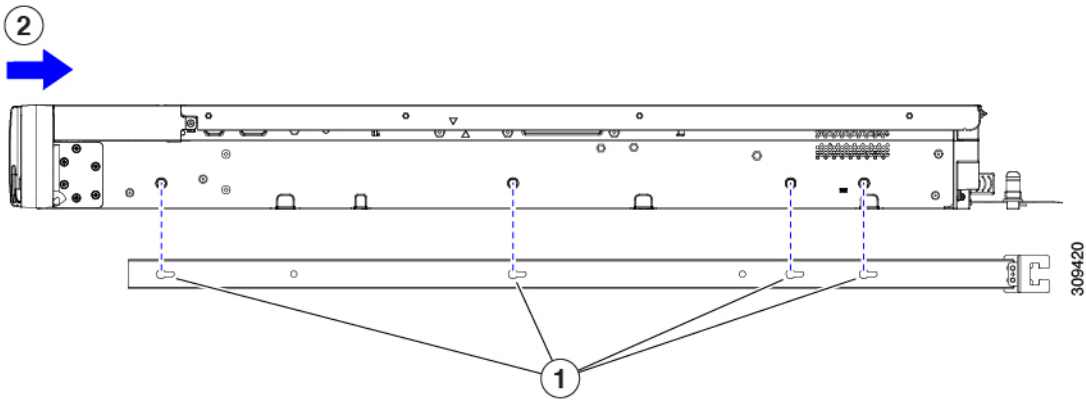
If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Statement 1006

## Procedure

**Step 1** Attach the inner rails to the sides of the server:

- a) Align an inner rail with one side of the server so that the three keyed slots in the rail align with the three pegs on the side of the server.
- b) Set the keyed slots over the pegs, and then slide the rail toward the front to lock it in place on the pegs. The front slot has a metal clip that locks over the front peg.



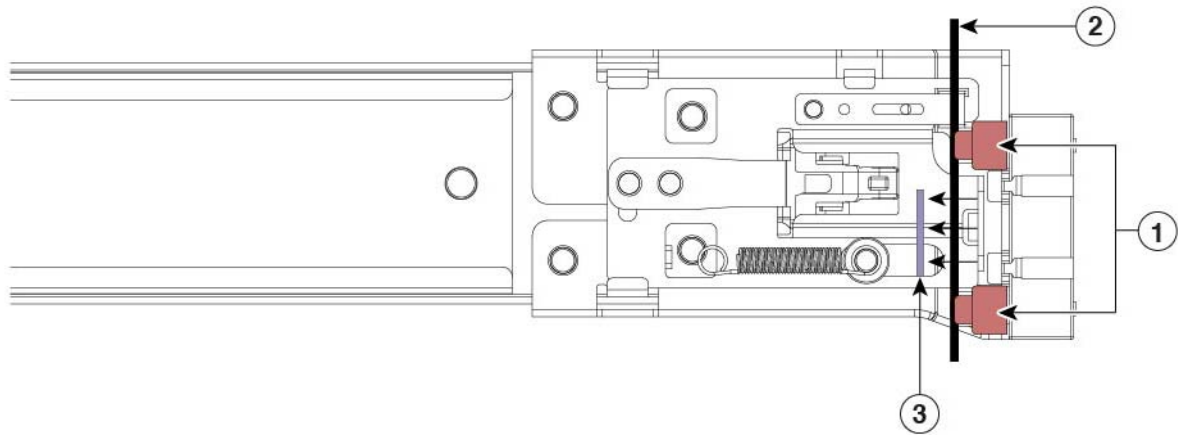
|   |                          |   |                 |
|---|--------------------------|---|-----------------|
| 1 | Keyed installation slots | 2 | Front of server |
|---|--------------------------|---|-----------------|

- c) Install the second inner rail to the opposite side of the server.

**Step 2** Open the front securing plate on both slide-rail assemblies. The front end of the slide-rail assembly has a spring-loaded securing plate that must be open before you can insert the mounting pegs into the rack-post holes.

On the *outside* of the assembly, push the green-arrow button toward the rear to open the securing plate.

Figure 5: Front Securing Mechanism, Inside of Front End



|   |                                                           |   |                                                       |
|---|-----------------------------------------------------------|---|-------------------------------------------------------|
| 1 | Front mounting pegs                                       | 3 | Securing plate shown pulled back to the open position |
| 2 | Rack post between mounting pegs and opened securing plate | - |                                                       |

**Step 3**

Install the outer slide rails into the rack:

- a) Align one slide-rail assembly front end with the front rack-post holes that you want to use.

The slide rail front-end wraps around the outside of the rack post and the mounting pegs enter the rack-post holes from the outside-front. See [Figure 5: Front Securing Mechanism, Inside of Front End, on page 35](#).

**Note**

The rack post must be between the mounting pegs and the *open* securing plate.

- b) Push the mounting pegs into the rack-post holes from the outside-front.  
 c) Press the securing plate release button, marked PUSH. The spring-loaded securing plate closes to lock the pegs in place.  
 d) Adjust the slide-rail length, and then push the rear mounting pegs into the corresponding rear rack-post holes. The slide rail must be level front-to-rear.

The rear mounting pegs enter the rear rack-post holes from the *inside* of the rack post.

- e) Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are at the same height and are level front-to-back.  
 f) Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

**Step 4**

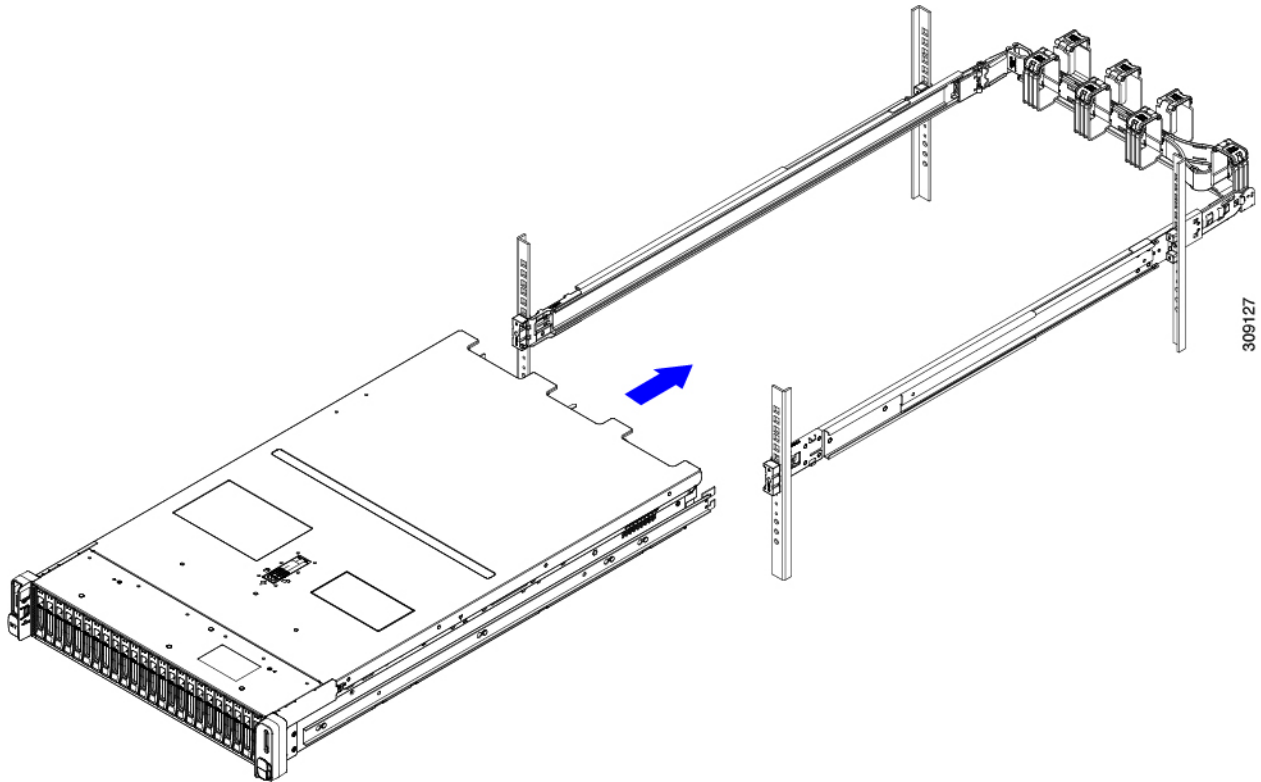
Insert the server into the slide rails:

**Caution**

This server can weigh up to 64 pounds (29 kilograms) when fully loaded with components. We recommend that you use a minimum of two people or a mechanical lift when lifting the server. Attempting this procedure alone could result in personal injury or equipment damage.

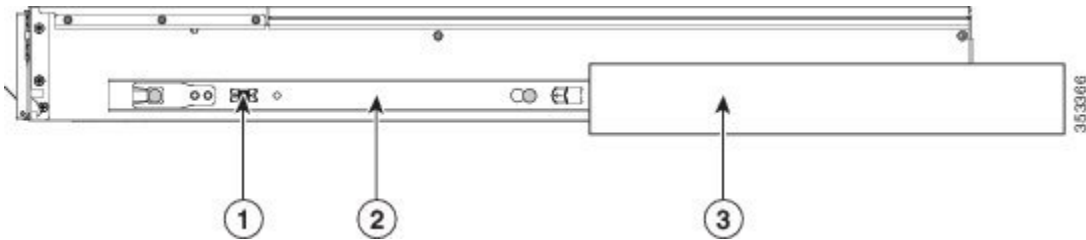
- a) Align the rear ends of the inner rails that are attached to the server sides with the front ends of the empty slide rails on the rack.

- b) Push the inner rails into the slide rails on the rack until they stop at the internal



- c) Slide the inner-rail release clip toward the rear on both inner rails, and then continue pushing the server into the rack until its front slam-latches engage with the rack posts.

**Figure 6: Inner-Rail Release Clip**

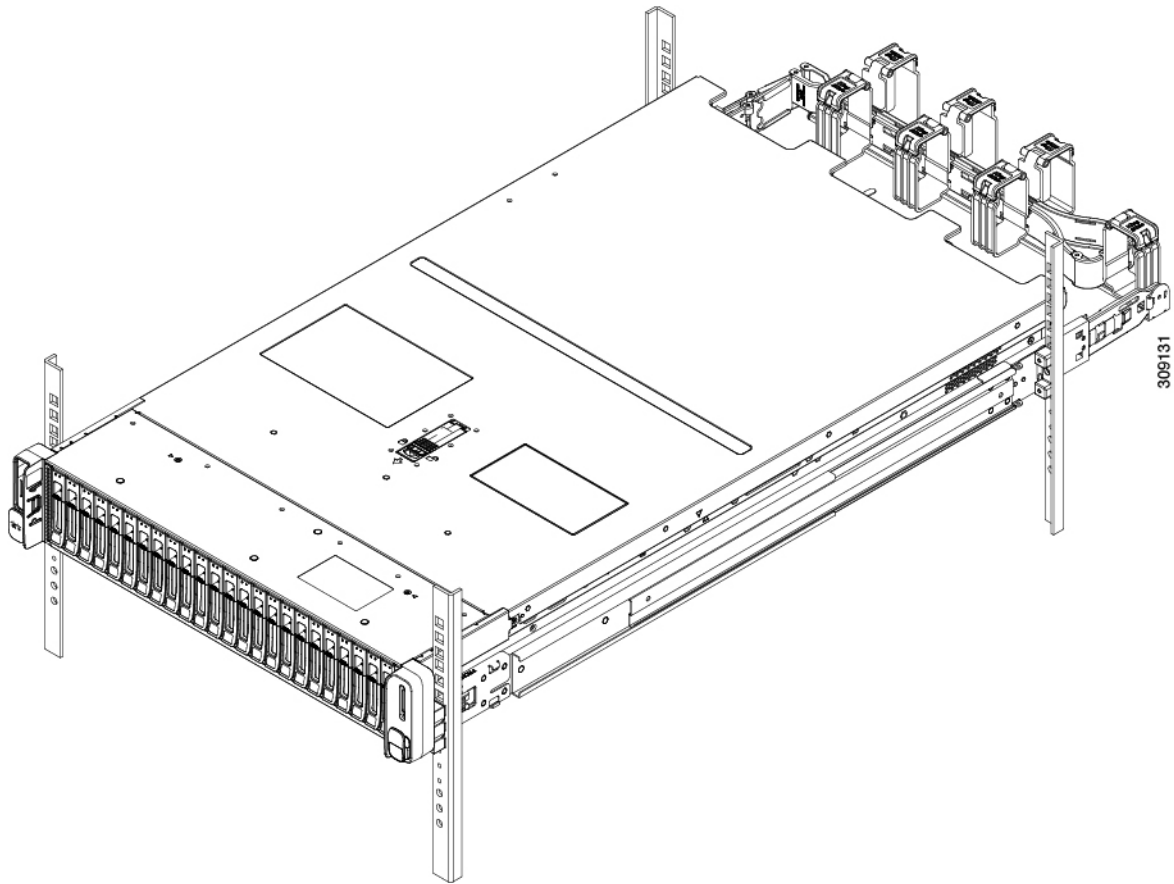


|   |                                                                  |   |                                        |
|---|------------------------------------------------------------------|---|----------------------------------------|
| 1 | Inner-rail release clip                                          | 3 | Outer slide rail attached to rack post |
| 2 | Inner rail attached to server and inserted into outer slide rail | - |                                        |

**Step 5** (Optional) Secure the server in the rack more permanently by using the two screws that are provided with the slide rails. Perform this step if you plan to move the rack with servers installed.

With the server fully pushed into the slide rails, open a hinged slam latch lever on the front of the server and insert a screw through the hole that is under the lever. The screw threads into the static part of the rail on the rack post and prevents the server from being pulled out. Repeat for the opposite slam latch.





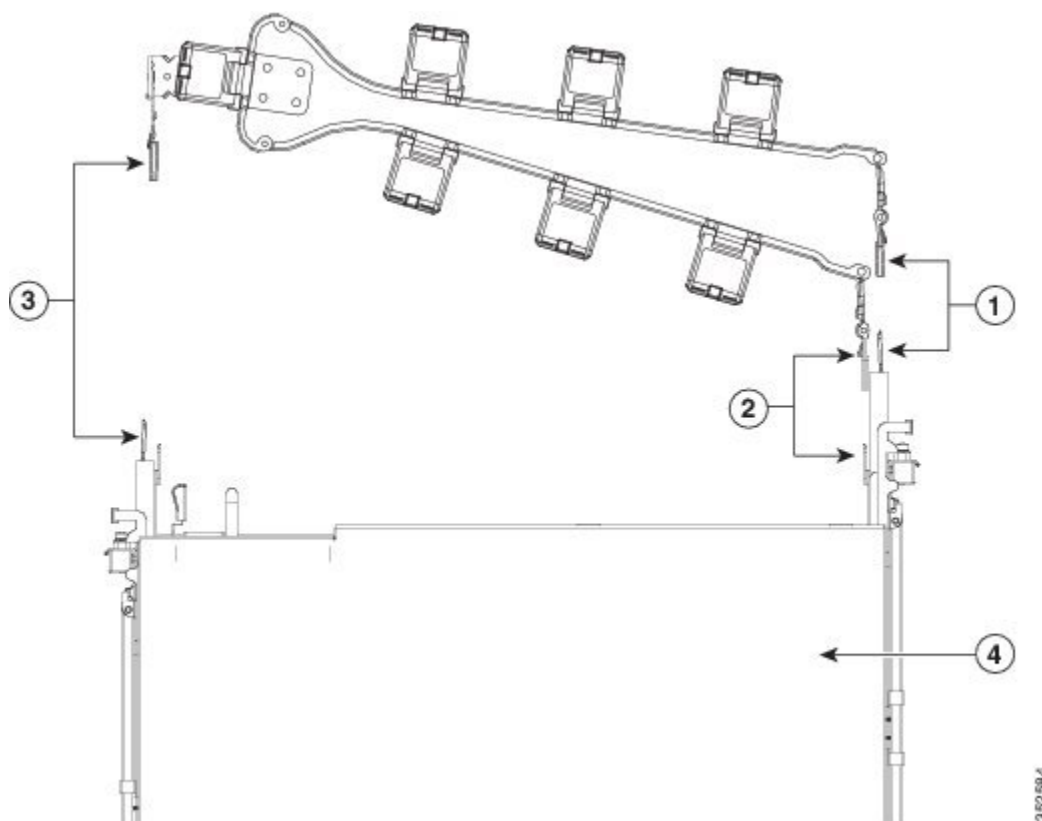
## Installing the Cable Management Arm (Optional)



**Note** The cable management arm (CMA) is reversible left-to-right. To reverse the CMA, see [Reversing the Cable Management Arm \(Optional\)](#), on page 39 before installation.

### Procedure

- Step 1** With the server pushed fully into the rack, slide the CMA tab of the CMA arm that is farthest from the server onto the end of the stationary slide rail that is attached to the rack post. Slide the tab over the end of the rail until it clicks and locks.

**Figure 7: Attaching the CMA to the Rear Ends of the Slide Rails**

|   |                                                                                              |   |                                                                                    |
|---|----------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|
| 1 | CMA tab on arm farthest from server attaches to end of stationary outer slide rail.          | 3 | CMA tab on width-adjustment slider attaches to end of stationary outer slide rail. |
| 2 | CMA tab on arm closest to the server attaches to end of inner slide rail attached to server. | 4 | Rear of server                                                                     |

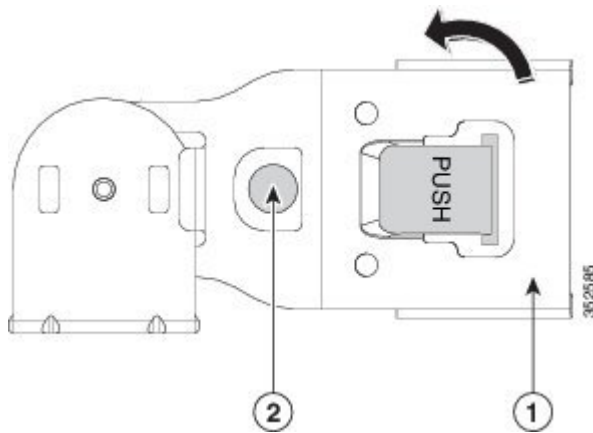
- Step 2** Slide the CMA tab that is closest to the server over the end of the inner rail that is attached to the server. Slide the tab over the end of the rail until it clicks and locks.
- Step 3** Pull out the width-adjustment slider that is at the opposite end of the CMA assembly until it matches the width of your rack.
- Step 4** Slide the CMA tab that is at the end of the width-adjustment slider onto the end of the stationary slide rail that is attached to the rack post. Slide the tab over the end of the rail until it clicks and locks.
- Step 5** Open the hinged flap at the top of each plastic cable guide and route your cables through the cable guides as desired.

## Reversing the Cable Management Arm (Optional)

### Procedure

- Step 1** Rotate the entire CMA assembly 180 degrees, left-to-right. The plastic cable guides must remain pointing upward.
- Step 2** Flip the tabs at the ends of the CMA arms so that they point toward the rear of the server.
- Step 3** Pivot the tab that is at the end of the width-adjustment slider. Depress and hold the metal button on the outside of the tab and pivot the tab 180 degrees so that it points toward the rear of the server.

**Figure 8: Reversing the CMA**



|   |                                           |   |                                |
|---|-------------------------------------------|---|--------------------------------|
| 1 | CMA tab on end of width-adjustment slider | 2 | Metal button on outside of tab |
|---|-------------------------------------------|---|--------------------------------|

## Initial Server Setup



**Note** This section describes how to power on the server, assign an IP address, and connect to server management when using the server in standalone mode.

### Server Default Settings

The server is shipped with these default settings:

- The NIC mode is *Shared OCP Extended*.

In this mode, DHCP replies are returned to the OCP adapter card (Intel X710 OCP 3.0 card) and the Cisco virtual interface card (VIC) ports. If the system determines that the Cisco VIC connection is not getting its IP address from a Cisco UCS Manager system because the server is in standalone mode, further DHCP requests from the Cisco VIC are disabled. If you want to use the 10/100/1000 dedicated

management ports to access Cisco IMC, you can connect to the server and change the NIC mode as described in [Setting Up the System With the Cisco IMC Configuration Utility, on page 43](#).

- The NIC redundancy is *Active-Active*. All Ethernet ports are utilized simultaneously.
- DHCP is enabled.
- IPv4 is enabled.

### Connection Methods

There are two methods for connecting to the system for initial setup:

- Local setup—Use this procedure if you want to connect a keyboard and monitor directly to the system for setup. This procedure can use a KVM cable (Cisco PID N20-BKVM-D) or the ports on the rear of the server.
- Remote setup—Use this procedure if you want to perform setup through your dedicated management LAN.



**Note** To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this server node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This server node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

This section contains the following topics:

## Connecting to the Server Locally For Setup

This procedure requires the following equipment:

- VGA monitor
- USB keyboard
- Either the supported Cisco KVM cable (Cisco PID N20-BKVM-D); or a USB cable and VGA DB-15 cable

### Procedure

- Step 1** Attach a power cord to each power supply in your server, and then attach each power cord to a grounded AC power outlet. If you are using DC power supplies, see [Installing DC Power Supplies \(First Time Installation\), on page 123](#).
- Wait for approximately two minutes to let the server boot to standby power during the first bootup. You can verify system power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.

**Step 2** Connect a USB keyboard and VGA monitor to the server using one of the following methods:

- Connect an optional KVM cable (Cisco PID N20-BKVM-D) to the KVM connector on the front panel. Connect your USB keyboard and VGA monitor to the KVM cable.
- Connect a USB keyboard and VGA monitor to the corresponding connectors on the rear panel.

**Step 3** Open the Cisco IMC Configuration Utility:

- a) Press and hold the front panel power button for four seconds to boot the server.
- b) During bootup, press **F8** when prompted to open the Cisco IMC Configuration Utility.

**Note**

The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.

The following are the requirements for Strong Password:

- The password can have a minimum of 8 characters and a maximum of 14 characters.
- The password must not contain the user's name.
- The password must contain characters from three of the following four categories:
  - English uppercase letters (A through Z)
  - English lowercase letters (a through z)
  - Base 10 digits (0 through 9)
  - Non-alphabetic characters !, @, #, \$, %, ^, &, \*, -, \_, =, “

**Step 4** Continue with [Setting Up the System With the Cisco IMC Configuration Utility, on page 43](#).

## Connecting to the Server Remotely For Setup

This procedure requires the following equipment:

- One RJ-45 Ethernet cable that is connected to your management LAN.

### Before you begin



**Note**

To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this server node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This server node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

## Procedure

**Step 1** Attach a power cord to each power supply in your server, and then attach each power cord to a grounded AC power outlet. If you are using DC power supplies, see [Installing DC Power Supplies \(First Time Installation\)](#), on page 123.

Wait for approximately two minutes to let the server boot to standby power during the first bootup. You can verify system power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.

**Step 2** Plug your management Ethernet cable into the dedicated management port on the rear panel.

**Step 3** Allow your preconfigured DHCP server to assign an IP address to the server node.

**Step 4** Use the assigned IP address to access and log in to the Cisco IMC for the server node. Consult with your DHCP server administrator to determine the IP address.

### Note

The default username for the server is *admin*. The default password is *password*.

**Step 5** From the Cisco IMC Server Summary page, click **Launch KVM Console**. A separate KVM console window opens.

**Step 6** From the Cisco IMC Summary page, click **Power Cycle Server**. The system reboots.

**Step 7** Select the KVM console window.

### Note

The KVM console window must be the active window for the following keyboard actions to work.

**Step 8** When prompted, press **F8** to enter the Cisco IMC Configuration Utility. This utility opens in the KVM console window.

### Note

The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.

The following are the requirements for Strong Password:

- The password can have a minimum of 8 characters and a maximum of 14 characters.
- The password must not contain the user's name.
- The password must contain characters from three of the following four categories:
  - English uppercase letters (A through Z)
  - English lowercase letters (a through z)
  - Base 10 digits (0 through 9)
  - Non-alphabetic characters !, @, #, \$, %, ^, &, \*, -, \_, =, “

**Step 9** Continue with [Setting Up the System With the Cisco IMC Configuration Utility](#), on page 43.

# Setting Up the System With the Cisco IMC Configuration Utility

## Before you begin

The following procedure is performed after you connect to the system and open the Cisco IMC Configuration Utility.

## Procedure

### Step 1

Set the NIC mode to choose which ports to use to access Cisco IMC for server management:

- *Shared OCP Extended*—In this NIC mode, DHCP replies are returned to the OCP adapter card (Intel X710 OCP 3.0 card) and the Cisco virtual interface card (VIC) ports. If the system determines that the Cisco VIC connection is not getting its IP address from a Cisco UCS Manager system because the server is in standalone mode, further DHCP requests from the Cisco VIC are disabled.
- *Shared OCP*—The OCP adapter card is used to access Cisco IMC. You must select either the Active-Active or Active-standby NIC redundancy setting in the following step.
- *Dedicated*—The dedicated management port is used to access Cisco IMC. You must select the *None* NIC redundancy setting in the following step.
- *Cisco Card*—The ports on an installed Cisco UCS Virtual Interface Card (VIC) are used to access the Cisco IMC. You must select either the *Active-Active* or *Active-standby* NIC redundancy setting in the following step.

See also the required VIC Slot setting below.

- *VIC Slot*—Only if you use the Cisco Card NIC mode, you must select this setting to match where your VIC is installed. The choices are Riser1, Riser2, or Flex-LOM (the mLOM slot).
  - If you select Riser1, you must install the VIC in slot 2.
  - If you select Riser2, you must install the VIC in slot 5.
  - If you select Flex-LOM, you must install an mLOM-style VIC in the mLOM slot.

### Step 2

Set the NIC redundancy to your preference. This server has three possible NIC redundancy settings:

- *None*—The Ethernet ports operate independently and do not fail over if there is a problem. This setting can be used only with the Dedicated NIC mode.
- *Active-standby*—If an active Ethernet port fails, traffic fails over to a standby port. Shared OCP and Cisco Card modes can each use either Active-standby or Active-active settings.
- *Active-active* (default)—All Ethernet ports are utilized simultaneously. The Shared OCP Extended mode must use only this NIC redundancy setting. Shared OCP and Cisco Card modes can each use either Active-standby or Active-active settings.

### Step 3

Choose whether to enable DHCP for dynamic network settings, or to enter static network settings.

#### Note

Before you enable DHCP, you must preconfigure your DHCP server with the range of MAC addresses for this server. The MAC address is printed on a label on the rear of the server. This server has a range of six MAC addresses assigned to Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

The *static* IPv4 and IPv6 settings include the following:

- The Cisco IMC IP address.

For IPv6, valid values are 1 - 127.

- The gateway.

For IPv6, if you do not know the gateway, you can set it as none by entering :: (two colons).

- The preferred DNS server address.

For IPv6, you can set this as none by entering :: (two colons).

**Step 4** (Optional) Make VLAN settings.

**Step 5** Press **F1** to go to the second settings window, then continue with the next step.

From the second window, you can press **F2** to switch back to the first window.

**Step 6** (Optional) Set a hostname for the server.

**Step 7** (Optional) Enable dynamic DNS and set a dynamic DNS (DDNS) domain.

**Step 8** (Optional) If you check the Factory Default check box, the server reverts to the factory defaults.

You can use this option to reset user credentials in future. For detailed steps, refer *Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide* for your Cisco IMC release at [Configuration Guides](#).

**Step 9** (Optional) Set a default user password.

**Note**

The factory default username for the server is *admin*. The default password is *password*.

**Step 10** (Optional) Enable auto-negotiation of port settings or set the port speed and duplex mode manually.

**Note**

Auto-negotiation is applicable only when you use the Dedicated NIC mode. Auto-negotiation sets the port speed and duplex mode automatically based on the switch port to which the server is connected. If you disable auto-negotiation, you must set the port speed and duplex mode manually.

**Step 11** (Optional) Reset port profiles and the port name.

**Step 12** Press **F5** to refresh the settings that you made. You might have to wait about 45 seconds until the new settings appear and the message, "Network settings configured" is displayed before you reboot the server in the next step.

**Step 13** Press **F10** to save your settings and reboot the server.

**Note**

If you chose to enable DHCP, the dynamically assigned IP and MAC addresses are displayed on the console screen during bootup.

---

### What to do next

Use a browser and the IP address of the Cisco IMC to connect to the Cisco IMC management interface. The IP address is based upon the settings that you made (either a static address or the address assigned by your DHCP server).





**Note** The factory default username for the server is *admin*. The default password is *password*.

To manage the server, see the *Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide* or the *Cisco UCS C-Series Servers Integrated Management Controller CLI Configuration Guide* for instructions on using those interfaces for your Cisco IMC release. The links to the configuration guides are in the [Cisco Integrated Management Controller](#).

## NIC Mode and NIC Redundancy Settings

**Table 7: Valid NIC Redundancy Settings For Each NIC Mode**

| NIC Mode            | Valid NIC Redundancy Settings   |
|---------------------|---------------------------------|
| Shared OCP Extended | Active-active                   |
| Dedicated           | None                            |
| Shared OCP          | Active-active<br>Active-standby |
| Cisco Card          | Active-active<br>Active-standby |

This server has the following NIC mode settings that you can choose from:

- *Shared OCP Extended* (default)—In this mode, DHCP replies are returned to the OCP adapter card (Intel X710 OCP 3.0 card) and the Cisco virtual interface card (VIC) ports. If the system determines that the Cisco VIC connection is not getting its IP address from a Cisco UCS Manager system because the server is in standalone mode, further DHCP requests from the Cisco VIC are disabled. If you want to use the 10/100/1000 dedicated management ports to access Cisco IMC, you can connect to the server and change the NIC mode as described in [Setting Up the System With the Cisco IMC Configuration Utility, on page 43](#).
  - *Shared OCP*—The OCP adapter card is used to access Cisco IMC. You must select either the Active-Active or Active-standby NIC redundancy setting in the following step.
  - *Dedicated*—The dedicated management port is used to access Cisco IMC. You must select the *None* NIC redundancy setting in the following step.
  - *Cisco Card*—The ports on an installed Cisco UCS Virtual Interface Card (VIC) are used to access the Cisco IMC. You must select either the *Active-Active* or *Active-standby* NIC redundancy setting in the following step.
- See also the required VIC Slot setting below.
- *VIC Slot*—Only if you use the Cisco Card NIC mode, you must select this setting to match where your VIC is installed. The choices are Riser1, Riser2, or Flex-LOM (the mLOM slot).
    - If you select Riser1, you must install the VIC in slot 2.

- If you select Riser2, you must install the VIC in slot 5.
- If you select Flex-LOM, you must install an mLOM-style VIC in the mLOM slot.

This server has the following NIC redundancy settings that you can choose from:

- *None*—The Ethernet ports operate independently and do not fail over if there is a problem. This setting can be used only with the Dedicated NIC mode.
- *Active-standby*—If an active Ethernet port fails, traffic fails over to a standby port. Shared OCP and Cisco Card modes can each use either Active-standby or Active-active settings.
- *Active-active* (default)—All Ethernet ports are utilized simultaneously. The Shared OCP Extended mode must use only this NIC redundancy setting. Shared OCP and Cisco Card modes can each use either Active-standby or Active-active settings.

## Updating the BIOS and Cisco IMC Firmware



### Caution

When you upgrade the BIOS firmware, you must also upgrade the Cisco IMC firmware to the same version or the server does not boot. Do not power off the server until the BIOS and Cisco IMC firmware are matching or the server does not boot.

Cisco provides the *Cisco Host Upgrade Utility* to assist with simultaneously upgrading the BIOS, Cisco IMC, and other firmware to compatible levels.

The server uses firmware obtained from and certified by Cisco. Cisco provides release notes with each firmware image. There are several possible methods for updating the firmware:

- **Recommended method for firmware update:** Use the Cisco Host Upgrade Utility to simultaneously upgrade the Cisco IMC, BIOS, and component firmware to compatible levels.

See the *Cisco Host Upgrade Utility Quick Reference Guide* for your firmware release at the documentation roadmap link below.

- You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC GUI interface.

See the *Cisco UCS C-Series Rack-Mount Server Configuration Guide*.

- You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC CLI interface.

See the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*.

For links to the documents listed above, see the [Cisco UCS C-Series Documentation Roadmap](#).

# Accessing the System BIOS

## Procedure

- 
- Step 1** Enter the BIOS Setup Utility by pressing the **F2** key when prompted during bootup.
- Note**  
The version and build of the current BIOS are displayed on the Main page of the utility.
- Step 2** Use the arrow keys to select the BIOS menu page.
- Step 3** Highlight the field to be modified by using the arrow keys.
- Step 4** Press **Enter** to select the field that you want to change, and then modify the value in the field.
- Step 5** Press the right arrow key until the Exit menu screen is displayed.
- Step 6** Follow the instructions on the Exit menu screen to save your changes and exit the setup utility (or press **F10**). You can exit without saving changes by pressing **Esc**.
- 

## Smart Access Serial

This server supports the Smart Access Serial feature. This feature allows you to switch between host serial and Cisco IMC CLI.

- This feature has the following requirements:
  - A serial cable connection, which can use either the RJ-45 serial connector on the server rear panel, or a DB-9 connection when using the KVM cable (Cisco PID N20-BKVM-D) on the front-panel KVM console connector.
  - Console redirection must be enabled in the server BIOS.
  - Terminal type must be set to VT100+ or VTUFT8.
  - Serial-over-LAN (SOL) must be disabled (SOL is disabled by default).
- To switch from host serial to Cisco IMC CLI, press **Esc+9**.  
You must enter your Cisco IMC credentials to authenticate the connection.
- To switch from Cisco IMC CLI to host serial, press **Esc+8**.



---

**Note** You cannot switch to Cisco IMC CLI if the serial-over-LAN (SOL) feature is enabled.

---

- After a session is created, it is shown in the CLI or web GUI by the name `serial`.

## Smart Access USB

This server supports the Smart Access USB feature. The board management controller (BMC) in this server can accept a USB mass storage device and access the data on it. This feature allows you to use the front-panel USB device as a medium to transfer data between the BMC and the user without need for network connectivity. This can be useful, for example, when remote BMC interfaces are not yet available, or are not accessible due to network misconfiguration.

- This feature has the following requirements:
  - The KVM cable (Cisco PID N20-BKVM) connected to the front panel KVM console connector.
  - A USB storage device connected to one of the USB 2.0 connectors on the KVM cable. The USB device must draw less than 500 mA to avoid disconnect by the current-protection circuit.



---

**Note** Any mouse or keyboard that is connected to the KVM cable is disconnected when you enable Smart Access USB.

---

- You can use USB 3.0-based devices, but they will operate at USB 2.0 speed.
  - We recommend that the USB device have only one partition.
  - The file system formats supported are: FAT16, FAT32, MSDOS, EXT2, EXT3, and EXT4. NTFS is not supported.
- The front-panel KVM connector has been designed to switch the USB port between Host OS and BMC.
  - Smart Access USB can be enabled or disabled using any of the BMC user interfaces. For example, you can use the Cisco IMC Configuration Utility that is accessed by pressing **F8** when prompted during bootup.
    - Enabled: the front-panel USB device is connected to the BMC.
    - Disabled: the front-panel USB device is connected to the host.
  - In a case where no management network is available to connect remotely to Cisco IMC, a Device Firmware Update (DFU) shell over serial cable can be used to generate and download technical support files to the USB device that is attached to front panel USB port.



## CHAPTER 3

# Servicing the Server

---

This chapter contains the following topics.

- [Status LEDs and Buttons, on page 49](#)
- [Preparing For Component Installation, on page 55](#)
- [Serial Number Location, on page 57](#)
- [Hot Swap vs Hot Plug, on page 58](#)
- [Removing and Replacing Components, on page 58](#)
- [Service Headers and Jumpers, on page 232](#)

## Status LEDs and Buttons

This section contains information for interpreting LED states.

# Front-Panel LEDs

Figure 9: Front Panel LEDs

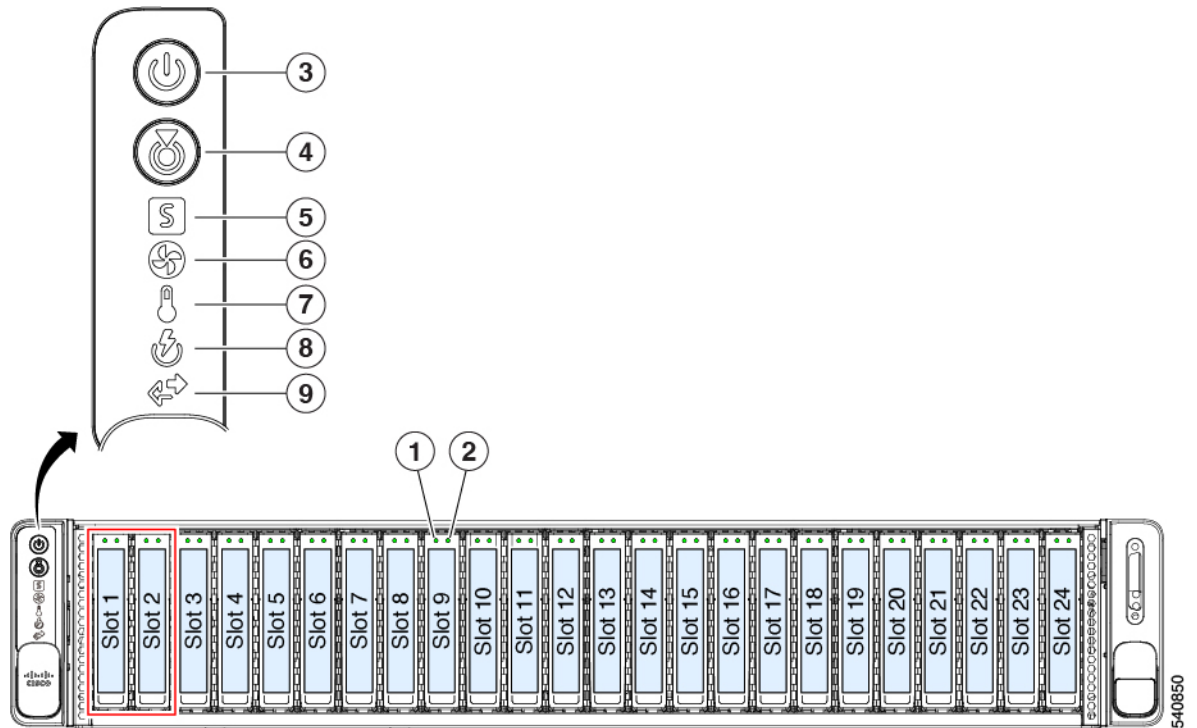


Table 8: Front Panel LEDs, Definition of States

|          | LED Name                                                                                                                                   | States                                                                                                                                                                                                                                                                                                    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1<br>SAS | SAS/SATA drive fault<br><br><b>Note</b><br>NVMe solid state drive (SSD) drive tray LEDs have different behavior than SAS/SATA drive trays. | <ul style="list-style-type: none"> <li>• Off—The hard drive is operating properly (no fault).</li> <li>• Amber—Drive fault detected.</li> <li>• Amber, blinking—The device is rebuilding.</li> <li>• Amber, blinking with one-second interval—Drive locate function activated in the software.</li> </ul> |
| 2<br>SAS | SAS/SATA drive activity LED                                                                                                                | <ul style="list-style-type: none"> <li>• Off—There is no hard drive in the hard drive tray (no access, no fault).</li> <li>• Green—The hard drive is ready.</li> <li>• Green, blinking—The hard drive is reading or writing data.</li> </ul>                                                              |

|                             |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b><br><br><b>NVMe</b> | <b>Note</b><br>NVMe solid state drive (SSD) drive tray LEDs have different behavior than SAS/SATA drive trays. | <ul style="list-style-type: none"> <li>• Off—The drive is not in use and can be safely removed.</li> <li>• Green—The drive is in use and functioning properly.</li> <li>• Green, blinking—the driver is initializing following insertion, or the driver is unloading following an eject command.</li> <li>• Amber—The drive has failed.</li> <li>• Amber, blinking—A drive Locate command has been issued in the software.</li> </ul> |
| <b>2</b><br><br><b>NVMe</b> | NVMe SSD activity                                                                                              | <ul style="list-style-type: none"> <li>• Off—No drive activity.</li> <li>• Green, blinking—There is drive activity.</li> </ul>                                                                                                                                                                                                                                                                                                        |
| <b>3</b>                    | Power button/LED                                                                                               | <ul style="list-style-type: none"> <li>• Off—There is no AC power to the server.</li> <li>• Amber—The server is in standby power mode. Power is supplied only to the Cisco IMC and some motherboard functions.</li> <li>• Green—The server is in main power mode. Power is supplied to all server components.</li> </ul>                                                                                                              |
| <b>4</b>                    | Unit identification                                                                                            | <ul style="list-style-type: none"> <li>• Off—The unit identification function is not in use.</li> <li>• Blue—The unit identification function is activated.</li> </ul>                                                                                                                                                                                                                                                                |

|   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | System health       | <ul style="list-style-type: none"> <li>• Green—The server is running in normal operating condition.</li> <li>• Green, blinking—The server is performing system initialization and memory check.</li> <li>• Amber, steady—The server is in a degraded operational state (minor fault). For example:               <ul style="list-style-type: none"> <li>• Power supply redundancy is lost.</li> <li>• CPUs are mismatched.</li> <li>• At least one CPU is faulty.</li> <li>• At least one DIMM is faulty.</li> <li>• At least one drive in a RAID configuration failed.</li> </ul> </li> <li>• Amber, Blinking—The server is experiencing a critical fault. For example:               <ul style="list-style-type: none"> <li>• Boot Failure</li> <li>• Fatal Processor and/or bus error detected</li> <li>• Loss of I/O</li> <li>• Over Temperature Condition</li> </ul> </li> </ul> |
| 6 | Fan status          | <ul style="list-style-type: none"> <li>• Green—All fan modules are operating properly.</li> <li>• Amber—Fans are operating in a degraded state. For example, one of the fans has a fault.</li> <li>• Amber, blinking—Two or more fan modules have a fault.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 7 | Temperature status  | <ul style="list-style-type: none"> <li>• Green—The server is operating at normal temperature, or the temperature sensor detects no error conditions.</li> <li>• Amber, steady—One or more temperature sensors breached a warning threshold.</li> <li>• Amber, blinking—One or more temperature sensors breached a critical threshold.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 8 | Power supply status | <ul style="list-style-type: none"> <li>• Green—All power supplies are operating normally, and no error condition is detected.</li> <li>• Amber, steady—One or more power supplies are in a degraded operational state.</li> <li>• Amber, blinking—One or more power supplies are in a critical fault state.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



|   |                       |                                                                                                                                                                                                                                                                                                      |
|---|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | Network link activity | <ul style="list-style-type: none"> <li>• Off—The Ethernet LOM port link is idle.</li> <li>• Green—One or more Ethernet LOM ports are link-active, but there is no activity on any of the links.</li> <li>• Green, blinking—One or more Ethernet LOM ports are link-active, with activity.</li> </ul> |
|---|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Rear-Panel LEDs

Figure 10: Rear Panel LEDs

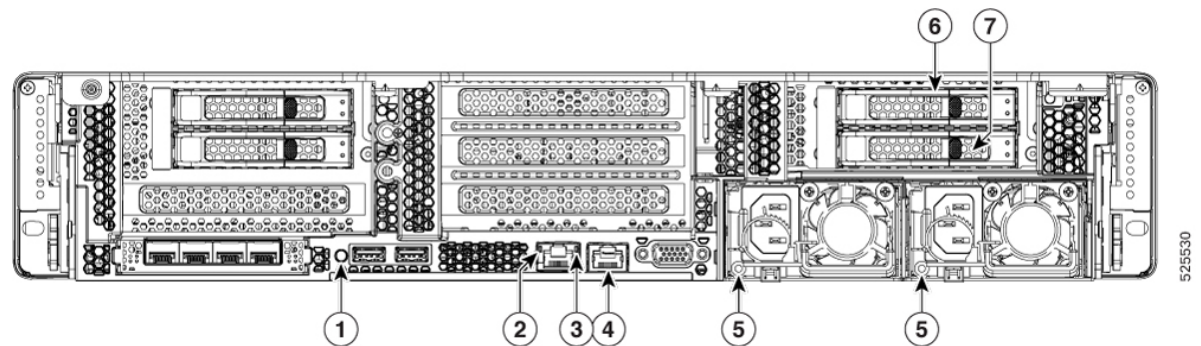


Table 9: Rear Panel LEDs, Definition of States

|   | LED Name                                       | States                                                                                                                                                                           |
|---|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Unit identification LED                        | <ul style="list-style-type: none"> <li>• Off—The unit identification function is not in use.</li> <li>• Blue, blinking—The unit identification function is activated.</li> </ul> |
| 2 | 1-Gb Ethernet dedicated management link speed  | <ul style="list-style-type: none"> <li>• Off—Link speed is 10 Mbps.</li> <li>• Amber—Link speed is 100 Mbps.</li> <li>• Green—Link speed is 1 Gbps.</li> </ul>                   |
| 3 | 1-Gb Ethernet dedicated management link status | <ul style="list-style-type: none"> <li>• Off—No link is present.</li> <li>• Green—Link is active.</li> <li>• Green, blinking—Traffic is present on the active link.</li> </ul>   |
| 4 | 1-Gb Serial port                               |                                                                                                                                                                                  |

|          |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5        | Power supply status (one LED each power supply unit)                                                                                       | <p><b>AC power supplies:</b></p> <ul style="list-style-type: none"> <li>• Off—No AC input (12 V main power off, 12 V standby power off).</li> <li>• Green, blinking—12 V main power off; 12 V standby power on.</li> <li>• Green, solid—12 V main power on; 12 V standby power on.</li> <li>• Amber, blinking—Warning threshold detected but 12 V main power on.</li> <li>• Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure).</li> </ul> <p><b>DC power supply (UCSC-PSUV2-1050DC):</b></p> <ul style="list-style-type: none"> <li>• Off—No DC input (12 V main power off, 12 V standby power off).</li> <li>• Green, blinking—12 V main power off; 12 V standby power on.</li> <li>• Green, solid—12 V main power on; 12 V standby power on.</li> <li>• Amber, blinking—Warning threshold detected but 12 V main power on.</li> <li>• Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure).</li> </ul> |
| 6<br>SAS | SAS/SATA drive fault<br><br><b>Note</b><br>NVMe solid state drive (SSD) drive tray LEDs have different behavior than SAS/SATA drive trays. | <ul style="list-style-type: none"> <li>• Off—The hard drive is operating properly.</li> <li>• Amber—Drive fault detected.</li> <li>• Amber, blinking—The device is rebuilding.</li> <li>• Amber, blinking with one-second interval—Drive locate function activated in the software.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 7<br>SAS | SAS/SATA drive activity LED                                                                                                                | <ul style="list-style-type: none"> <li>• Off—There is no hard drive in the hard drive tray (no access, no fault).</li> <li>• Green—The hard drive is ready.</li> <li>• Green, blinking—The hard drive is reading or writing data.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | NVMe SSD drive fault | <ul style="list-style-type: none"> <li>• Off—The drive is not in use and can be safely removed.</li> <li>• Green—The drive is in use and functioning properly.</li> <li>• Green, blinking—the driver is initializing following insertion, or the driver is unloading following an eject command.</li> <li>• Amber—The drive has failed.</li> <li>• Amber, blinking—A drive Locate command has been issued in the software.</li> </ul> |
| 7 | NVMe SSD activity    | <ul style="list-style-type: none"> <li>• Off—No drive activity.</li> <li>• Green, blinking—There is drive activity.</li> </ul>                                                                                                                                                                                                                                                                                                        |

## Internal Diagnostic LEDs

The server has internal fault LEDs for CPUs, DIMMs, and fan modules at the base of the CPUs, DIMMs, and fan modules.

|   |                                                                                                                                                                                                                                               |   |                                                                                                                                                                                                                                                  |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Fan module fault LEDs (one on the top of each fan module) <ul style="list-style-type: none"> <li>• Amber—Fan has a fault or is not fully seated.</li> <li>• Green—Fan is OK.</li> </ul>                                                       | 3 | DIMM fault LEDs (one behind each DIMM socket on the motherboard) <p>These LEDs operate only when the server is in standby power mode.</p> <ul style="list-style-type: none"> <li>• Amber—DIMM has a fault.</li> <li>• Off—DIMM is OK.</li> </ul> |
| 2 | CPU fault LEDs (one behind each CPU socket on the motherboard). <p>These LEDs operate only when the server is in standby power mode.</p> <ul style="list-style-type: none"> <li>• Amber—CPU has a fault.</li> <li>• Off—CPU is OK.</li> </ul> | - |                                                                                                                                                                                                                                                  |

## Preparing For Component Installation

This section includes information and tasks that help prepare the server for component installation.

## Required Equipment For Service Procedures

The following tools and equipment are used to perform the procedures in this chapter:

- T-30 Torx driver (supplied with replacement CPUs for heatsink removal)
- #1 flat-head screwdriver (used during CPU or heatsink replacement)
- #1 Phillips-head screwdriver (for M.2 SSD and intrusion switch replacement)
- Electrostatic discharge (ESD) strap or other grounding equipment such as a grounded mat

## Shutting Down and Removing Power From the Server

The server can run in either of two power modes:

- Main power mode—Power is supplied to all server components and any operating system on your drives can run.
- Standby power mode—Power is supplied only to the service processor and certain components. It is safe for the operating system and data to remove power cords from the server in this mode.

**Caution**

After a server is shut down to standby power, electric current is still present in the server. To completely remove power, you must disconnect all power cords from the power supplies in the server, as directed in the service procedures.

You can shut down the server by using the front-panel power button or the software management interfaces.

## Removing the Server Top Cover

### Procedure

**Step 1** Remove the top cover:

- a) If the cover latch is locked, slide the lock sideways to unlock it.

When the latch is unlocked, the handle pops up so that you can grasp it.

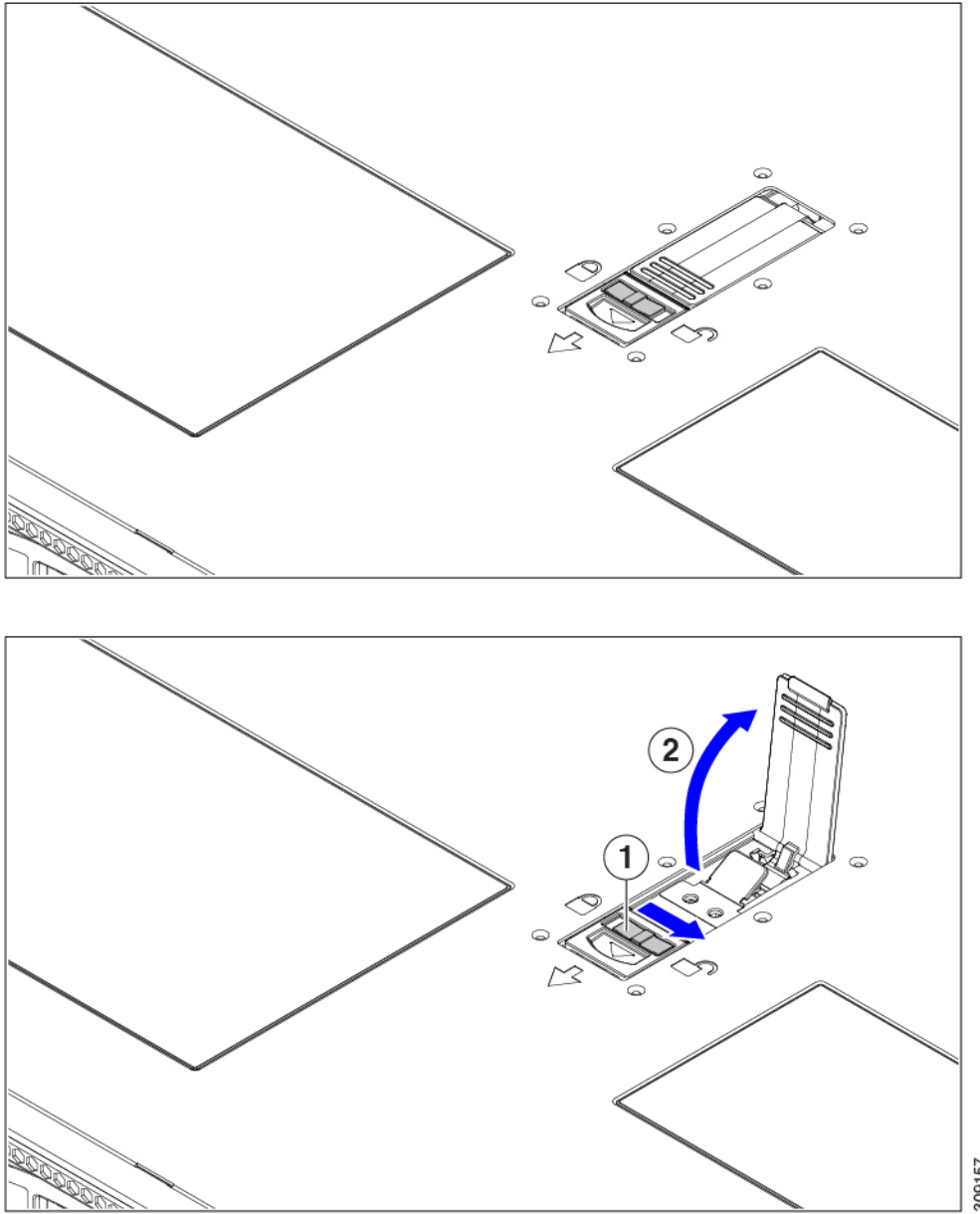
- b) Lift on the end of the latch so that it pivots vertically to 90 degrees.
- c) Simultaneously, slide the cover back and lift the top cover straight up from the server and set it aside.

**Step 2** Replace the top cover:

- a) With the latch in the fully open position, place the cover on top of the server about one-half inch (1.27 cm) behind the lip of the front cover panel.
- b) Slide the cover forward until the latch makes contact.
- c) Press the latch down to the closed position. The cover is pushed forward to the closed position as you push down the latch.
- d) Lock the latch by sliding the lock button to sideways to the left.

Locking the latch ensures that the server latch handle does not protrude when you install the blade.

Figure 11: Removing the Top Cover



309157

|   |            |   |                    |
|---|------------|---|--------------------|
| 1 | Cover lock | 2 | Cover latch handle |
|---|------------|---|--------------------|

## Serial Number Location

The serial number for the server is printed on a label on the top of the server, near the front. See [Removing the Server Top Cover](#), on page 56.

# Hot Swap vs Hot Plug

Some components can be removed and replaced without shutting down and removing power from the server. This type of replacement has two varieties: hot-swap and hot-plug.

- Hot-swap replacement—You do not have to shut down the component in the software or operating system. This applies to the following components:
  - SAS/SATA hard drives
  - SAS/SATA solid state drives
  - Cooling fan modules. With a single fan failure, other fans throttle up to compensate, but with multiple fan failures that require opening the top cover to replace, you must complete the fan replacement procedure within 60 seconds.
  - Power supplies (when redundant as 1+1)
- Hot-plug replacement—You must take the component offline before removing it for the following component:
  - NVMe PCIe solid state drives

## Removing and Replacing Components



### Warning

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

Statement 1029



### Caution

When handling server components, handle them only by carrier edges and use an electrostatic discharge (ESD) wrist-strap or other grounding device to avoid damage.



### Tip

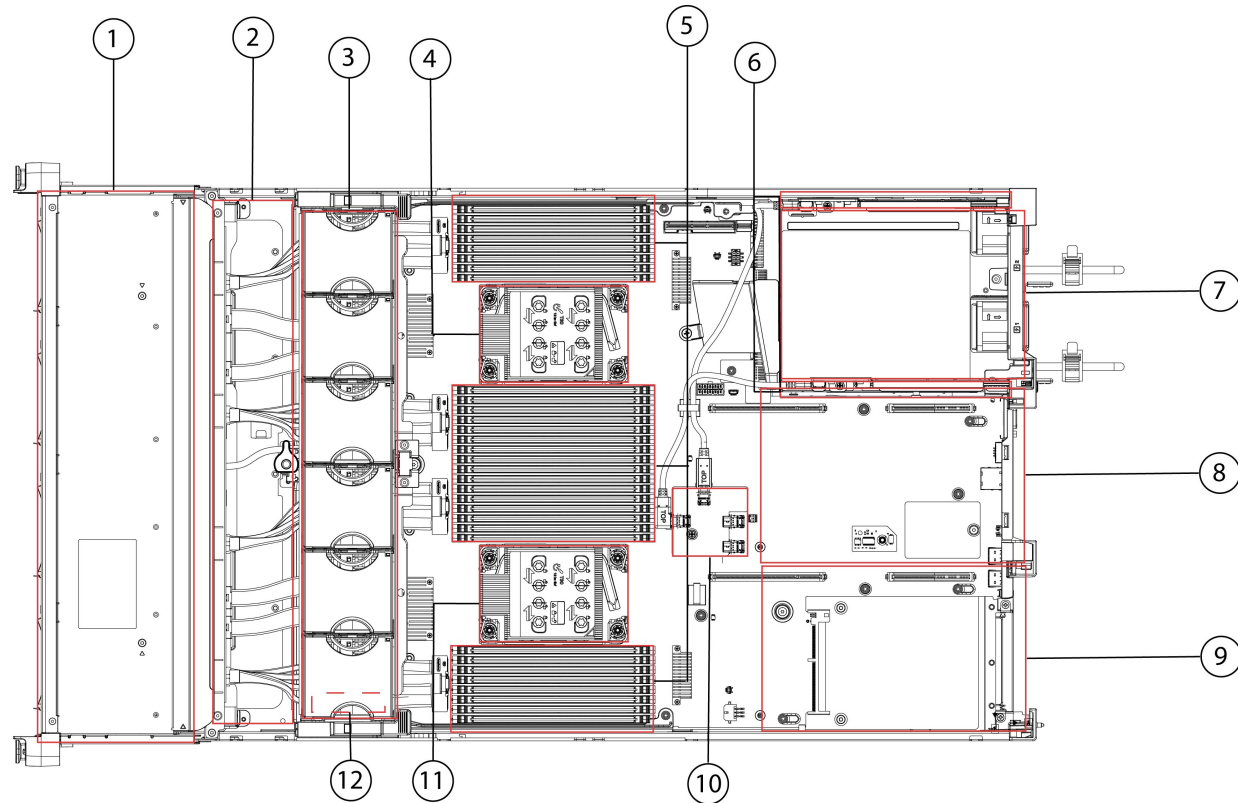
You can press the unit identification button on the front panel or rear panel to turn on a flashing, blue unit identification LED on both the front and rear panels of the server. This button allows you to locate the specific server that you are servicing when you go to the opposite side of the rack. You can also activate these LEDs remotely by using the Cisco IMC interface.

This section describes how to install and replace server components.

## Serviceable Component Locations

This topic shows the locations of the field-replaceable components and service-related items. The view in the following figure shows the server with the top cover removed.

**Figure 12: Cisco UCS C240 M8 Server, Serviceable Component Locations**



487378



**Note** The preceding illustration shows a server with three half-height rear risers. The server supports also supports two full-height, full-width risers (not shown).

|          |                                                                                                                                                                                                                                                                                      |          |                                             |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------|
| <b>1</b> | Front-loading drive bays.                                                                                                                                                                                                                                                            | <b>2</b> | RAID Module slot.                           |
| <b>3</b> | Cooling fan modules (six, hot-swappable fan modules in a single fan tray)                                                                                                                                                                                                            | <b>4</b> | CPU socket 2                                |
| <b>5</b> | DIMM sockets on motherboard (16 per CPU)<br>See the <a href="#">Cisco UCS Intel M8 Memory Guide</a> . for DIMM slot numbering.<br><b>Note</b><br>An air baffle rests on top of the DIMM and CPUs when the server is operating. The air baffle is not displayed in this illustration. | <b>6</b> | M.2 RAID Controllers, two individual pieces |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | <p>PCIe riser 3 (PCIe slots 7 and 8 numbered from bottom to top), with the following options:</p> <ul style="list-style-type: none"> <li>• 3A (Default Option)—Slot 7 (x24 mechanical, x8 electrical, Gen 4)<br/>Slot 8 (x16 mechanical, x8 electrical, Gen 4)</li> <li>• 3B (Storage Option)—Slots 7 and 8, both support x4 electrical, Gen 4.<br/>Both slots can accept universal SFF HDDs or NVMe SSDs.</li> <li>• 3C (GPU Option)—Slot 7 (x24 mechanical, x16 electrical). Slot 7 can support a full height, full length GPU card.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8  | <p>PCIe riser 2 (PCIe slots 4, 5, 6 numbered from bottom to top), with the following options:</p> <ul style="list-style-type: none"> <li>• 2A (Default Option)—Slot 4 (x24 mechanical, x8 electrical, Gen 4). NCSI is supported on one slot at a time. Supports a full height, <math>\frac{3}{4}</math> length card.<br/>Slot 5 (x24 mechanical, x16 electrical, Gen 4). NCSI is supported on one slot at a time. Supports one full height, full length card.<br/>Slot 6 (x16 mechanical, x8 electrical, Gen 4). Supports a full height, full length card.</li> <li>• 2C— Slots 4 (x24 mechanical, x16 electrical, Gen 5) NCSI supported on one slot at a time. Supports a full-height, full-length card.<br/>Slot 5 (x24 mechanical, x16 electrical Gen 5) Supports full-height, full-length drive.</li> </ul> |
| 9  | <p>PCIe riser 1 (PCIe slot 1, 2, 3 numbered bottom to top), with the following options:</p> <ul style="list-style-type: none"> <li>• 1A (Default Option)—Slot 1 (x24 mechanical, x8 electrical, Gen 4) NCSI is supported on one slot at a time. Supports full height, <math>\frac{3}{4}</math> length card.<br/>Slot 2 (x24 mechanical, x16 electrical, Gen 4). NCSI is supported on one slot at a time. Supports full height, full length GPU card.<br/>Slot 3 (x16 mechanical, x8 electrical, Gen 4) Supports full height, full length card.</li> <li>• 1B (Storage Option)—Slot 1 supports an M.2 NVMe RAID card<br/>Slot 2 (x4 electrical), supports universal 2.5-inch HDD NVMe drive<br/>Slot 3 (x4 electrical), supports universal 2.5-inch HDD NVMe drive</li> <li>• 1C — (x24 mechanical, x16 electrical, Gen 5) NCSI supported on one slot at a time. Supports a full-height, <math>\frac{3}{4}</math>-length card.<br/>Slot 2 (x24 mechanical, x16 electrical, Gen 5) Supports a full-height, full-length card.</li> </ul> | 10 | RAID controller card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 11 | CPU socket 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 12 | SuperCap Module (under fan tray)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

The Technical Specifications Sheets for all versions of this server, which include supported component part numbers, are at [Cisco UCS Servers Technical Specifications Sheets](#) (scroll down to *Technical Specifications*).



## Replacing the Air Duct

The server has an air duct under the top sheet metal cover. The air duct ensures proper cooling and air flow across the server from intake (the cool aisle of the data center) to exhaust (the hot aisle in the data center). The air duct is in the middle of the server and covers the CPU and DIMMs.

The server has two different revisions of airduct (A0 and B0) with subtle differences.



**Note** You might be able to find the revision on packaging, such as an ESD bag, or on a label on the air duct (if present).

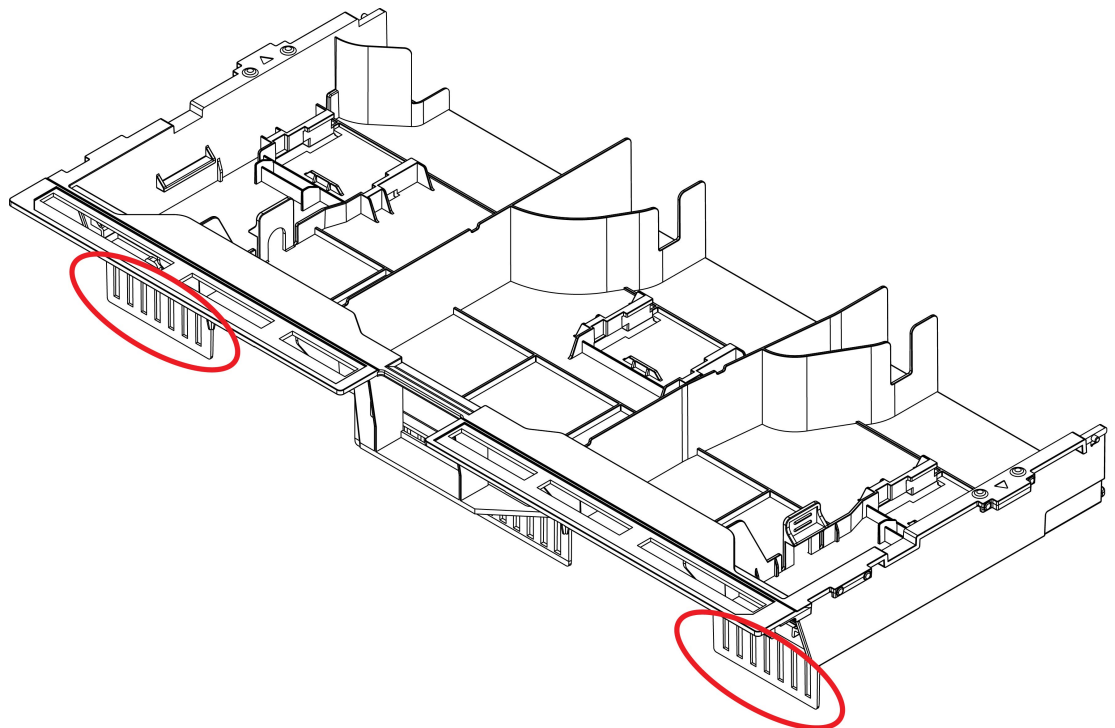
To help you identify each revision of air duct, compare the illustrations that follow.

- One air duct (UCSC-GPUAD-C240M7= Rev A0) is used for servers populated with Intel Fourth Generation Xeon Scalable Processors. In the following illustrations, notice the lower mesh on the front of the air duct and the legs at the rear of the air duct, which are different from the Rev B0 air duct. Also, the front wall (not pictured) is different from the Rev B0 air duct.



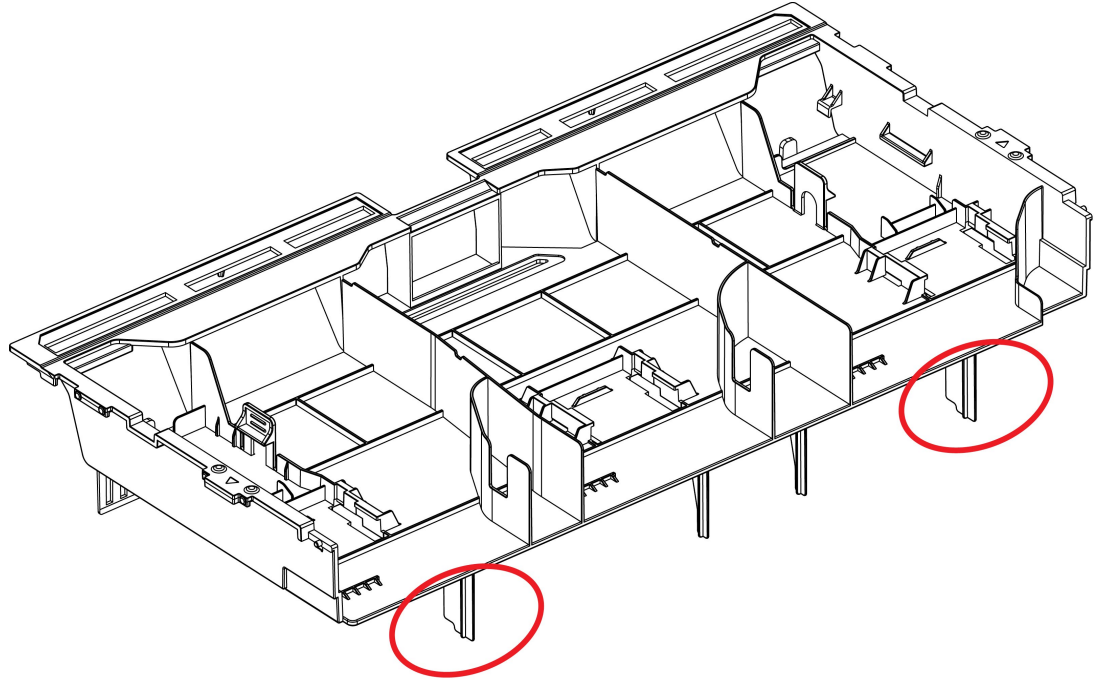
**Note** The A0 air duct will be phased out so that only the B0 air duct will be available.

**Figure 13: Air Duct for Intel Fourth Generation Xeon Scalable Processors (Rev A0), Front View**



481367

**Figure 14: Air Duct for Intel Fourth Generation Xeon Scalable Processors (Rev A0), Rear View**

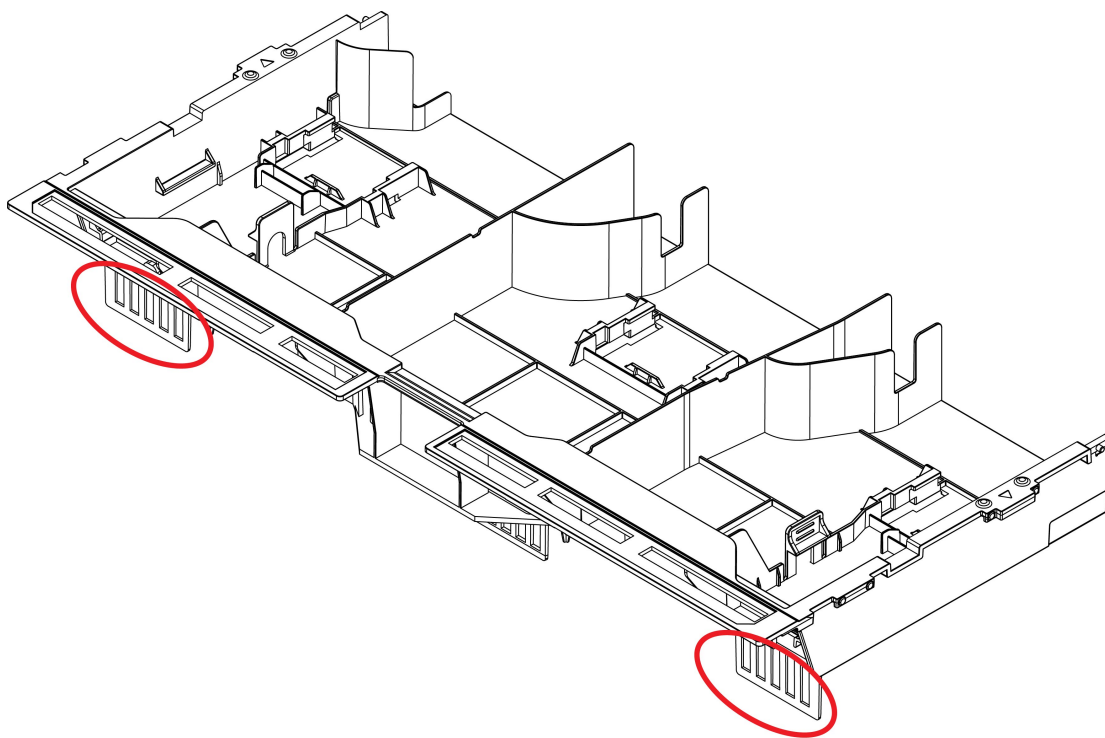


481366

- One air duct UCSC-GPUAD-C240M7= Rev B0 is required for servers that have Intel Fifth Generation Xeon Scalable Processors.
  - By default, this air duct is pre-installed at the factory for new servers with Intel Fifth Generation Xeon Scalable Processors.
  - This air duct is required if you will be upgrading your server from Intel Fourth Generation Xeon Scalable Processors to Intel Fifth Generation Xeon Scalable Processors.
  - When upgrading to Intel Fifth Generation Xeon Scalable Processors, you must order the Rev B0 air duct from Cisco.

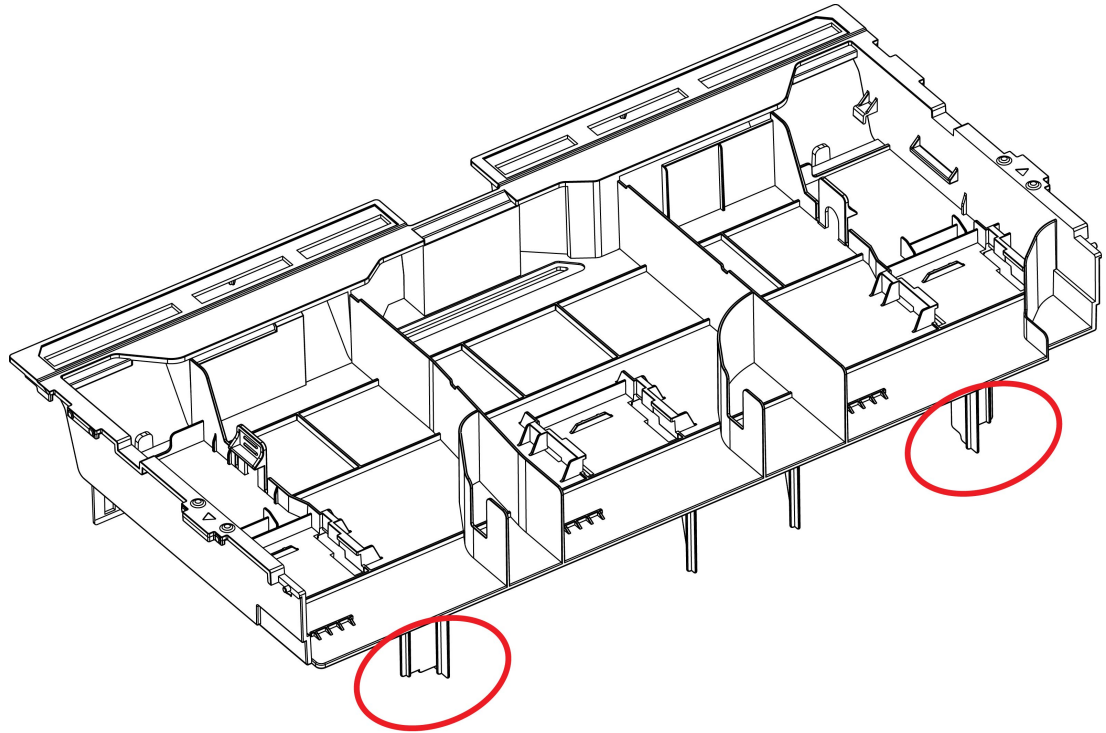
In the following illustrations, notice the lower mesh on the front of the air duct and the legs at the rear of the air duct, which are different from the Rev A0 air duct. Also, the front wall (not pictured) is different from the Rev A0 air duct.

**Figure 15: Air Duct for Intel Fifth Generation Xeon Scalable Processors, Front View**



481369

*Figure 16: Air Duct for Intel Fifth Generation Xeon Scalable Processors, Rear View*



481368

To replace the server's air duct, use the following procedures:

- [Removing the Air Duct, on page 64](#)
- [Installing the Air Duct, on page 65](#)

## Removing the Air Duct

Use this procedure to remove the air duct when needed.



**Note** Your air duct might be somewhat different than shown in this topic based on its revision level (A0 or B0), but the overall procedure is applicable.

### Before you begin

The air duct has triangular alignment features that match with similar features on the sidewall of the server. Notice their locations. You will use them to aid reinstalling the air duct.

### Procedure

**Step 1** Remove the server top cover.

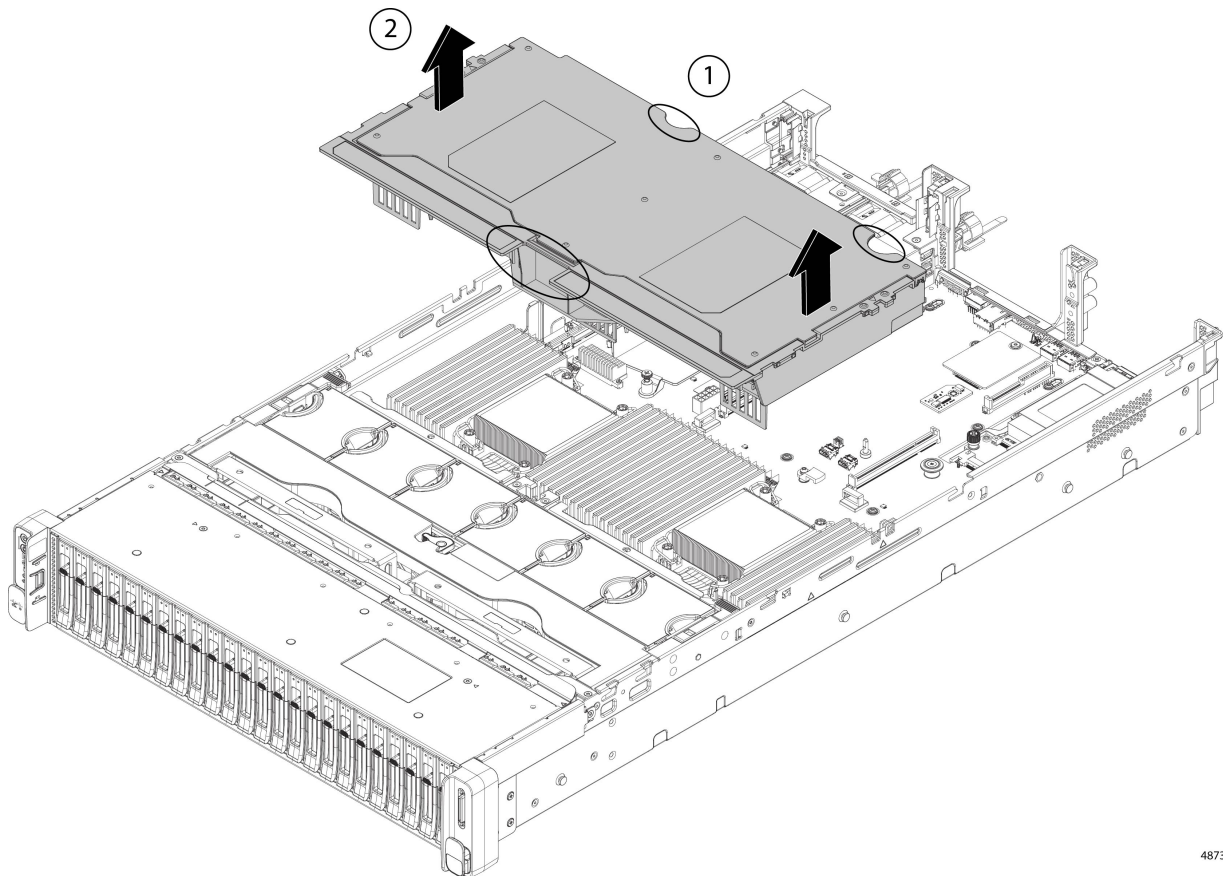
**Step 2** Locate the detents for the air duct, which are rectangular or semi-circular cutouts in the air baffle that provide grasp point for your fingers.

When removing the air duct, always grasp the detents closest to the chassis sidewalls (left and right).

**Step 3** Grasp the left and right detent then lift the air duct out of the chassis.

**Note**

You might need to slide the air duct towards the back of the server while lifting the air duct up.



487379

---

**What to do next**

When you are done servicing the server, install the air duct. See [Installing the Air Duct, on page 65](#).

## Installing the Air Duct

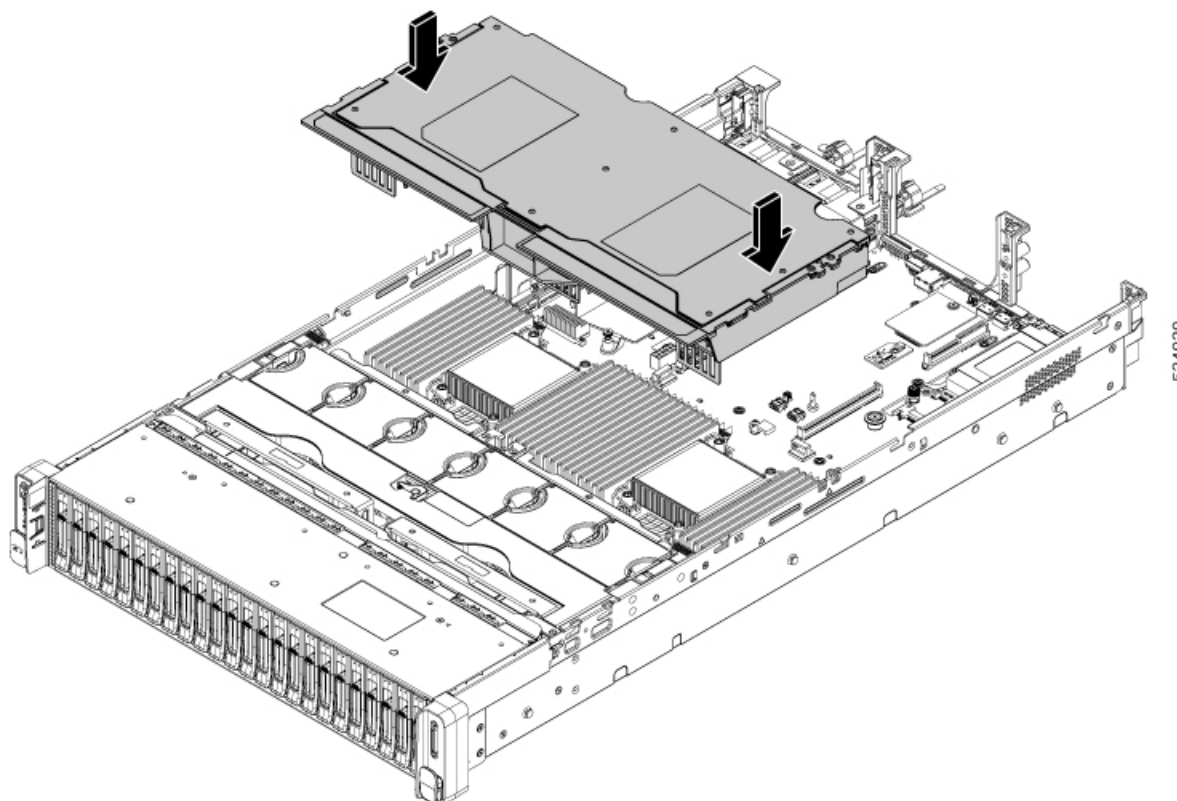
The air duct sits behind the front-loading drive cage and covers the CPU and DIMMs in the middle of the server.

**Step 1** Orient the air duct as shown.

**Step 2** Match the alignment features on each side of the air duct with their corresponding feature on the chassis sidewall.

### Note

Notice that the sheetmetal of the chassis wall has notches that accept the tabs on the air duct.



**Step 3** Lower the air duct into place and gently press down to ensure that all of its edges sit flush.

If the air duct is not seated correctly, it can obstruct installing the server's top cover.

**Step 4** When the air duct is correctly seated, attach the server's top cover.

The server top cover should sit flush so that the metal tabs on the top cover match the indents in the top edges of the air duct.

## Replacing the RV Baffle

If the SFF configuration of the server (UCSC-240-M8SX) has SAS/SATA controllers, a special baffle, the RV baffle, is required. This baffle is in addition to either the standard CPU air baffle or GPU air blocker.

The RV baffle sits between the fans and the drive backplane to control airflow and is held in place by notches in the baffle that seat into the top of the sheetmetal walls of the server.

Replacing the RV baffle is a tool-less procedure. Use the following tasks to replace the RV baffle.

- [Removing the RV Baffle, on page 67](#)
- [Installing the RV Baffle, on page 67](#)

## Removing the RV Baffle

The RV baffle sits between the front drive backplane and the server fan tray on UCSC-240-M8SX servers with SAS/SATA controllers. The top of the baffle has parts that are molded to a right angle that holds the baffle in place while it rests on top of the server's sheetmetal sidewalls.

Removing the RV baffle is a tool-less procedure, and the RV baffle can be removed independent of the fan tray. However, when the UCSC-240-M8SX server is operating, the RV baffle must be in place.

Use this task to remove the RV baffle.



### Caution

Although the fans in the server's fan tray are hooded to shield the fan blades, make sure to keep your fingers away from the fans while performing this procedure!

### Procedure

- 
- Step 1** If you have not already done so, remove the server top cover.  
See [Removing the Server Top Cover, on page 56](#).
- Step 2** Using your fingers, grasp the RV baffle and lift it out of the server.
- 

## Installing the RV Baffle

Use this procedure to install the RV baffle between the SFF backplane and the fan tray for UCSC-240-M8SX servers with SAS/SATA controllers.

### Procedure

- 
- Step 1** Align the RV baffle with the fan module so that the flat edges of each will sit flush against each other.
- Step 2** Holding the RV baffle level, lower it into the gap between the fan modules and the backplane.  
The baffle should fit into the gap and the tabs on the top of the baffle should sit easily on the top of the server's sidewalls.
-



## Replacing Front-Loading SAS/SATA Drives



**Note** You do not have to shut down the server or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable.

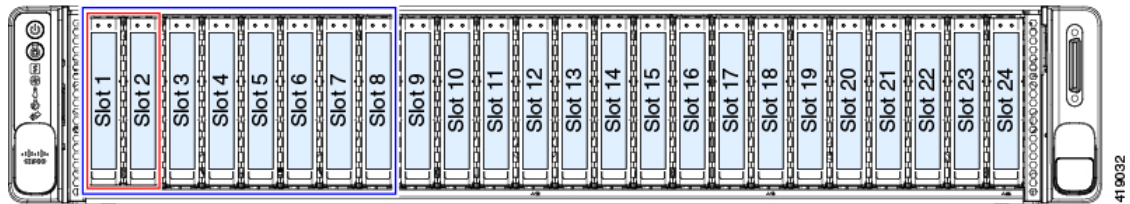
To replace rear-loading SAS/SATA drives, see [Replacing Rear-Loading SAS/SATA Drives](#), on page 71.

### Front-Loading SAS/SATA Drive Population Guidelines

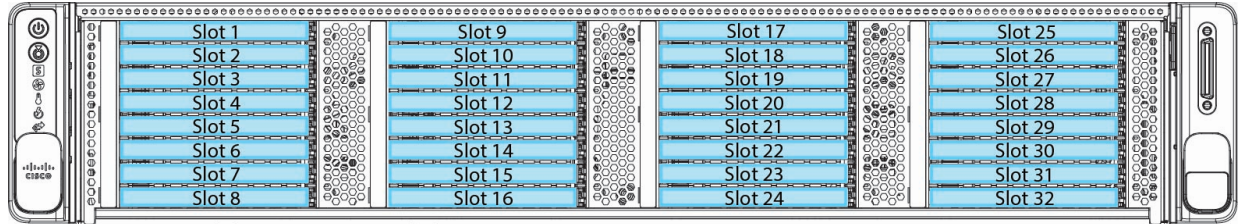
The server is orderable in the following different versions, each with a different front panel/drive-backplane configuration.

Drive bay numbering is shown in the following figures.

**Figure 17: Cisco UCS-C240-M8SX, Drive Bay Numbering**

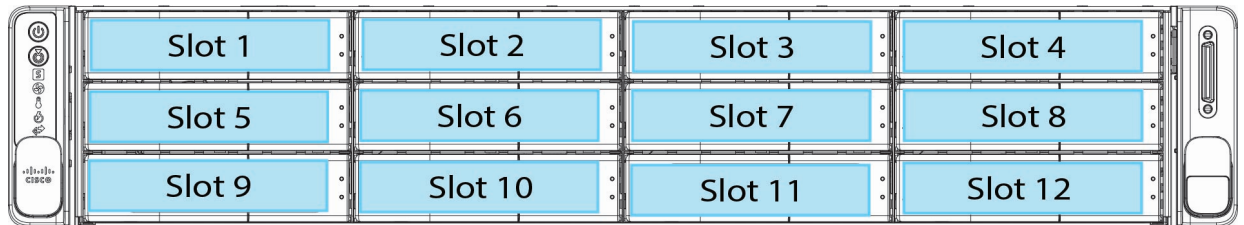


**Figure 18: Cisco UCS-C240-M8E3S, Drive Bay Numbering**



487383

**Figure 19: Cisco UCS-C240-M8L Drive Bay Numbering**



487384

Observe these drive population guidelines for optimum performance:

- When populating drives, add drives to the lowest-numbered bays first.





**Note** For diagrams of which drive bays are controlled by particular controller cables on the backplane, see [Storage Controller Cable Connectors and Backplanes](#), on page 271.

- Front-loading drives are hot pluggable, but each drive requires a 10 second delay between hot removal and hot insertion.
- Keep an empty drive blanking tray in any unused bays to ensure proper airflow.
- You can mix SAS/SATA hard drives and SAS/SATA SSDs in the same server. However, you cannot configure a logical volume (virtual drive) that contains a mix of hard drives and SSDs. That is, when you create a logical volume, it must contain all SAS/SATA hard drives or all SAS/SATA SSDs.

## 4K Sector Format SAS/SATA Drives Considerations

- You must boot 4K sector format drives in UEFI mode, not legacy mode. See the procedures in this section.
- Do not configure 4K sector format and 512-byte sector format drives as part of the same RAID volume.
- For operating system support on 4K sector drives, see the interoperability matrix tool for your server: [Hardware and Software Interoperability Matrix Tools](#)

### Procedure

---

## Setting Up UEFI Mode Booting in the BIOS Setup Utility

### Procedure

---

- Step 1** Enter the BIOS setup utility by pressing the **F2** key when prompted during bootup.
- Step 2** Go to the **Boot Options** tab.
- Step 3** Set **UEFI Boot Options** to **Enabled**.
- Step 4** Under **Boot Option Priorities**, set your OS installation media (such as a virtual DVD) as your **Boot Option #1**.
- Step 5** Go to the **Advanced** tab.
- Step 6** Select **LOM** and **PCIe Slot Configuration**.
- Step 7** Set the **PCIe Slot ID: HBA Option ROM** to **UEFI Only**.
- Step 8** Press **F10** to save changes and exit the BIOS setup utility. Allow the server to reboot.
- Step 9** After the OS installs, verify the installation:
- a) Enter the BIOS setup utility by pressing the **F2** key when prompted during bootup.
  - b) Go to the **Boot Options** tab.

- c) Under **Boot Option Priorities**, verify that the OS you installed is listed as your **Boot Option #1**.

---

## Setting Up UEFI Mode Booting in the Cisco IMC GUI

### Procedure

---

- Step 1** Use a web browser and the IP address of the server to log into the Cisco IMC GUI management interface.
- Step 2** Navigate to **Server > BIOS**.
- Step 3** Under Actions, click **Configure BIOS**.
- Step 4** In the Configure BIOS Parameters dialog, select the **Advanced** tab.
- Step 5** Go to the **LOM** and **PCIe Slot Configuration** section.
- Step 6** Set the **PCIe Slot: HBA Option ROM** to **UEFI Only**.
- Step 7** Click **Save Changes**. The dialog closes.
- Step 8** Under BIOS Properties, set **Configured Boot Order** to **UEFI**.
- Step 9** Under Actions, click **Configure Boot Order**.
- Step 10** In the Configure Boot Order dialog, click **Add Local HDD**.
- Step 11** In the Add Local HDD dialog, enter the information for the 4K sector format drive and make it first in the boot order.
- Step 12** Save changes and reboot the server. The changes you made will be visible after the system reboots.
- 

## Replacing a Front-Loading SAS/SATA Drive



---

**Note** You do not have to shut down the server or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable.

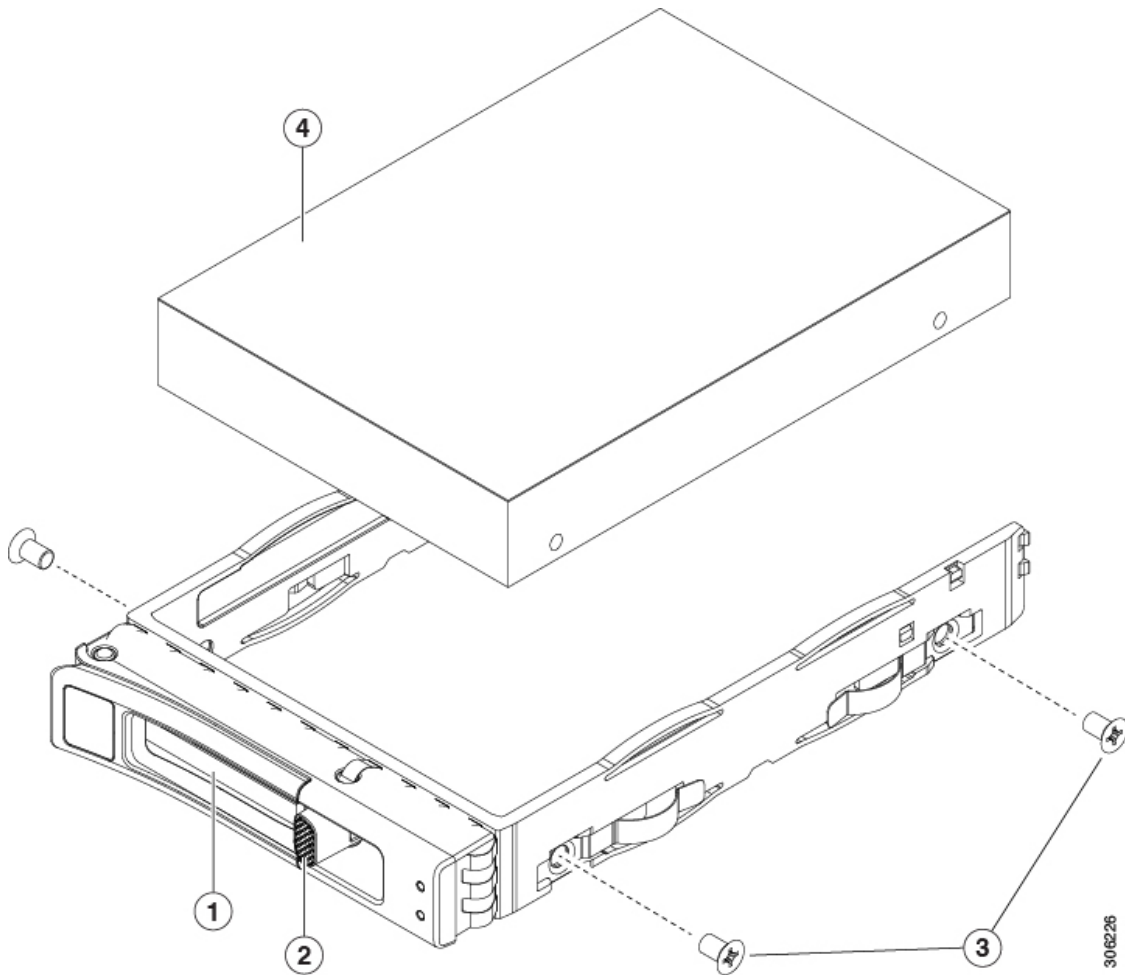
---

### Procedure

---

- Step 1** Remove the drive that you are replacing or remove a blank drive tray from the bay:
- Press the release button on the face of the drive tray.
  - Grasp and open the ejector lever and then pull the drive tray out of the slot.
  - If you are replacing an existing drive, remove the four drive-tray screws that secure the drive to the tray and then lift the drive out of the tray.
- Step 2** Install a new drive:
- Place a new drive in the empty drive tray and install the four drive-tray screws.
  - With the ejector lever on the drive tray open, insert the drive tray into the empty drive bay.
  - Push the tray into the slot until it touches the backplane, and then close the ejector lever to lock the drive in place.

Figure 20: Replacing a Drive in a Drive Tray



|   |                |   |                                      |
|---|----------------|---|--------------------------------------|
| 1 | Ejector lever  | 3 | Drive tray screws (two on each side) |
| 2 | Release button | 4 | Drive removed from drive tray        |

## Replacing Rear-Loading SAS/SATA Drives



**Note** You do not have to shut down the server or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable.

### Rear-Loading SAS/SATA Drive Population Guidelines

The rear drive bay support differs by server PID and which type of RAID controller is used in the server:

- UCSC-C240-M8SX supports up to 4 SFF SAS/SATA or NVMe drives (direct attached or RAID controlled) with Riser 1B and 3B
- UCSCS-C240-M8L supports up to 4 SFF SAS/SATA or NVMe (direct attached or RAID controlled) with Riser 1B and 3.
- UCSC-C240-M8E3S supports up to 4 EDSFF E3.S 11TB NVMe drives (direct attach only) with Riser 1D and 3D.
- Rear bays are numbered 101 to 104 with drive 101 at the left bottom, 102 at the left top, drive 103 at the right bottom, and 104 at the right top positions.
- When populating drives, add drives to the lowest-numbered bays first.
- Keep an empty drive blanking tray in any unused bays to ensure proper airflow.
- You can mix SAS/SATA hard drives and SAS/SATA SSDs in the same server. However, you cannot configure a logical volume (virtual drive) that contains a mix of hard drives and SSDs. That is, when you create a logical volume, it must contain all SAS/SATA hard drives or all SAS/SATA SSDs.

## Replacing a Rear-Loading SAS/SATA Drive

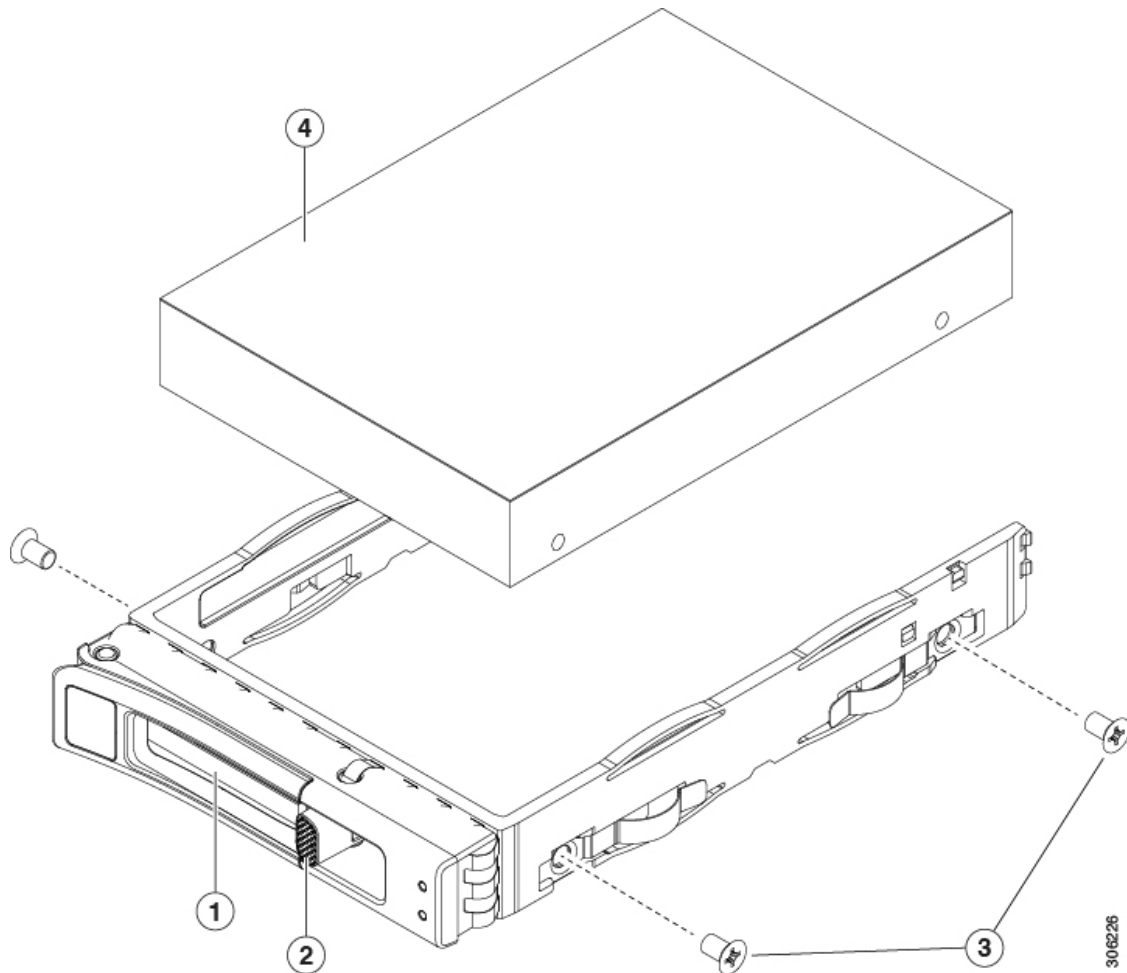


**Note** You do not have to shut down the server or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable.

### Procedure

- Step 1** Remove the drive that you are replacing or remove a blank drive tray from the bay:
- a) Press the release button on the face of the drive tray.
  - b) Grasp and open the ejector lever and then pull the drive tray out of the slot.
  - c) If you are replacing an existing drive, remove the four drive-tray screws that secure the drive to the tray and then lift the drive out of the tray.
- Step 2** Install a new drive:
- a) Place a new drive in the empty drive tray and install the four drive-tray screws.
  - b) With the ejector lever on the drive tray open, insert the drive tray into the empty drive bay.
  - c) Push the tray into the slot until it touches the backplane, and then close the ejector lever to lock the drive in place.

Figure 21: Replacing a Drive in a Drive Tray



|   |                |   |                                      |
|---|----------------|---|--------------------------------------|
| 1 | Ejector lever  | 3 | Drive tray screws (two on each side) |
| 2 | Release button | 4 | Drive removed from drive tray        |

## 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 server.

- Only drives that are managed by the UCS MegaRAID controller are affected.
- Drives can be affected regardless of where they are installed in the server (front-loaded, rear-loaded, and so on).
- Both SFF and LFF form factor drives can be affected.
- Drives installed in all Cisco UCS C-Series servers can be affected.

- Drives can be affected regardless of whether they are configured for hotplug 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 server 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 74](#).

## 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 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). Choose the appropriate option:
- a) For a front-loading drive, see [Replacing a Front-Loading SAS/SATA Drive, on page 70](#)
  - b) For a rear-loading drive, see [Replacing a Rear-Loading SAS/SATA Drive, on page 72](#)
- Step 2** During boot up, watch the drive's LEDs to verify correct operation.

See [Status LEDs and Buttons, on page 49](#).

- Step 3** If the error persists, cold reseal the drive, which requires a server power down. Choose the appropriate option:
- Use your server management software to gracefully power down the server.  
See the appropriate Cisco management software documentation.
  - If server power down through software is not available, you can power down the server by pressing the power button.  
See [Status LEDs and Buttons, on page 49](#).
  - Reseat the drive as documented in Step 1.
  - When the drive is correctly resealed, 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:
- Contact Cisco TAC Support for assistance with troubleshooting.
  - Begin an RMA of the errored drive.
- 

## Replacing Front-Loading NVMe SSDs

This section is for replacing NVMe solid-state drives (SSDs) in front-panel drive bays.

### Front-Loading NVMe SSD Population Guidelines

The front drive bay support for 2.5-inch NVMe SSDs differs by server PID:

- UCSC-C240-M8S:
  - Drive bays 1 through 24 support SFF U.3 NVMe SSDs when the server is configured with a Tri-Mode Storage Controller.
  - Drive bays 1 through 4 and 21 through 24 also support direct-attached SFF U.3 NVMe SSDs.
- UCSC-C240-M8E3S:
  - Drive bays 1 through 32 support direct-attached EDSFF E3.S 1TB NVMe SSDs
- For a single CPU server, front-loading NVMe drives can be populated in slots 21-24.

### Front-Loading NVMe SSD Requirements and Restrictions

Observe these requirements:

- Hot-plug support must be enabled in the system BIOS. If you ordered the system with NVMe drives, hot-plug support is enabled at the factory.

Observe these restrictions:

- NVMe SSDs support booting only in UEFI mode. Legacy boot is not supported. For instructions on setting up UEFI boot, see [Setting Up UEFI Mode Booting in the BIOS Setup Utility, on page 69](#) or [Setting Up UEFI Mode Booting in the Cisco IMC GUI, on page 70](#).

- UEFI boot is supported in all supported operating systems. Hot-insertion and hot-removal are supported in all supported operating systems except VMWare ESXi.

## Enabling Hot-Plug Support in the System BIOS

Hot-plug (OS-informed hot-insertion and hot-removal) is disabled in the system BIOS by default.

- If the system was ordered with NVMe PCIe SSDs, the setting was enabled at the factory. No action is required.
- If you are adding NVMe PCIe SSDs after-factory, you must enable hot-plug support in the BIOS. See the following procedures.

### Enabling Hot-Plug Support Using the BIOS Setup Utility

#### Procedure

- 
- |               |                                                                                          |
|---------------|------------------------------------------------------------------------------------------|
| <b>Step 1</b> | Enter the BIOS setup utility by pressing the <b>F2</b> key when prompted during bootup.  |
| <b>Step 2</b> | Navigate to <b>Advanced &gt; PCI Subsystem Settings &gt; NVMe SSD Hot-Plug Support</b> . |
| <b>Step 3</b> | Set the value to <b>Enabled</b> .                                                        |
| <b>Step 4</b> | Save your changes and exit the utility.                                                  |
- 

### Enabling Hot-Plug Support Using the Cisco IMC GUI

#### Procedure

- 
- |               |                                                                             |
|---------------|-----------------------------------------------------------------------------|
| <b>Step 1</b> | Use a browser to log in to the Cisco IMC GUI for the server.                |
| <b>Step 2</b> | Navigate to <b>Compute &gt; BIOS &gt; Advanced &gt; PCI Configuration</b> . |
| <b>Step 3</b> | Set NVME SSD Hot-Plug Support to <b>Enabled</b> .                           |
| <b>Step 4</b> | Save your changes.                                                          |
- 

## Replacing a Front-Loading NVMe SSD

This topic describes how to replace NVMe SSDs in the front-panel drive bays.



---

|             |                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Note</b> | OS-surprise removal is not supported. OS-informed hot-insertion and hot-removal are supported on all supported operating systems except VMware ESXi. |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|

---



---

|             |                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Note</b> | OS-informed hot-insertion and hot-removal must be enabled in the system BIOS. See <a href="#">Enabling Hot-Plug Support in the System BIOS, on page 76</a> . |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

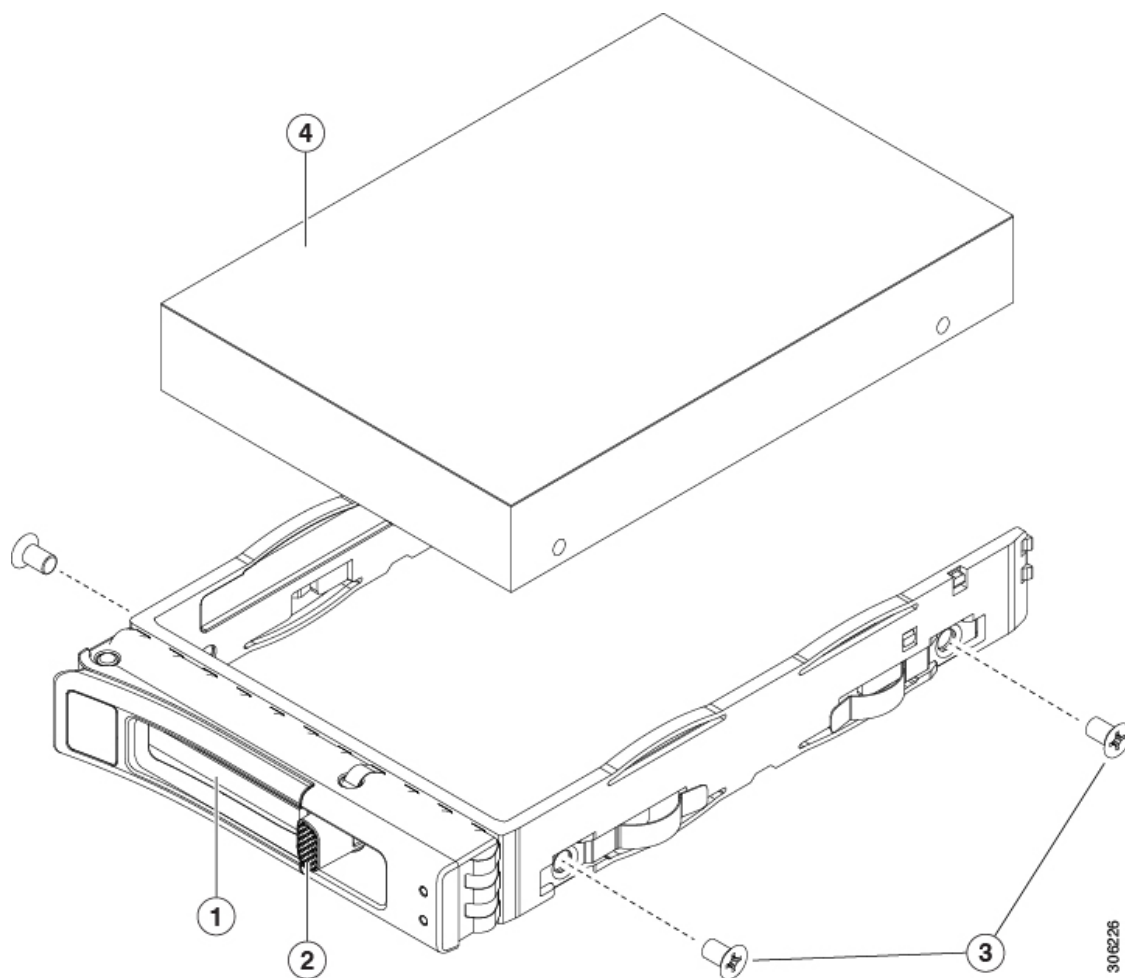


## Procedure

---

- Step 1** Remove an existing front-loading NVMe SSD:
- Shut down the NVMe SSD to initiate an OS-informed removal. Use your operating system interface to shut down the drive, and then observe the drive-tray LED:
    - Green—The drive is in use and functioning properly. Do not remove.
    - Green, blinking—the driver is unloading following a shutdown command. Do not remove.
    - Off—The drive is not in use and can be safely removed.
  - Press the release button on the face of the drive tray.
  - Grasp and open the ejector lever and then pull the drive tray out of the slot.
  - Remove the four drive tray screws that secure the SSD to the tray and then lift the SSD out of the tray.
- Step 2** Install a new front-loading NVMe SSD:
- Place a new SSD in the empty drive tray and install the four drive-tray screws.
  - With the ejector lever on the drive tray open, insert the drive tray into the empty drive bay.
  - Push the tray into the slot until it touches the backplane, and then close the ejector lever to lock the drive in place.
- Step 3** Observe the drive-tray LED and wait until it returns to solid green before accessing the drive:
- Off—The drive is not in use.
  - Green, blinking—the driver is initializing following hot-plug insertion.
  - Green—The drive is in use and functioning properly.

Figure 22: Replacing a Drive in a Drive Tray



|   |                |   |                                      |
|---|----------------|---|--------------------------------------|
| 1 | Ejector lever  | 3 | Drive tray screws (two on each side) |
| 2 | Release button | 4 | Drive removed from drive tray        |

## Replacing an E3.S Drive

The server supports 16 or 32 E3.S front-loading drives. Additionally, up to four E3.S drives are supported in PCI risers, two each in Riser 1 and Riser 3, in the rear of the server.

Use the following tasks to replace a E3.S drive.

- [Removing an E3.S Drive, on page 79](#)
- [Installing an E3.S Drive, on page 81](#)

## E3.S PCIe Requirements and Restrictions

For 7.5mm E3.S PCIe SSD drives, be aware of the following:

- UEFI boot mode can be configured through the Boot Order Policy setting in the Server Policy supported by Cisco Intersight Managed Mode (IMM). For instructions about setting up UEFI boot mode through Cisco IMM, go to:

[Cisco Intersight Managed Mode Configuration Guide](#)

- PCIe SSDs cannot be controlled with a SAS RAID controller because PCIe SSDs interface with the compute node via the PCIe bus.
- UEFI boot is supported in all supported operating systems.

## Removing an E3.S Drive

Use this task to remove a E3.S PCIe drive from the server.



---

**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.

---

### Before you begin



---

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

---

## Procedure

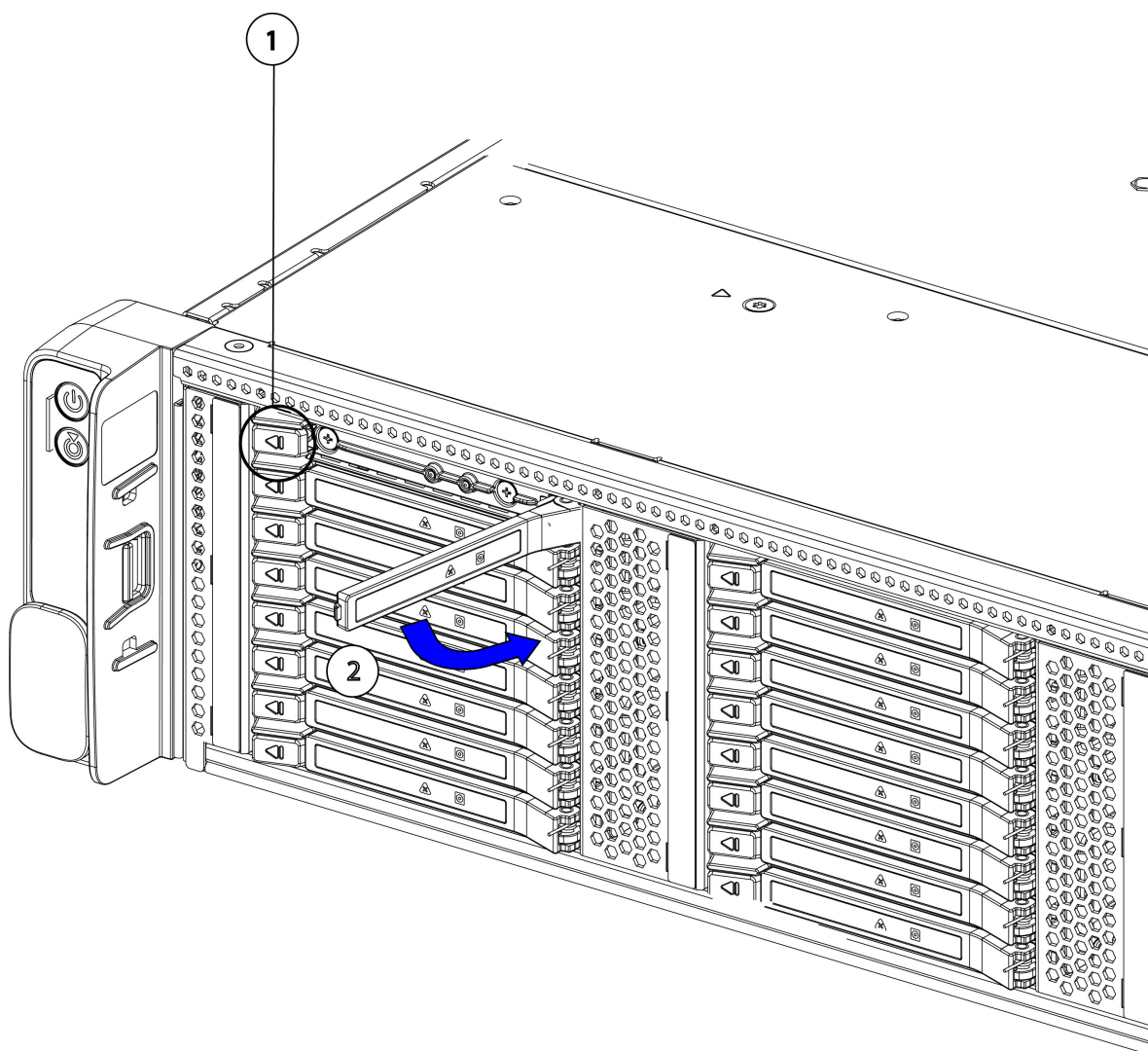
---

**Step 1** Push the ejector button to disengage the locking mechanism and open the ejector arm partially.

**Step 2** Gently swing the ejector arm to the right, the open position, until the ejector arm stops.

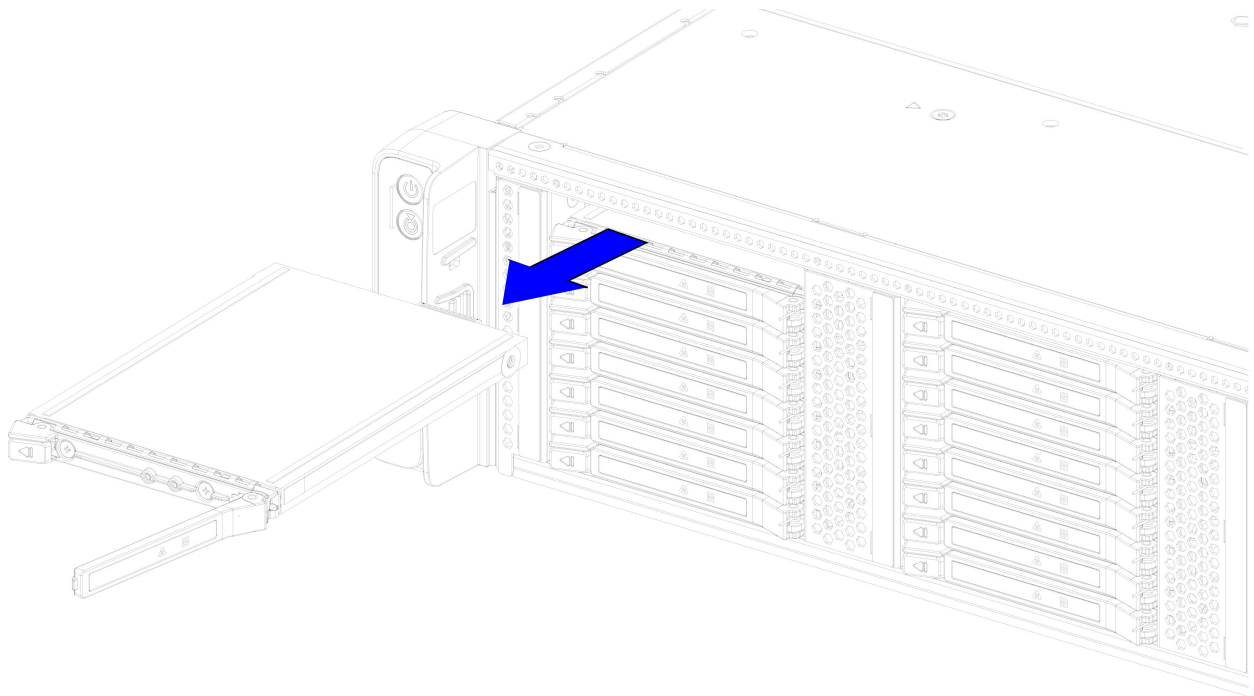
### Caution

Do not twist or tilt on the ejector arm while it is in the open position. Also, the ejector arm stops when it is fully open. Do not force the ejector open past its stopping point.



489792

**Step 3** Grasping the ejector arm, gently start sliding the the drive out of the drive bay. When the drive is partially removed, you can grasp the drive carrier with your fingers to slide it completely out of the drive bay.



489793

**Step 4** Place the drive on an antistatic mat or antistatic foam if you are not immediately reinstalling it in another server.

### What to do next

Cover the empty drive bay. Choose the appropriate option:

- [Installing an E3.S Drive, on page 81](#)
- Install a drive blanking panel to maintain proper airflow and keep contaminant and particulate matter out of the drive bay if it will remain empty.

### Installing an E3.S Drive



#### Caution

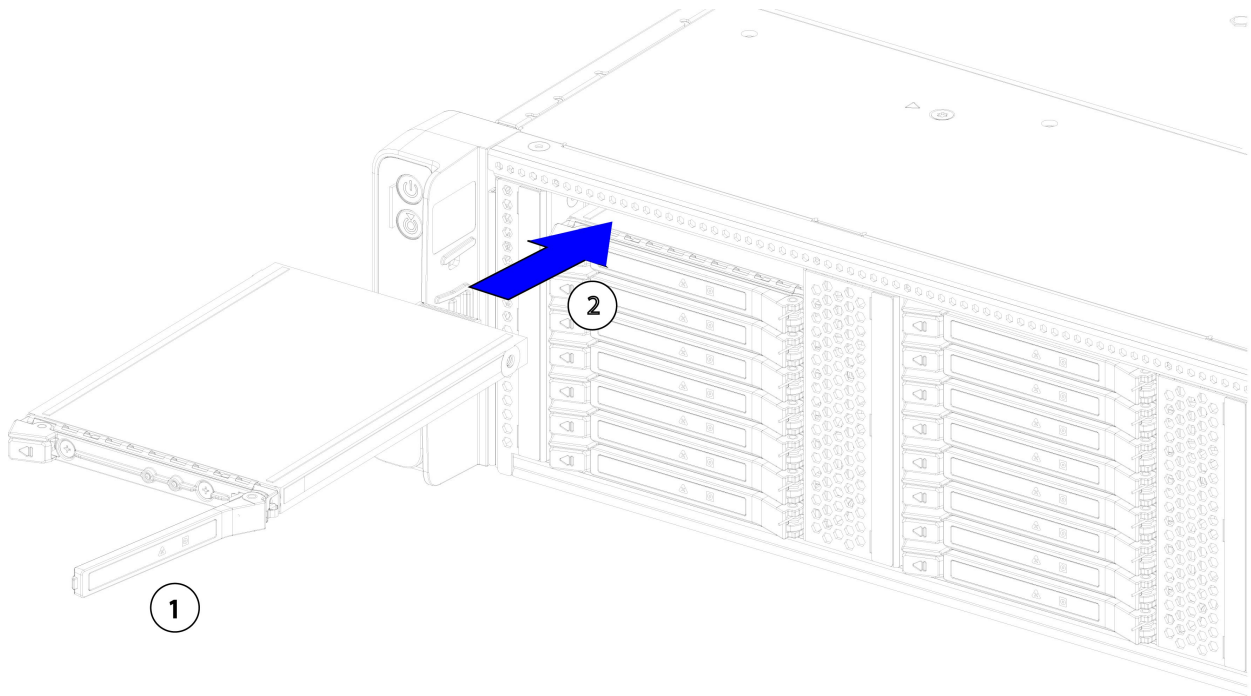
For hot installation of drives, after the original drive is removed, you must wait for 20 seconds before installing a drive. Failure to allow this 20-second wait period causes the management software to display incorrect drive inventory information. If incorrect drive information is displayed, remove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

To install a E3.S PCIe drive, follow this procedure:

## Procedure

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

**Step 2** Orient the drive so that the ejector is on the right side



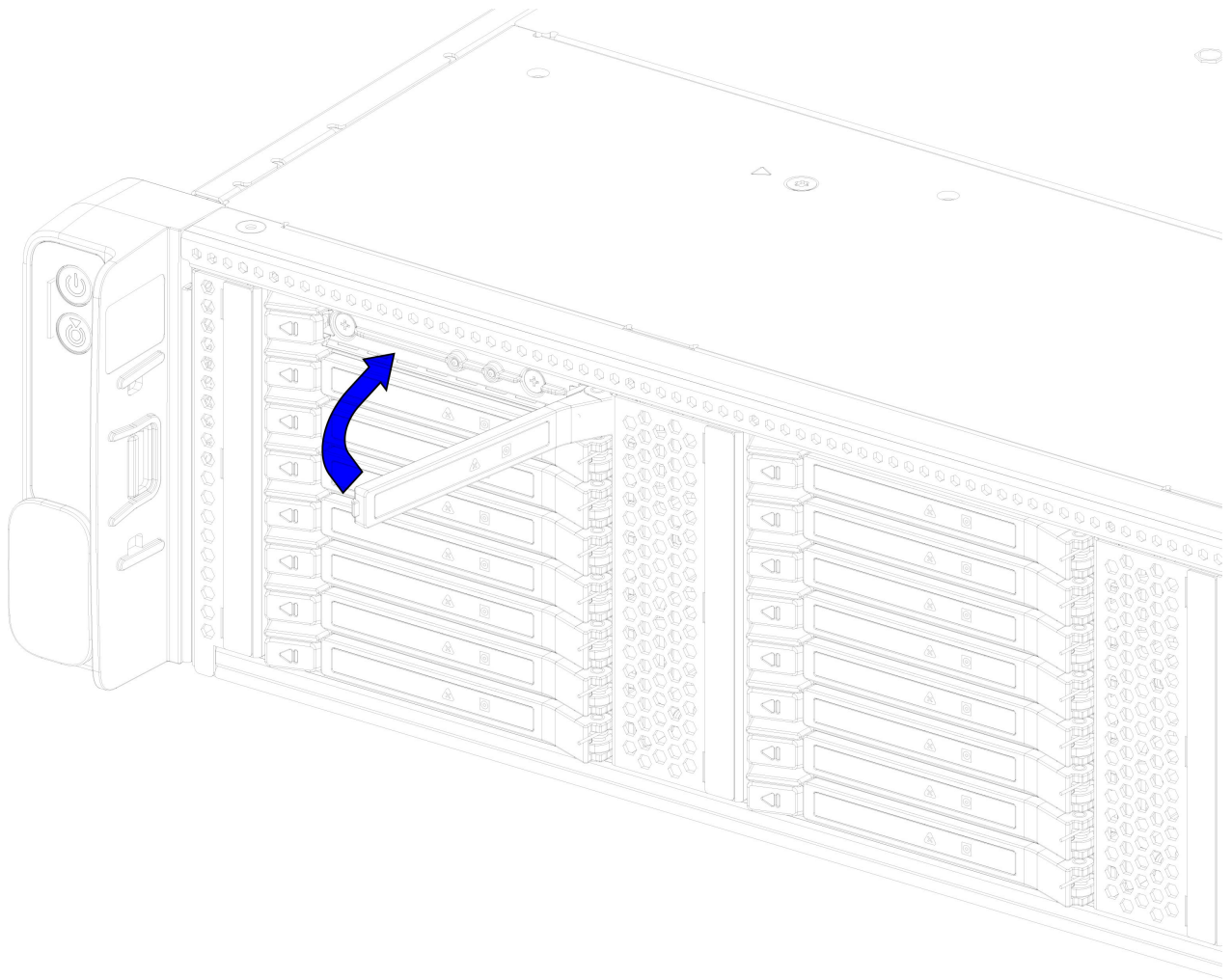
489794

**Step 3** Align the drive with the drive bay, and keeping it level and gently slide the drive into the empty drive bay until it seats into place.

If you need to, you can press on the middle of the drive to seat it into the bay.

**Step 4** Push the drive ejector arm into the closed position.

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



489795

## Replacing Mid-Mounted SAS/SATA Drives (LFF Server)

Mid-mounted drives are supported on the LFF server only. These drives connect directly to the midplane, so there are no cables to disconnect as part of the replacement procedure.

Mid-mounted drives can be hot swapped and hot inserted, so you do not need to disconnect facility power.

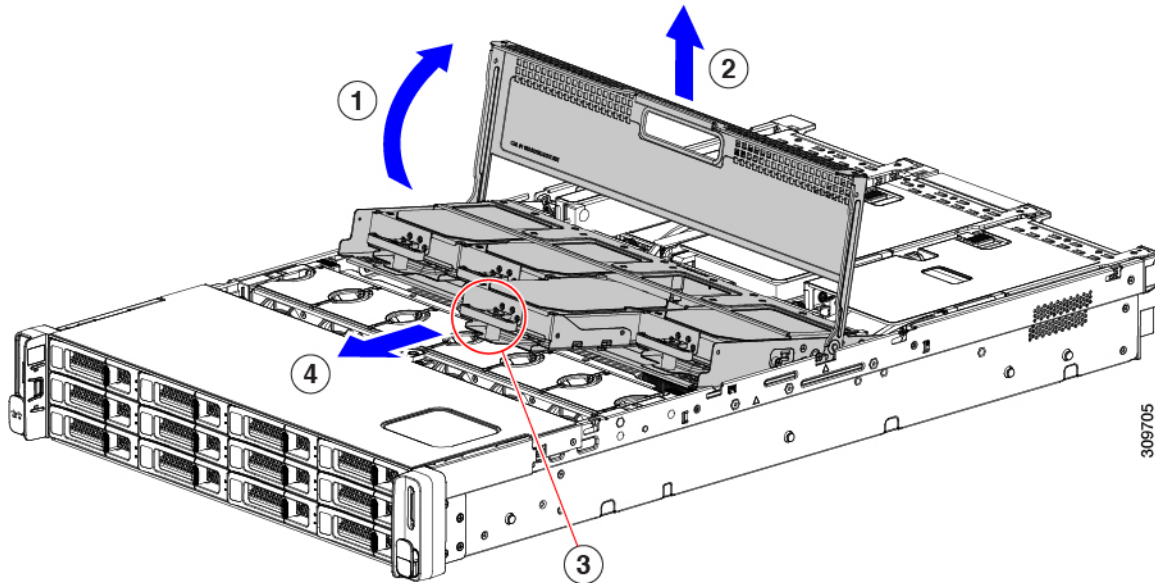
### Procedure

- Step 1** Open the server top cover.
- Step 2** Grasp the handle for the mid-mount drive cage, and swing the cage cover open.

When the cage cover is open, it will be pointing up at a 90-degree angle.

**Step 3** Grasping the cage cover handle, pull up on the drive cage until the bottom row of drives clears the top of the server. When pulling on the mid-mount drive cage, it will arc upward.

**Step 4** Grasp the drive handle and pull the drive out of the mid-mount drive cage.



**Step 5** Orient the drive so that the handle is at the bottom and align it with its drive bay.

**Step 6** Holding the drive level, slide it into the drive bay until it connects with the midplane.

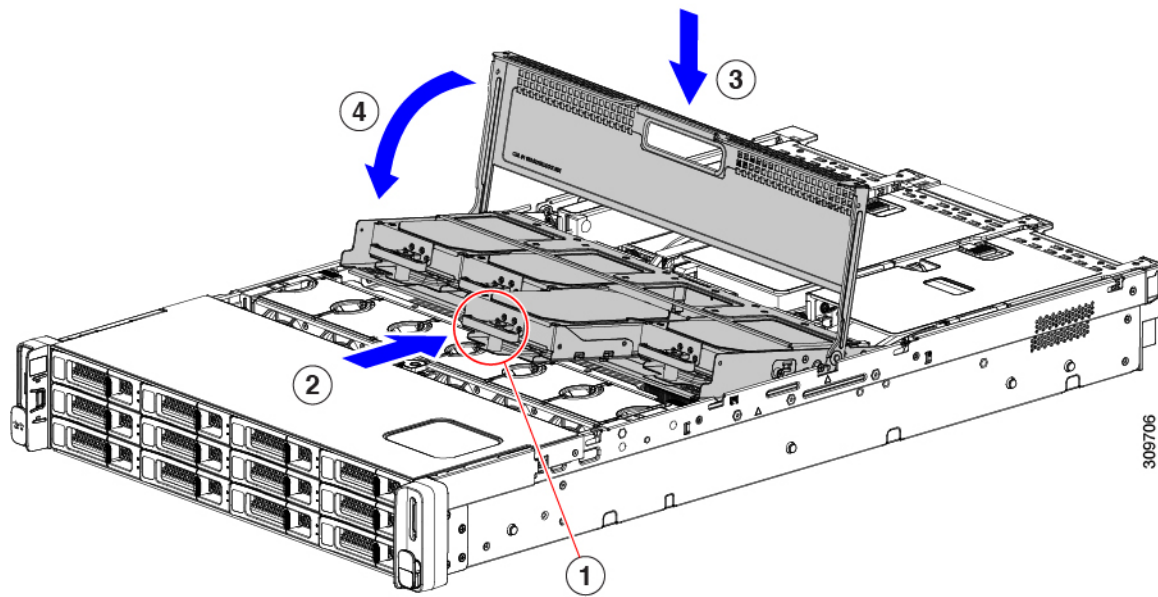
**Step 7** Push down on the drive cage so that it seats into the server.

**Step 8** Grasp the handle and close the server cage cover.

**Note**

Make sure that the server cage cover is completely closed, and the server cage is completely seated in the server. When the server cage is completely seated, its top is flush with the fans and rear PCI riser cages.





**Step 9** Install the server's top cover.

If the server's top cover does not close easily, check that the mid-mount drive cage is completely seated into the server.

## Replacing Rear-Loading NVMe SSDs

This section is for replacing NVMe solid-state drives (SSDs) in rear-panel drive bays.

### Rear-Loading NVMe SSD Population Guidelines

The rear drive bay support differs by server PID and which type of RAID controller is used in the server for non-NVMe drives:

- UCSC-C240-M8S: Supports up to 4 SFF or NVMe drives (direct attached or RAID controlled) with Riser 1B and 3B.
- UCSC-C240-M8E3S: Supports up to 4 SFF or NVMe drives (direct attached or RAID controlled) with Riser 1B and 3B.
- UCSC-C240-M8L: Supports up to 4 EDSFF E3.S 1TB NVMe drives (direct attached only) with Riser 1D & 3D.
- Rear bays are numbered 101 to 104 with drive 101 at the left bottom, 102 at the left top, drive 103 at the right bottom, and 104 at the right top positions.
- When populating drives, add drives to the lowest-numbered bays first.
- Drives are hot pluggable, but each drive requires a 10-second delay between hot removal and hot insertion.
- Keep an empty drive blanking tray in any unused bays to ensure proper airflow.

## Rear-Loading NVMe SSD Requirements and Restrictions

Observe these requirements:

- The server must have two CPUs if the server contains more than 2 rear drives.
- The server must have the correct storage risers for the configuration.
- Rear PCIe cable and rear drive backplane.
- Hot-plug support must be enabled in the system BIOS. If you ordered the system with NVMe drives, hot-plug support is enabled at the factory.

Observe these restrictions:

- NVMe SSDs support booting only in UEFI mode. Legacy boot is not supported. For instructions on setting up UEFI boot, see [Setting Up UEFI Mode Booting in the BIOS Setup Utility, on page 69](#) or [Setting Up UEFI Mode Booting in the Cisco IMC GUI, on page 70](#).
- UEFI boot is supported in all supported operating systems. Hot-insertion and hot-removal are supported in all supported operating systems except VMWare ESXi.
- Riser 1B and 3B are supported only in SFF configurations.
- Riser 1D and 3D are supported only in E3.S configurations.

## Replacing a Rear-Loading NVMe SSD

This topic describes how to replace NVMe SSDs in the rear-panel drive bays.



**Note** OS-surprise removal is not supported. OS-informed hot-insertion and hot-removal are supported on all supported operating systems except VMware ESXi.



**Note** OS-informed hot-insertion and hot-removal must be enabled in the system BIOS. See [Enabling Hot-Plug Support in the System BIOS, on page 76](#).

### Procedure

#### Step 1

Remove an existing rear-loading NVMe SSD:

- Shut down the NVMe SSD to initiate an OS-informed removal. Use your operating system interface to shut down the drive, and then observe the drive-tray LED:
  - Green—The drive is in use and functioning properly. Do not remove.
  - Green, blinking—the driver is unloading following a shutdown command. Do not remove.
  - Off—The drive is not in use and can be safely removed.
- Press the release button on the face of the drive tray.

- c) Grasp and open the ejector lever and then pull the drive tray out of the slot.
- d) Remove the four drive tray screws that secure the SSD to the tray and then lift the SSD out of the tray.

**Note**

If this is the first time that rear-loading NVMe SSDs are being installed in the server, you must install PCIe riser 2B or 2C and a rear NVMe cable kit.

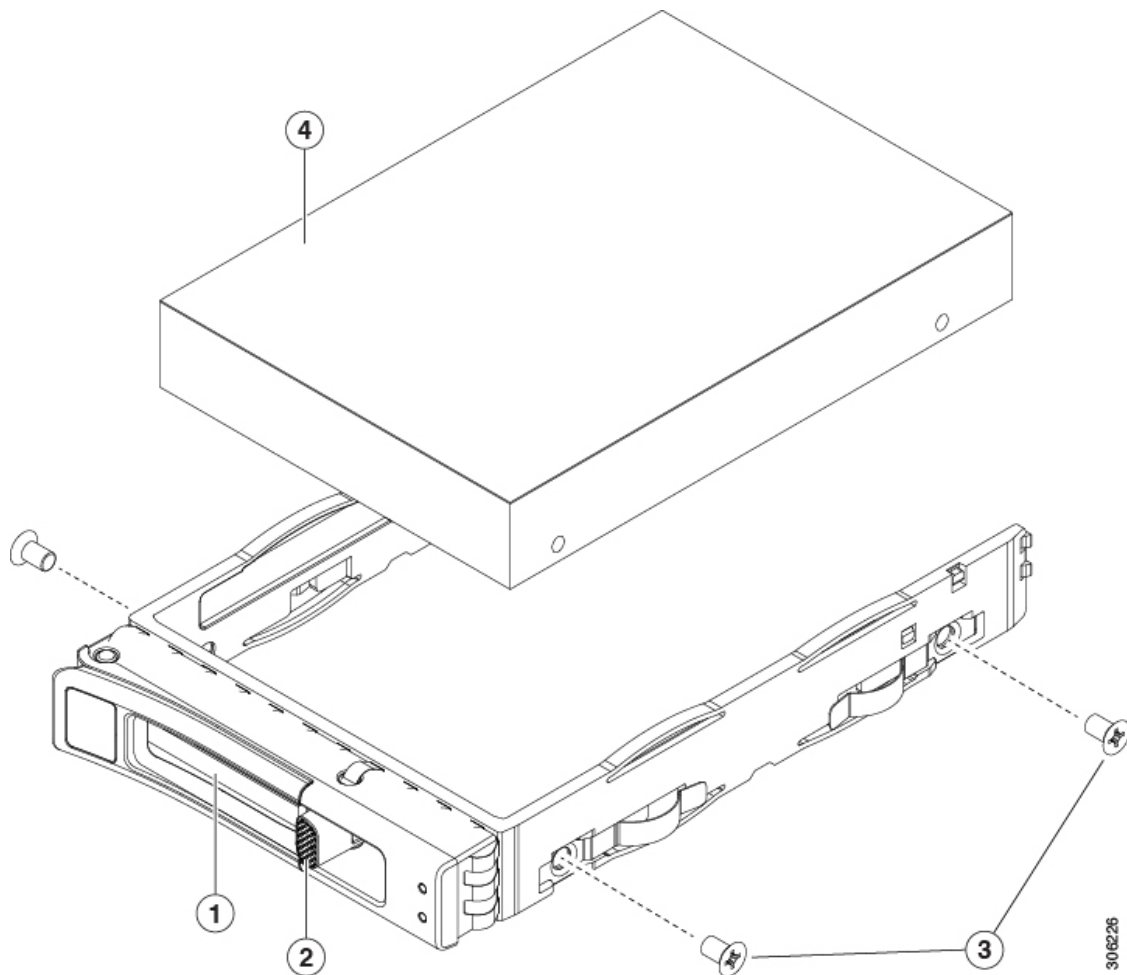
**Step 2** Install a new front-loading NVMe SSD:

- a) Place a new SSD in the empty drive tray and install the four drive-tray screws.
- b) With the ejector lever on the drive tray open, insert the drive tray into the empty drive bay.
- c) Push the tray into the slot until it touches the backplane, and then close the ejector lever to lock the drive in place.

**Step 3** Observe the drive-tray LED and wait until it returns to solid green before accessing the drive:

- Off—The drive is not in use.
- Green, blinking—the driver is initializing following hot-plug insertion.
- Green—The drive is in use and functioning properly.

**Figure 23: Replacing a Drive in a Drive Tray**



|   |                |   |                                      |
|---|----------------|---|--------------------------------------|
| 1 | Ejector lever  | 3 | Drive tray screws (two on each side) |
| 2 | Release button | 4 | Drive removed from drive tray        |

## Replacing Fan Modules

The six fan modules in the server are numbered as shown in [Serviceable Component Locations, on page 23](#).



### Tip

There is a fault LED on the top of each fan module. This LED lights green when the fan is correctly seated and is operating OK. The LED lights amber when the fan has a fault or is not correctly seated.



### Caution

You do not have to shut down or remove power from the server to replace fan modules because they are hot-swappable. However, to maintain proper cooling, do not operate the server for more than one minute with any fan module removed.

## Procedure

### Step 1 Remove an existing fan module:

- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

#### Caution

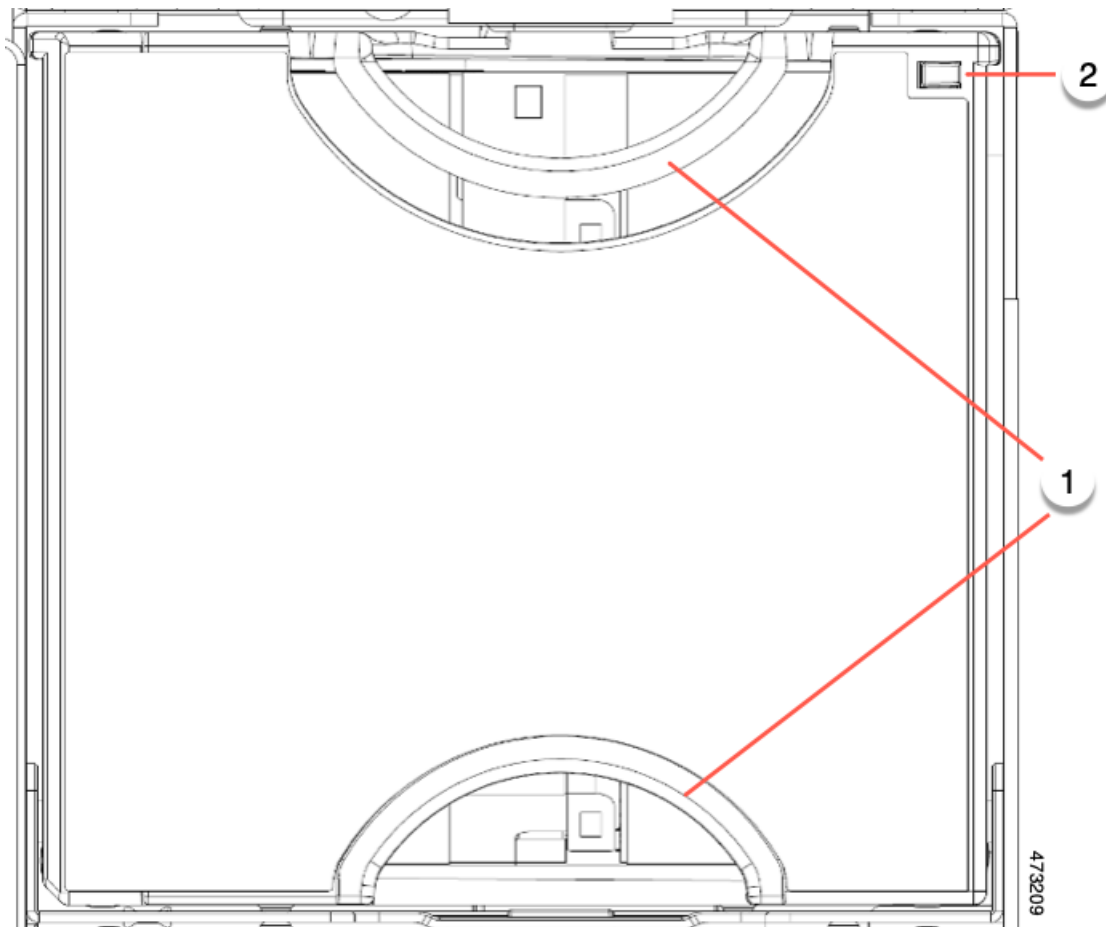
If you cannot safely view and access the component, remove the server from the rack.

- Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Grasp and squeeze the fan module release latches on its top. Lift straight up to disengage its connector from the motherboard.

### Step 2 Install a new fan module:

- Set the new fan module in place. The arrow printed on the top of the fan module should point toward the rear of the server.
- Press down gently on the fan module to fully engage it with the connector on the motherboard.
- Replace the top cover to the server.
- Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

Figure 24: Top View of Fan Module



|   |                            |   |                                                                                                                                                                                                                                   |
|---|----------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Fan module release latches | 2 | Fan module fault LED <ul style="list-style-type: none"> <li>• Green—All fan modules are operating properly.</li> <li>• Amber—Fans are operating in a degraded state. For example, one or more of the fans has a fault.</li> </ul> |
|---|----------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Replacing the Fan Tray

The server has a fan tray that contains the 5 individual fans modules. Individual fan modules can be replaced, and the fan tray can also be completely removed if needed.

To remove individual fans, see [Replacing Fan Modules, on page 88](#)

Use the following procedure to replace the fan tray.

- [Removing the Fan Tray, on page 90](#)

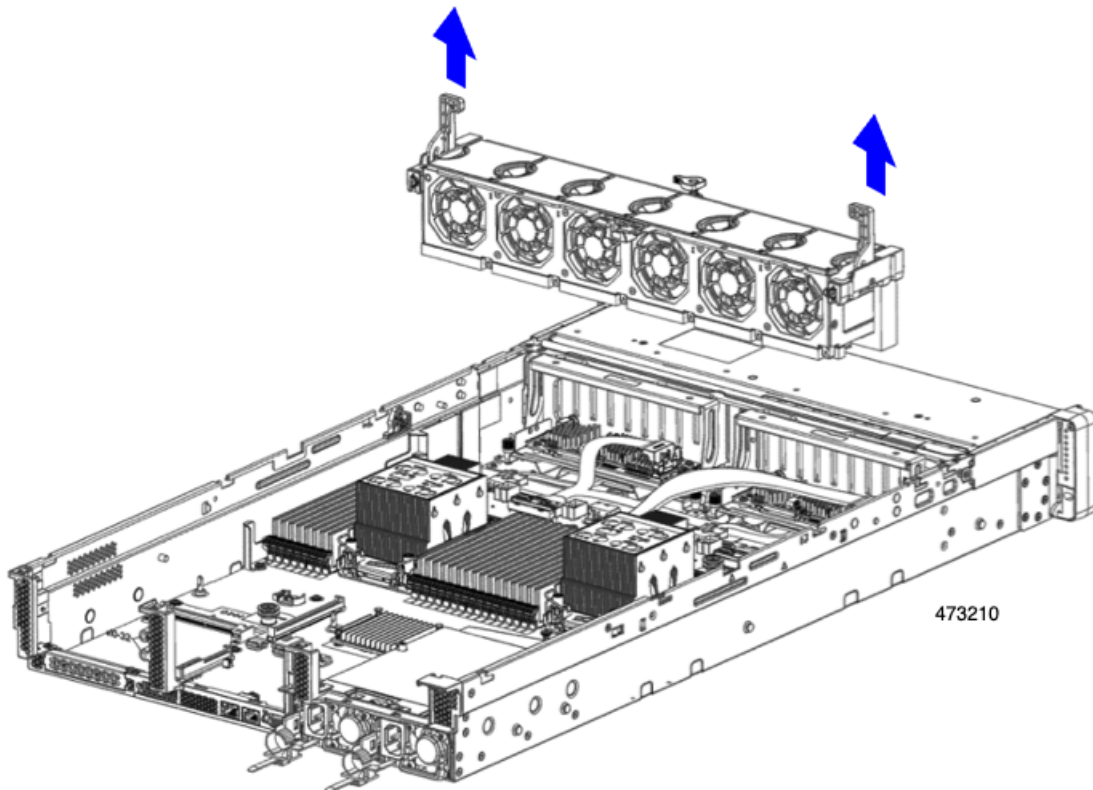
- [Installing the Fan Tray, on page 91](#)

## Removing the Fan Tray

The fan tray can be removed either with all fan modules in place, or when some, or all, of the fan modules have been removed.

### Procedure

- 
- Step 1** Rotate the tool-less middle lockdown screws that secure the fan tray to the chassis.
- Locate the lockdown screws that secure the fan tray to the server.
  - Grasp the screws and rotate them a quarter of a turn (90 degrees) to loosen the screws.
- Step 2** Unhinge the handle on both sides of the fan tray.
- Step 3** Remove the fan tray from the server.
- Grasp the handles at the top of the fan tray.
  - Holding the fan tray level, lift the fan tray up until it is removed from the chassis.



**What to do next**

Reinsert the fan tray into the chassis. See [Installing the Fan Tray, on page 91](#).

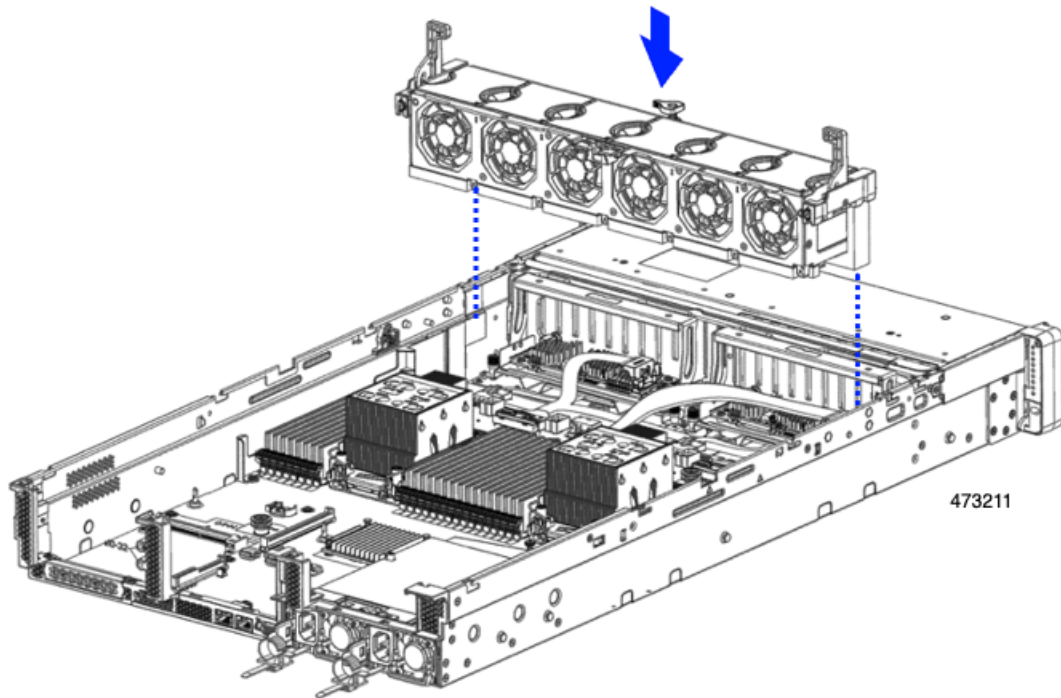
## Installing the Fan Tray

You can install the fan tray with or without fans installed. Use the following procedure to install the fan tray.

**Procedure****Step 1**

Install the fan tray.

- a) Align the fan tray with the guides on the inside of the chassis.
- b) Make sure that the system cable is organized on both sides and will not obstruct installation.
- c) Holding the fan tray by the handles, slide it into place in the chassis.



- d) Push down and rotate the middle lockdown screw clockwise to lock the fan tray into the chassis receiving bracket.

**Step 2**

Close the top cover, or perform additional procedures, if needed.

## Replacing CPUs and Heatsinks

This section contains the following topics:

- [CPU Configuration Rules, on page 92](#)
- [Tools Required For CPU Replacement, on page 93](#)

- [Removing CPUs and Heat Sinks, on page 93](#)
- [Installing the CPUs and Heatsinks, on page 99](#)
- [Additional CPU-Related Parts to Order with RMA Replacement CPUs, on page 103](#)

## CPU Configuration Rules

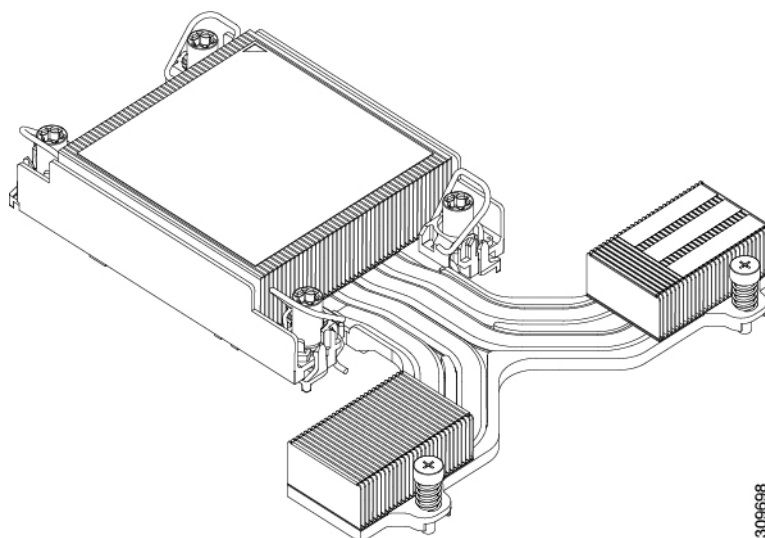
This server has two CPU sockets on the motherboard. Each CPU supports 8 DIMM channels (16 DIMM slots). See the [Cisco UCS Intel M8 Memory Guide](#).

- The server can operate with one CPU, or two identical CPUs installed.
- The minimum configuration is that the server must have at least CPU 1 installed. Install CPU 1 first, and then CPU 2.
- The following restrictions apply when using a single-CPU configuration:
  - Any unused CPU socket must have the socket dust cover from the factory in place.
  - The maximum number of DIMMs is 16 (only CPU 1 channels A through H).
- Two different form factors exist for heatsinks, a low profile and a high profile. The server can be ordered with either, but you cannot mix high- and low-profile CPUs and heatsinks in the same server. A single server must have all of one type.

The CPU and heatsink installation procedure is different depending on the type of heatsink used in your server.

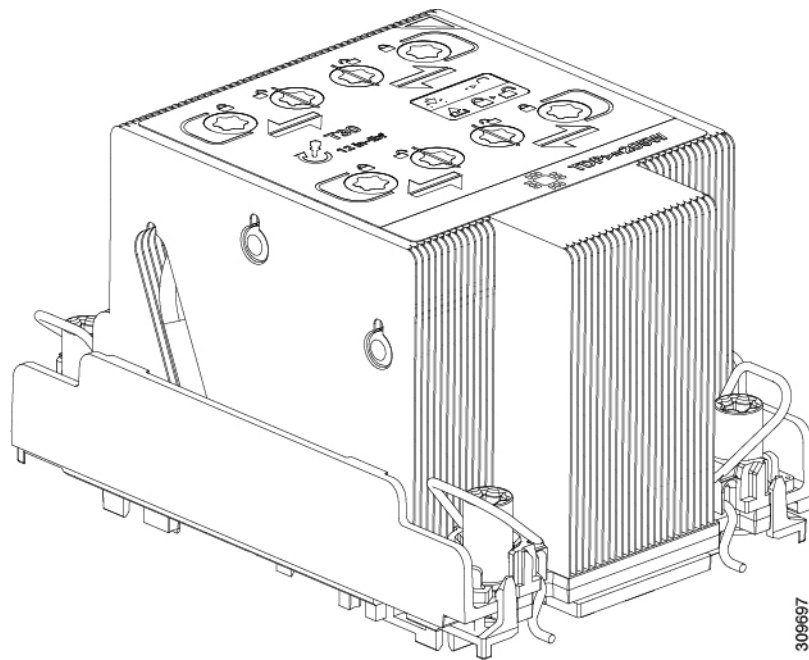
- Low profile (UCSC-HSLP-C220M8), which has 4 T30 Torx screws on the main heatsink, and 2 Phillips-head screws on the extended heatsink.

This heat sink is required for UCSC-C240-M8L servers or any C240 M8 servers that contain UCSC-GPUAD-240M8.



- High profile (UCSC-HSHP-240M8), which has 4 T30 Torx screws.





## Tools Required For CPU Replacement

You need the following tools and equipment for this procedure:

- T-30 Torx driver—Supplied with replacement CPU.
- #1 flat-head screwdriver—Supplied with replacement CPU.
- CPU assembly tool—Supplied with replacement CPU. Orderable separately as Cisco PID UCS-CPUAT=.
- Heatsink cleaning kit—Supplied with replacement CPU. Orderable separately as Cisco PID UCSX-HSCK=.

One cleaning kit can clean up to four CPUs.

- Thermal interface material (TIM)—Syringe supplied with replacement CPU. Use only if you are reusing your existing heatsink (new heatsinks have a pre-applied pad of TIM). Orderable separately as Cisco PID UCS-CPU-TIM=.

One TIM kit covers one CPU.

See also [Additional CPU-Related Parts to Order with RMA Replacement CPUs, on page 103](#).

## Removing CPUs and Heat Sinks

Use the following procedure to remove an installed CPU and heatsink from the server. With this procedure, you will remove the CPU from the motherboard, disassemble individual components, then place the CPU and heatsink into the fixture that came with the CPU.

## Procedure

---

**Step 1** Choose the appropriate method to loosen the securing screws, based on the whether the CPU has a high-profile or low-profile heatsink.

- For a CPU with a high-profile heatsink, proceed to step a.
- For a CPU with a low-profile heatsink, skip to step 2.

- a) Using a T30 Torx driver, loosen all the securing nuts.
- b) Push the rotating wires towards each other to move them to the unlocked position.

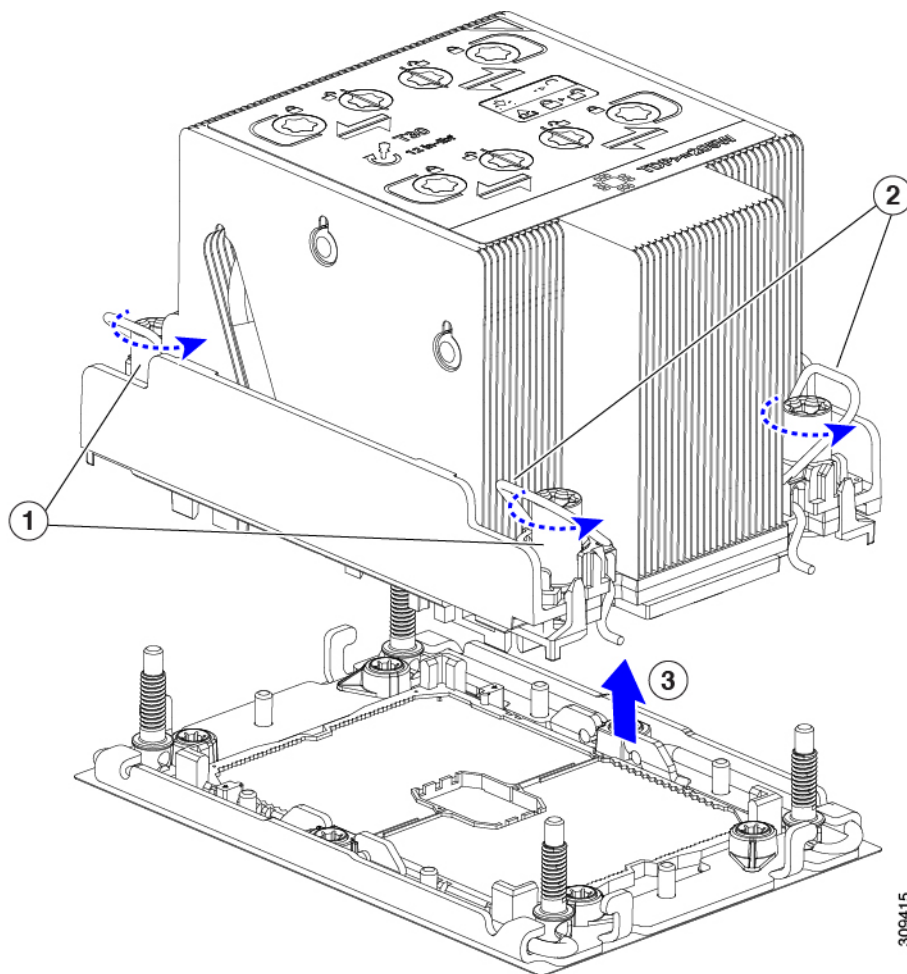
**Caution**

Make sure that the rotating wires are as far inward as possible. When fully unlocked, the bottom of the rotating wire disengages and allows the removal of the CPU assembly. If the rotating wires are not fully in the unlocked position, you can feel resistance when attempting to remove the CPU assembly.

- c) Grasp the CPU and heatsink along the edge of the carrier and lift the CPU and heatsink off of the motherboard.

**Caution**

While lifting the CPU assembly, make sure not to bend the heatsink fins. Also, if you feel any resistance when lifting the CPU assembly, verify that the rotating wires are completely in the unlocked position.



309415

- d) Go to step 3.

## Step 2

Remove the CPU.

- Using a #2 Phillips screwdriver, loosen the two Phillips head screws for the extended heatsink.
- Using a T30 Torx driver, loosen the four Torx securing nuts.
- Push the rotating wires towards each other to move them to the unlocked position.

### Caution

Make sure that the rotating wires are as far inward as possible. When fully unlocked, the bottom of the rotating wire disengages and allows the removal of the CPU assembly. If the rotating wires are not fully in the unlocked position, you can feel resistance when attempting to remove the CPU assembly.

- d) Grasp the CPU and heatsink along the edge of the carrier and lift the CPU and heatsink off of the motherboard.

### Caution

While lifting the CPU assembly, make sure not to bend the heatsink fins. Also, if you feel any resistance when lifting the CPU assembly, verify that the rotating wires are completely in the unlocked position.

- e) Go to step 3.

## Step 3

Put the CPU assembly on a rubberized mat or other ESD-safe work surface.

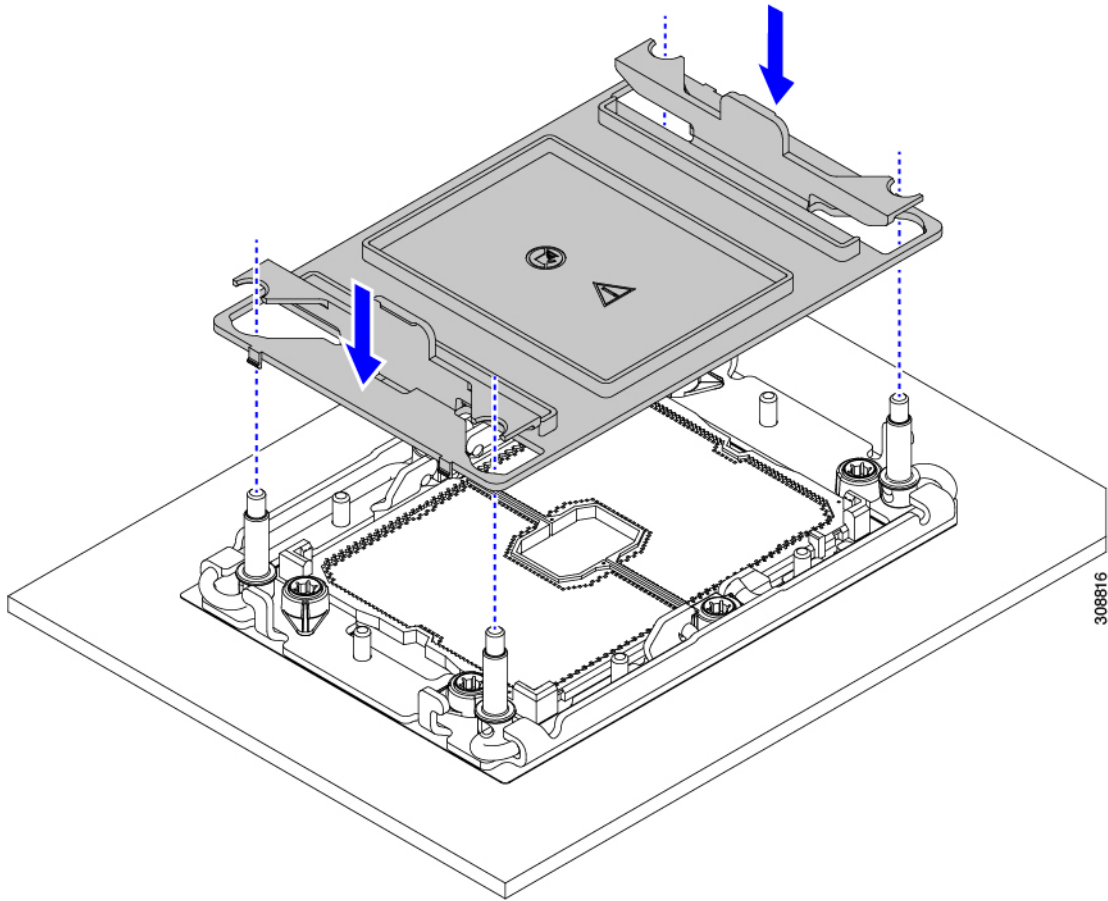
When placing the CPU on the work surface, the heatsink label should be facing up. Do not rotate the CPU assembly upside down.

**Step 4** Attach a CPU dust cover to the CPU socket.

- Align the posts on the CPU bolstering plate with the cutouts at the corners of the dust cover.
- Lower the dust cover and simultaneously press down on the edges until it snaps into place over the CPU socket.

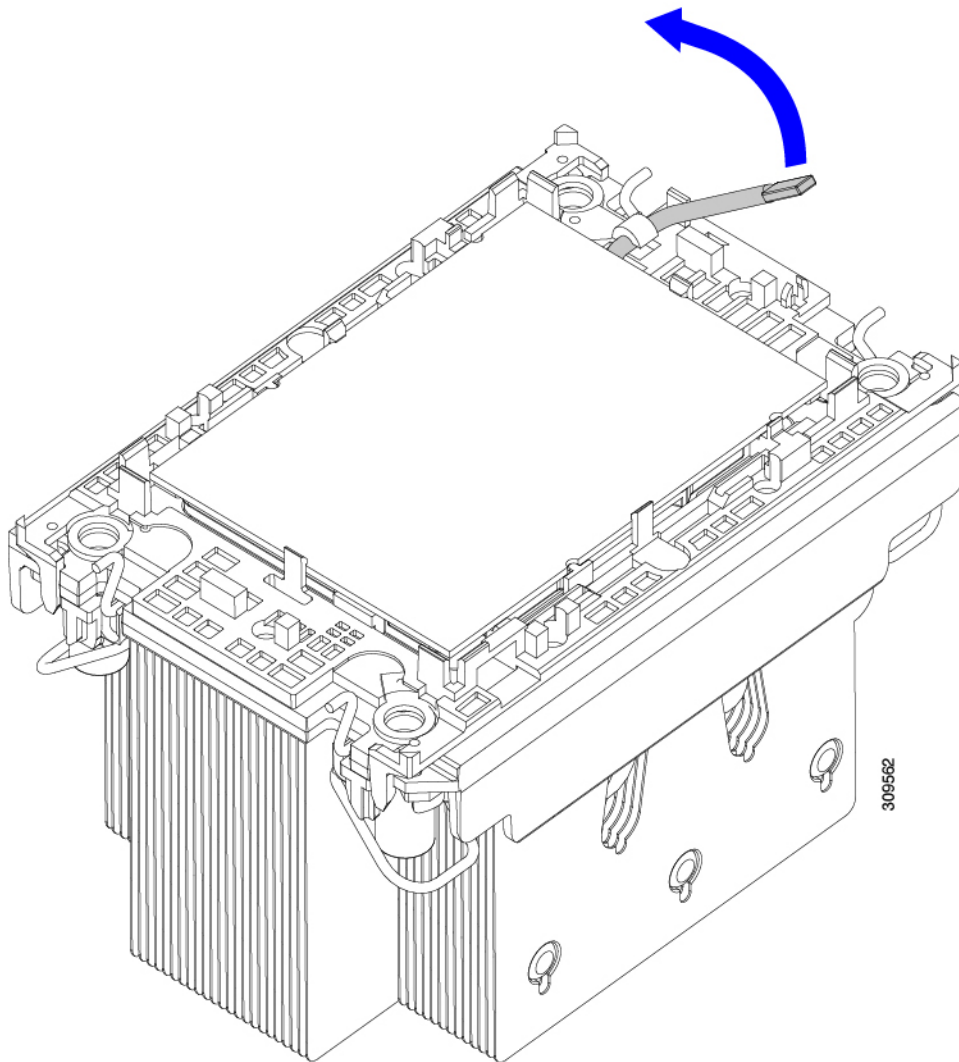
**Caution**

Do not press down in the center of the dust cover!



**Step 5** Detach the CPU from the CPU carrier by disengaging CPU clips and using the TIM breaker.

- Turn the CPU assembly upside down, so that the heatsink is pointing down.  
This step enables access to the CPU securing clips.
- Gently lift the TIM breaker in a 90-degree upward arc to partially disengage the CPU clips on this end of the CPU carrier.



- c) Lower the TIM breaker into the u-shaped securing clip to allow easier access to the CPU carrier.

**Note**

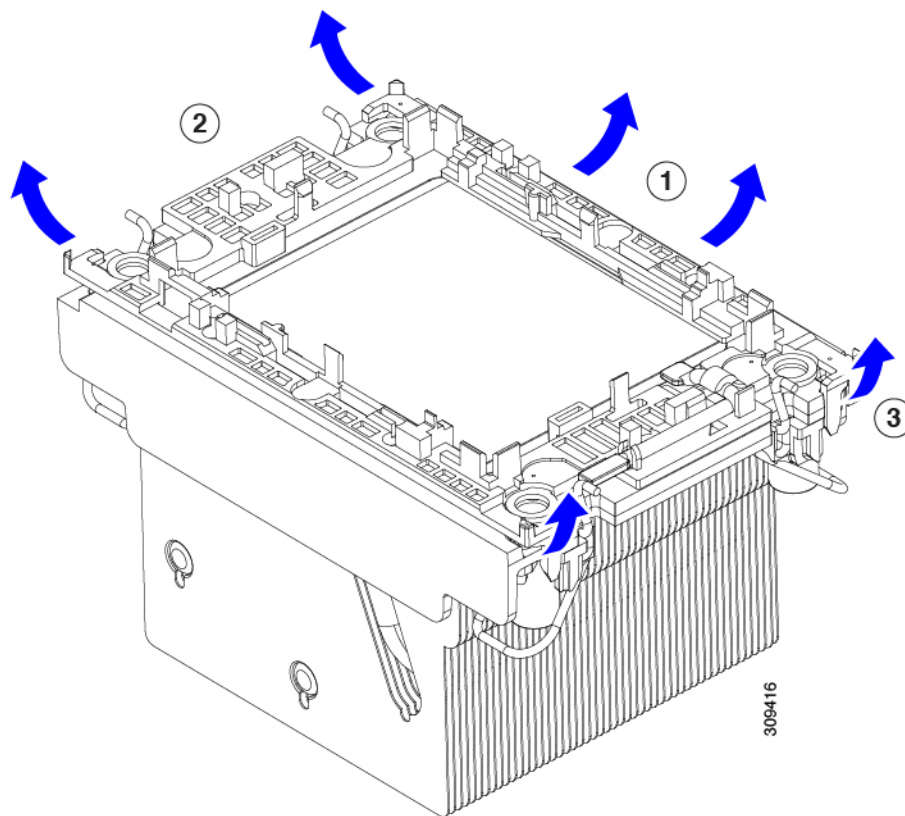
Make sure that the TIM breaker is completely seated in the securing clip.

- d) Gently pull up on the outer edge of the CPU carrier (2) so that you can disengage the second pair of CPU clips near both ends of the TIM breaker.

**Caution**

Be careful when flexing the CPU carrier! If you apply too much force you can damage the CPU carrier. Flex the carrier only enough to release the CPU clips. Make sure to watch the clips while performing this step so that you can see when they disengage from the CPU carrier.

- e) Gently pull up on the outer edge of the CPU carrier so that you can disengage the pair of CPU clips (3 in the following illustration) which are opposite the TIM breaker.
- f) Grasp the CPU carrier along the short edges and lift it straight up to remove it from the heatsink.

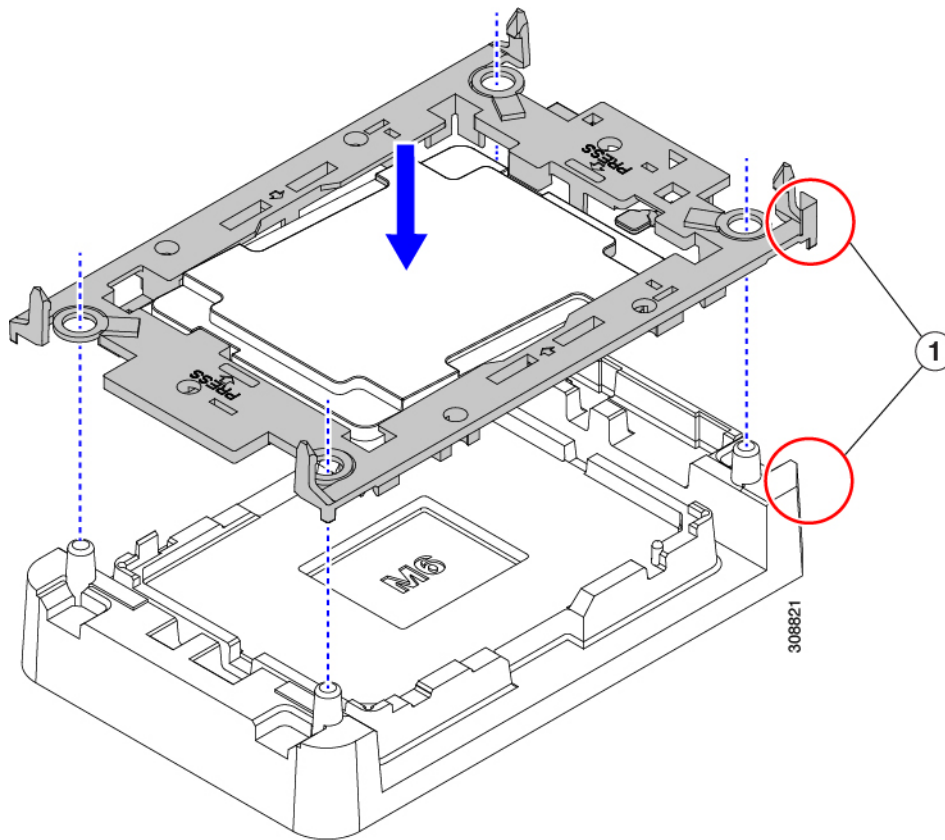
**Step 6** Transfer the CPU and carrier to the fixture.

- a) When all the CPU clips are disengaged, grasp the carrier, and lift it and the CPU to detach them from the heatsink.

**Note**

If the carrier and CPU do not lift off of the heatsink, attempt to disengage the CPU clips again.

- b) Flip the CPU and carrier right-side up so that the words PRESS are visible.  
c) Align the posts on the fixture and the pin 1 locations on the CPU carrier and the fixture (1 in the following illustration).  
d) Lower the CPU and CPU carrier onto the fixture.



**Step 7** Use the provided cleaning kit (UCSX-HSCK) to remove all of the thermal interface barrier (thermal grease) from the CPU, CPU carrier, and heatsink.

**Important**

Make sure to use only the Cisco-provided cleaning kit, and make sure that no thermal grease is left on any surfaces, corners, or crevices. The CPU, CPU carrier, and heatsink must be completely clean.

**What to do next**

Choose the appropriate option:

- If you will be installing a CPU, go to [Installing the CPUs and Heatsinks, on page 99](#).
- If you will not be installing a CPU, verify that a CPU socket cover is installed. This option is valid only for CPU socket 2 because CPU socket 1 must always be populated in a runtime deployment.

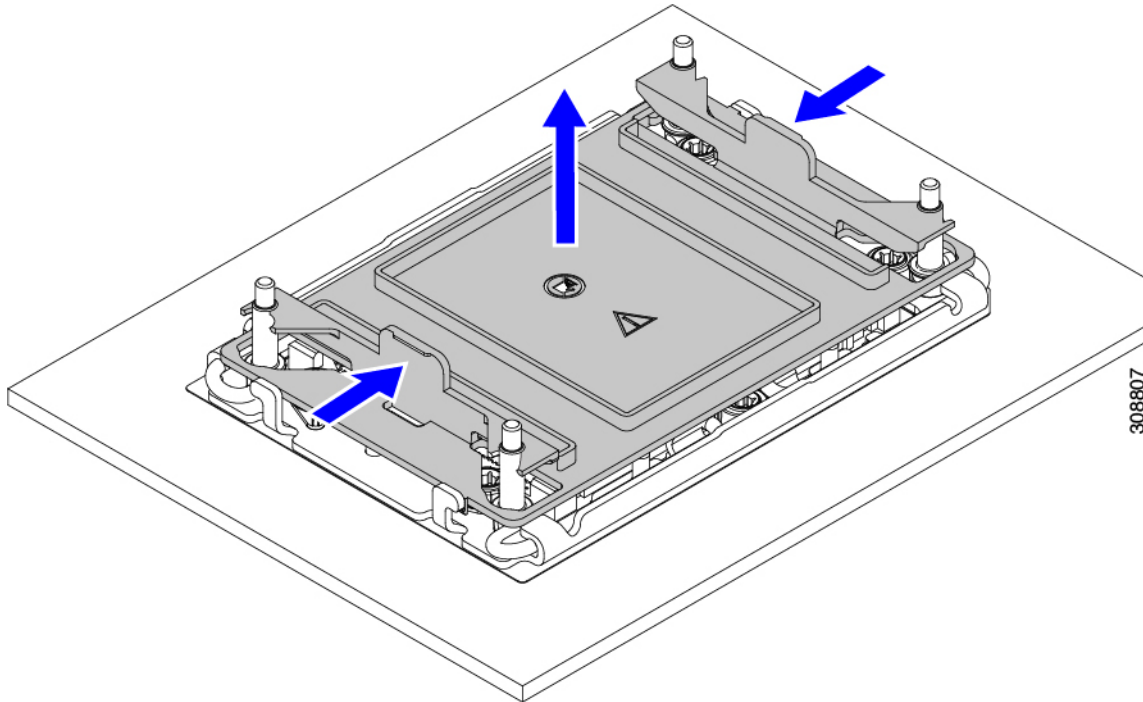
## Installing the CPUs and Heatsinks

Use this procedure to install a CPU if you have removed one, or if you are installing a CPU in an empty CPU socket. To install the CPU, you will move the CPU to the fixture, then attach the CPU assembly to the CPU socket on the server mother board.



## Procedure

- Step 1** Remove the CPU socket dust cover on the server motherboard.
- Push the two vertical tabs inward to disengage the dust cover.
  - While holding the tabs in, lift the dust cover up to remove it.



- Store the dust cover for future use.

### Caution

Do not leave an empty CPU socket uncovered. If a CPU socket does not contain a CPU, you must install a CPU dust cover.

- Step 2** Grasp the CPU fixture on the edges labeled PRESS, lift it out of the tray, and place the CPU assembly on an ESD-safe work surface.

- Step 3** Apply new TIM.

### Note

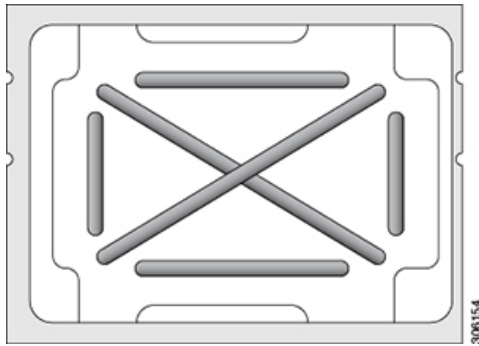
The heatsink must have new TIM on the heatsink-to-CPU surface to ensure proper cooling and performance.

- If you are installing a new heatsink, it is shipped with a pre-applied pad of TIM. Go to step 4.
  - If you are reusing a heatsink, you must remove the old TIM from the heatsink and then apply new TIM to the CPU surface from the supplied syringe. Continue with step a below.
- Apply the Bottle #1 cleaning solution that is included with the heatsink cleaning kit (UCSX-HSCK=), as well as the spare CPU package, to the old TIM on the heatsink and let it soak for a least 15 seconds.
  - Wipe all of the TIM off the heatsink using the soft cloth that is included with the heatsink cleaning kit. Be careful to avoid scratching the heatsink surface.



- c) Completely clean the bottom surface of the heatsink using Bottle #2 to prepare the heatsink for installation.
- d) Using the syringe of TIM provided with the new CPU (UCS-CPU-TIM=), apply 1.5 cubic centimeters (1.5 ml) of thermal interface material to the top of the CPU. Use the pattern shown in the following figure to ensure even coverage.

**Figure 25: Thermal Interface Material Application Pattern**



**Caution**

Use only the correct heatsink for your CPU. CPUs use the same heatsink based on your server configuration. For non-GPU servers, use UCSC-HSHP-C240M7. For a GPU, or GPU-ready configuration, use UCSC-HSLP-C220M7.

**Step 4** Attach the heatsink to the CPU fixture.

- a) Make sure the rotating wires are in the unlocked position so that the feet of the wires do not impede installing the heatsink.
- b) Grasp the heatsink by the fins and align the pin 1 location of the heatsink with the pin 1 location on the CPU fixture, then lower the heatsink onto the CPU fixture.

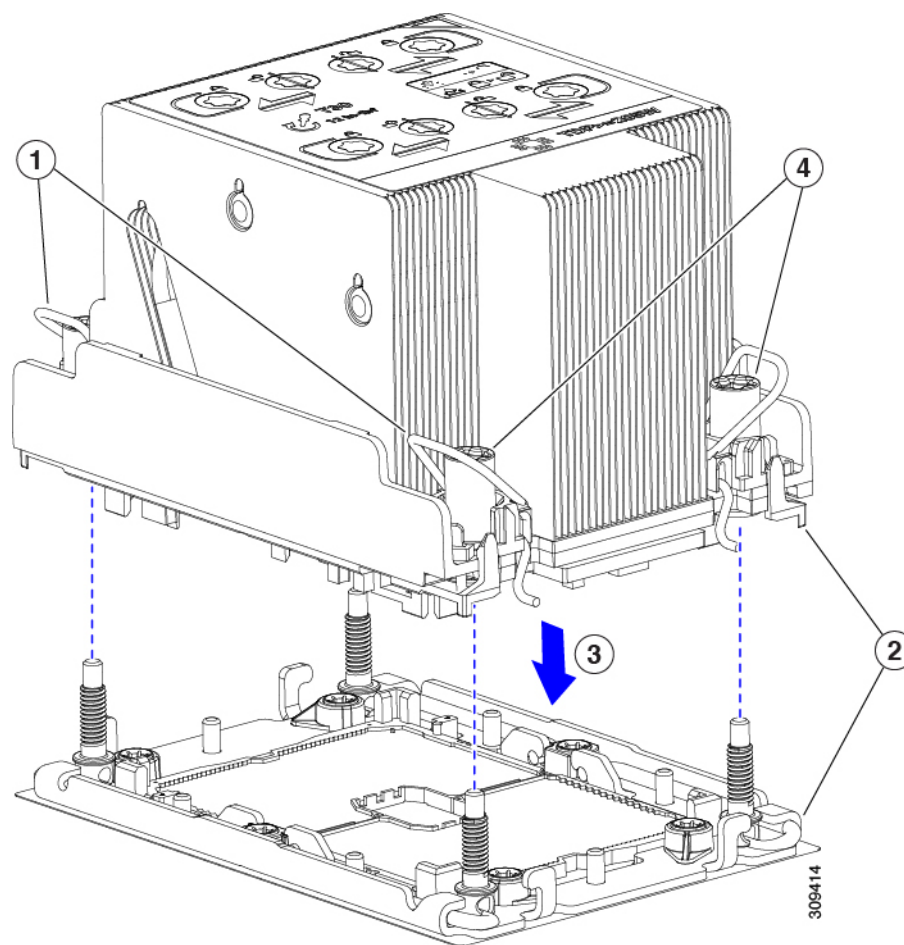
**Step 5** Install the CPU assembly onto the CPU motherboard socket.

- a) Push the rotating wires (1 in the following image) to the unlocked position so that they do not obstruct installation.
- b) Grasp the heatsink by the fins, align the pin 1 location on the heatsink with the pin 1 location on the CPU socket (2 in the following image), then seat the heatsink onto the CPU socket.
- c) Holding the CPU assembly level, lower it onto the CPU socket.
- d) Push the rotating wires away from each other to lock the CPU assembly into the CPU socket.

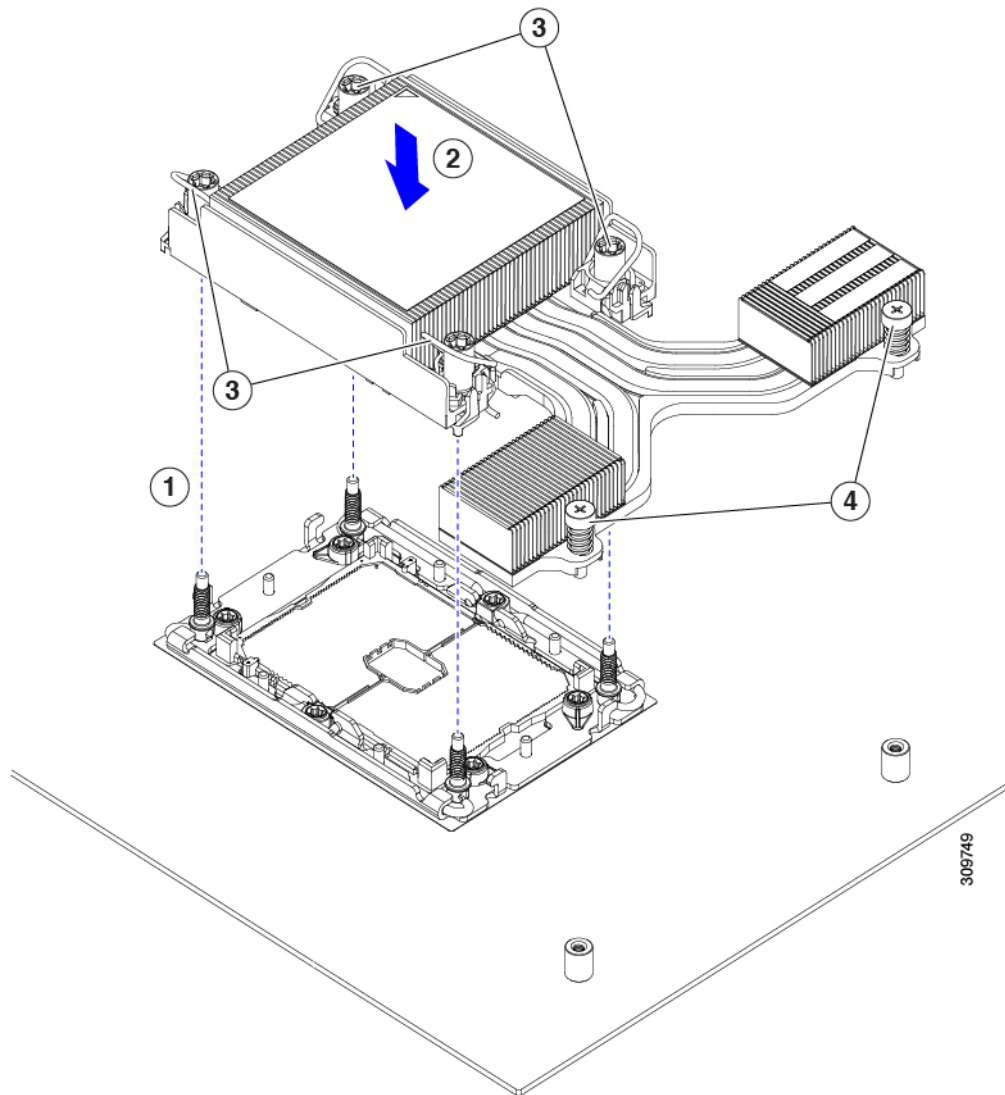
**Caution**

Make sure that you close the rotating wires completely before using the Torx driver to tighten the securing nuts.

- e) Choose the appropriate option to secure the CPU to the socket.
  - For a CPU with a high-profile heatsink, set the T30 Torx driver to 12 in-lb of torque and tighten the 4 securing nuts to secure the CPU to the motherboard (4).



- For a CPU with a low-profile heatsink, set the T30 Torx driver to 12 in-lb of torque and tighten the 4 securing nuts to secure the CPU to the motherboard (3) first. Then, set the torque driver to 6 in-lb of torque and tighten the two Phillips head screws for the extended heatsink (4).



## Additional CPU-Related Parts to Order with RMA Replacement CPUs

When a return material authorization (RMA) of the CPU is done on a Cisco UCS C-Series server, additional parts might not be included with the CPU spare. The TAC engineer might need to add the additional parts to the RMA to help ensure a successful replacement.



**Note** The following items apply to CPU *replacement* scenarios. If you are replacing a system chassis and *moving* existing CPUs to the new chassis, you do not have to separate the heatsink from the CPU. See [Additional CPU-Related Parts to Order with RMA Replacement System Chassis](#), on page 104.

- Scenario 1—You are reusing the existing heatsinks:

- Heat sink cleaning kit (UCSX-HSCK=)  
One cleaning kit can clean up to four CPUs.
- Thermal interface material (TIM) kit (UCS-CPU-TIM=)  
One TIM kit covers one CPU.

- Scenario 2—You are replacing the existing heatsinks:

**Caution**

Use only the correct heatsink for your CPUs to ensure proper cooling. There are two different heatsinks, a low profile (UCSC-HSLP-C220M8) which is used on the LFF version of the server, or with GPUs on any version of the C240 M8 server, and a high-profile (UCSC-HSHP-C240M8) which is used with a non-GPU configuration of the SSF or E3.S versions of the server.

- New heatsinks have a pre-applied pad of TIM.
- Heat sink cleaning kit (UCSX-HSCK=)  
One cleaning kit can clean up to four CPUs.
- Scenario 3—You have a damaged CPU carrier (the plastic frame around the CPU):
  - CPU Carrier
  - #1 flat-head screwdriver (for separating the CPU from the heatsink)
  - Heatsink cleaning kit (UCSX-HSCK=)  
One cleaning kit can clean up to four CPUs.
  - Thermal interface material (TIM) kit (UCS-CPU-TIM=)  
One TIM kit covers one CPU.

A CPU heat sink cleaning kit is good for up to four CPU and heat sink cleanings. The cleaning kit contains two bottles of solution, one to clean the CPU and heat sink of old TIM and the other to prepare the surface of the heat sink.

New heat sink spares come with a pre-applied pad of TIM. It is important to clean any old TIM off of the CPU surface prior to installing the heat sinks. Therefore, even when you are ordering new heat sinks, you must order the heat sink cleaning kit.

## Additional CPU-Related Parts to Order with RMA Replacement System Chassis

When a return material authorization (RMA) of the system chassis is done on a Cisco UCS C-Series server, you move existing CPUs to the new chassis.

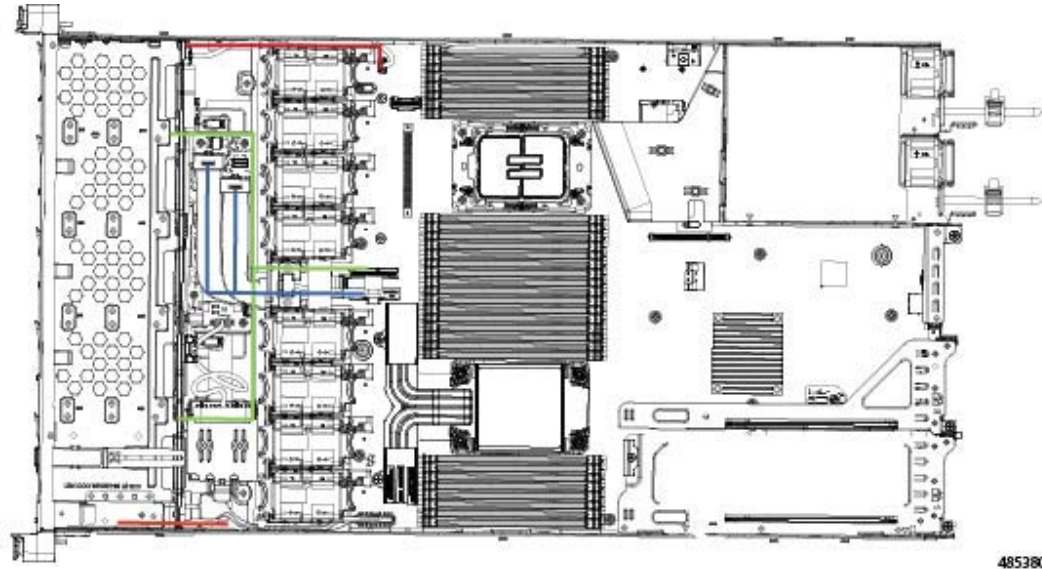
The only tool required for moving a CPU/heatsink assembly is a T-30 Torx driver.

## Cabling For RAID Cards

The server has single and dual controllers for RAID cards. The following topics show cabling diagrams for supported RAID card configuration.

### Cisco Trimode M1 24G RAID Controller With 4GB FBWC32 Drives

The following diagram shows cabling pertinent to the Cisco Trimode M1 24G RAID Controller With 4GB FBWC32 Drives.

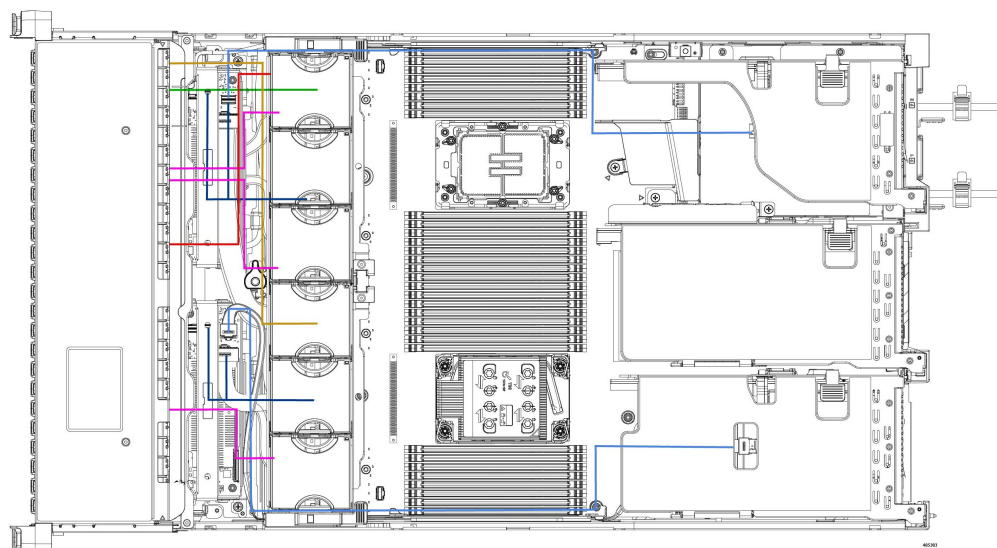


| Cable                                  | Color       | Cisco Part Number | Notes                                                                                                                                                                                                     |
|----------------------------------------|-------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO cable<br>(Y cable x16 to x8 + x8) | Light Green |                   | The single-connector end of the cable connects to the P-2 motherboard connector near rear riser 3. The dual-connector end of the cable connects to the NVME-B and NVME-D connectors on the HDD backplane. |
| MCIO cable<br>(Y cable x16 to x8 + x8) | Blue        |                   | The single-connector end of the cable connects to the P2 connector on the motherboard near the rear riser. The dual-connector end of the cable connects to RAID controller2/HBA2.                         |
| HDD backplane CFG cable                | Ruby Red    |                   | Connects motherboard to HDD backplane                                                                                                                                                                     |

| Cable                        | Color | Cisco Part Number | Notes |
|------------------------------|-------|-------------------|-------|
| HDD Backplane Power cable, 2 | Red   |                   |       |

## Cisco Trimode M1 24G HBA Controller with 4GB FBWC 16 Drives

The following diagram shows cabling pertinent to a Cisco Trimode M1 24G HBA Controller with 4GB FBWC 16 Drives.



| Cable                | Color       | Cisco Part Number | Notes                                                                                                                                                                                                     |
|----------------------|-------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe cable (x8) | Light Green |                   | The single-connector end of the cable connects to the P-2 motherboard connector near rear riser 3. The dual-connector end of the cable connects to the NVME-B and NVME-D connectors on the HDD backplane. |
| MCIO NVMe cable (x8) | Brown       |                   | The single-connector end of the cable connects to the P2 connector on the motherboard near the rear riser. The dual-connector end of the cable connects to RAID controller2/HBA2.                         |

| Cable                            | Color      | Cisco Part Number | Notes                                    |
|----------------------------------|------------|-------------------|------------------------------------------|
| MCIO NVMe Y cable<br>(x16 to x8) | Blue       |                   |                                          |
| Slimline SAS Cable               | Light Blue |                   |                                          |
| HDD backplane power<br>cable     | Turquoise  |                   | Connects motherboard to<br>HDD backplane |
| HDD Backplane Power<br>CFG cable | Red        |                   |                                          |

## Replacing RAID Card and Cables

This section describes how replace RAID Cards and Cables

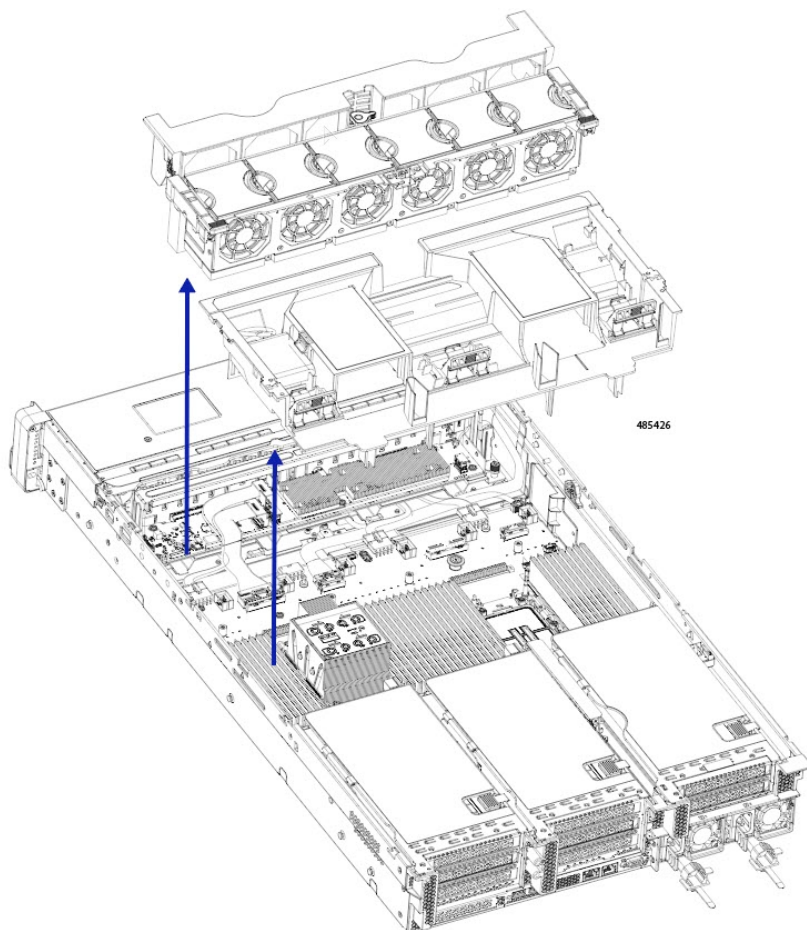
### Removing Cisco Trimode M1 24G RAID Controller W/4GB FBWC 32 Drives

The RAID card is located in the front of the server. This process requires you to disconnect the RAID cables from the card and motherboard before removing the RAID card.

#### Procedure

- 
- Step 1** Remove the Fan Module and Air Baffle.

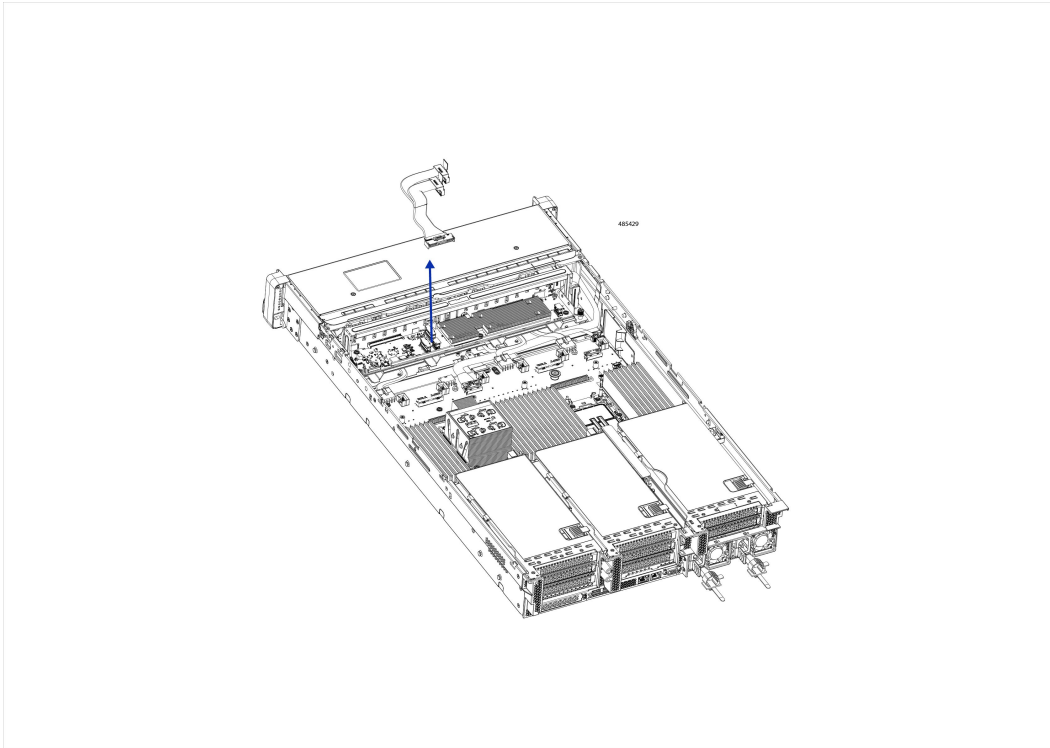
**Figure 26: Remove the Fan Module and Air Baffle**



**Step 2** Disconnect and remove the connector cable from the server motherboard.

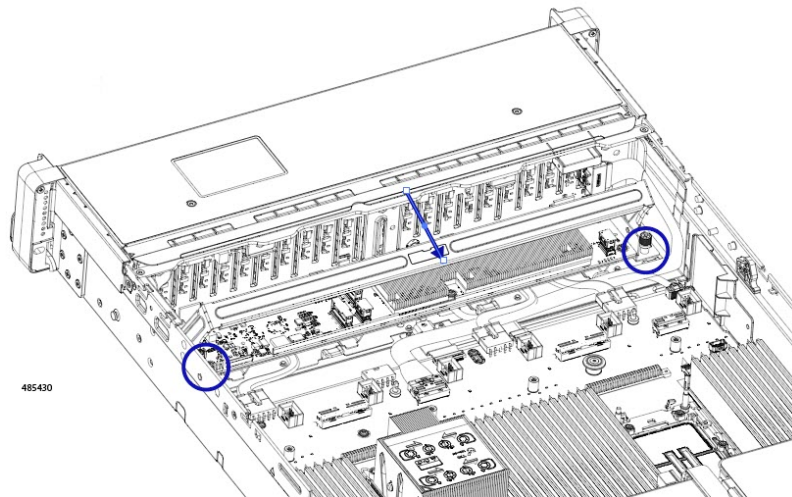


**Figure 27: Disconnect the Connector Cable**



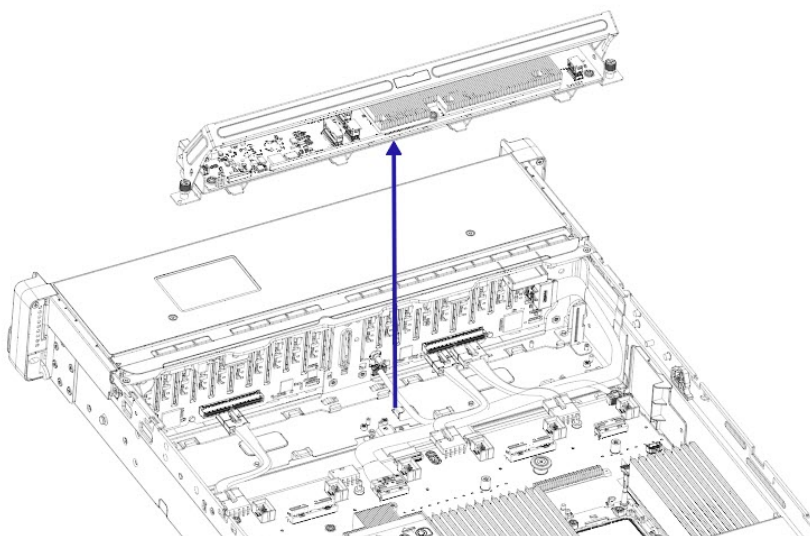
**Step 3** Disconnect the right-side RAID module from the sled carrier.

**Figure 28: Disconnecting the Right-Side module**



**Step 4** Remove the right-side RAID module from the server motherboard.

*Figure 29: Removing Right-Side RAID Module*

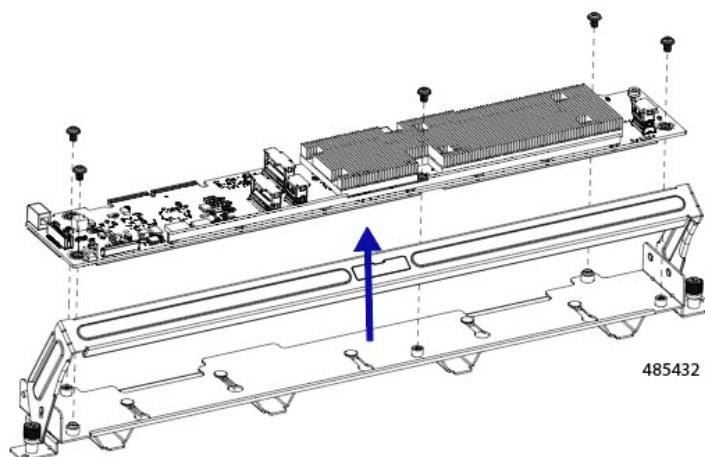


**Step 5**

Remove RAID card from carrier.

- a) Loosen the five screws connecting the RAID card to module carrier.
- b) Remove the RAID card from the module carrier.

*Figure 30: Removing RAID Card from Carrier*



### What to do next

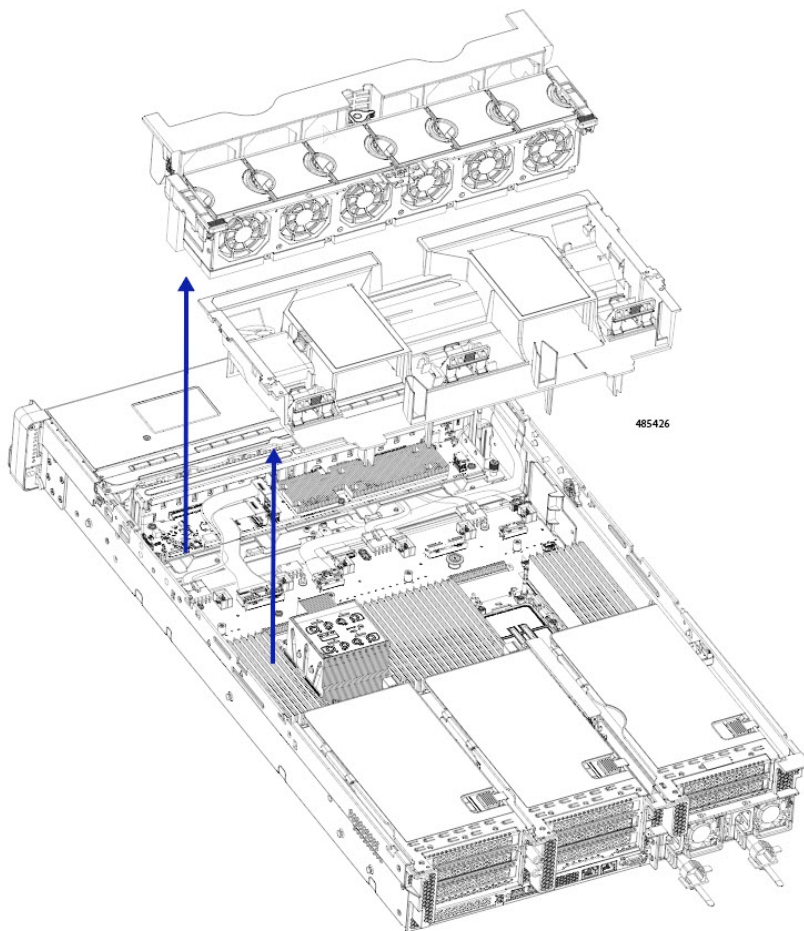
## Installing Cisco Trimode M1 24G RAID Controller W/4GB FBWC 32 Drives

The RAID card is located in the front of the server. This process requires you to connect the RAID card and cables to and motherboard.

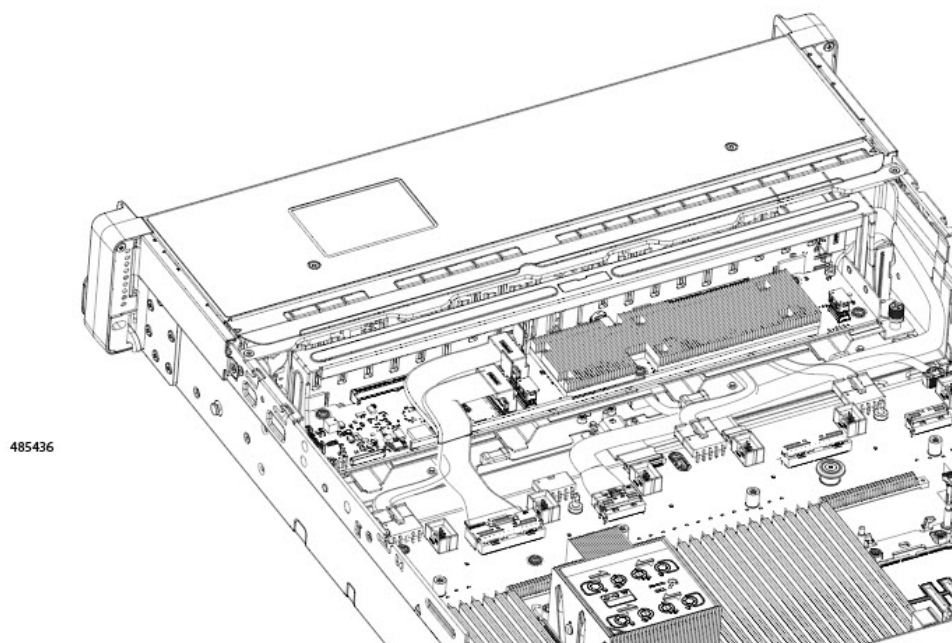
### Procedure

- Step 1** Remove the Fan Module and Air Baffle.

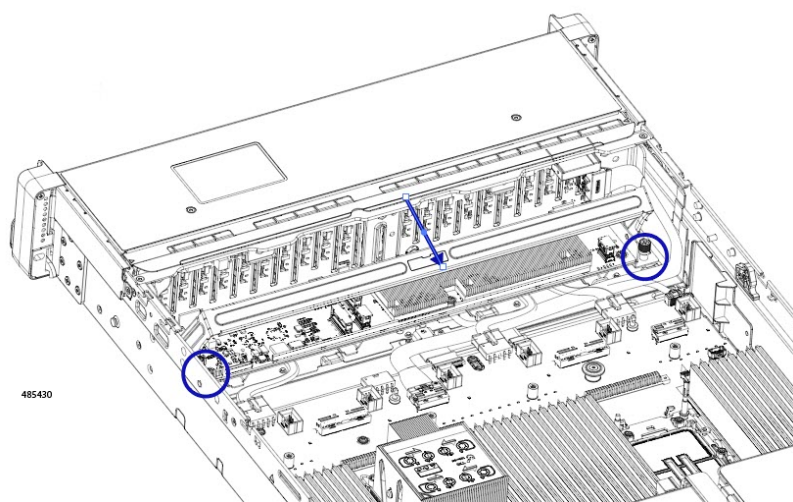
*Figure 31: Remove the Fan Module and Air Baffle*



- Step 2** Connect the RAID connector cable to the server motherboard.

*Figure 32: Connect the RAID Connector Cable*

**Step 3** Install the right-side RAID module to the sled carrier.

*Figure 33: Installing the Right-Side module*

**Step 4** Tighten the right-side RAID module screws to the server motherboard.

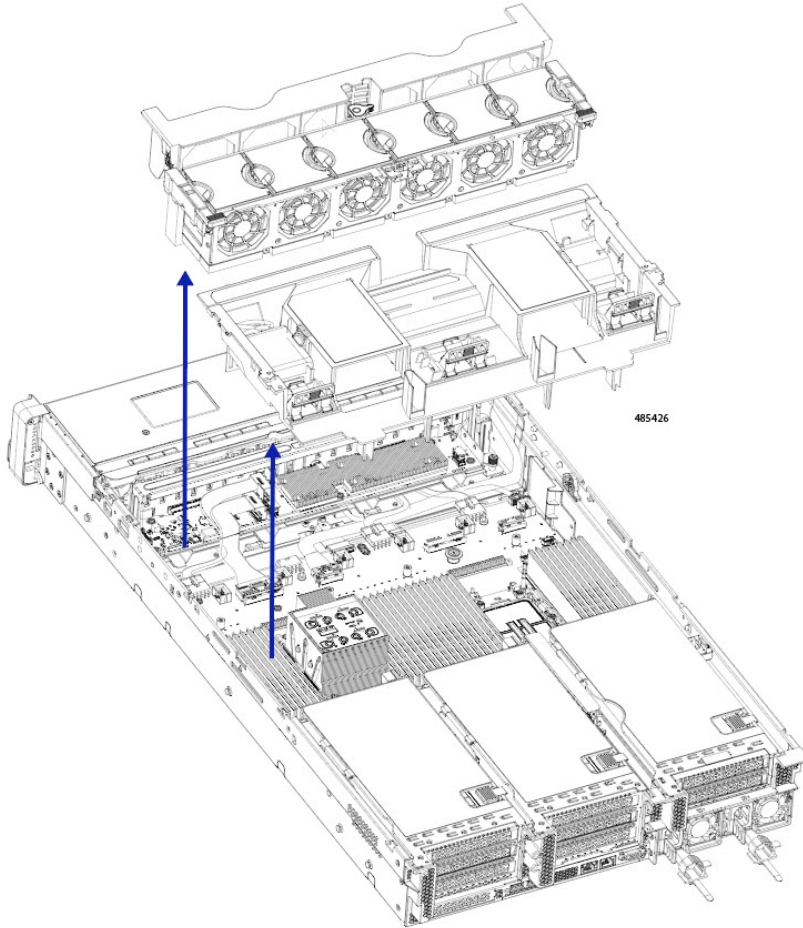
## Replacing Cisco Trimode M1 HBA Controller W/4GB FBWC 16 Drives

The RAID card is located in the front of the server. This process requires you to disconnect the RAID cables from the card and motherboard before removing the RAID card.

## Procedure

- Step 1** Remove the Fan Module and the Air Baffle from the server.

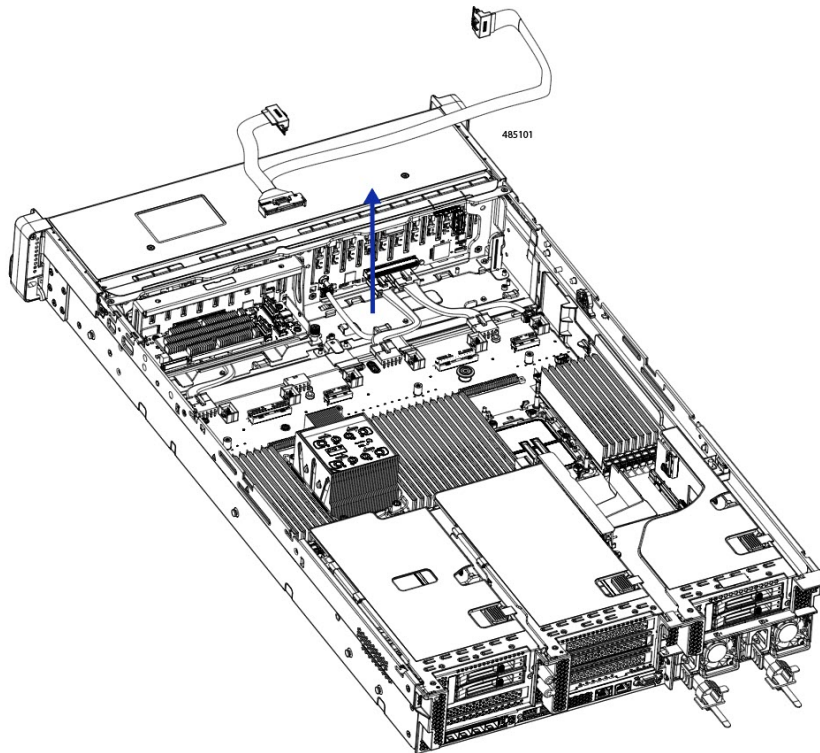
*Figure 34: Remove Fan Module and Air Baffle*



- Step 2** Remove the connector cable from the server motherboard.

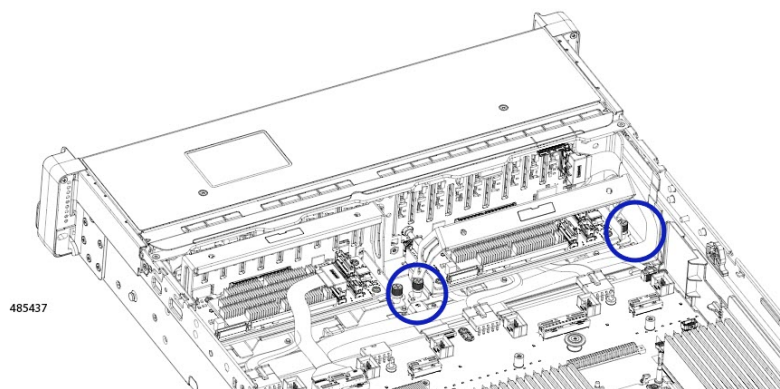


**Figure 35: Remove Connector Cables**



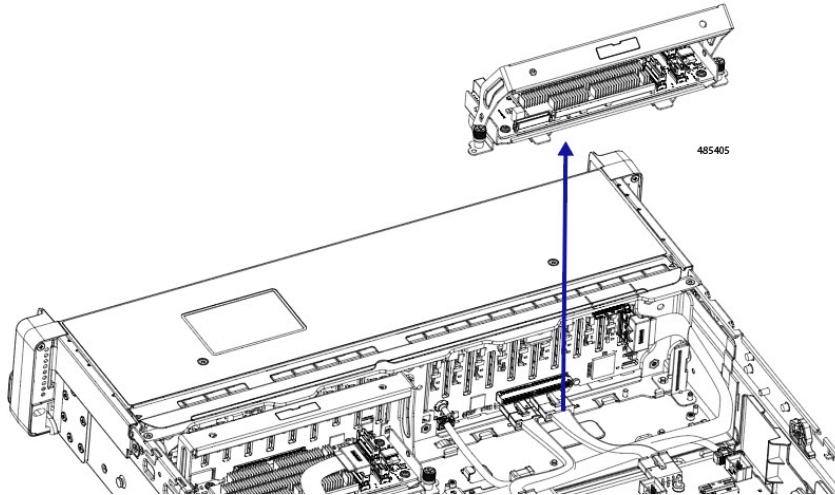
- Step 3** Open the right side RAID module from the sled carrier.
- a) Lift the sled carrier lever.
  - b) Loosen the screws on the RAID card sled carrier.

**Figure 36: Disconnecting Right RAID Card from Carrier**



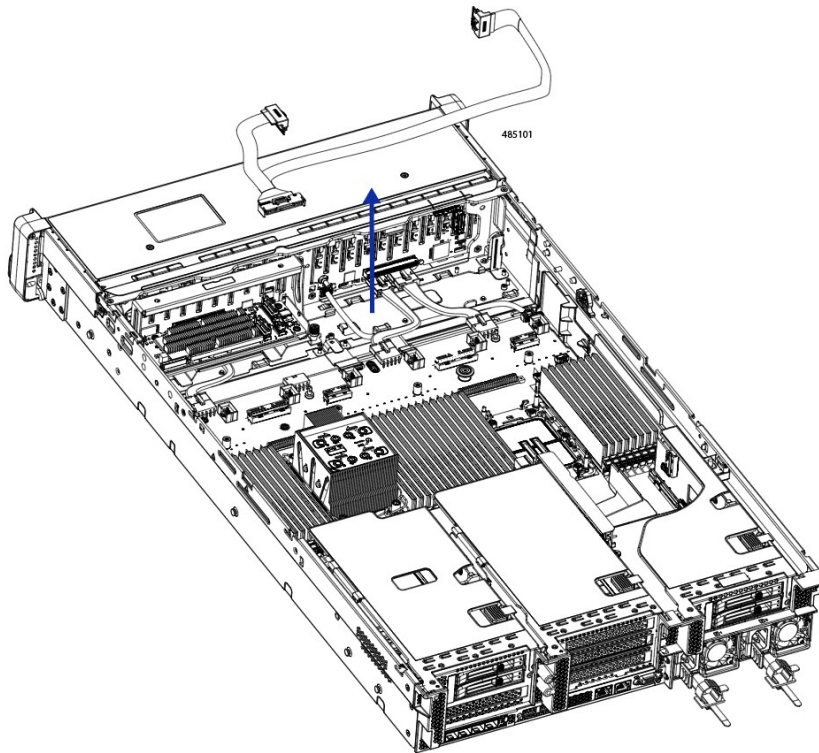
- Step 4** Remove the right side RAID module from the server motherboard.

**Figure 37: Remove RAID Side Card Module.**



**Step 5** Disconnect and remove the RAID card connector cable from the server motherboard.

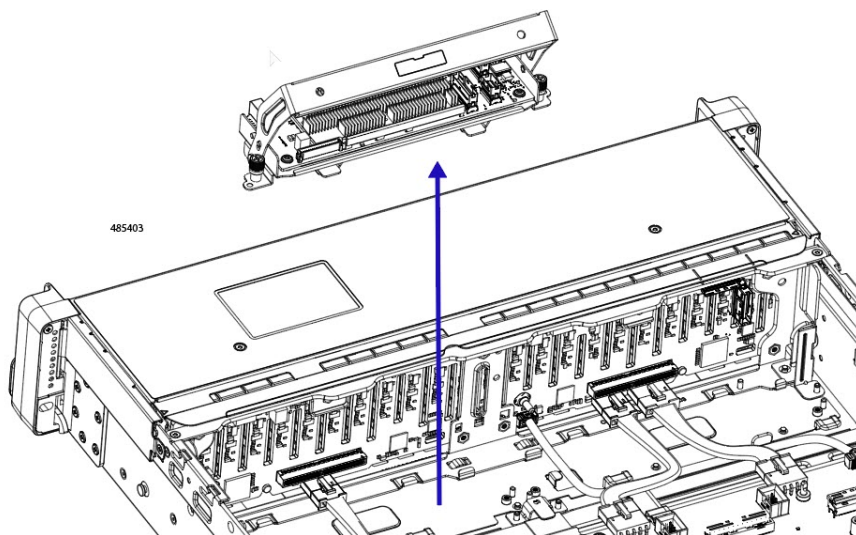
**Figure 38: Remove RAID Card Connector Cable**



**Step 6** Open the left side RAID module from the sled carrier.

- a) Lift the sled carrier lever.
- b) Loosen the screws on the RAID card sled carrier.

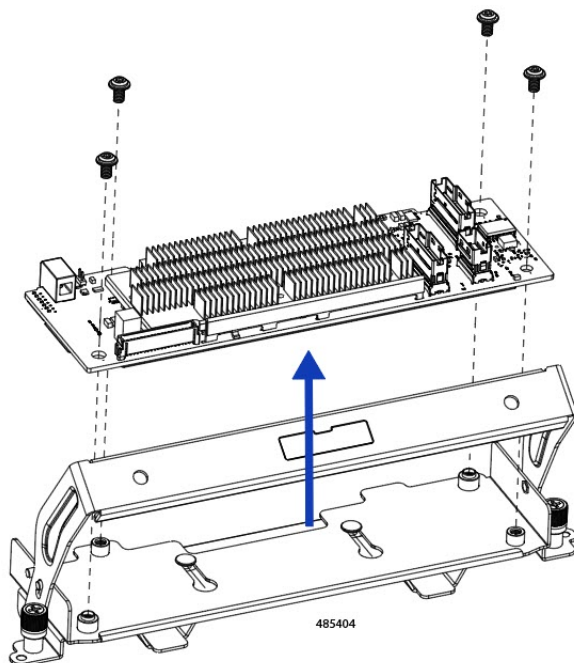
**Figure 39: Disconnecting Left side RAID Card from Carrier**



**Step 7** Remove the RAID card from the module sled carrier.

- a) Loosen the screws on the sled carrier.
- b) Remove RAID card.

**Figure 40: Removing RAID Card from Module Sled Carrier**





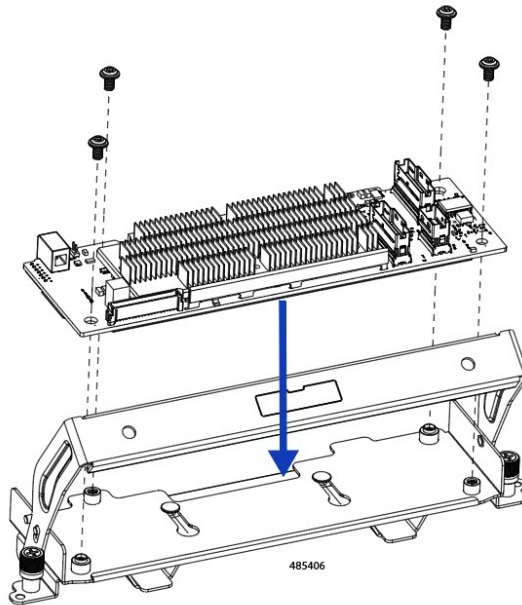
## Installing Cisco Trimode M1 24G HBA Controller W/GB FBWC 16 Drives

The RAID card is located in the front of the server. This process requires you to connect the RAID card and cables to and motherboard.

### Procedure

- Step 1** Attach the RAID card to the module sled carrier.

*Figure 41: Attach the RAID Card to the Module Sled Carrier*



- Step 2** Insert and attach the RAID module to the sled carrier.
- Step 3** Attach the RAID card connector cables to the server motherboard.
- Step 4** Attach the RAID card module to the server motherboard.
- Step 5** Attach the second connector cable to the RAID card and the server motherboard.
- Step 6** Install the Fan Module and the Air Baffle to the server.
- Step 7** Tighten the RAID module screws to the server motherboard.

### What to do next

Check the RAID card and connectors and make sure all connections are secure.

## Replacing Memory DIMMs

The server supports R-DIMM, DDR5 288 pin DIMM modules. Eight memory channels per socket are supported with 2 DIMMs per channel, for a total of 32 memory slots on the motherboard.

When installing or replacing DIMMs, be aware of the following:


**Caution**

DIMMs and their sockets are fragile and must be handled with care to avoid damage during installation.


**Caution**

Cisco does not support third-party DIMMs. Using non-Cisco DIMMs in the server might result in system problems or damage to the motherboard.


**Note**

To ensure the best server performance, it is important that you are familiar with memory performance guidelines and population rules before you install or replace DIMMs.

For detailed information about supported memory usage, mixing, and population guidelines, see the [Cisco UCS Intel M8 Memory Guide](#).

## Replacing DIMMs

### Identifying a Faulty DIMM

Each DIMM socket has a corresponding DIMM fault LED, directly in front of the DIMM socket. See [Internal Diagnostic LEDs, on page 55](#) for the locations of these LEDs. When the server is in standby power mode, these LEDs light amber to indicate a faulty DIMM.

### Procedure

**Step 1** Remove an existing DIMM:

- a) Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- b) Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

If you cannot safely view and access the component, remove the server from the rack.

- c) Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- d) Remove the air baffle that covers the front ends of the DIMM slots to provide clearance.
- e) Locate the DIMM that you are removing, and then open the ejector levers at each end of its DIMM slot.

**Step 2** Install a new DIMM:

**Note**

Before installing DIMMs, see the memory population rules for this server. Go to the [Cisco UCS Intel M8 Memory Guide](#).

- a) Align the new DIMM with the empty slot on the motherboard. Use the alignment feature in the DIMM slot to correctly orient the DIMM.
- b) Push down evenly on the top corners of the DIMM until it is fully seated and the ejector levers on both ends lock into place.

- c) Replace the top cover to the server.
- d) Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

---

## Replacing the RTC Battery

**Warning**

There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

[Statement 1015]

**Warning**

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

The real-time clock (RTC) battery retains system settings when the server is disconnected from power. The battery type is CR2032. Cisco supports the industry-standard CR2032 battery, which can be purchased from most electronic stores.

### Procedure

**Step 1**

Remove the RTC battery:

- a) Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- b) Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

If you cannot safely view and access the component, remove the server from the rack.

- c) Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- d) Remove PCIe riser 2 from the server to provide clearance to the RTC battery socket that is on the motherboard. See [Replacing a PCIe Riser, on page 124](#).
- e) Locate the horizontal RTC battery socket.
- f) Remove the battery from the socket on the motherboard. Gently pry the securing clip to the side to provide clearance, then lift up on the battery.

**Step 2**

Install a new RTC battery:

- a) Insert the battery into its socket and press down until it clicks in place under the clip.

**Note**

The positive side of the battery marked “3V+” should face up.

- b) Replace PCIe riser 2 to the server. See [Replacing a PCIe Riser, on page 124](#).
- c) Replace the top cover to the server.

- d) Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

## Replacing Power Supplies

When two power supplies are installed they are redundant as 1+1 by default, but they also support cold redundancy mode. Cold redundancy (CR) suspends power delivery on one or more power supplies and forces the remainder of the load to be supplied by the active PSU(s). As a result, total power efficiency is improved by best utilizing the PSU efficiency when compared to load characteristics.

- See also [Power Specifications, on page 261](#)
- See also [Rear-Panel LEDs, on page 53](#) for information about the power supply LEDs.

This section includes procedures for replacing AC and DC power supply units.

## Supported Power Supplies

The Cisco UCS C240 M8 supports the following power supplies.



**Caution** Do not mix PSU types in the same server. PSU must be the same type and wattage.

For detailed information, see [Power Specifications, on page 261](#).

| PSU Type  | Supported In           | Notes                                                                                                          |
|-----------|------------------------|----------------------------------------------------------------------------------------------------------------|
| 1050 W DC | All UCS C240 M8 models | One power supply is mandatory; one more can be added for 1 + 1 redundancy as long power supplies are the same. |
| 1200 W AC | All UCS C240 M8 models | One power supply is mandatory; one more can be added for 1 + 1 redundancy as long power supplies are the same. |
| 1600 W AC | All UCS C240 M8 models | One power supply is mandatory; one more can be added for 1 + 1 redundancy as long power supplies are the same. |
| 2300 W AC | All UCS C240 M8 models | One power supply is mandatory; one more can be added for 1 + 1 redundancy as long power supplies are the same. |

## Replacing AC Power Supplies



**Note** If you have ordered a server with power supply redundancy (two power supplies), you do not have to power off the server to replace a power supply because they are redundant as 1+1.



**Note** Do not mix power supply types or wattages in the server. Both power supplies must be identical.

**Caution**

DO NOT interchange power supplies of any earlier Cisco UCS servers (for example, any Cisco UCS C240 M6 server power supplies) with the Cisco UCS C240 M8 server.

**Procedure****Step 1**

Remove the power supply that you are replacing or a blank panel from an empty bay:

a) Perform one of the following actions:

- If your server has only one power supply, shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- If your server has two power supplies, you do not have to shut down the server.

b) Remove the power cord from the power supply that you are replacing.

c) Grasp the power supply handle while pinching the release lever toward the handle.

d) Pull the power supply out of the bay.

**Step 2**

Install a new power supply:

a) Grasp the power supply handle and insert the new power supply into the empty bay.

b) Push the power supply into the bay until the release lever locks.

c) Connect the power cord to the new power supply.

d) Only if you shut down the server, press the Power button to boot the server to main power mode.

**Replacing DC Power Supplies****Note**

This procedure is for replacing DC power supplies in a server that already has DC power supplies installed. If you are installing DC power supplies to the server for the first time, see [Installing DC Power Supplies \(First Time Installation\), on page 123](#).

**Warning**

**A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.**

Statement 1022

**Warning**

**This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.**

Statement 1045



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

Statement 1074



**Note** If you are replacing DC power supplies in a server with power supply redundancy (two power supplies), you do not have to power off the server to replace a power supply because they are redundant as 1+1.



**Note** Do not mix power supply types or wattages in the server. Both power supplies must be identical.

## Procedure

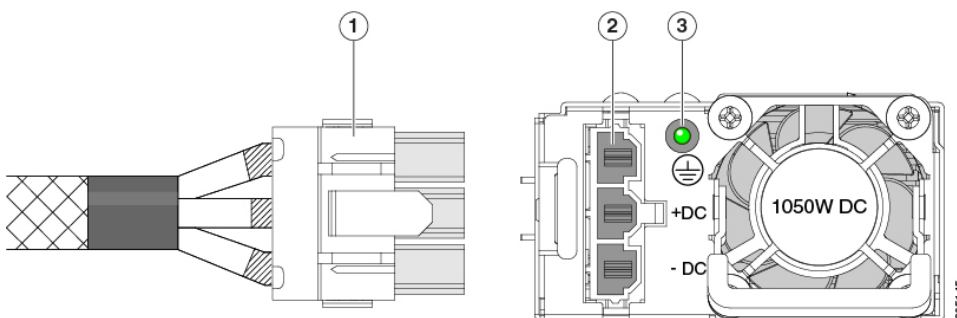
**Step 1** Remove the DC power supply that you are replacing or a blank panel from an empty bay:

- a) Perform one of the following actions:
  - If you are replacing a power supply in a server that has only one DC power supply, shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
  - If you are replacing a power supply in a server that has two DC power supplies, you do not have to shut down the server.
- b) Remove the power cord from the power supply that you are replacing. Lift the connector securing clip slightly and then pull the connector from the socket on the power supply.
- c) Grasp the power supply handle while pinching the release lever toward the handle.
- d) Pull the power supply out of the bay.

**Step 2** Install a new DC power supply:

- a) Grasp the power supply handle and insert the new power supply into the empty bay.
- b) Push the power supply into the bay until the release lever locks.
- c) Connect the power cord to the new power supply. Press the connector into the socket until the securing clip clicks into place.
- d) Only if you shut down the server, press the Power button to boot the server to main power mode.

**Figure 42: Replacing DC Power Supplies**



|   |                                           |   |                |
|---|-------------------------------------------|---|----------------|
| 1 | Keyed cable connector (CAB-48DC-40A-8AWG) | 3 | PSU status LED |
| 2 | Keyed DC input socket                     | - |                |

## Installing DC Power Supplies (First Time Installation)



### Note

This procedure is for installing DC power supplies to the server for the first time. If you are replacing DC power supplies in a server that already has DC power supplies installed, see [Replacing DC Power Supplies, on page 121](#).



### Warning

**A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.**

Statement 1022



### Warning

**This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.**

Statement 1045



### Warning

**Installation of the equipment must comply with local and national electrical codes.**

Statement 1074



### Note

Do not mix power supply types or wattages in the server. Both power supplies must be identical.



### Caution

As instructed in the first step of this wiring procedure, turn off the DC power source from your facility's circuit breaker to avoid electric shock hazard.

## Procedure

### Step 1

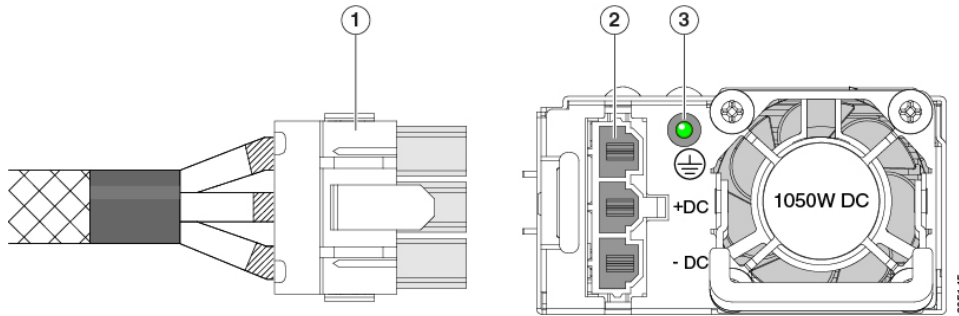
Turn off the DC power source from your facility's circuit breaker to avoid electric shock hazard.

#### Note

The required DC input cable is Cisco part CAB-48DC-40A-8AWG. This 3-meter cable has a 3-pin connector on one end that is keyed to the DC input socket on the power supply. The other end of the cable has no connector so that you can wire it to your facility's DC power.

- Step 2** Wire the non-terminated end of the cable to your facility's DC power input source.
- Step 3** Connect the terminated end of the cable to the socket on the power supply. The connector is keyed so that the wires align for correct polarity and ground.
- Step 4** Return DC power from your facility's circuit breaker.
- Step 5** Press the Power button to boot the server to main power mode.

**Figure 43: Replacing DC Power Supplies**



|   |                                           |   |                |
|---|-------------------------------------------|---|----------------|
| 1 | Keyed cable connector (CAB-48DC-40A-8AWG) | 3 | PSU status LED |
| 2 | Keyed DC input socket                     | - |                |

- Step 6** See [Grounding for DC Power Supplies, on page 124](#) for information about additional chassis grounding.

## Grounding for DC Power Supplies

AC power supplies have internal grounding and so no additional grounding is required when the supported AC power cords are used.

When using a DC power supply, additional grounding of the server chassis to the earth ground of the rack is available. Two screw holes for use with your dual-hole grounding lug and grounding wire are supplied on the chassis rear panel.



**Note** The grounding points on the chassis are sized for 10-32 screws. You must provide your own screws, grounding lug, and grounding wire. The grounding lug must be dual-hole lug that fits 10-32 screws. The grounding cable that you provide must be 14 AWG (2 mm), minimum 60° C wire, or as permitted by the local code.

## Replacing a PCIe Riser

This server has three toolless PCIe risers for horizontal installation of PCIe cards. Each riser is available in multiple versions. See [PCIe Slot Specifications, on page 125](#) for detailed descriptions of the slots and features in each riser version.



## Procedure

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Step 4** Remove the PCIe riser that you are replacing:
- Grasp the flip-up handle on the riser and the blue forward edge, and then lift up evenly to disengage its circuit board from the socket on the motherboard. Set the riser on an antistatic surface.
  - If the riser has a card installed, remove the card from the riser. See [Replacing a PCIe Card, on page 126](#).
- Step 5** Install a new PCIe riser:
- Note**  
The PCIe risers are not interchangeable. If you plug a PCIe riser into the wrong socket, the server will not boot. Riser 1 must plug into the motherboard socket labeled “RISER1.” Riser 2 must plug into the motherboard socket labeled “RISER2.”
- If you removed a card from the old PCIe riser, install the card to the new riser. See [Replacing a PCIe Card, on page 126](#).
  - Position the PCIe riser over its socket on the motherboard and over its alignment slots in the chassis.
  - Carefully push down on both ends of the PCIe riser to fully engage its circuit board connector with the socket on the motherboard.
- Step 6** Replace the top cover to the server.
- Step 7** Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

## Replacing a PCIe Card



**Note** Cisco supports all PCIe cards qualified and sold by Cisco. PCIe cards not qualified or sold by Cisco are the responsibility of the customer. Although Cisco will always stand behind and support the C-Series rack-mount servers, customers using standard, off-the-shelf, third-party cards must go to the third-party card vendor for support if any issue with that particular card occurs.

## PCIe Slot Specifications

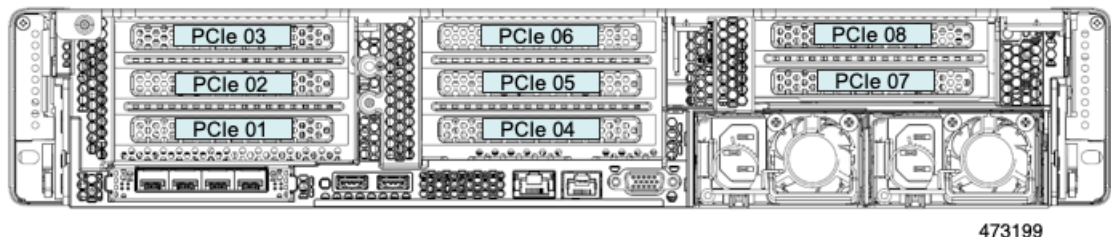
The server contains three toolless PCIe risers for horizontal installation of PCIe cards. Each riser is orderable in multiple versions.

- Riser 1 (controlled by CPU1) contains PCIe slots 1, 2, and 3, and is available with the following different options:

- Riser 1A —Slot 1 (x8 Gen 5), 2 (x16 Gen 5), 3 (x8 Gen 5).
- Riser 1B (SFF server and LFF server)—Slots 1 (Reserved), 2 (x4 Gen4) and 3 (x4 Gen 4) for SFF drive bays
- Riser 1C—Slot1 (x16 Gen 5), 2 (x16 Gen 5)
- Riser 1D (EDSFF server only)—Slot 1 (Reserved), 2 (x4 Gen5), and 3 (x4 Gen 5)
- Riser 2 contains (controlled by CPU2) contains PCIe slots 4, 5, and 6, and is available with the following different options:
  - Riser 2A—Slots 4 (x8 Gen 5), 5 (x16 Gen 5), and 6 (x8 Gen 5).
  - Riser 2C—Slot 1 (x16 Gen 5), 1 (x16 Gen 5)
- Riser 3 (controller by CPU2) contains PCIe slots 7 and 8, and is available in the following different options:
  - Riser 3A—Slots 7 (x8 Gen 5) and 8 (x8 Gen 5).
  - Riser 3B (SFF and LFF server)—Slots 1 (Reserved), 2 (x4 Gen 4) and 3 (x4 Gen 4) for SFF drive bays.
  - Riser 3C—Slot 7 (x16 Gen 5).
  - Riser 3D (EDSFF server only)— Slots 1 (Reserved), 2 (x4 Gen 5), and 3 (x4 Gen 5) for EDSFF E3.S 1TB drive bays

The following illustration shows the PCIe slot numbering.

**Figure 44: Rear Panel, Showing PCIe Slot Numbering**



## Replacing a PCIe Card



### Note

If you are installing a Cisco UCS Virtual Interface Card, there are prerequisite considerations. See [Cisco Virtual Interface Card \(VIC\) Considerations](#), on page 128.



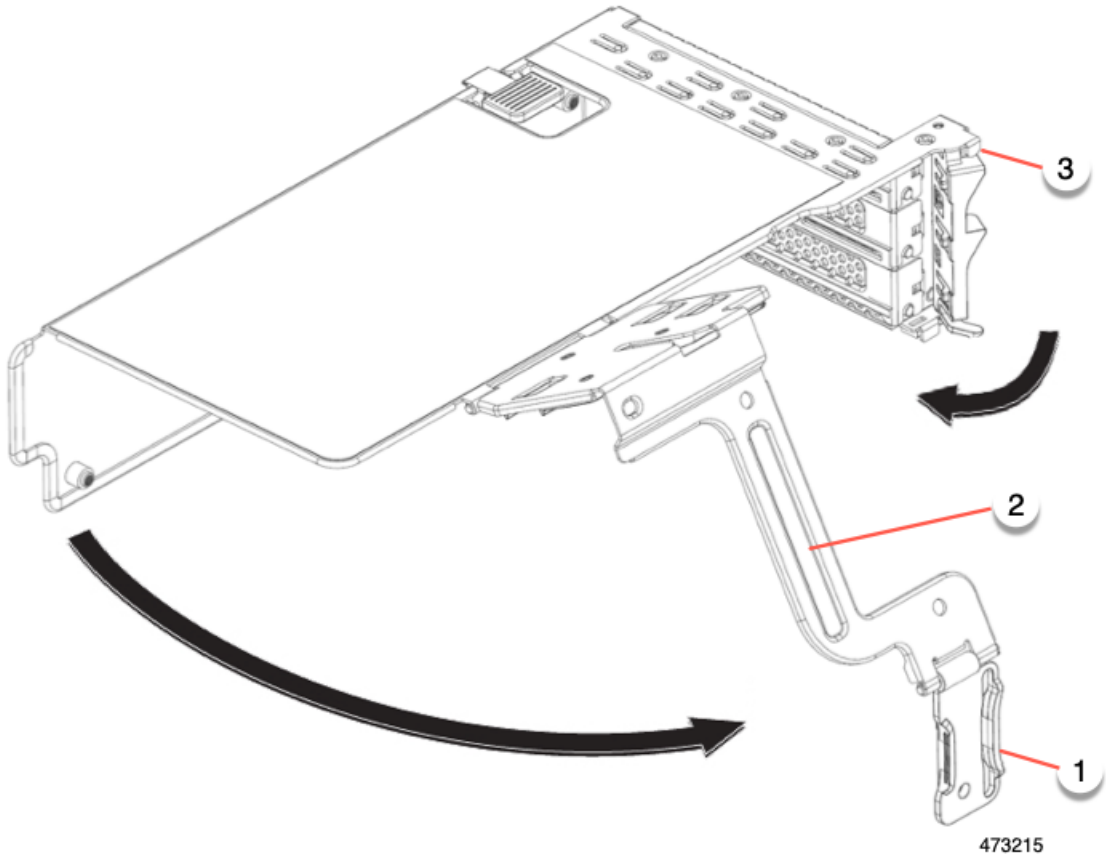
### Note

RAID controller cards install into a dedicated motherboard socket. See [Replacing a Storage Controller Card \(RAID or HBA\)](#), on page 136.

## Procedure

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Step 4** Remove the PCIe card that you are replacing:
- Remove any cables from the ports of the PCIe card that you are replacing.
  - Use two hands to flip up and grasp the blue riser handle and the blue finger grip area on the front edge of the riser, and then lift straight up.
  - On the bottom of the riser, push the release latch that holds the securing plate, and then swing the hinged securing plate open.
  - Open the hinged card-tab retainer that secures the rear-panel tab of the card.
  - Pull evenly on both ends of the PCIe card to remove it from the socket on the PCIe riser.
- If the riser has no card, remove the blanking panel from the rear opening of the riser.
- Step 5** Install a new PCIe card:
- With the hinged card-tab retainer open, align the new PCIe card with the empty socket on the PCIe riser.
  - Push down evenly on both ends of the card until it is fully seated in the socket.
  - Ensure that the card's rear panel tab sits flat against the riser rear-panel opening and then close the hinged card-tab retainer over the card's rear-panel tab.
  - Swing the hinged securing plate closed on the bottom of the riser. Ensure that the clip on the plate clicks into the locked position.
  - Position the PCIe riser over its socket on the motherboard and over the chassis alignment channels.
  - Carefully push down on both ends of the PCIe riser to fully engage its connector with the sockets on the motherboard.
- Step 6** Replace the top cover to the server.
- Step 7** Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

Figure 45: PCIe Riser Card Securing Mechanisms



|   |                                        |   |                          |
|---|----------------------------------------|---|--------------------------|
| 1 | Release latch on hinged securing plate | 3 | Hinged card-tab retainer |
| 2 | Hinged securing plate                  | - |                          |

## Cisco Virtual Interface Card (VIC) Considerations

This section describes VIC card support and special considerations for this server.



**Note** If you use the *Cisco Card* NIC mode, you must also make a *VIC Slot* setting that matches where your VIC is installed. The options are Riser1, Riser2, and Flex-LOM. See [NIC Mode and NIC Redundancy Settings, on page 45](#) for more information about NIC modes.

If you want to use the Cisco UCS VIC card for Cisco UCS Manager integration, see also the [Cisco UCS C-Series Server Integration with Cisco UCS Manager Guides](#) for details about supported configurations, cabling, and other requirements.

- A total of 3 VICs are supported in the server: 2 PCIe style, and 1 mLOM style. A maximum of one VIC is supported per riser.

- VIC slot priority is depened on the which reisers are selected:
  - When VIC is selected with Riser 1A/2A, VIC slots should be populated in the following order: mLOM, Riser 1A slot 2, Riser 2A slot 5, Riser 1A slot 1, Riser 2A slot 4.
  - When VIC is selected with Riser 1C/2C, VIC slots should be populated in the following order: mLOM, Riser 1C slot 1, Riser 2C slot 4

**Note**

Single wire management is supported on only one VIC at a time. If multiple VICs are installed on a server, only one slot has NCSI enabled at a time. For single wire management, priority goes to the MLOM slot, then slot 2, then slot 5 for NCSI management traffic. When multiple cards are installed, connect the single-wire management cables in the priority order mentioned above.

- The NCSI protocol is supported on n only one slot at a time in each riser.
  - If a GPU card is present in slot 2, NCSI automatically shifts from slot 2 to slot 1.
  - If a GPU card is present in slot 5, NCSI automatically shifts from slot 5 to slot 4.

**Note**

PCIe riser 2 is not available in a single-CPU system.

## Replacing an mLOM Card

The server supports a modular LOM (mLOM) card to provide additional rear-panel connectivity. The mLOM socket is on the motherboard, under the storage controller card.

The mLOM socket provides a Gen-3 x16 PCIe lane. The socket remains powered when the server is in 12 V standby power mode, and it supports the network communications services interface (NCSI) protocol.

**Note**

If your mLOM card is a Cisco UCS Virtual Interface Card (VIC), see [Cisco Virtual Interface Card \(VIC\) Considerations, on page 128](#) for more information and support details.

### Procedure

#### Step 1

Remove any existing mLOM card (or a blanking panel):

- Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

If you cannot safely view and access the component, remove the server from the rack.

- c) Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- d) Remove any storage controller (RAID or HBA card) to provide clearance to the mLOM socket on the motherboard. See [Replacing a Storage Controller Card \(RAID or HBA\), on page 136](#).
- e) Loosen the single captive thumbscrew that secures the mLOM card to the threaded standoff on the chassis floor.
- f) Slide the mLOM card horizontally to free it from the socket, then lift it out of the server.

**Step 2**

Install a new mLOM card:

- a) Set the mLOM card on the chassis floor so that its connector is aligned with the motherboard socket.
- b) Push the card horizontally to fully engage the card's edge connector with the socket.
- c) Tighten the captive thumbscrew to secure the card to the chassis floor.
- d) Return the storage controller card to the server. See [Replacing a Storage Controller Card \(RAID or HBA\), on page 136](#).
- e) Replace the top cover to the server.
- f) Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

## Replacing an OCP Card

As a hardware option, the server can be configured with an Open Compute Project (OCP) 3.0 NIC in the rear mezzanine mLOM slot. To support this option, the server requires the Intel Ethernet Network Adapter X710 OCP 3.0 card.

If this is the first time an OCP card is being installed into the server, you will need to install the OCP interposer, which is available as part of a kit (UCSC-OCP3-KIT-D=).



**Note** In addition to an OCP card, the server can support a Cisco mLOM in the rear mezzanine mLOM slot. The server can support either an OCP card or an mLOM, but not both. For information about replacing an mLOM, see [Replacing an mLOM Card, on page 129](#).

See the following topics.

- [Cisco VIC mLOM and OCP Card Replacement Considerations, on page 130](#)
- [Removing an OCP Card, on page 132](#)
- [Installing an OCP Card, on page 134](#)

## Cisco VIC mLOM and OCP Card Replacement Considerations

In Cisco UCS C240 M8 servers, Cisco IMC network connection may be lost in the following situations, while replacing Cisco VIC mLOM and OCP cards:

- If an OCP card is replaced by a Cisco VIC card in the mLOM Slot and the NIC mode is set to **Shared OCP** or **Shared OCP Extended**.
- If a Cisco VIC Card in the mLOM Slot is replaced by an OCP Card and the NIC mode is set to **Cisco-card MLOM**.

Follow these recommendations while replacing Cisco VIC mLOM or OCP cards in Cisco UCS C240 M8 servers to avoid loss of connectivity:

- Before replacing the card, configure any of the NIC modes that has network connected, other than **Cisco card MLOM**, **Shared OCP**, or **Shared OCP Extended**. After replacing the card, configure the appropriate NIC mode.

To set the NIC mode, refer *Server NIC Configuration* section in [Configuration Guides](#) for your Cisco IMC release.

- Or, after replacing the card, configure the appropriate NIC mode using Cisco IMC Configuration Utility/F8.

See [Connecting to the Server Remotely For Setup](#), on page 41.

- Or, after replacing the card, perform factory default settings using Cisco IMC Configuration Utility/F8 then perform the following steps:

1. Once the server is rebooted, boot the system to Cisco IMC Configuration Utility/F8 then change the default password.
2. Configure the appropriate NIC mode settings.

**Table 10: Factory Default Settings**

| VIC in mLOM slot | Intel OCP 3.0 NIC (Intel X710) in mLOM Slot | VIC in Riser Slot | Dedicated Management Port | NIC Mode for CIMC Access                                                                                                                                                                                                                    |
|------------------|---------------------------------------------|-------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes              | No                                          | No                | Yes                       | <b>Cisco Card</b> mode with the card in mLOM Slot                                                                                                                                                                                           |
| No               | Yes                                         | No                | Yes                       | <b>Shared OCP Extended</b>                                                                                                                                                                                                                  |
| No               | Yes                                         | Yes               | Yes                       | <b>Shared OCP Extended</b>                                                                                                                                                                                                                  |
| No               | No                                          | Yes               | Yes                       | <b>Cisco Card</b> with VIC SLOT based on precedence:<br><b>For C240 M8:</b><br><ol style="list-style-type: none"> <li>1. Riser 1 - Slot 2</li> <li>2. Riser 2 - Slot 5</li> <li>3. Riser 1 - Slot 1</li> <li>4. Riser 2 - Slot 4</li> </ol> |
| No               | No                                          | No                | Yes                       | <b>Dedicated</b>                                                                                                                                                                                                                            |

## Removing an OCP Card

The OCP card (UCSC-O-ID10GC) mounts into the rear mezzanine mLOM slot. You will need to open the server top cover to remove or install the OCP card.

Use the following procedure to remove the OCP card from a server with full-height risers.

### Before you begin

Gather a #2 Phillips screwdriver.

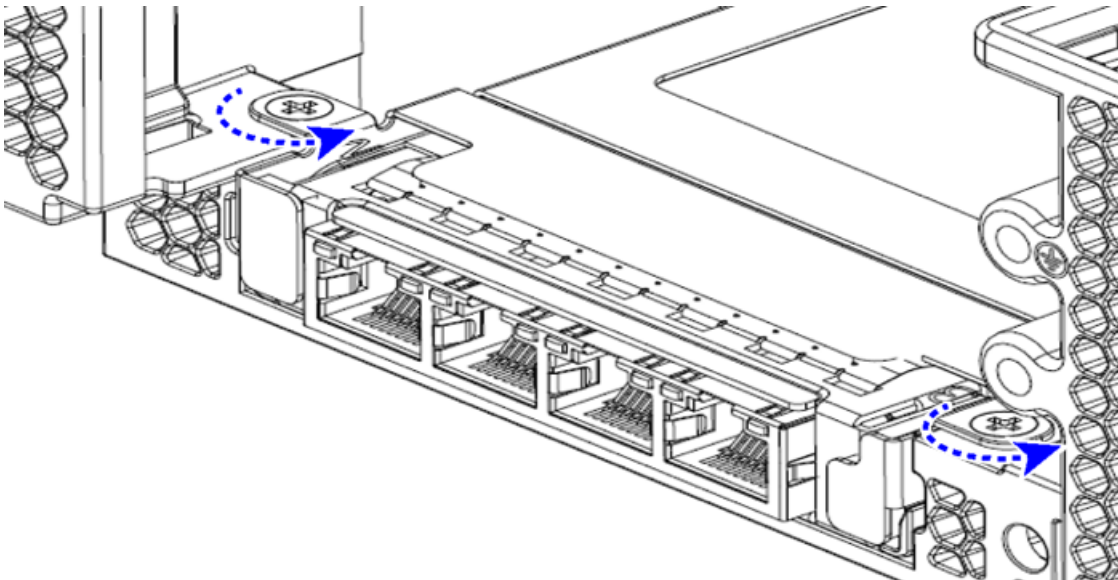
### Procedure

**Step 1** If you have not removed the server's top cover, do so now.

See [Removing the Server Top Cover, on page 56](#).

**Step 2** Remove the OCP bracket.

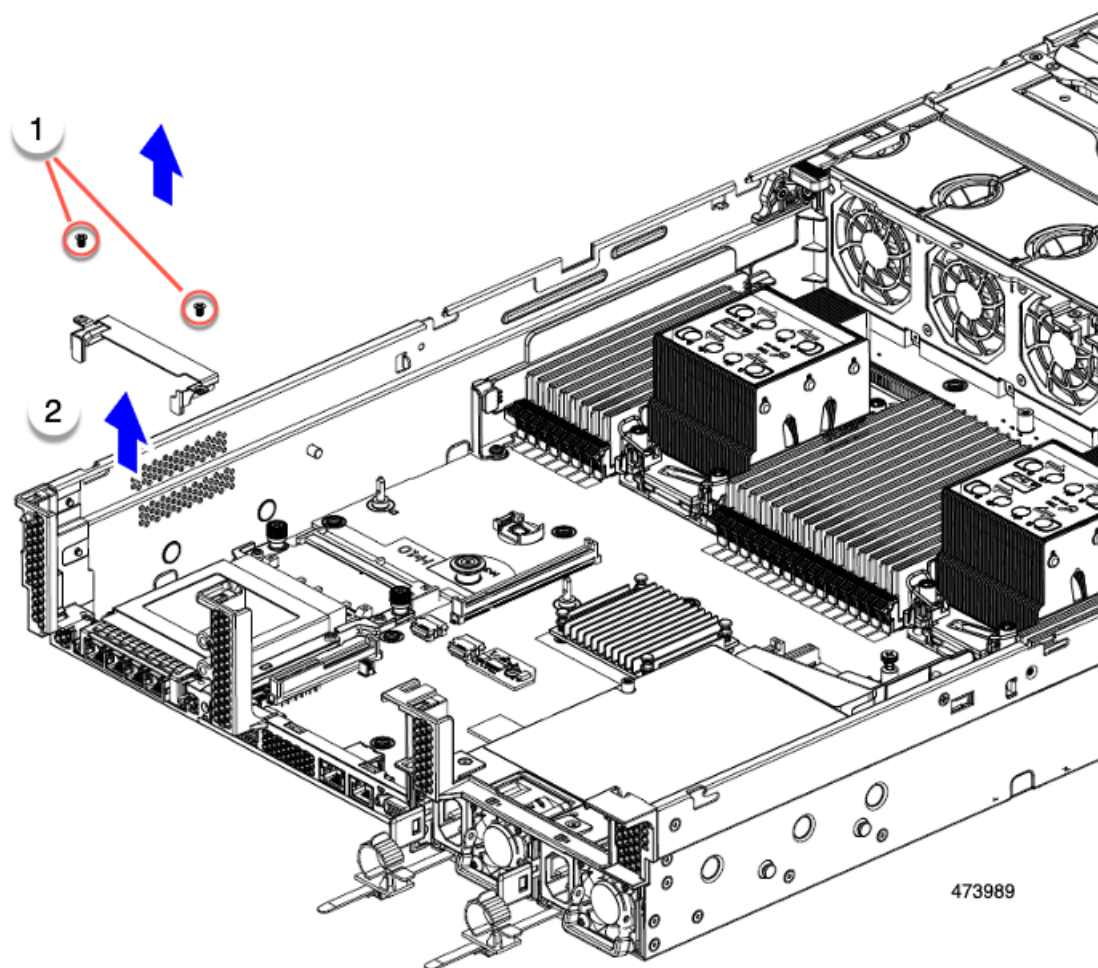
- a) Locate the two screws that secure the bracket to the server sheetmetal.
- b) Using a #2 Phillips screwdriver, loosen the screws.



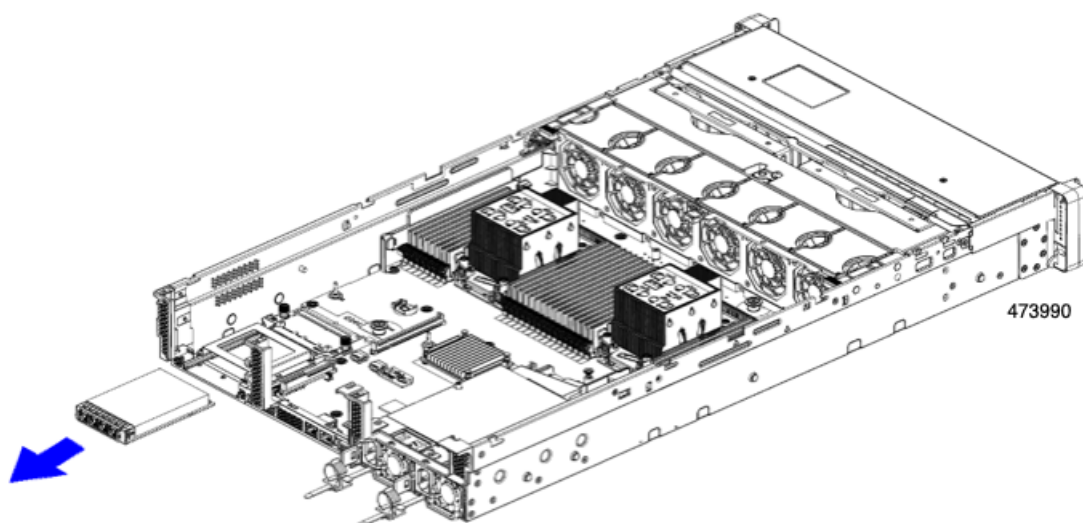
473988

- c) Remove the screws and lift the bracket off of the server.





d) Holding the OCP card level, slide it out of the server.

**Step 3** Choose the appropriate option:

- Reinstall an OCP Card. See [Installing an OCP Card, on page 134](#).
- If you want to install an mLOM instead, see [Replacing an mLOM Card, on page 129](#).
- Replace the top cover and return the server to operation.

## Installing an OCP Card

The OCP 3.0 card (UCSC-O-ID10GC) installs into the rear mezzanine mLOM slot and connects to an adapter, not directly to the motherboard. To install the OCP card, the server's top cover must be opened to gain access to screws that secure the OCP card in place.

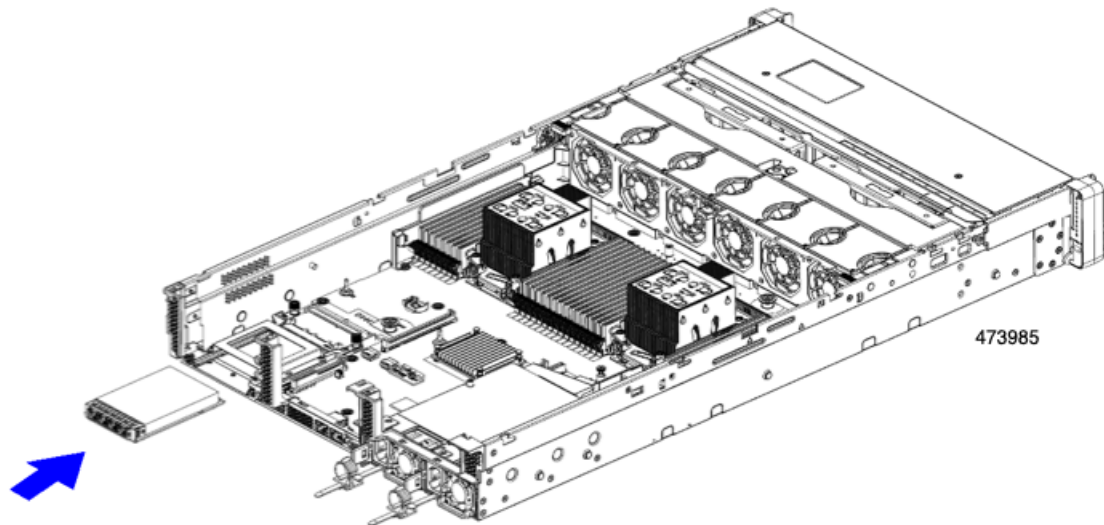
Use the following task to install an OCP 3.0 card.

**Before you begin**

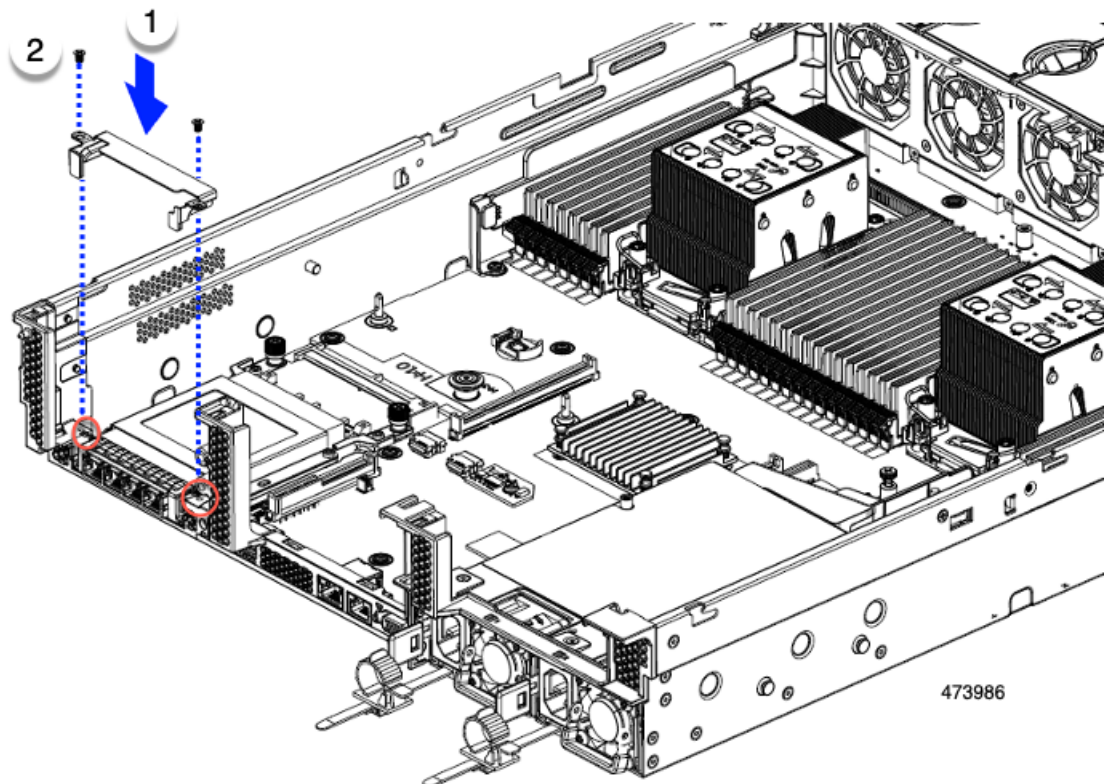
Gather a #2 Phillips screwdriver.

**Procedure**

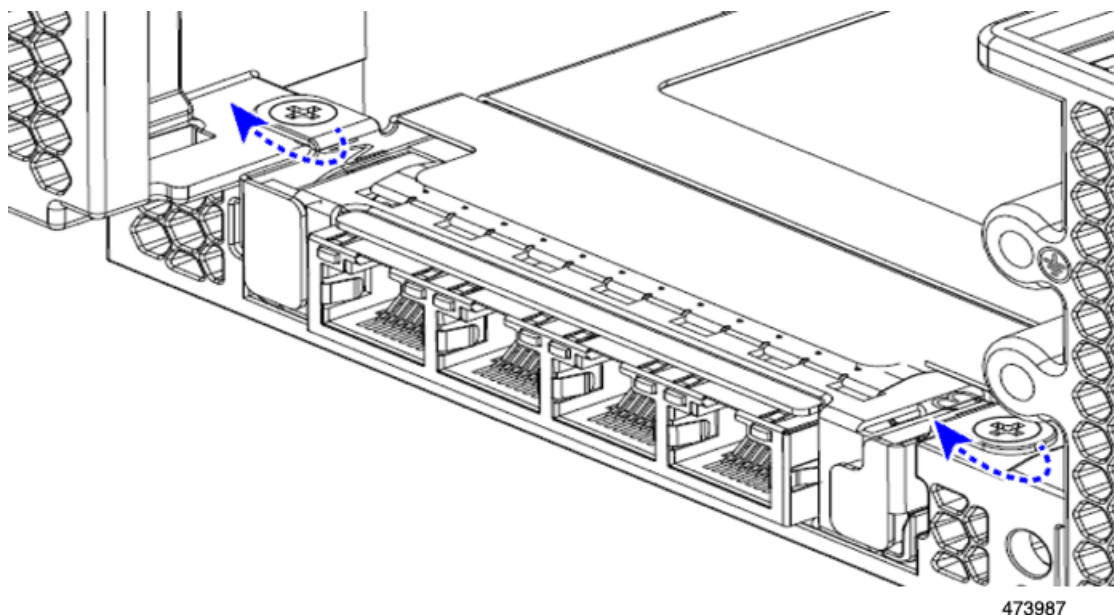
- Step 1** If you have not removed the server's top cover, do so now.  
See [Removing the Server Top Cover, on page 56](#).
- Step 2** Install the OCP card.
- a) Holding the OCP card level, slide it into the slot on the rear of the server.



- b) Install the OCP bracket onto the server, making sure to align the screwholes at each end of the bracket with the screwholes on the OCP/mLOM slot.



**Step 3** Using a #2 Phillips screwdriver, tighten the screws to secure the OCP bracket and OCP card to the server.



#### What to do next

Replace the server top cover.

## Replacing a Storage Controller Card (RAID or HBA)

For hardware-based storage control, the server can use a Cisco modular RAID controller or HBA that plugs into a dedicated, vertical socket on the motherboard.

### Storage Controller Card Firmware Compatibility

Firmware on the storage controller (RAID or HBA) must be verified for compatibility with the current Cisco IMC and BIOS versions that are installed on the server. If not compatible, upgrade or downgrade the storage controller firmware using the Host Upgrade Utility (HUU) for your firmware release to bring it to a compatible level.



**Note** **For servers running in standalone mode only:** After you replace controller hardware, you must run the Cisco UCS Host Upgrade Utility (HUU) to update the controller firmware, even if the firmware Current Version is the same as the Update Version. Running HUU is necessary to program any controller specific values to the storage controller for the specific server. If you do not run HUU, the storage controller may not be discovered..

See the HUU guide for your Cisco IMC release for instructions on downloading and using the utility to bring server components to compatible levels: [HUU Guides](#).

## Backplane Connectors

The server can be ordered with different storage hardware, each of which has a specific front drive backplane. Refer to the information in this topic when cabling storage controllers (RAID or HBA) for data storage drives.

The backplane connectors are labelled so that they are easily identifiable when you are working in the server. For reference, each supported backplane type is shown here.

For each backplane type:

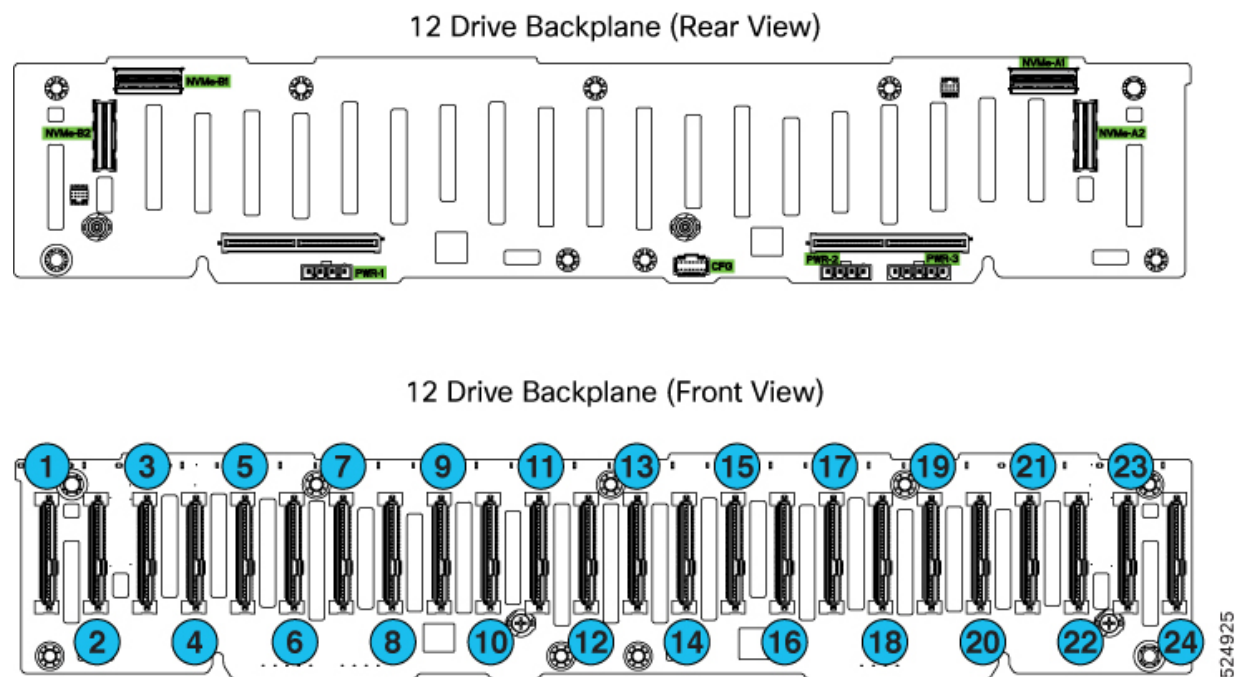
- The rear view shows the backplane connectors that face the interior of the server and can receive cables.
- The front view shows the backplane connectors that face the front-loading drives and enumerates the connector for each drive bay.



**Note** The server also has M.2 boot drives which are managed by a Boot-Optimized RAID Controller, which does not affect the data storage drives and does not connect the drive backplane.

### SFF Drive Backplane (UCSC-240-M8SX)

The SFF backplane has the following connectors.

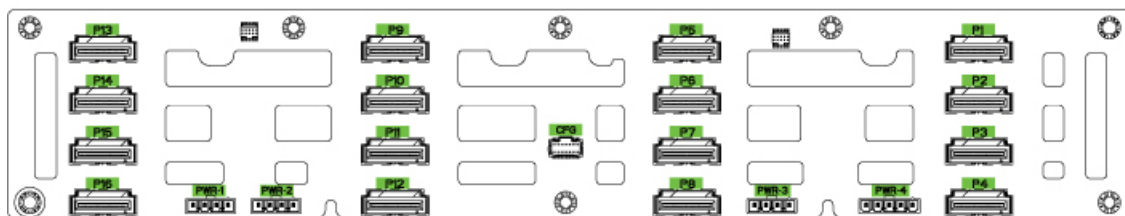


### E3S Drive Backplane (UCSC-240-M8E3S)

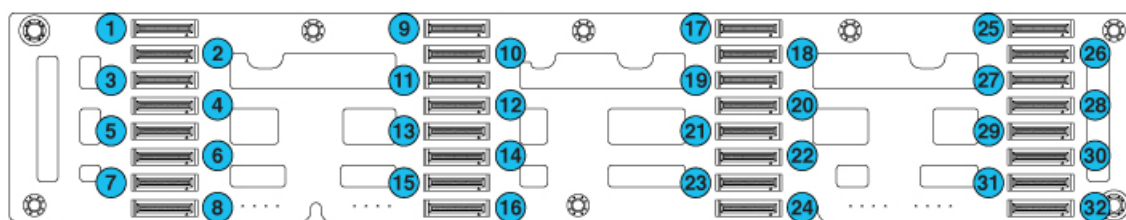
The NVMe backplane has the following connectors.



16/32 Drive Backplane (Rear View)



16/32 Drive Backplane (Front View)



524926

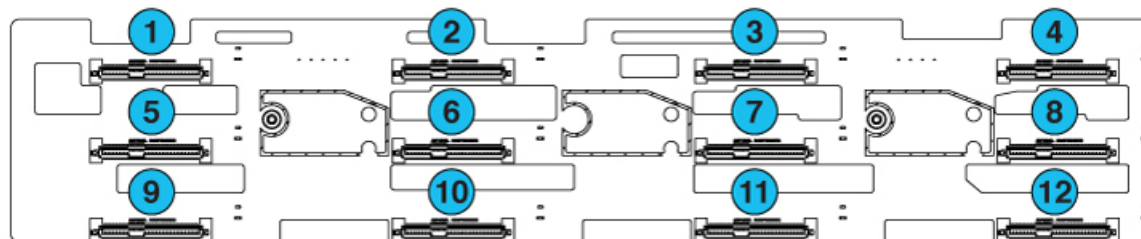
### LFF Drive Backplane (UCSC-240-M8L)

The LFF backplane has the following connectors.

12 Drive Backplane (Rear View)



12 Drive Backplane (Front View)



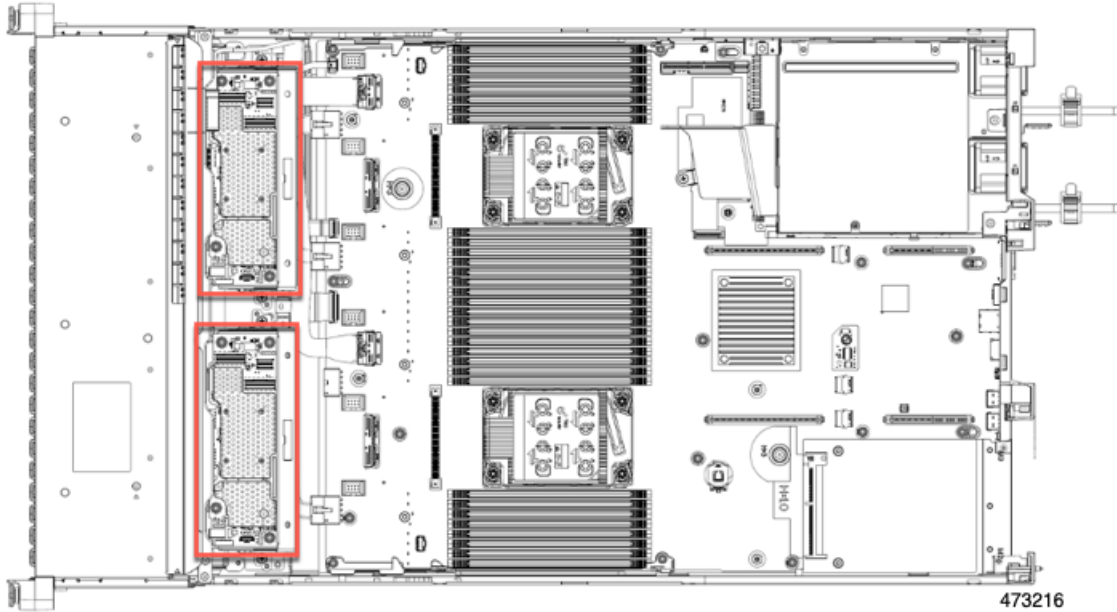
524924

## Removing the Dual Storage Controller Cards

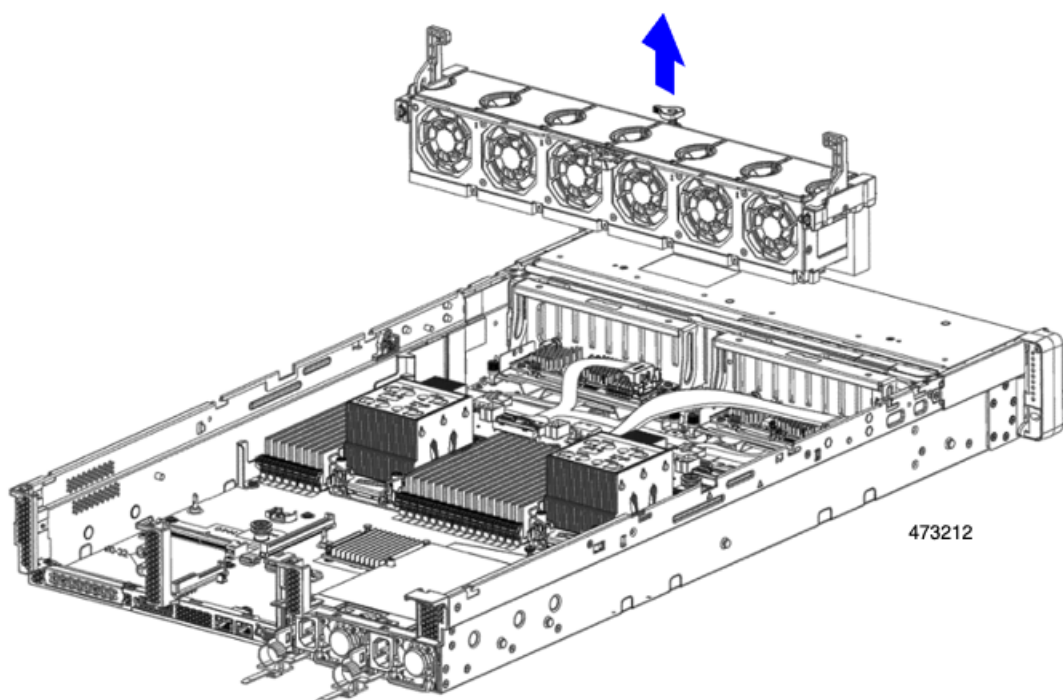
The front RAID assembly can contain either a single Storage controller card in a single tray, or two Storage controller cards each in its own tray. Use this procedure to remove each of the Storage controller cards. This procedure assumes that you have removed power from the server and removed the top cover.

## Procedure

- Step 1** Locate the dual Storage controller cards.
- Each Storage controller card has its own tray, as shown.

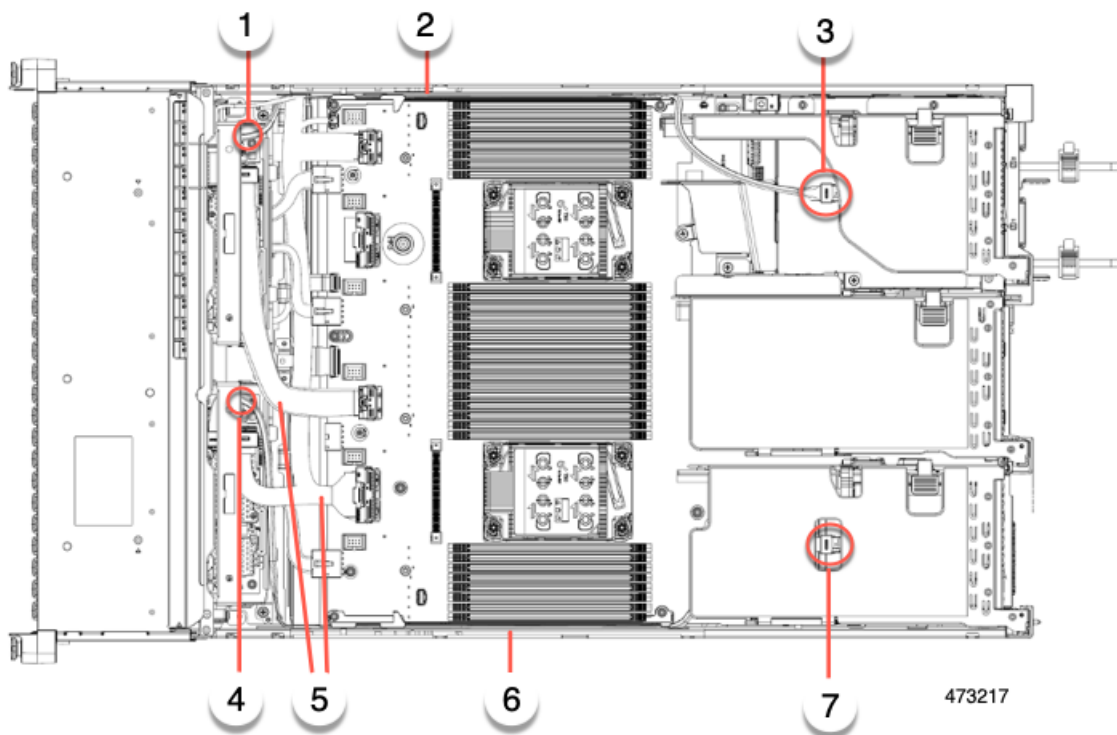


- Step 2** Remove the fan tray.
- For more information, see [Removing the Fan Tray](#), on page 90.

**Step 3** Disconnect the cables.

- a) For each Storage controller card, grasp the ribbon cable connector and disconnect it from the RAID card.  
You can leave the other end of the ribbon cable attached to the motherboard.
- b) For each Storage controller card, grasp the connector for the rear-drive cable, and disconnect it from the card.  
You can leave the other end of the rear-drive cable attached.





|   |                                                                   |   |                                                    |
|---|-------------------------------------------------------------------|---|----------------------------------------------------|
| 1 | SAS cable connection on Storage controller card.                  | 2 | SAS cable that connects to rear drives in Riser 3B |
| 3 | SAS cable connection on rear Riser 3B.                            | 4 | SAS cable connection on Storage controller card.   |
| 5 | Ribbon cables connecting Storage controller cards to motherboard. | 6 | SAS cable that connects to rear drives in Riser 1B |
| 7 | SAS cable connection on rear Riser 1B.                            |   |                                                    |

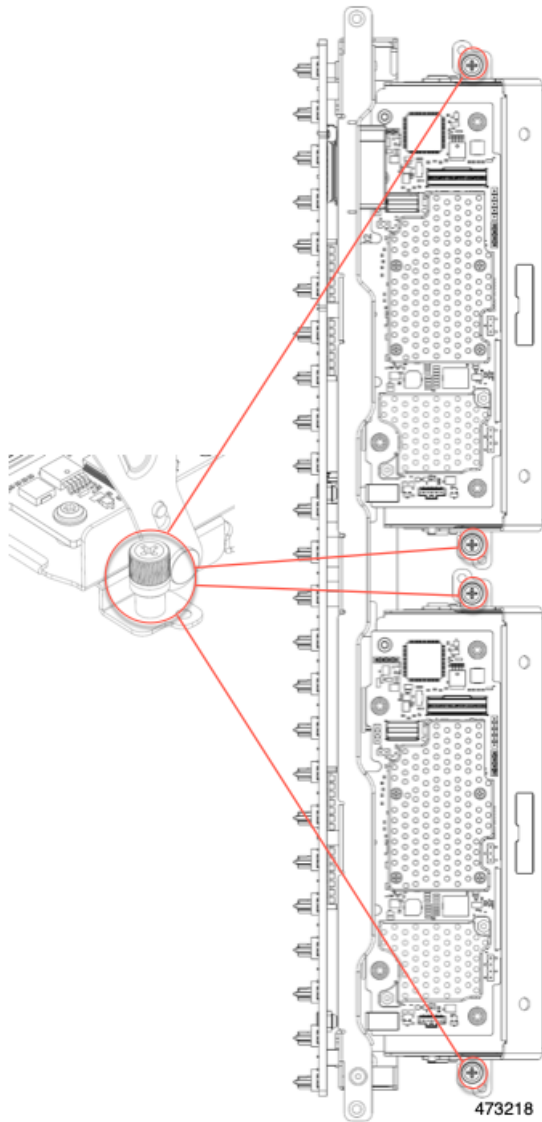
#### Step 4 Remove the Storage controller cards.

- Grasp the cable that leads to the rear drives and disconnect it from each card.
- Grasp the handle at the top of each card tray, and gently push it towards the rear of the server.

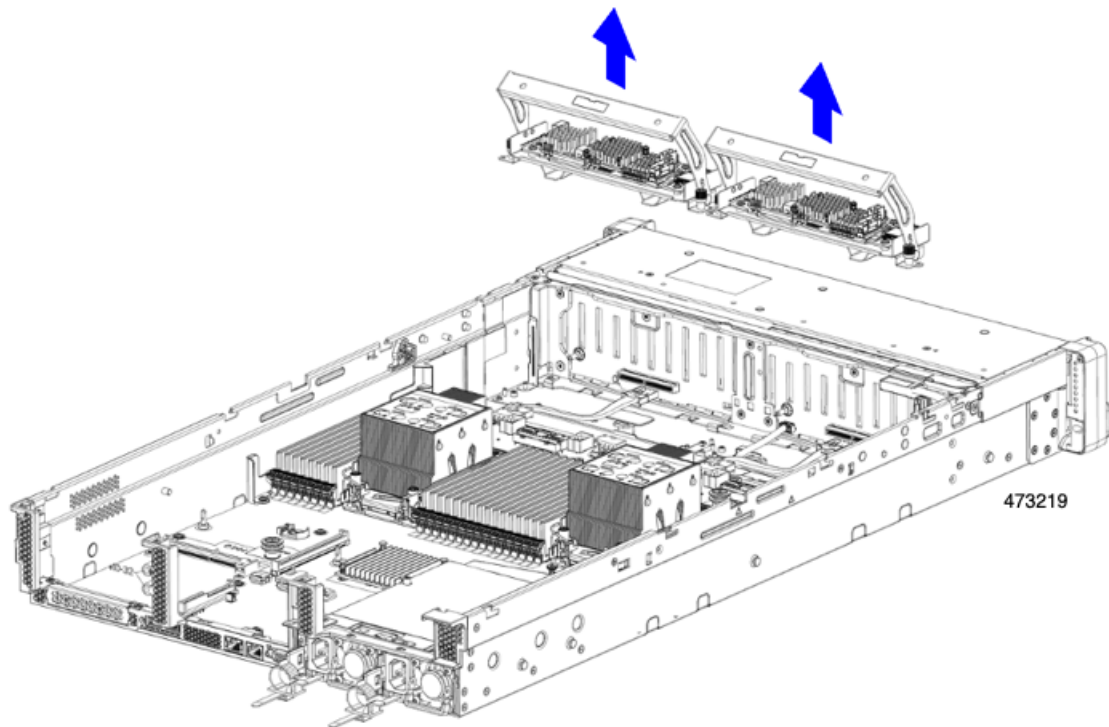
The handle should slide to the open position. This step disconnects the Storage controller card from a socket on an interior wall.

- Using a #2 Phillips screwdriver, loosen the captive screws at the edges of the trays.

## Removing the Dual Storage Controller Cards



- d) Grasp each card tray by the handle and lift the Storage controller cards out of the chassis.



---

**What to do next**

Reinsert the dual Storage controller cards. Go to [Installing the Dual Storage Controller Cards, on page 143](#).

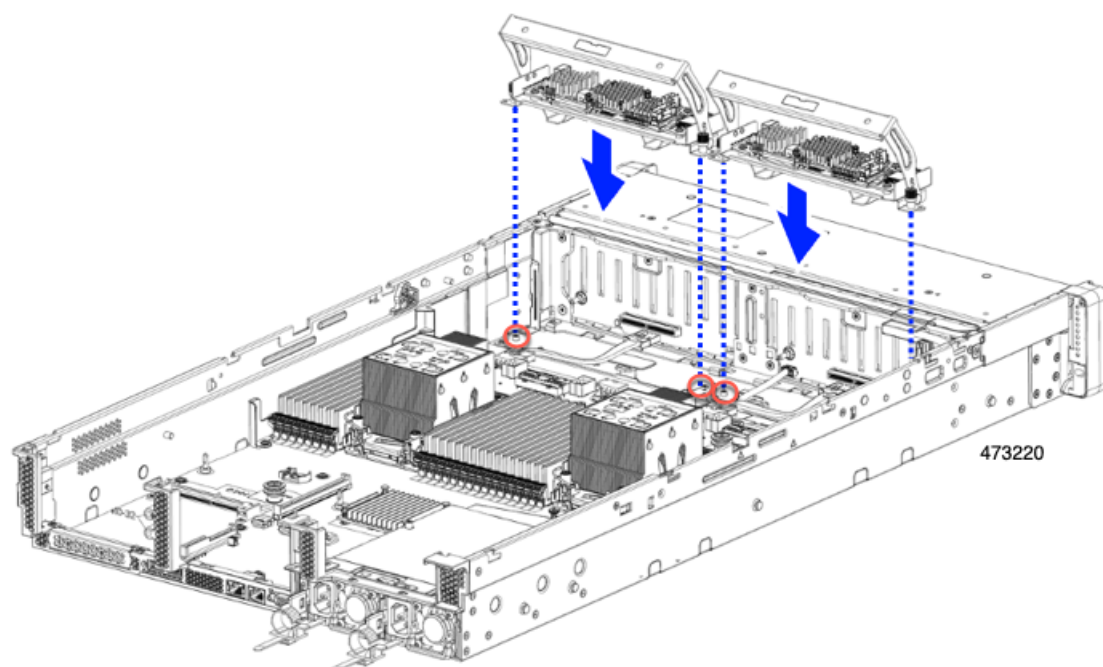
## Installing the Dual Storage Controller Cards

Use this procedure to install the dual Storage controller cards into the server. The Storage controller cards are contained in tray, which is replaceable.

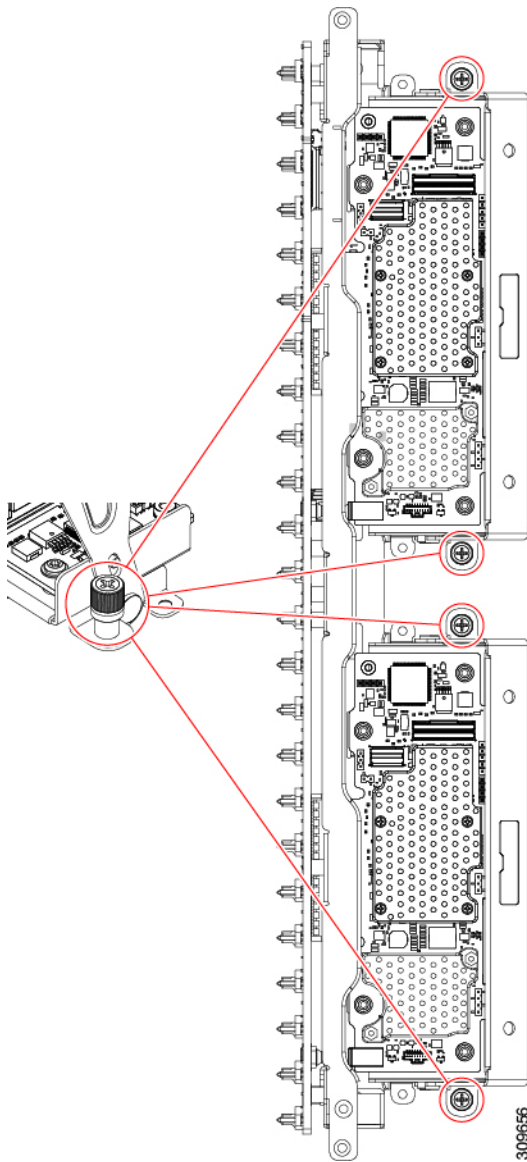
### Procedure

---

- Step 1** Grasp each card tray by the handle.
- Step 2** Install the Storage controller cards.
- Make sure that the handle of the tray is in the open position.
  - Make sure that the cables do not obstruct installing the Storage controller cards.
  - Orient the Storage controller card so that the thumbscrews align with their threaded standoffs on the motherboard.
  - Holding the card tray by the handle, keep the tray level and lower it into the server.



- e) Using a #2 Phillips head screwdriver, tighten the screws at the edges of each tray.



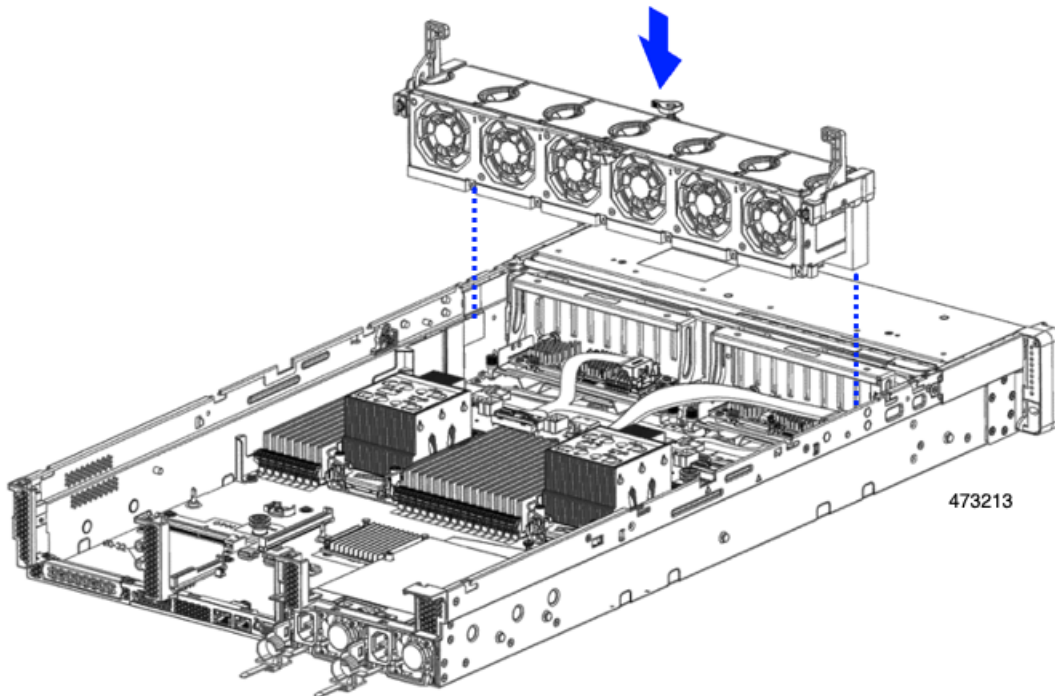
- f) Gently push the handle of the tray towards the front of the server.

This step seats each Storage controller card into its socket on the interior wall. You might feel some resistance as the card meets the socket. This resistance is normal.

**Step 3** Reconnect the cables.

**Step 4** Reinsert the fan tray.

For more information, see [Installing the Fan Tray, on page 91](#).



---

**What to do next**

Perform other maintenance tasks, if needed, or replace the top cover and restore facility power.

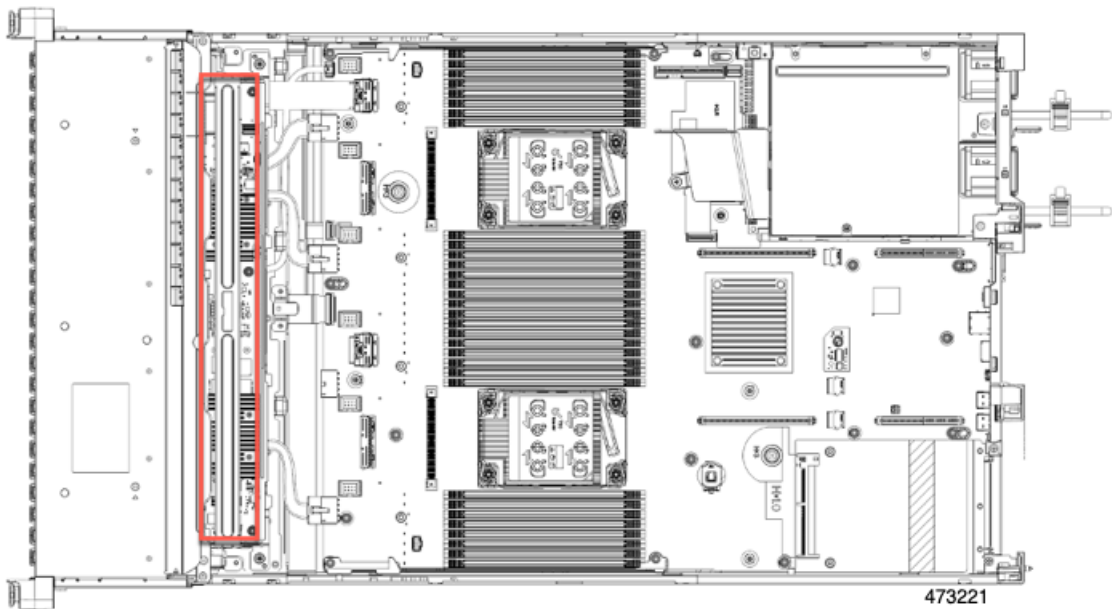
## Removing the Storage Controller Card

The Storage controller can contain either a single controller card in a single tray, or two controller cards each in its own tray. Use this procedure to remove the single Storage controller card. This procedure assumes that you have removed power from the server and removed the top cover.

---

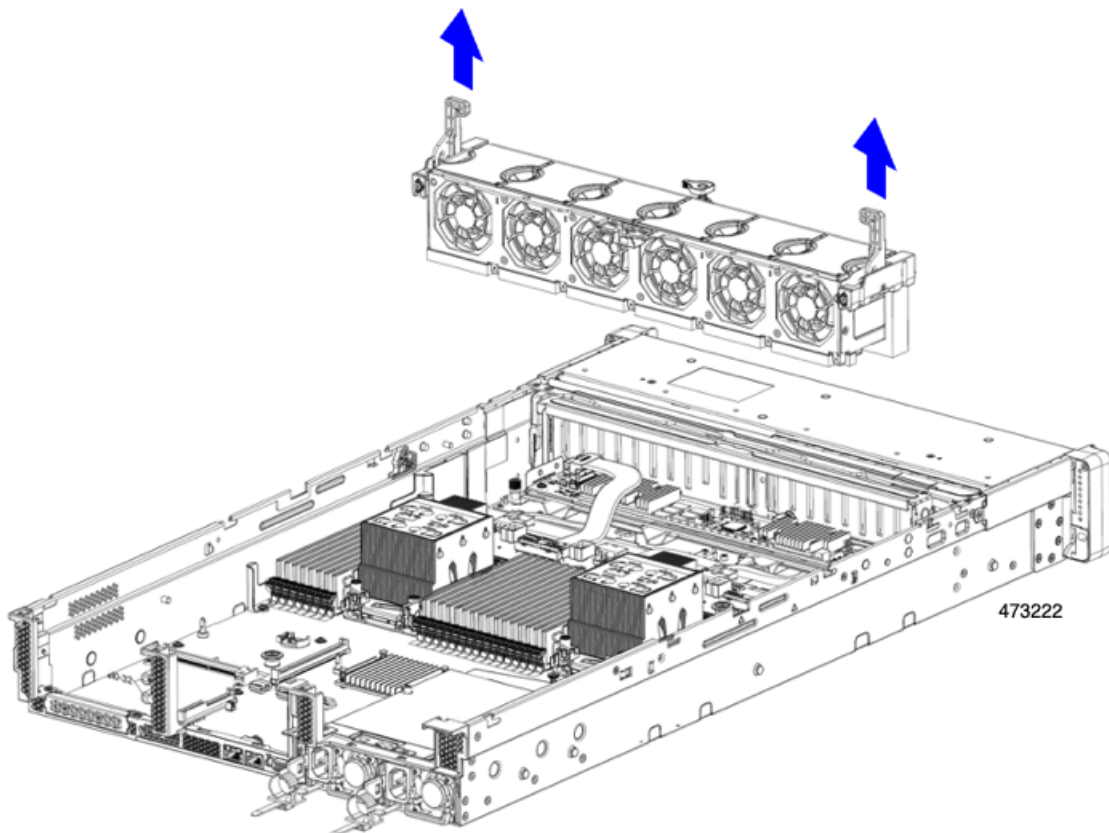
**Procedure**

**Step 1** Locate the Storage controller card.

**Step 2**

Remove the fan tray.

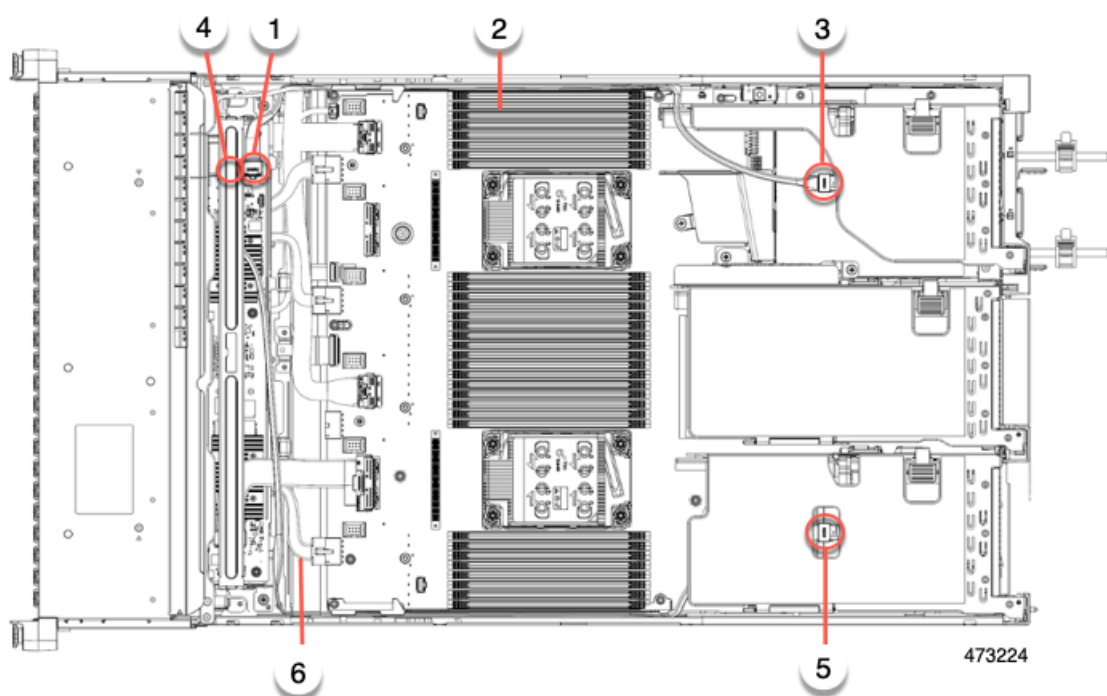
For more information, see [Removing the Fan Tray](#), on page 90.

**Step 3**

Disconnect the cables.

## Removing the Storage Controller Card

- a) Grasp the ribbon cable connectors and disconnect them from the Storage controller card.  
You can leave the other end of the ribbon cable attached to the motherboard.
- b) Grasp the connector for the rear-drive cables (1 and 4) and disconnect them from the Storage controller card.  
You can leave the other end of the rear-drive cable attached.

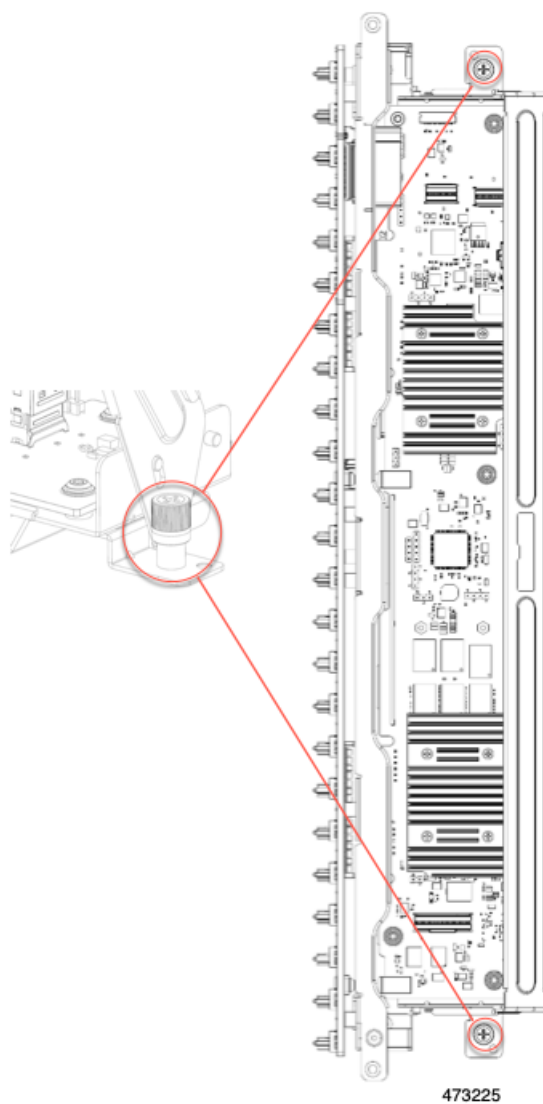


|   |                                                              |   |                                                              |
|---|--------------------------------------------------------------|---|--------------------------------------------------------------|
| 1 | Storage controller card connector for rear drives (Riser 3B) | 2 | SAS/SATA cable for rear drives                               |
| 3 | Connector for PCI Riser 3                                    | 4 | Storage controller card connector for rear drives (Riser 1B) |
| 5 | Connector for PCI Riser 1                                    | 6 | SAS/SATA cable for rear drives                               |

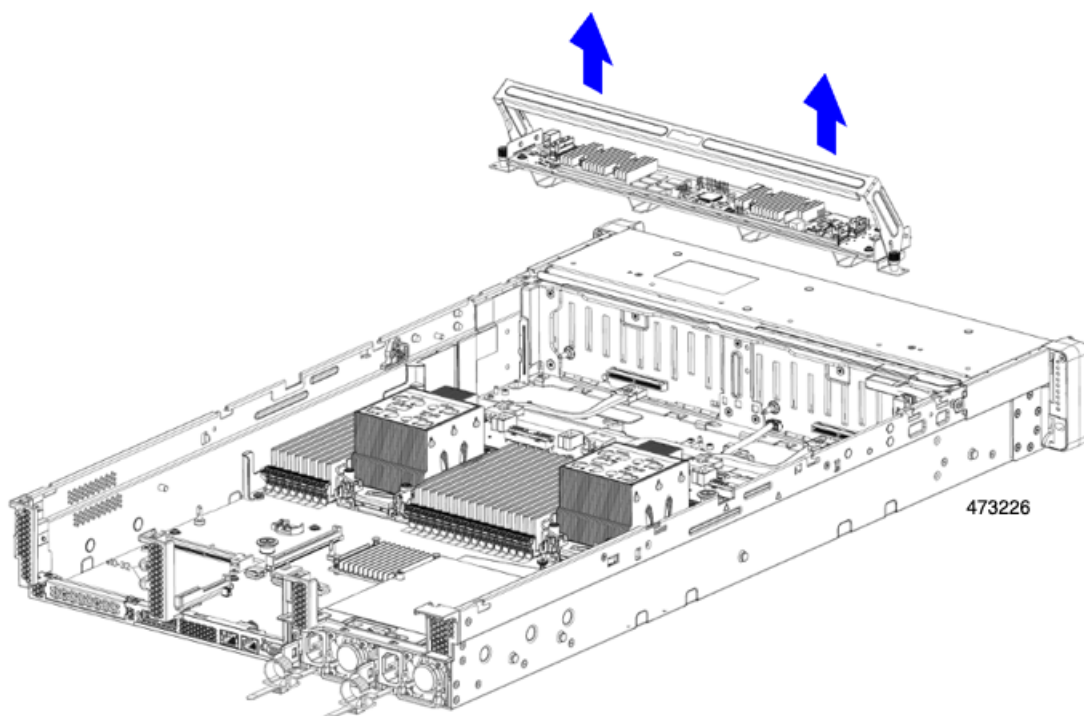
### Step 4 Remove the Storage controller card.

- a) Using both hands, grasp the handle at the top of the card tray, and gently push it towards the rear of the server.  
The handle should slide to the open position. This step disconnects the Storage controller card from a socket on an interior wall.
- b) Using a #2 Phillips screwdriver, loosen the captive screws at the edges of the tray.





- c) Using both hands, grasp the tray's handle, and keeping the Storage controller card tray level, lift it out of the chassis.



---

**What to do next**

Reinsert the Storage controller card. Go to [Installing the Storage Controller Card, on page 150](#).

## Installing the Storage Controller Card

Use this procedure to install the single Storage controller card into the server. The Storage controller card is contained in tray, which is replaceable.

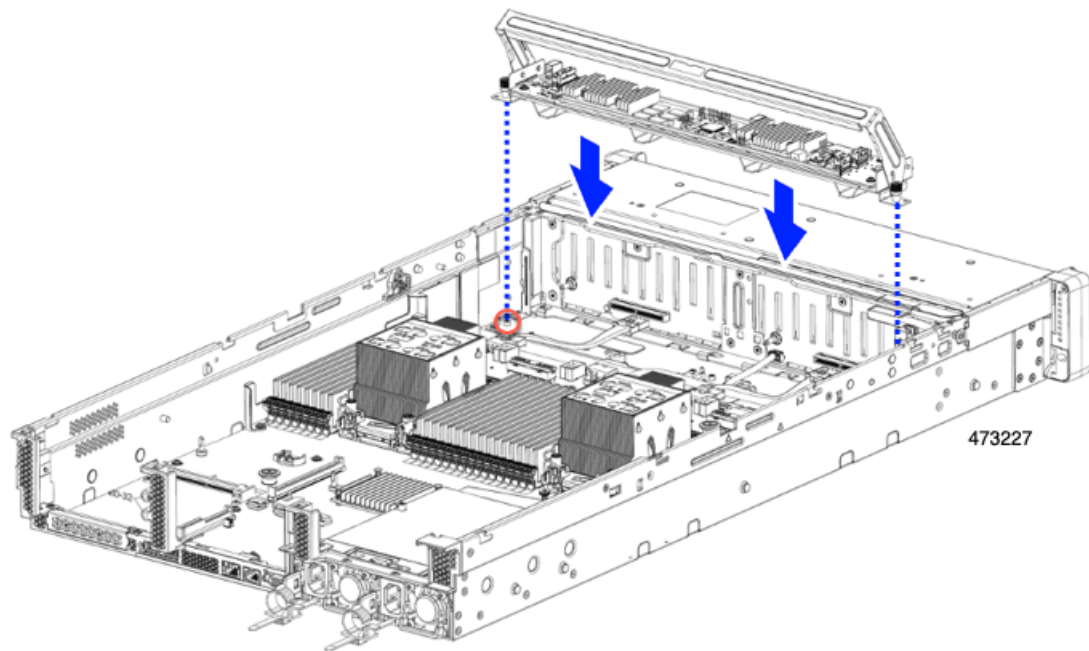
### Procedure

---

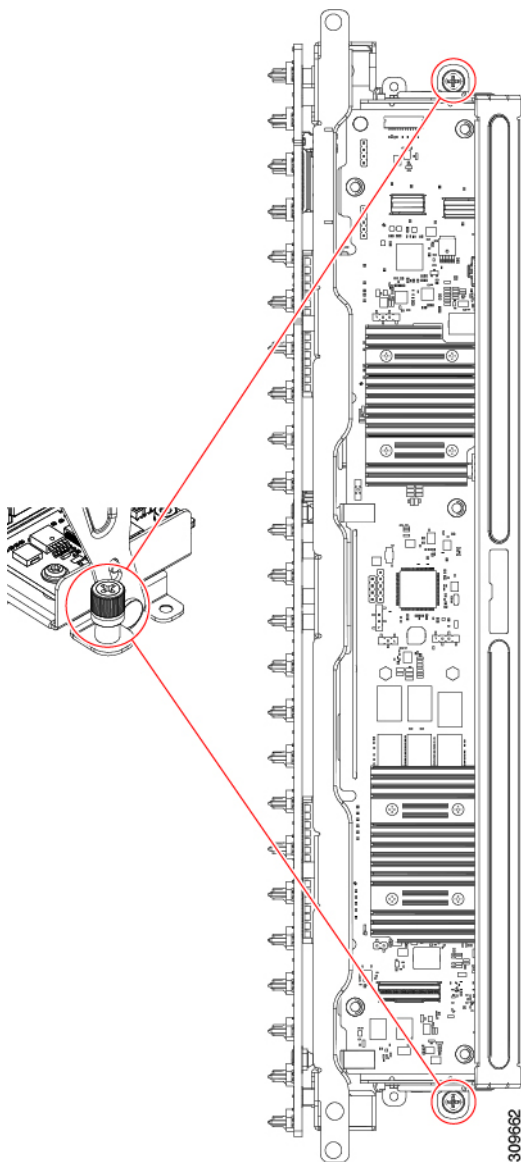
**Step 1** Grasp the card tray by the handle.

**Step 2** Install the Storage controller card.

- Make sure that the handle of the tray is in the open position.
- Make sure that the cables do not obstruct installing the Storage controller card.
- Orient the Storage controller card so that the thumbscrews align with their threaded standoffs on the motherboard.
- Using both hands, hold the card tray by the handle, keep the tray level, and lower it into the server.



- e) Using a #2 Phillips head screwdriver, tighten the screws at the edges of the tray.



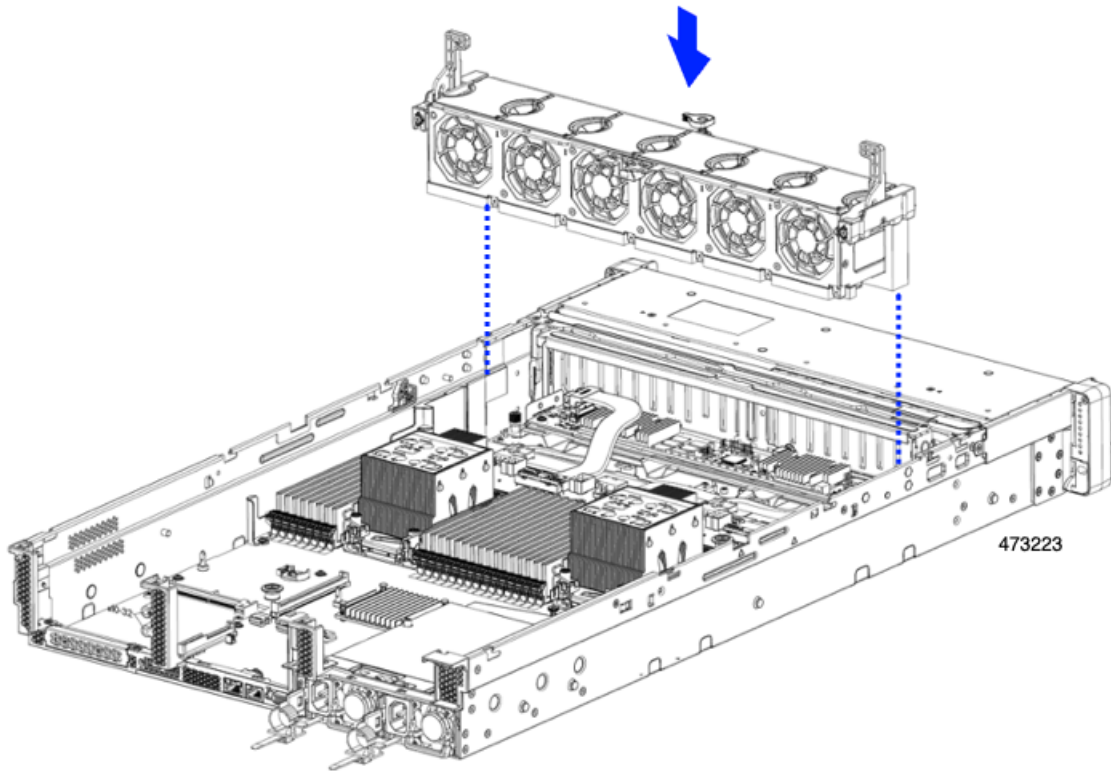
- f) Using both hands, make sure to apply equal pressure to both sides of the handle, and gently push the handle of the tray towards the front of the server.

This step seats the Storage controller card into its sockets on the interior wall. You might feel some resistance as the card meets the socket. This resistance is normal.

**Step 3** Reconnect the cables.

**Step 4** Reinsert the fan tray.

For more information, see [Installing the Fan Tray, on page 91](#).

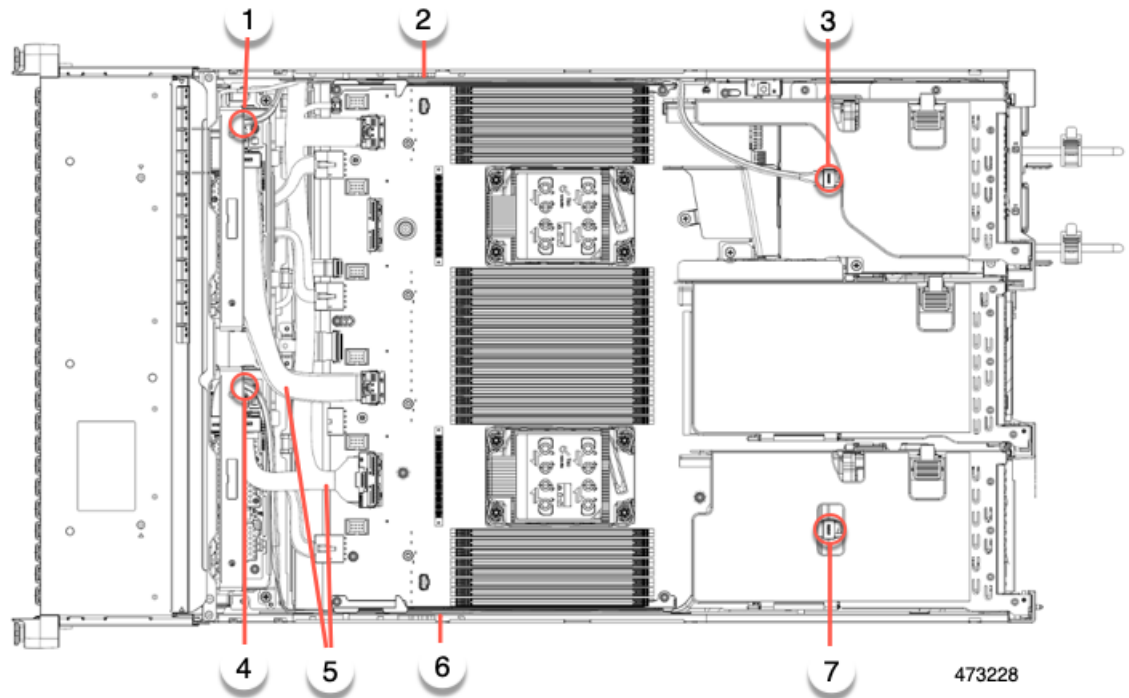
**What to do next**

Perform other maintenance tasks, if needed, or replace the top cover and restore facility power.

**Verify Cabling**

After installing a Storage controller card, the cabling between the card(s) and rear drives should be as follows.

- For a 24-drive server, verify the following:
  - the SAS/SATA cable is connected to the controller card and Riser 3B
  - the SAS/SATA cable is connected to the controller card and the Riser 1B
  - both ribbon cables are connected to the controller card and the motherboard



|   |                                                                   |   |                                                    |
|---|-------------------------------------------------------------------|---|----------------------------------------------------|
| 1 | SAS cable connection on Storage controller card.                  | 2 | SAS cable that connects to rear drives in Riser 3B |
| 3 | SAS cable connection on rear Riser 3B.                            | 4 | SAS cable connection on Storage controller card.   |
| 5 | Ribbon cables connecting Storage controller cards to motherboard. | 6 | SAS cable that connects to rear drives in Riser 1B |
| 7 | SAS cable connection on rear Riser 1B.                            |   |                                                    |

## Cabling for UCSC-240-M8SX Servers

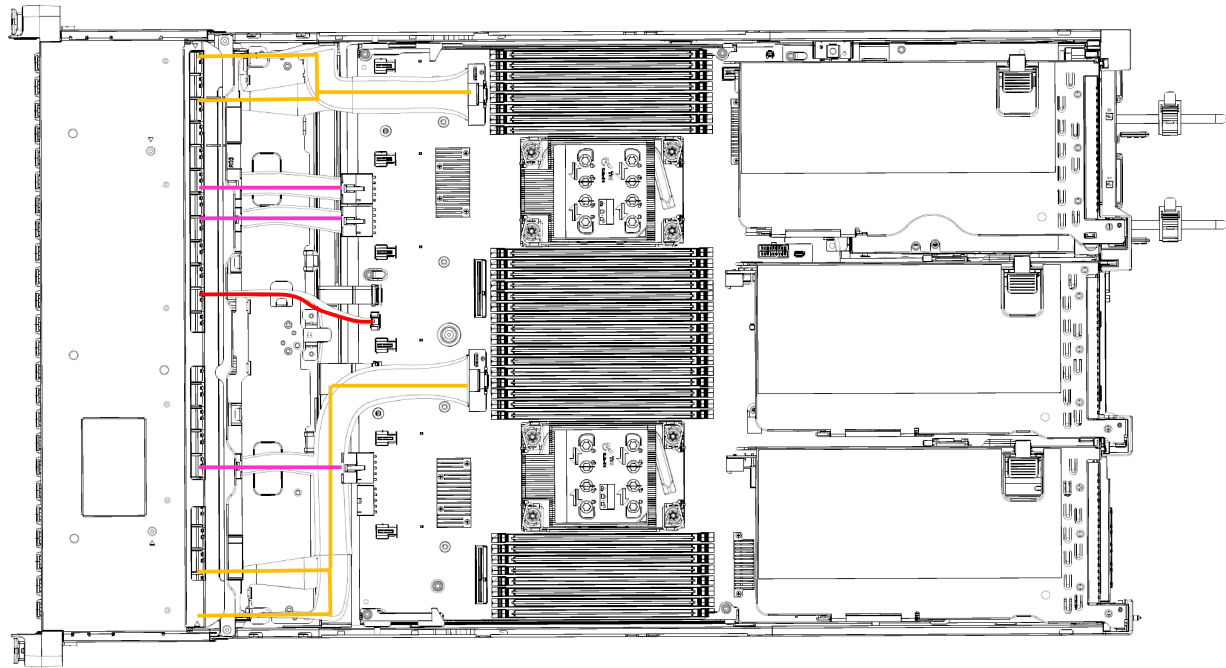
The UCSC-240-M8SX servers have multiple different storage controller options for front- and rear-loading drives. Use the cabling diagrams in this topic to connect the storage controllers to local storage.



**Note** For information about the location and identity of the different SFF backplane connectors, see [Backplane Connectors, on page 137](#).

### Cisco UCSC-240-M8SX with No Storage Controller

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives. This configuration has no front storage controller.

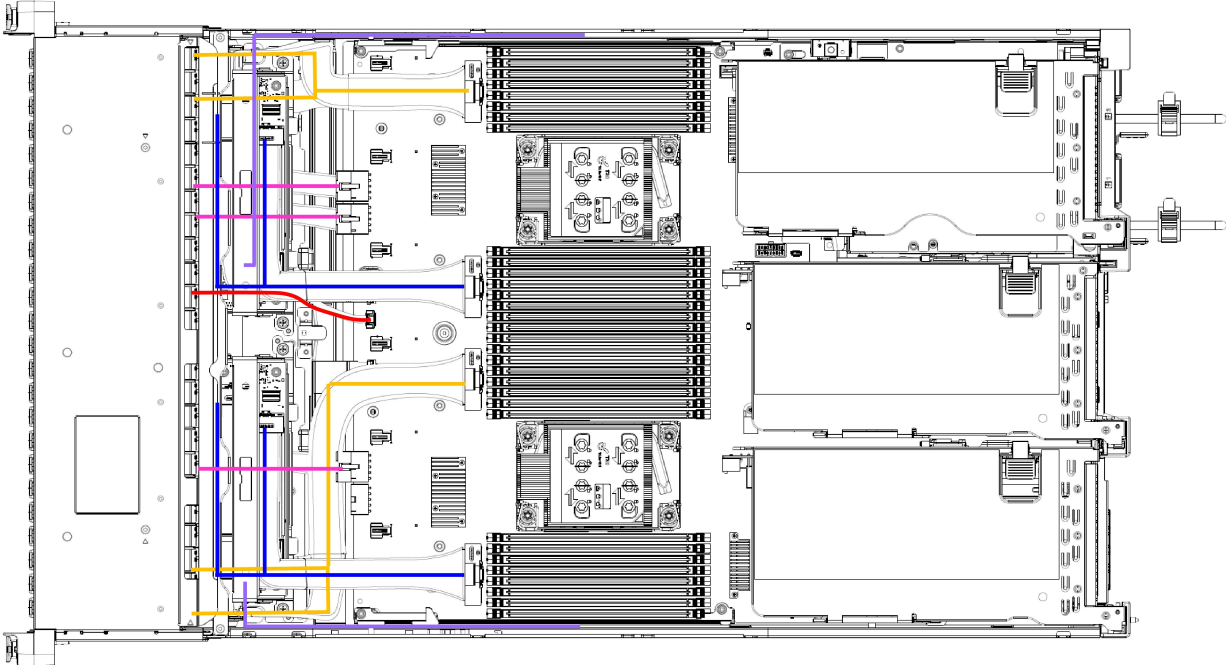


489776

| Cable                                                         | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow | <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the NVME-A2 and NVME-A1 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the NVME-B2 and NVME-B1 connectors on the backplane.</p> |
| HDD backplane CFG cable                                       | Red    | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                  |
| HDD Bbackplane PWR cables, 3                                  | Pink   | Connects motherboard to HDD backplane power connectors (PWR-1 by CPU1 , PWR-2, and PWR-3 by CPU 2)                                                                                                                                                                                                                                                                                                                                                          |

### Cisco UCSC-240-M8SX with Dual UCSC-RAID-M1L16

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives. This configuration features two 16-drive Cisco 24G Tri-Mode M1 RAID controller (UCSC-RAID-M1L16).



489777

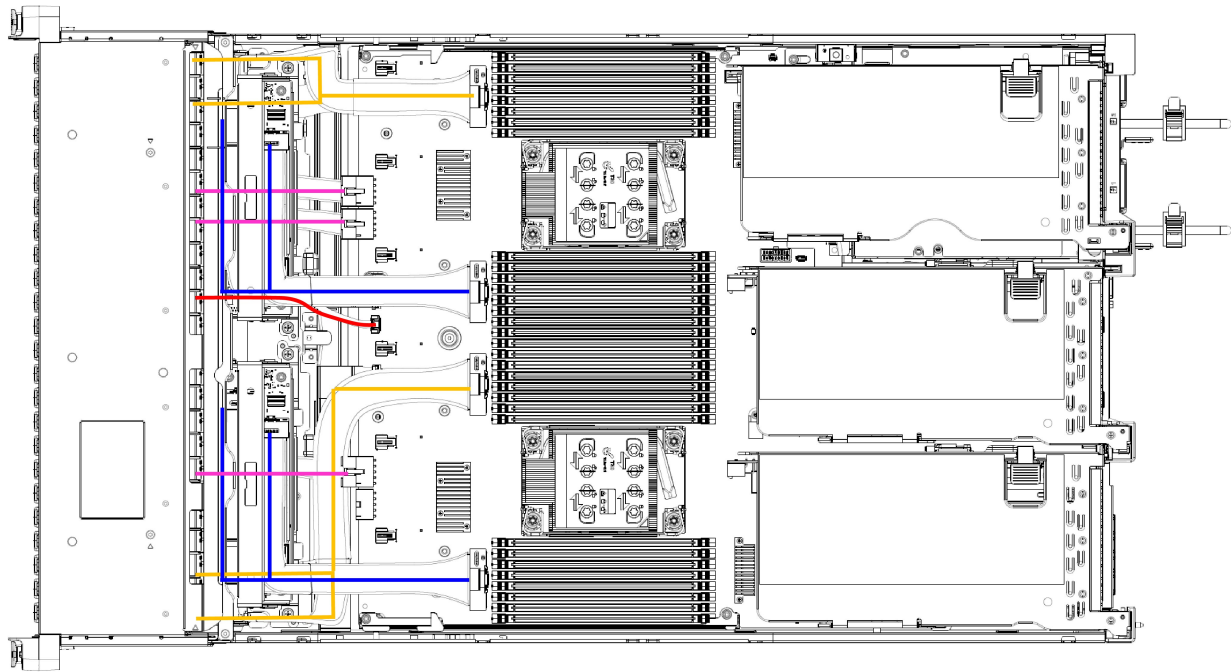
| Cable                                                         | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the NVME-A2 and NVME-A1 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the NVME-B2 and NVME-B1 connectors on the backplane.</p> |



| Cable                                              | Color    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MICIO NVMe Y cable to storage controller cables, 2 | Blue     | <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connectors on the storage controller.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connectors on the storage controller.</p> |
| HDD backplane CFG cable                            | Red      | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                |
| HDD Bbackplane PWR cables, 3                       | Pink     | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                                                                                                                                                                                                                                                                    |
| SuperCap cables, 2                                 | Lavender | Connects each Supercap to the storage controller.                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### Cisco UCSC-240-M8SX with Dual UCSC-HBA-M1L16

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives. This configuration features two 16-drive Cisco 24G Tri-Mode M1 HBA controller (UCSC-HBA-M1L16).



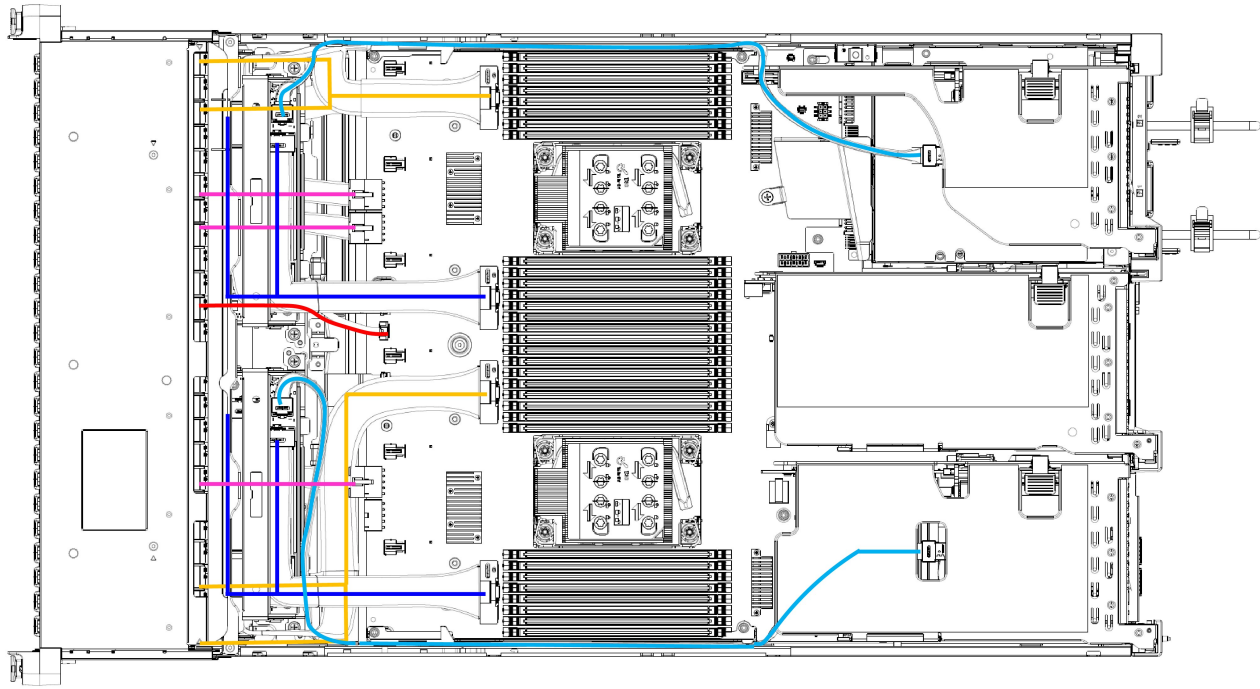
489778

| Cable                                                         | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the NVME-A2 and NVME-A1 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the NVME-B2 and NVME-B1 connectors on the backplane.</p> |

| Cable                                              | Color | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MICIO NVMe Y cable to storage controller cables, 2 | Blue  | <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connectors on the storage controller.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connectors on the storage controller.</p> |
| HDD backplane CFG cable                            | Red   | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                  |
| HDD Bbackplane PWR cables, 3                       | Pink  | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                                                                                                                                                                                                                                                                      |

#### Cisco UCSC-240-M8SX with Dual UCSC-HBA-M1L16 and Rear Drives

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives and 4 rear SFF drives. This configuration features two 16-drive Cisco 24G Tri-Mode M1 HBA controllers (UCSC-HBA-M1L16).



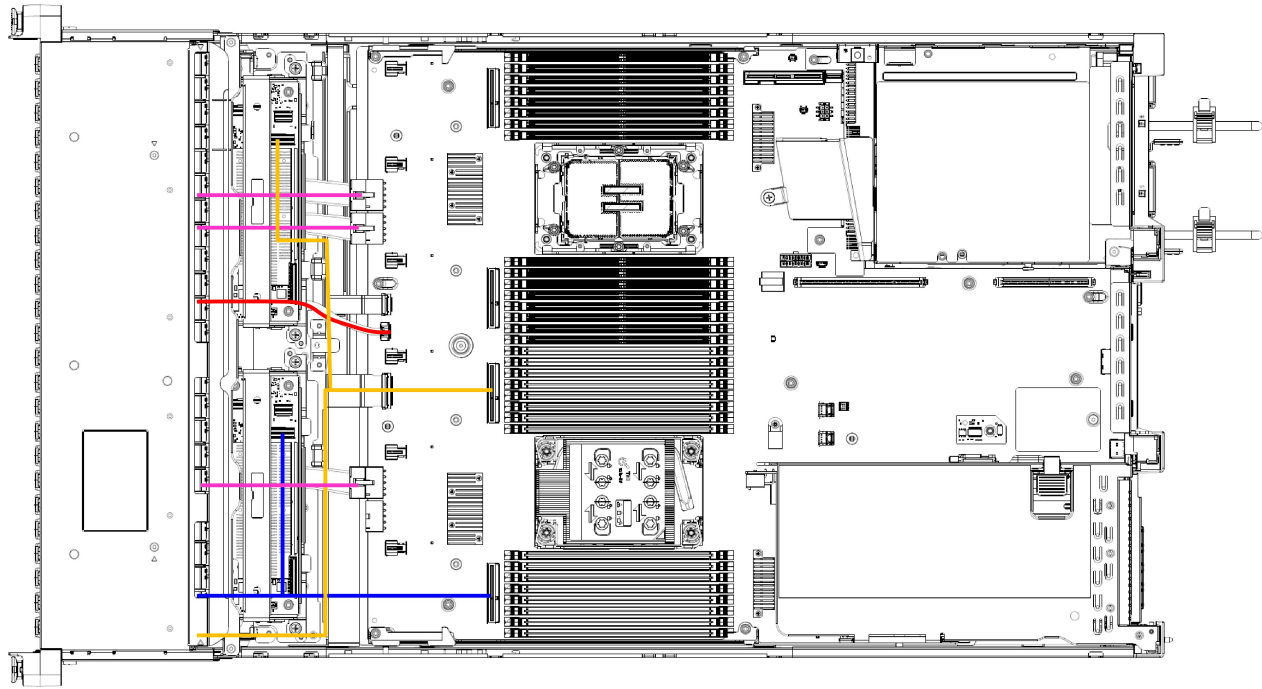
489779

| Cable                                                         | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the NVME-A1 and NVME-A2 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the NVME-B1 and NVME-B2 connectors on the backplane.</p> |

| Cable                                              | Color | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MICIO NVMe Y cable to storage controller cables, 2 | Blue  | <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connectors on the storage controller.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connectors on the storage controller.</p> |
| HDD backplane CFG cable                            | Red   | Connects motherboard to HDD backplane byt the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                 |
| HDD Bbackplane PWR cables, 3                       | Pink  | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                                                                                                                                                                                                                                                                      |
| Slimline SAS Cable, 4                              | Cyan  | <p>Connects the storage controller 1 (by CPU 2) to the rear SAS connector for PCI Riser 3</p> <p>Connects storage controller 2 (by CPU 1) to the rear SAS connector for PCIe Riser 1</p>                                                                                                                                                                                                                                                                                    |

### Cisco UCSC-240-M8SX with a Single CPU and Dual UCSC-HBA-M1L16

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives. This single CPU configuration two 16-drove Cisco 24G Tri-Mode M1 HBA controllers (UCSC-HBA-M1L16).

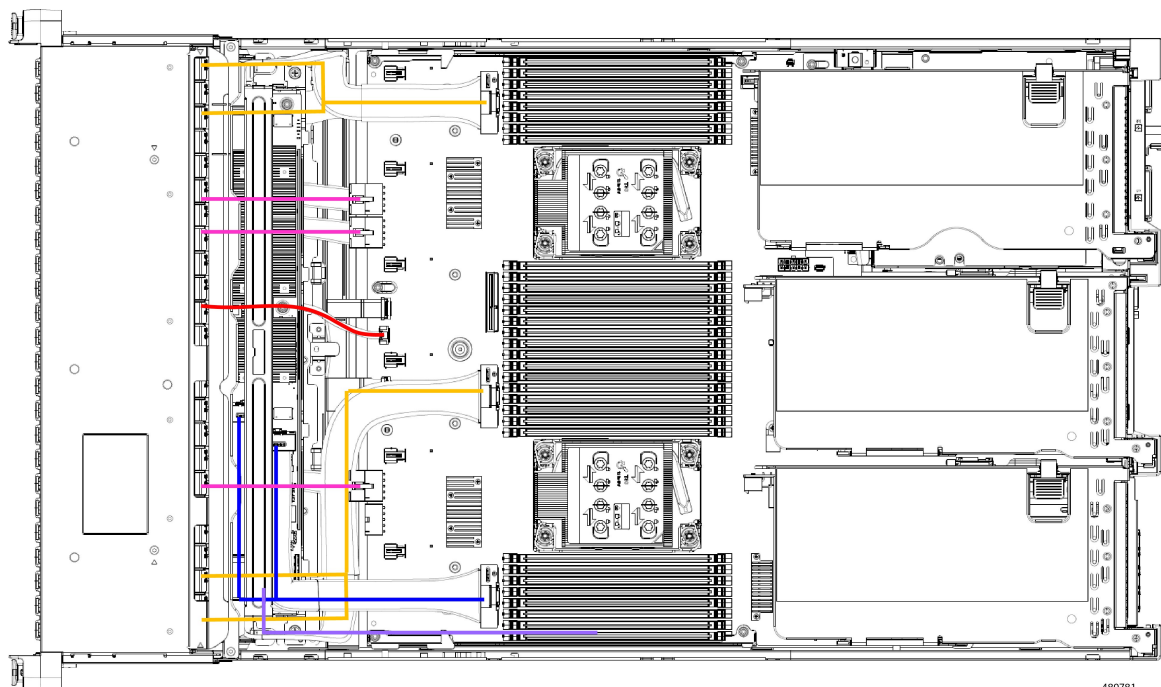


489780

| Cable                                                         | Color  | Notes                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow | The single-connector end of the cable connects to the P-2 motherboard connector in front of the cntral DIMM block. The dual-connector end of the cable connects to the NVME-B2 connector on the backplane and the PCIe-1 connector on storage controller 2. |
| MICIO NVMe Y cable to storage controller cables, 2            | Blue   | The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the NVME-B1 connector on the backplane and the PCIe-1 connector on storage controller 1.  |
| HDD backplane CFG cable                                       | Red    | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                  |
| HDD Bbackplane PWR cables, 3                                  | Pink   | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                                                      |

### Cisco UCSC-240-M8SX with UCSC-RAID-MP1L32

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives. This configuration features the 32-drive Cisco 24G Tri-Mode M1 RAID controller (UCSC-HBA-MP1L32).



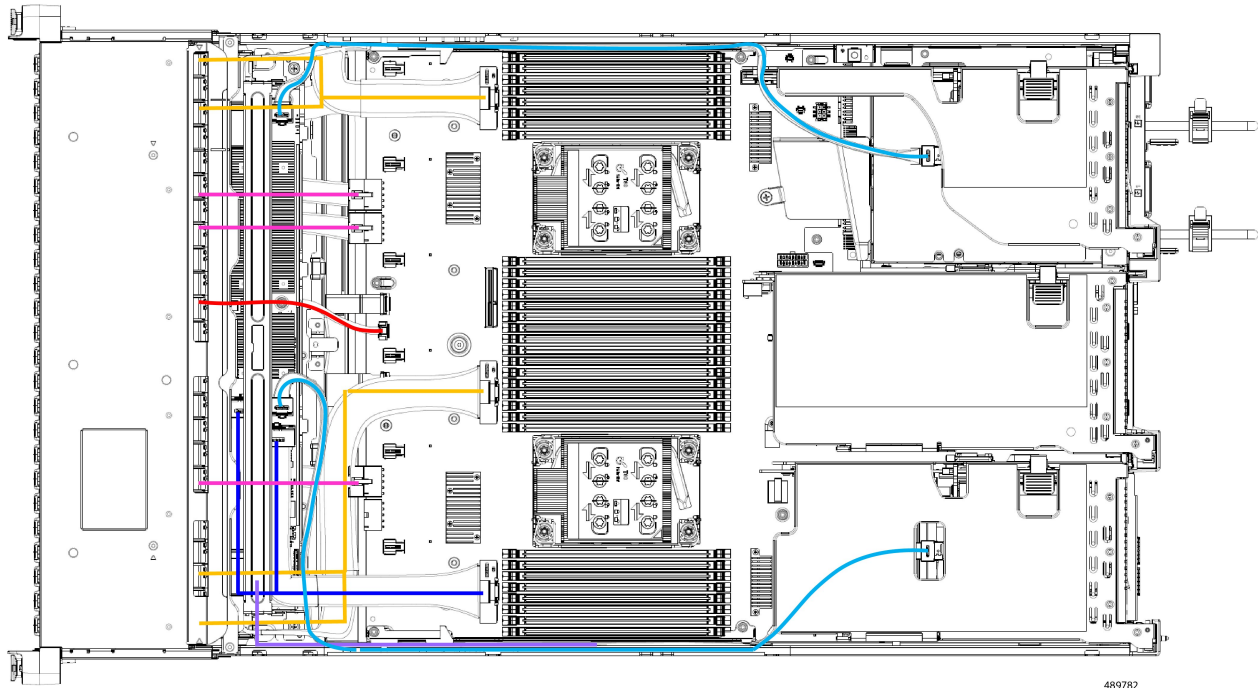
489781

| Cable                                                         | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the NVMe-A2 and NVMe-A1 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the NVMe-B2 and NVMe-B1 connectors on the backplane.</p> |

| Cable                                             | Color    | Notes                                                                                                                                                                                                                        |
|---------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MICIO NVMe Y cable to storage controller cable, 1 | Blue     | The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connector on the storage controller. |
| HDD backplane CFG cable                           | Red      | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                   |
| HDD Bbackplane PWR cables, 3                      | Pink     | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                       |
| SuperCap Cable, 1                                 | Lavender | Connects the Supercap to the storage controller                                                                                                                                                                              |

### Cisco UCSC-240-M8SX with UCSC-RAID-MP1L32 and Rear Drives

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives and four rear SFF drives. This configuration features the 32-drive Cisco 24G Tri-Mode M1 RAID controller (UCSC-HBA-MP1L32).

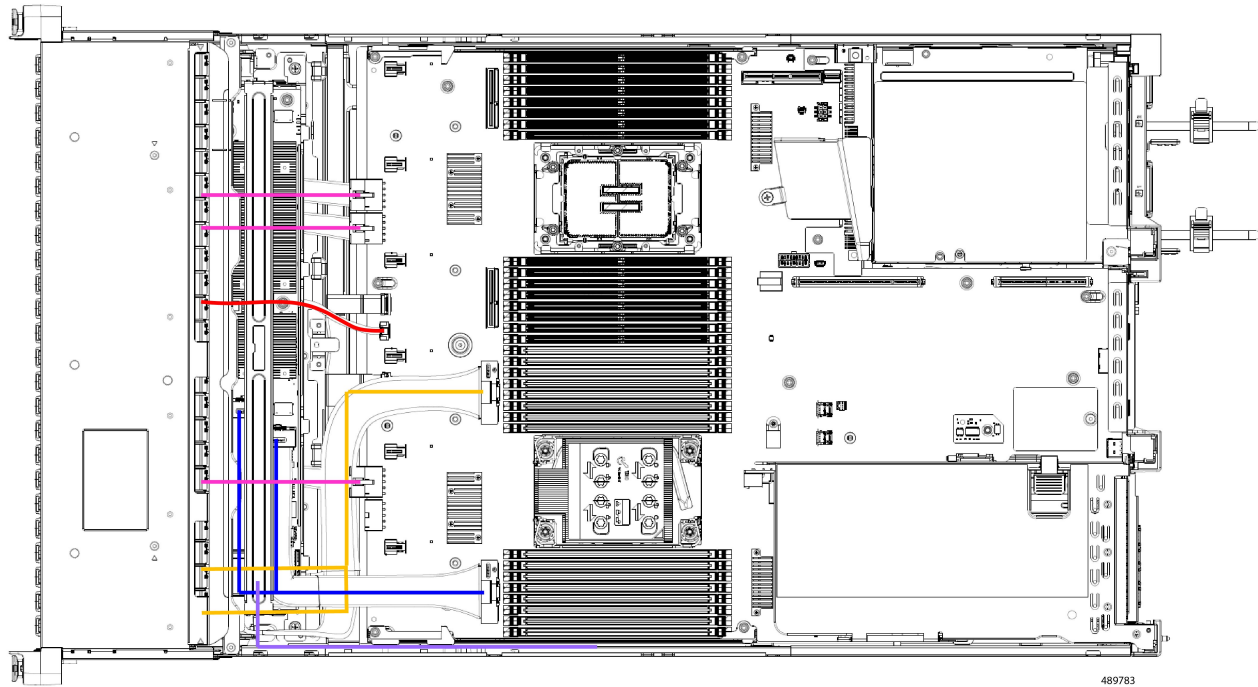




| Cable                                                         | Color    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cables, 2<br>(x16 to x8) | Yellow   | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the NVMe-A2 and NVMe-A1 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the NVMe-B2 and NVMe-B1 connectors on the backplane.</p> |
| MICIO NVMe Y cable to storage controller cable                | Blue     | The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connector on the storage controller.                                                                                                                                                                                                                                  |
| HDD backplane CFG cable                                       | Red      | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                                                                                                                                                                                                                                                        |
| HDD Bbackplane PWR cables, 3                                  | Pink     | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                                                                                                                                                                                                                                                        |
| SuperCap Cable, 1                                             | Lavender | Connects the Supercap to the storage controller                                                                                                                                                                                                                                                                                                                                                                                                               |
| Slimline SAS Cable, 4                                         | Cyan     | <p>Connects the storage controller (by CPU 2) to the rear SAS connector for PCI Riser 3</p> <p>Connects the storage controller (by CPU 1) to the rear SAS connector for PCIe Riser 1</p>                                                                                                                                                                                                                                                                      |

### Cisco UCSC-240-M8SX with a Single CPU and UCSC-RAID-MP1L32

Use this diagram to connect a UCSC-240-M8SX with 24 front-loading SFF drives in a single CPU configuration. This configuration features the 32-drive Cisco 24G Tri-Mode M1 RAID controller (UCSC-HBA-MP1L32).



489783

| Cable                                                     | Color    | Notes                                                                                                                                                                                                                        |
|-----------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane cable<br>(x16 to x8) | Yellow   | The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the NVMe-B2 and NVMe-B1 connectors on the backplane.     |
| MICIO NVMe Y cable to storage controller cable            | Blue     | The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the PCIe-1 and PCIe-2 connector on the storage controller. |
| HDD backplane CFG cable                                   | Red      | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                   |
| HDD Bbackplane PWR cables, 3                              | Pink     | Connects motherboard to HDD backplane power (PWR-1 by CPU 1, PWR-2, and PWR-3 by CPU2)                                                                                                                                       |
| SuperCap Cable, 1                                         | Lavender | Connects the Supercap to the storage controller                                                                                                                                                                              |

## Cabling for UCSC-240-E3S Servers

The UCSC-240-M8E3S servers have multiple different storage controller options for front- and rear-loading drives. Use the cabling diagrams in this topic to connect the storage controllers to local storage.



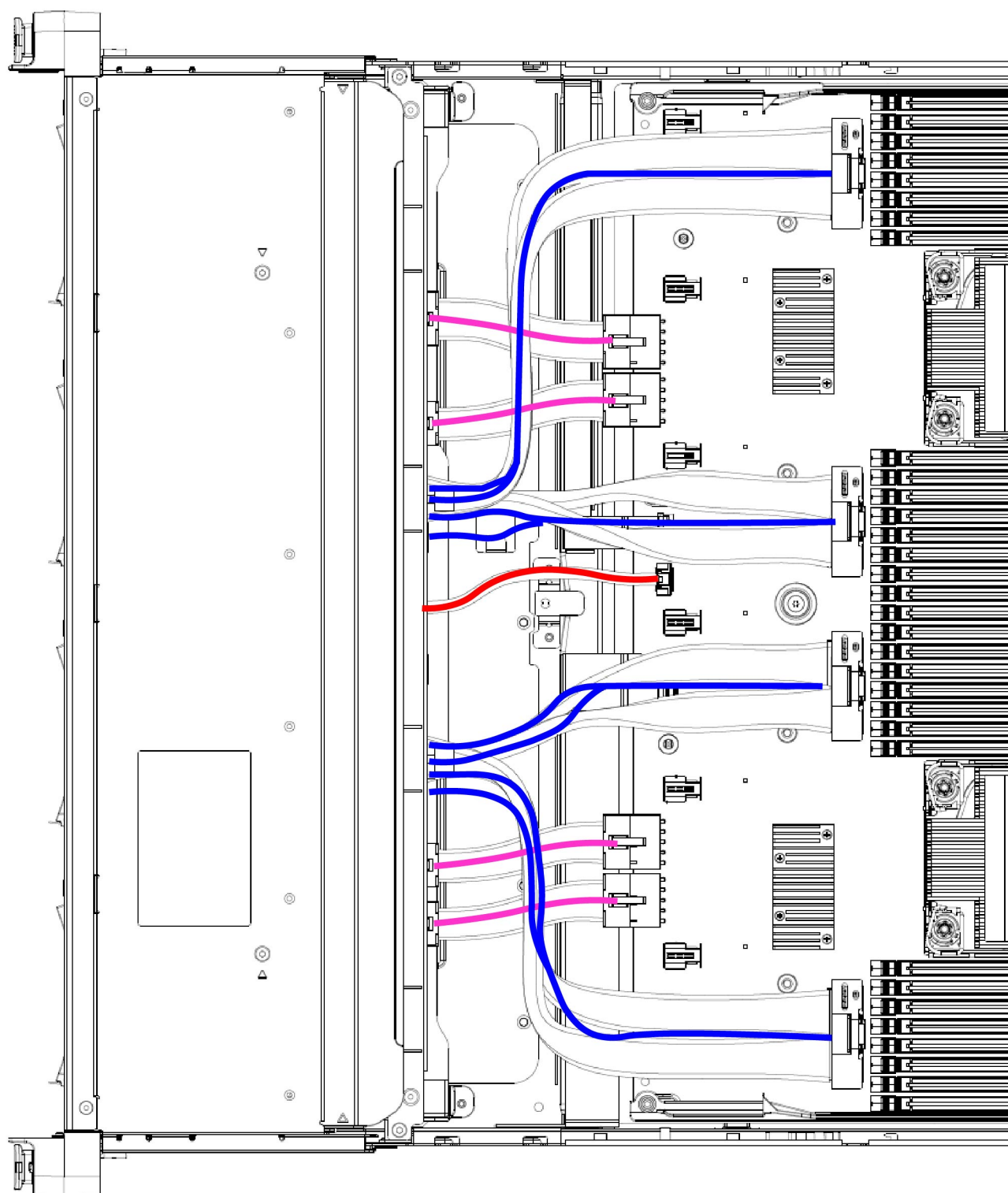
---

**Note** For information about the location and identity of the different NVMe backplane connectors, see [Backplane Connectors, on page 137](#).

---

### Cisco UCSC-240-M8E3S with 16 1T x4 Signaling Front Drives and Rear Drives

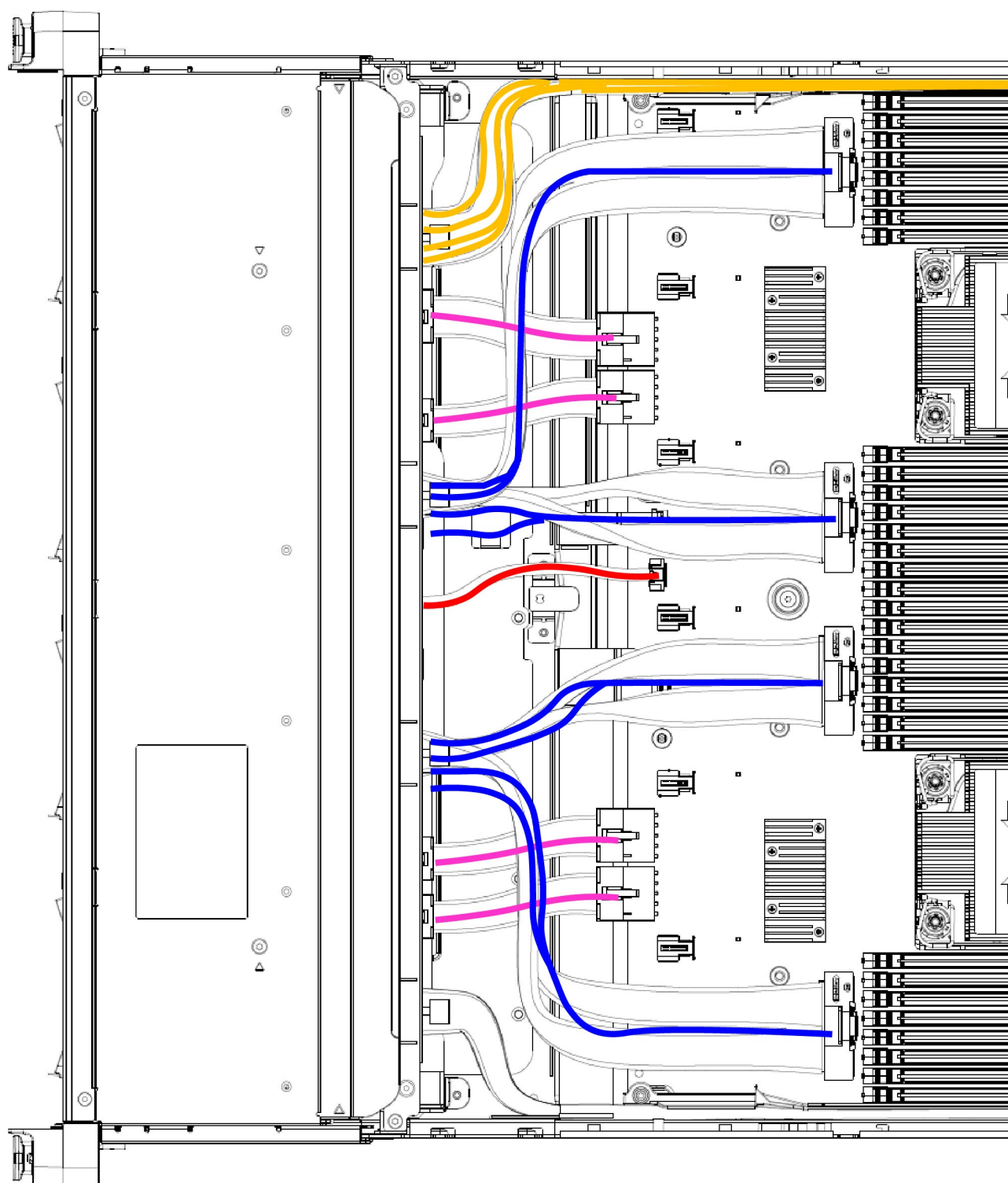
Use this diagram to connect a UCSC-240-M8E3S with 16 1TB drives x4 Signalling and four E3.S rear drives.



| Cable                                                                                  | Color    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane, Front MCIO to backplane cables, 4<br>(x16 to x8) | Blue     | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P5 and P6 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P7 and P8 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P9 and P8 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P11 and P12 connectors on the backplane.</p> |
| HDD backplane CFG cable                                                                | Red      | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HDD Bbackplane PWR cable, 4                                                            | Pink     | Connects motherboard to HDD backplane power connectors (PWR-3 and PWR-4 by CPU 2, and PWR-1 and PWR-2 by CPU1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Rear E3.S x8 cables, 4                                                                 | Lavender | <p>Connects to the Rear SSD1 and Rear SSD2 connector on the motherboard and PCIe Riser 3</p> <p>Connects to the Rear SSD1 and Rear SSD2 connector on the motherboard and PCIe Riser 1</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

### Cisco UCSC-240-M8E3S with 24 1T x4 Signaling Front Drives

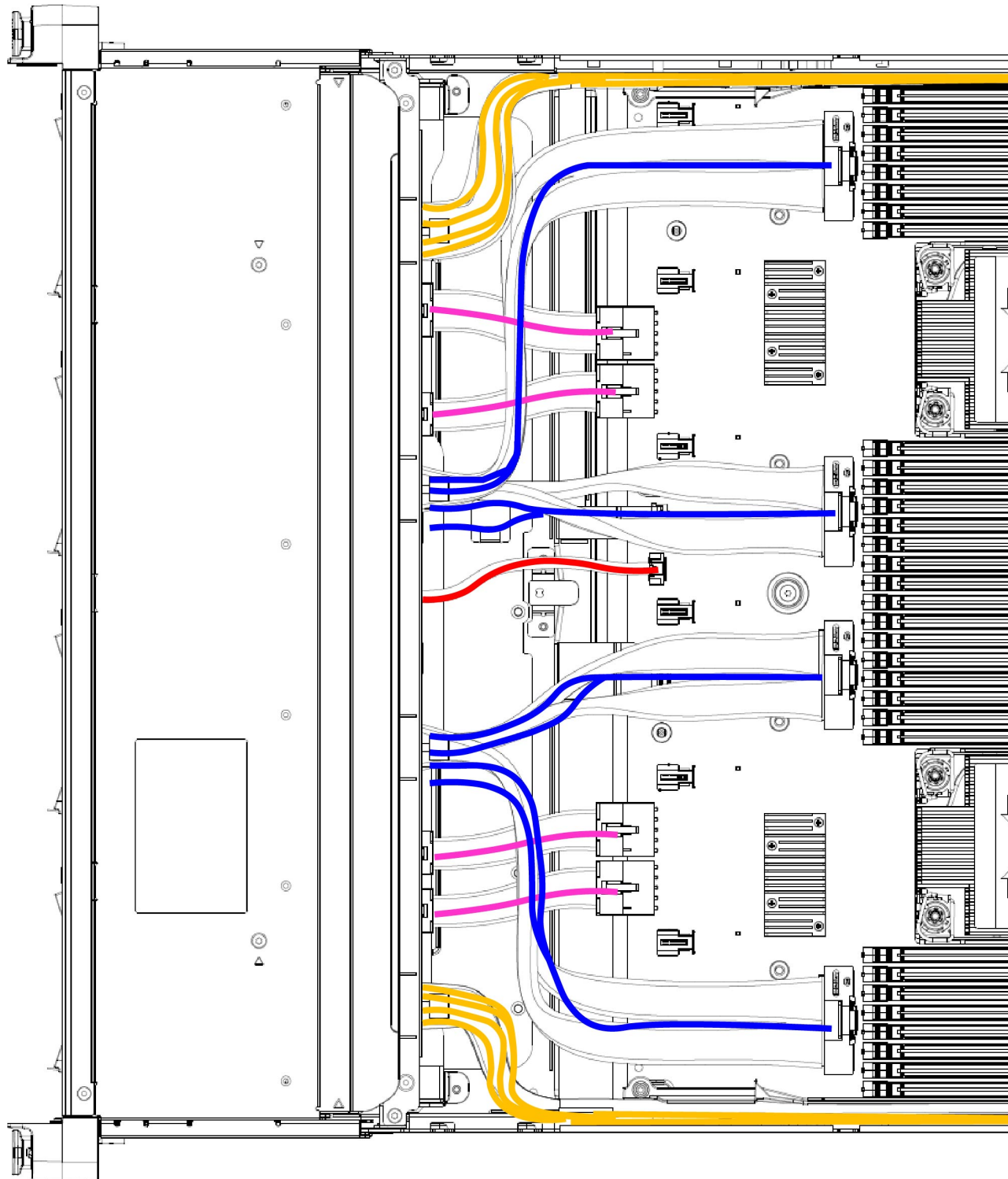
Use this diagram to connect a UCSC-240-M8E3S with 24 1TB drives x4 Signalling.



| Cable                                                                                  | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe X cable to drive backplane, Riser 2E to backplane cables, 2<br>(x16 to x8)   | Yellow | Connects the P1 through P4 connectors on the backplane to the connectors on Riser 2E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| MCIO NVMe Y cable to drive backplane, Front MCIO to backplane cables, 4<br>(x16 to x8) | Blue   | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P5 and P6 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P7 and P8 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P9 and P8 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P11 and P12 connectors on the backplane.</p> |
| HDD backplane CFG cable                                                                | Red    | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HDD Bbackplane PWR cable, 4                                                            | Pink   | Connects motherboard to HDD backplane power connectors (PWR-3 and PWR-4 by CPU 2, and PWR-1 and PWR-2 by CPU1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### Cisco UCSC-240-M8E3S with 32 1T x4 Signaling Front Drives

Use this diagram to connect a UCSC-240-M8E3S with 32 1TB drives x4 Signalling.

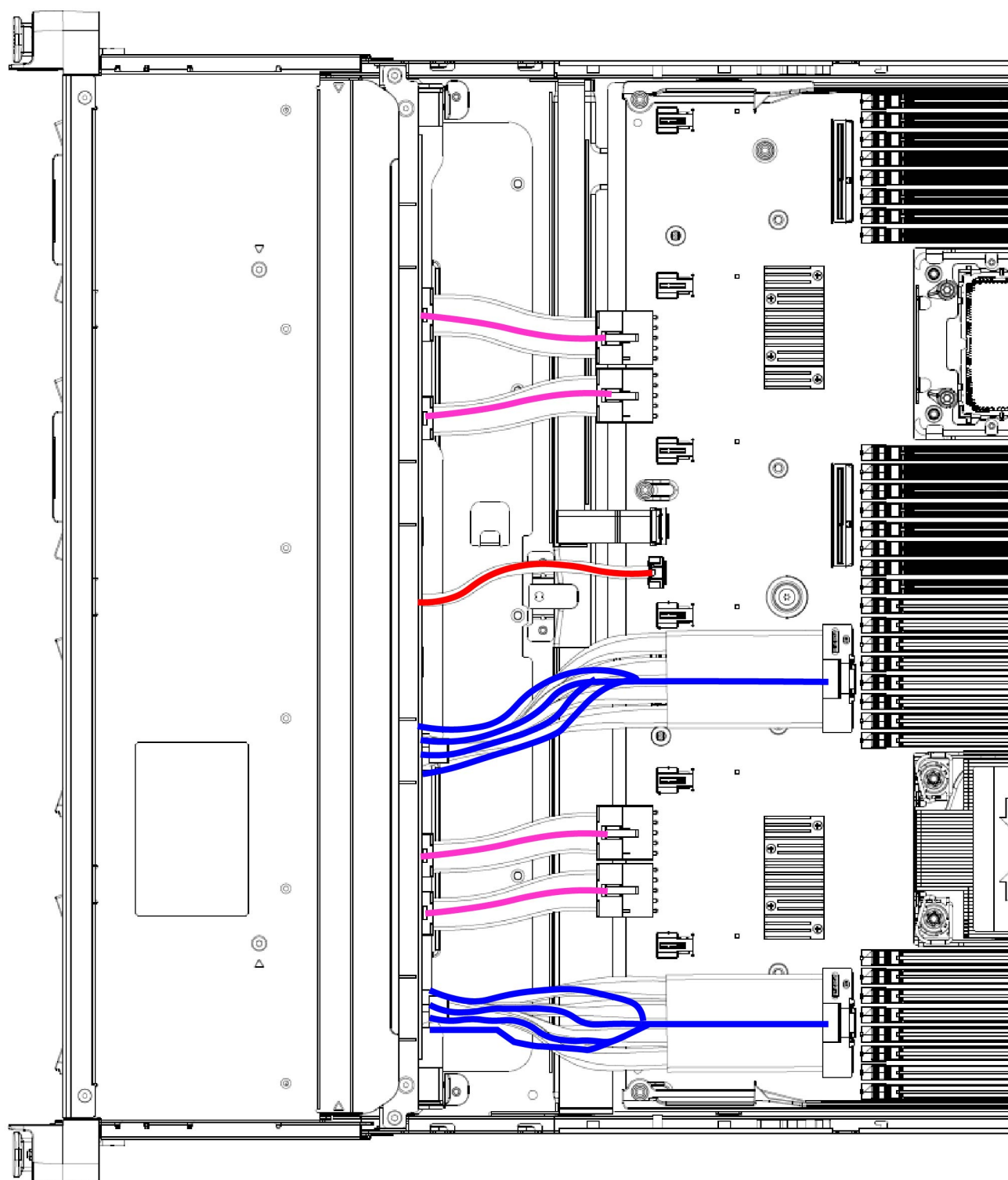




| Cable                                                                                       | Color  | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe X cable to drive backplane, Riser 1E and 2E to backplane cables, 2<br>(x16 to x8) | Yellow | Connects the P1 through P4 connectors on the backplane to the connectors on Riser 2E<br><br>Connects the P13 through P16 connectors on the backplane to the connectors on Riser 1E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| MCIO NVMe Y cable to drive backplane, Front MCIO to backplane cables, 4<br>(x16 to x8)      | Blue   | The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P5 and P6 connectors on the backplane.<br><br>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P7 and P8 connectors on the backplane.<br><br>The single-connector end of the cable connects to the P-2 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P9 and P10 connectors on the backplane.<br><br>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P11 and P12 connectors on the backplane. |
| HDD backplane CFG cable                                                                     | Red    | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| HDD Bbackplane PWR cable, 4                                                                 | Pink   | Connects motherboard to HDD backplane power connectors (PWR-3 and PWR-4 by CPU 2, and PWR-1 and PWR-2 by CPU1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### Cisco UCSC-240-M8E3S with 16 1T x2 Signaling Front Drives and Rear Drives

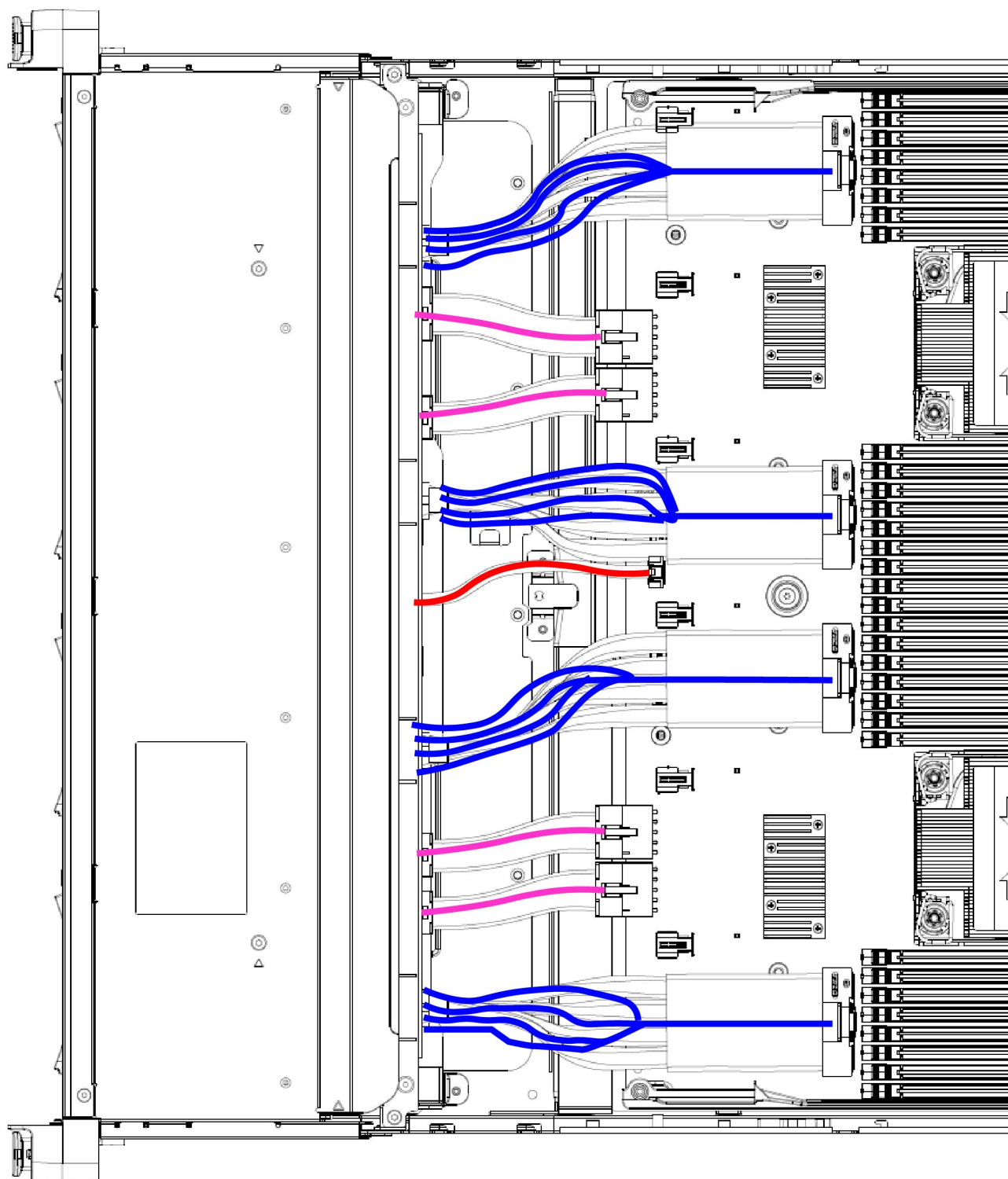
Use this diagram to connect a UCSC-240-M8E3S with 16 1TB drives 24 Signalling plus four E3.S rear drives.



| Cable                                                                                  | Color    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane, Front MCIO to backplane cables, 2<br>(x16 to x8) | Blue     | <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the P9 through P12 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 2 DIMM block. The dual-connector end of the cable connects to the P13 through P16 connectors on the backplane.</p> |
| HDD backplane CFG cable                                                                | Red      | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                           |
| HDD Bbackplane PWR cable, 4                                                            | Pink     | Connects motherboard to HDD backplane power connectors (PWR-3 and PWR-4 by CPU 2, and PWR-1 and PWR-2 by CPU1)                                                                                                                                                                                                                                                                                                                                       |
| Rear E3.S x8 cables, 4                                                                 | Lavender | <p>Connects to the Rear SSD1 and Rear SSD2 connector on the motherboard and PCIe Riser 3</p> <p>Connects to the Rear SSD1 and Rear SSD2 connector on the motherboard and PCIe Riser 1</p>                                                                                                                                                                                                                                                            |

### Cisco UCSC-240-M8E3S with 32 1T/2T x2 Signaling Front Drives and Rear Drives

Use this diagram to connect a UCSC-240-M8E3S with 16 1- or 2-TB drives x2 Signalling plus four E3.S rear drives.



| Cable                                                                                  | Color    | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MCIO NVMe Y cable to drive backplane, Front MCIO to backplane cables, 2<br>(x16 to x8) | Blue     | <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the P1 through P4 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the P5 through P8 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-2 motherboard connector in front of the central DIMM block. The dual-connector end of the cable connects to the P9 through P12 connectors on the backplane.</p> <p>The single-connector end of the cable connects to the P-1 motherboard connector in front of the CPU 1 DIMM block. The dual-connector end of the cable connects to the P13 through P16 connectors on the backplane.</p> |
| HDD backplane CFG cable                                                                | Red      | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| HDD Bbackplane PWR cable, 4                                                            | Pink     | Connects motherboard to HDD backplane power connectors (PWR-3 and PWR-4 by CPU 2, and PWR-1 and PWR-2 by CPU1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Rear E3.S x8 cables, 4                                                                 | Lavender | <p>Connects to the Rear SSD1 and Rear SSD2 connector on the motherboard and PCIe Riser 3</p> <p>Connects to the Rear SSD1 and Rear SSD2 connector on the motherboard and PCIe Riser 1</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

### Cabling for UCSC-240-M8L Servers

The UCSC-240-M8L servers have multiple different storage controller options for front- and rear-loading drives. Use the cabling diagrams in this topic to connect the storage controllers to local storage.



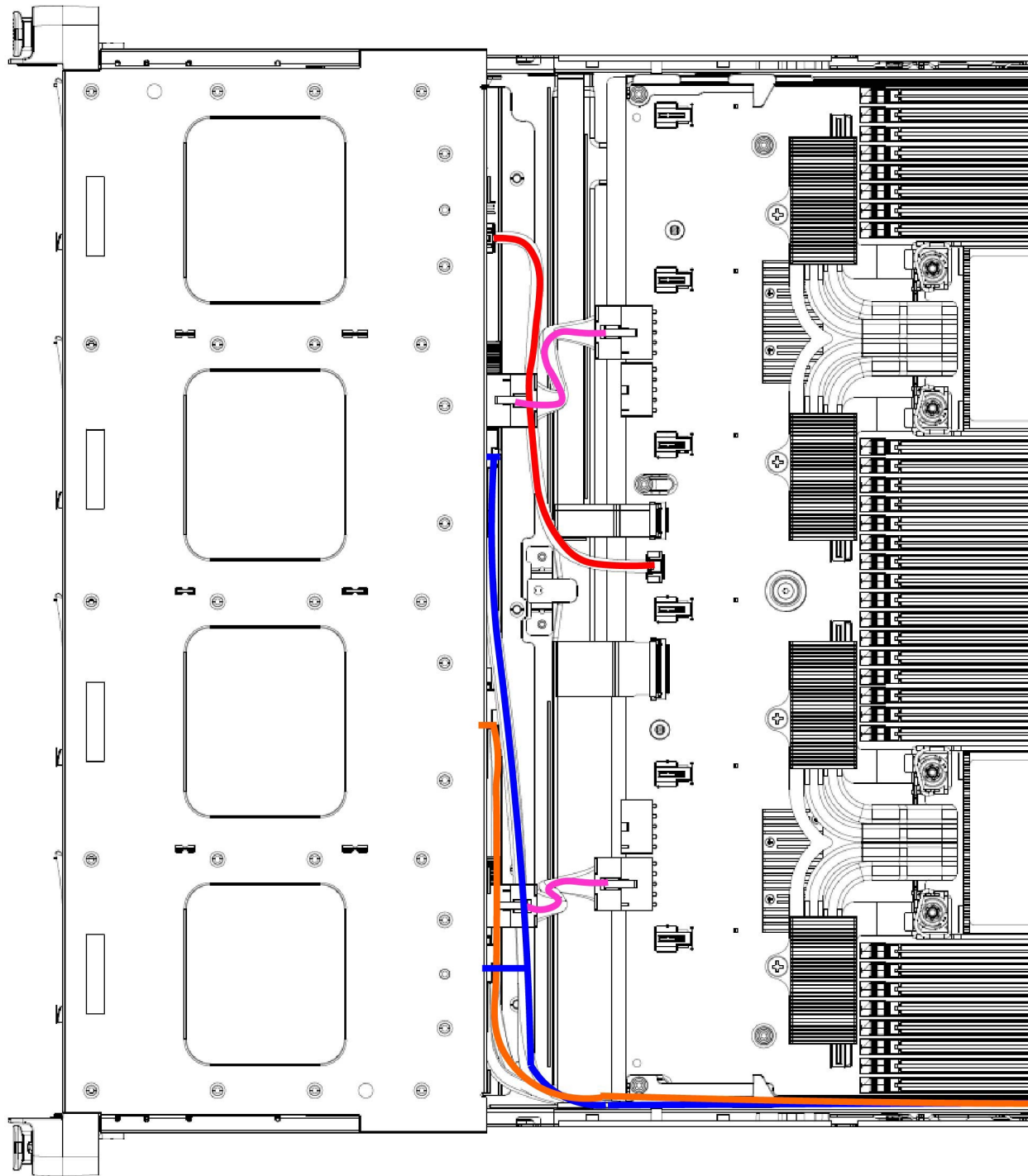
---

**Note** For information about the location and identity of the different LFF backplane connectors, see [Backplane Connectors, on page 137](#).

---

### **Cisco UCSC-240-M8L**

Use this diagram to connect a UCSC-240-M8L with 12 large form factor front-loading drives.



| Cable                                                                                             | Color  | Notes                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slimline SAS cable (x4) 2-in-1 cable, 1<br>Front BP & Mid BP connection to LFF storage controller | Orange | The single-connector end of the cable connects to the J23 connector on the storage controller.<br><br>The dual end of the cable connects to the SAS B1 and SAS B2 connectors on the motherboard. |
| Slimline SAS cable (x4) 2-in-1 cable, 1<br>Front BP & Mid BP connection to LFF storage controller | Blue   | The single-connector end of the cable connects to the J22 connector on the storage controller.<br><br>The dual end of the cable connects to the SAS A1 and SAS A2 connectors on the backplane.   |
| HDD backplane CFG cable                                                                           | Red    | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                       |
| HDD Backplane PWR cables, 2                                                                       | Pink   | Connects motherboard to HDD backplane power connectors (PWR-1 by CPU1 and PWR-2 by CPU 2)                                                                                                        |

### Cisco UCSC-240-M8L with Four LFF Mid-Mount and Four Rear Drives Plus an LFF Storage Controller

Use this diagram to connect a UCSC-240-M8L with 12 large form factor front-loading drives, four mid-mount drives, and four rear drives. This configuration features an LFF storage controller in a PCIe slot in Riser 1.



| Cable                                                                                             | Color  | Notes                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slimline SAS cable (x4) 2-in-1 cable, 1<br>Front BP & Mid BP connection to LFF storage controller | Orange | The single-connector end of the cable connects to the J23 connector on the storage controller.<br><br>The dual end of the cable connects to the SAS B1 on the front backplane and SAS B2 connector on the middle backplane. |
| Slimline SAS cable (x4) 2-in-1 cable, 1<br>Front BP & Mid BP connection to LFF storage controller | Blue   | The single-connector end of the cable connects to the J22 connector on the storage controller.<br><br>The dual end of the cable connects to the SAS A1 and SAS A2 connectors on the backplane.                              |
| HDD backplane CFG cable                                                                           | Red    | Connects motherboard to HDD backplane by the CFG connector                                                                                                                                                                  |
| HDD Backplane PWR cables, 2                                                                       | Pink   | Connects motherboard to HDD backplane power connectors (PWR-1 by CPU1 and PWR-2 by CPU 2)                                                                                                                                   |
| Slimline SAS cable (x4) 2-in-1 cable, 1<br>(Miami River to Rear HDD BP)                           | Cyan   | The single-connector end of the cable connects to the J6 connector on the storage controller.<br><br>The dual end of the cable connects to the Rear SAS 1 and Rear SAS 3 on the rear drive backplane.                       |
| Middle backplane CFG cable                                                                        | Green  | Connects to the mid-mount drive backplane by the CFG connector.                                                                                                                                                             |
| Middle backplane Power cable                                                                      | Yellow | Connects to the mid-mount drive backplane PWR connector                                                                                                                                                                     |

## Replacing the Supercap (RAID Backup)

This server supports installation of two Supercap units for 24 drive servers. The unit mounts to a bracket on the removable air baffle.

The Supercap provides approximately three years of backup for the disk write-back cache DRAM in the case of a sudden power loss by offloading the cache to the NAND flash.

The SuperCap is supported on the following RAID controllers. The SuperCaps and cable options differ depending on the type of RAID controller installed in your server.

| RAID Controller PID                                                                            | SuperCap PID | SuperCap Cable                                                                                 |
|------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• UCSC-RAID-M1L32</li> <li>• UCSC-RAID-M1L16</li> </ul> | UCSC-SCPM1G= | The SuperCap cable is not a separately orderable part. The cable is included with the SuperCap |
| <ul style="list-style-type: none"> <li>• UCSC-RAID-SD-D</li> <li>UCSC-RAID-HP</li> </ul>       | UCSC-SCAP-D= | The SuperCap cable is a separately orderable part (CBL-SCAPSD-C240-D)                          |

Use the following task to replace the SuperCap.

## Procedure

### Step 1

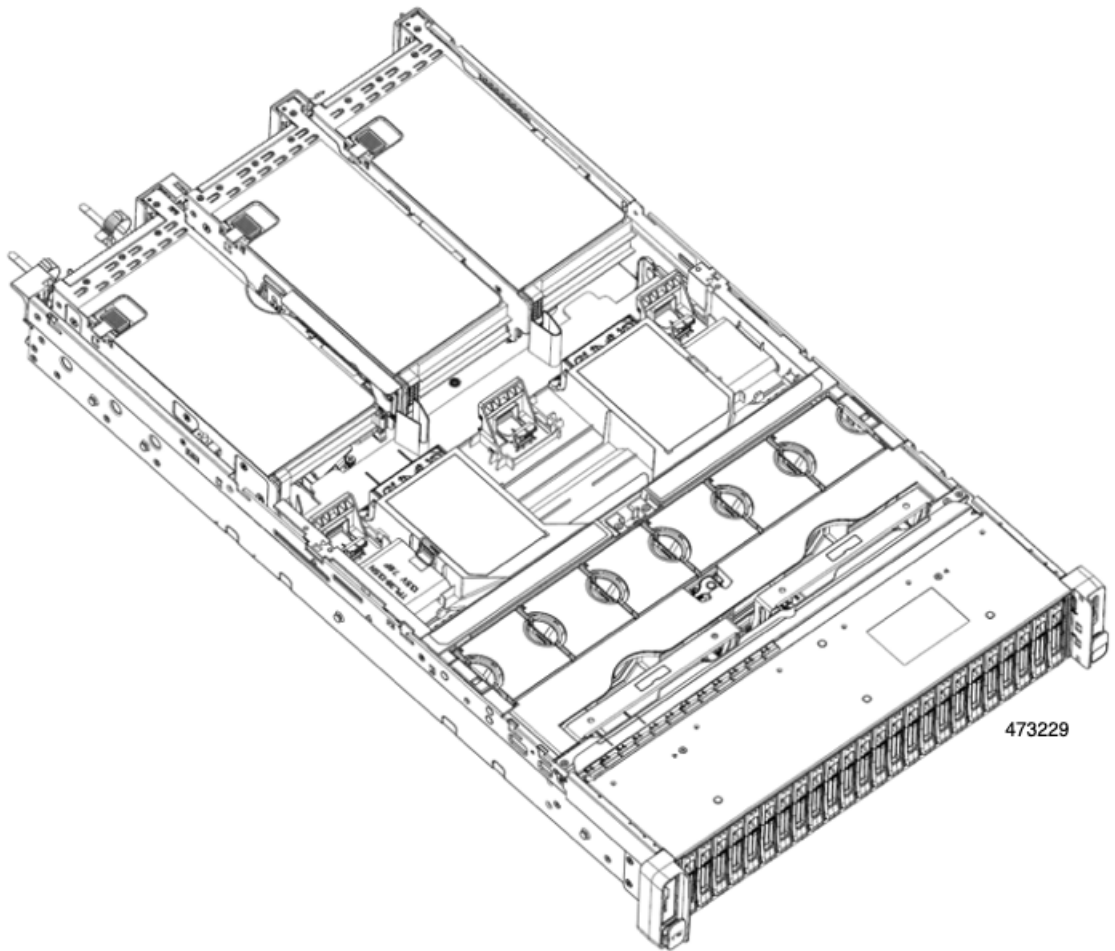
Prepare the server for component installation:

- Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

#### Caution

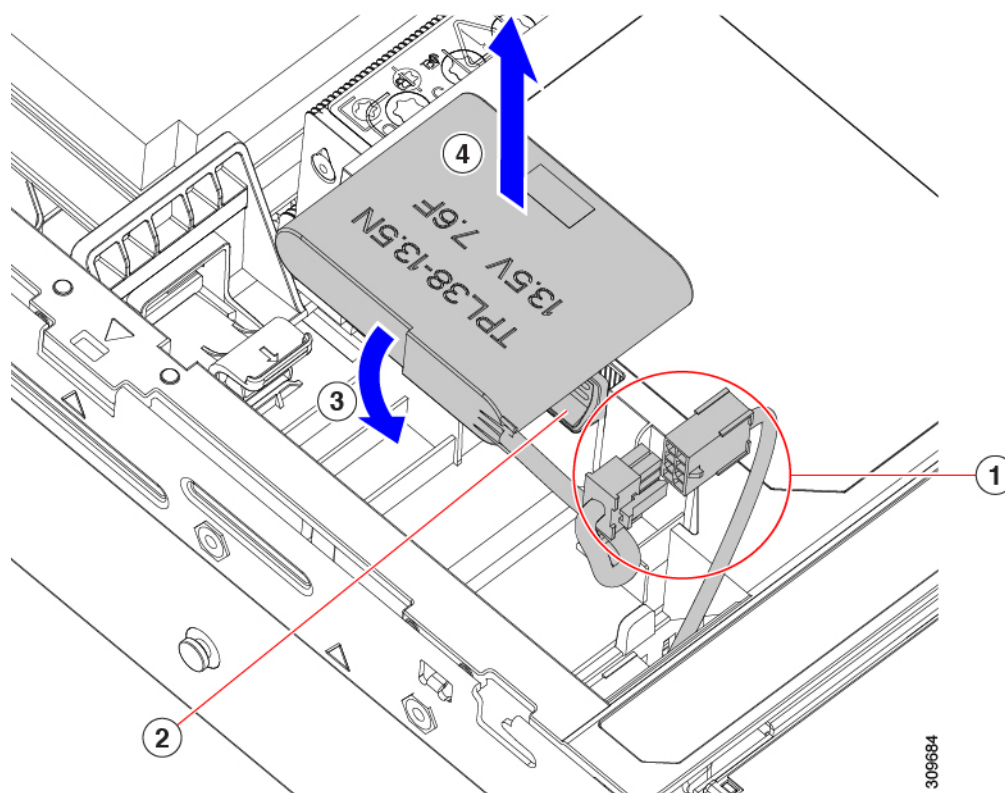
If you cannot safely view and access the component, remove the server from the rack.

- Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Locate the SuperCap unit(s) as shown below.

**Step 2**

Remove an existing Supercap:

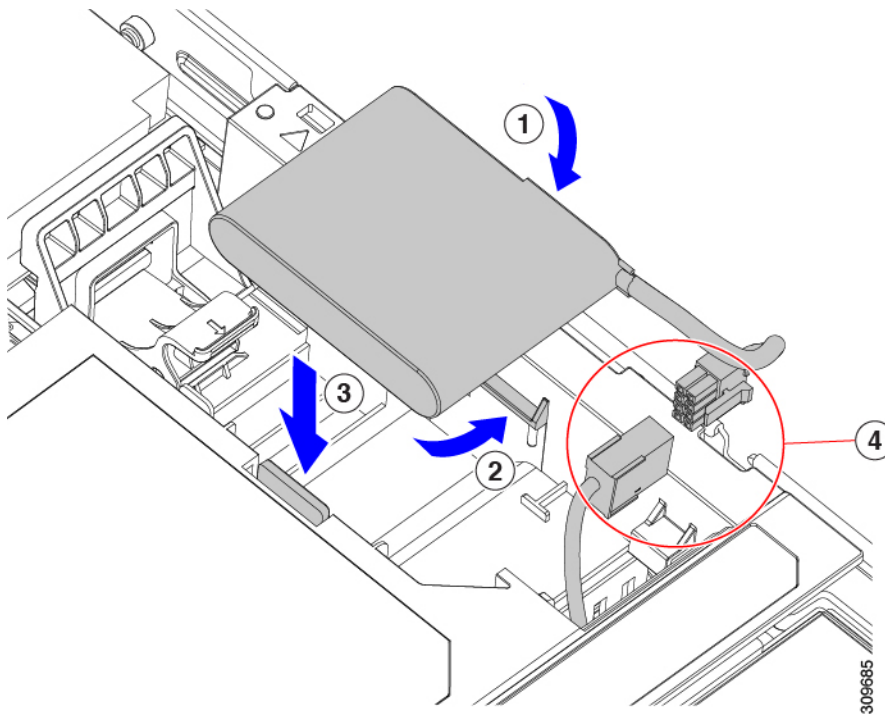
- a) Disconnect the Supercap cable from the RAID cable.
- b) Push aside the securing tab that holds the Supercap to its bracket.
- c) Lift the Supercap free of the bracket and set it aside.

**Step 3** Install a new Supercap:

- Orient the SuperCap unit so that the SuperCap cable and the RAID cable connectors meet.
- Make sure that the RAID cable does not obstruct the SuperCap when you install it, then insert the new Supercap into the mounting bracket.

Make that the SuperCap unit is securely inserted into it bracket.

- Connect the Supercap cable from the RAID controller card to the connector on the Supercap cable.



**Step 4** Replace the top cover to the server.

**Step 5** Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

## Replacing a Boot-Optimized M.2 RAID Controller Module

The Cisco Boot-Optimized M.2 RAID Controller module includes slots for two SATA M.2 drives, plus an integrated 6-Gbps SATA RAID controller that can control the SATA M.2 drives in a RAID 1 array. Although two M.2 SSDs are recommended, the server can operate on only one.

Multiple RAID controller options are available on the server. The following topics cover the M.2 boot-optimized RAID controllers, which are available and install to different locations on the server.

**Table 11: Boot Optimized M.2 RAID Controllers**

| PID             | Description                                                       | M.2 Drive Location                                                                                        |
|-----------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| UCSC-M2RR-240M8 | UCS C240 M8 RAID Controller for Hot-Swap M.2 modules (by Riser 3) | Two separate modules are installable vertically in two slots, one slot on each side of PCIe Riser 3 slot. |

| PID            | Description                                                              | M.2 Drive Location                                                                                                                                                            |
|----------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UCSC-M2RM-M8   | UCS C2X0 M8 Boot RAID Controller for Hot-Swap M.2 Modules (in MLOM slot) | One module containing two M.2 SSDs is installable in the mLOM/OCP card slot.<br><br><b>Note</b><br>This Boot RAID module prevents the server from accepting an mLOM/OCP card. |
| UCS-M2-HWRAID2 | Cisco Boot-Optimized RAID Controller for Internal M.2 modules.           | Inside the server under Riser 3                                                                                                                                               |



**Note** An internal M.2 boot-optimized RAID controller is available and installs to different locations of the server depending on which server type you order. For more information, see [Replacing the Internal Boot-Optimized M.2 RAID Controller, on page 208](#).

## Cisco Boot-Optimized M.2 RAID Controller Considerations

Review the following considerations:

- This controller supports RAID 1 (single volume) and JBOD mode.



**Note** Do not use the server's embedded SW MegaRAID controller to configure RAID settings when using this controller module. Instead, you can use the following interfaces:

- Cisco IMC 4.3(6) and later
- BIOS HII utility, BIOS 4.3(6) and later
- Cisco UCS Manager 4.3(6) and later (UCS Manager-integrated servers)

- The M.2 module locations differ depending on which RAID controller is installed.

**Table 12: M.2 Drive Locations and Identifiers**

| PID             | Location                               | Identifier                                                                                                           |
|-----------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| UCSC-M2RR-240M8 | Near Riser 3 at the rear of the server | The left drive is the first device (slot 1, drive 253) and the right drive is the second device (slot 2, drive 254). |

| PID            | Location                          | Identifier                                                                                                           |
|----------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------|
| UCSC-M2RM-M8   | mLOM Slot                         | The left drive is the first device (slot 1, drive 253) and the right drive is the second device (slot 2, drive 254). |
| UCS-M2-HWRAID2 | Inside the server by Rise 3 (LFF) | The left drive is the first device (slot 1, drive 251) and the right drive is the second device (slot 2, drive 252). |

- When using RAID, we recommend that both SATA M.2 drives are the same capacity. If different capacities are used, the smaller capacity of the two drives is used to create a volume and the rest of the drive space is unusable.

JBOD mode supports mixed capacity SATA M.2 drives.

- Drives can be hot pluggable depending on which ones are used.
  - The UCSC-M2RR-240M8 and UCSC-M2RM-M8 support hot-plug (OS informed removal or installation) of its M.2 SSDs.
  - The UCS-M2-HWRAID2 does not support hot-plug replacements of M.2 SSDs.
- Monitoring of the controller and installed SATA M.2 drives can be done using Cisco IMC and Cisco UCS Manager. They can also be monitored using other utilities such as UEFI HII, PMCLI, XMLAPI, and Redfish.
- Updating firmware of the controller and the individual drives:
  - For standalone servers, use the Cisco Host Upgrade Utility (HUU). Refer to the [HUU Documentation](#).
  - For servers integrated with Cisco UCS Manager, refer to the [Cisco UCS Manager Firmware Management Guide](#).
- The SATA M.2 drives can boot in UEFI mode only. Legacy boot mode is not supported.
- If you replace a single SATA M.2 drive that was part of a RAID volume, rebuild of the volume is auto-initiated after the user accepts the prompt to import the configuration. If you replace both drives of a volume, you must create a RAID volume and manually reinstall any OS.
- We recommend that you erase drive contents before creating volumes on used drives from another server. The configuration utility in the server BIOS includes a SATA secure-erase function.
- The server BIOS includes a configuration utility specific to this controller that you can use to create and delete RAID volumes, view controller properties, and erase the physical drive contents. Access the utility by pressing **F2** when prompted during server boot. Then navigate to **Advanced > Cisco Boot Optimized M.2 RAID Controller**.

## Installing the UCSC-M2RR-240M8 Boot Optimized RAID Controller

The server offers one boot-optimized RAID controller that hosts two individual M.2 modules, with each module containing a single M.2 NVMe SSD. The controller supports RAID of boot info, OS, and logging.

Boot RAID controllers do not affect data I/O to the user storage drives (SFF, NVMe, or LFF) in the front, middle (for LFF servers), or rear of the server.

Use this procedure to install the two boot optimized M.2 RAID controllers.

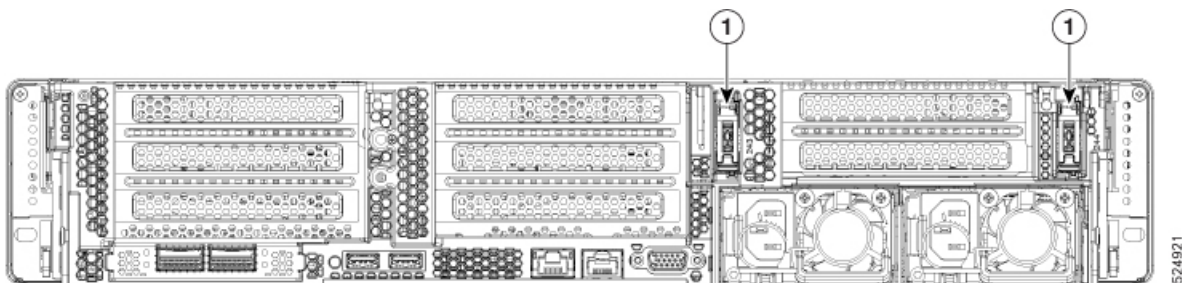
### Before you begin

To install the RAID controllers, you will need the cable them to the rear SATA controller card on the motherboard. Make sure that you have the appropriate cables.

- Cables are different lengths, and they are labelled to help identify which cable attaches to which USB connector on the rear SATA controller card.
- Cables have different connectors. The long cable has two right angle connectors, but the short cable has one right angle connector and one straight through connector.
- Cable connectors are USB type and have the word **TOP** on each connector end to help you correctly orient and connect the cables.
- If you are replacing the Boot Optimized RAID Controller, or if you are switching between rear hot-swappable Boot RAID Controllers, will replace the M.2 modules, cables, and the Rear SATA controller card. All these parts are included in the replacement kit.

### Procedure

**Step 1** Locate the two controller slots on the rear of the server.



**Step 2** If you have not already done so, remove the top cover.

See [Removing the Server Top Cover, on page 56](#).

**Step 3** Connect the cables to the rear of each controller.

**Step 4** Install the RAID controller modules.

a) Slide the tabs on the front into the notches in the rear wall (1).

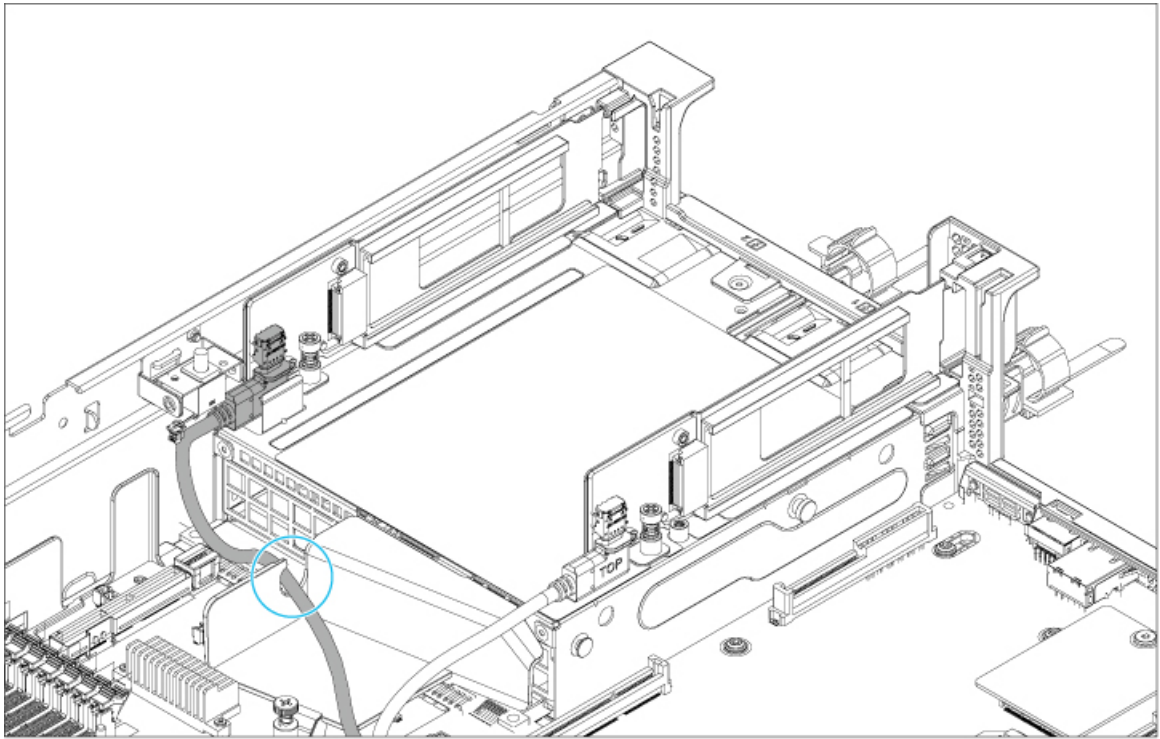
The tab on the top of the controller inserts into a vertical notch, and the tab on the bottom of the controller inserts into a horizontal notch.

b) Align the captive thumbscrew at the rear of the controller with its screwhole and tighten the captive screw (2).



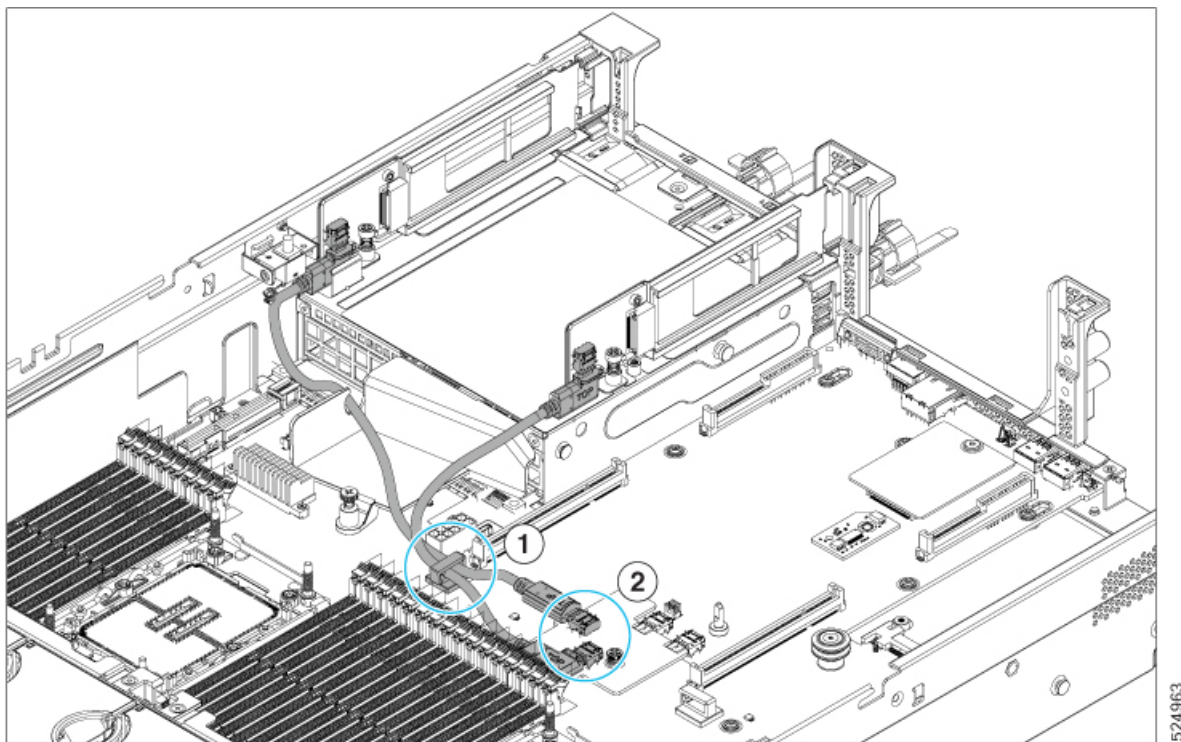
**Step 5** Connect the cables to the rear SATA controller card.

- a) Route the longer cable, which is closest to the server sidewall, through the notch in the baffle.



- b) Gather both cables, and pass the loose ends through the cable retainer (1).  
c) Connect each end of the cable to the rear SATA controller card card (2).

The long cable connects to the far connector, and the short cable connects to the close connector.



### What to do next

Choose the appropriate option:

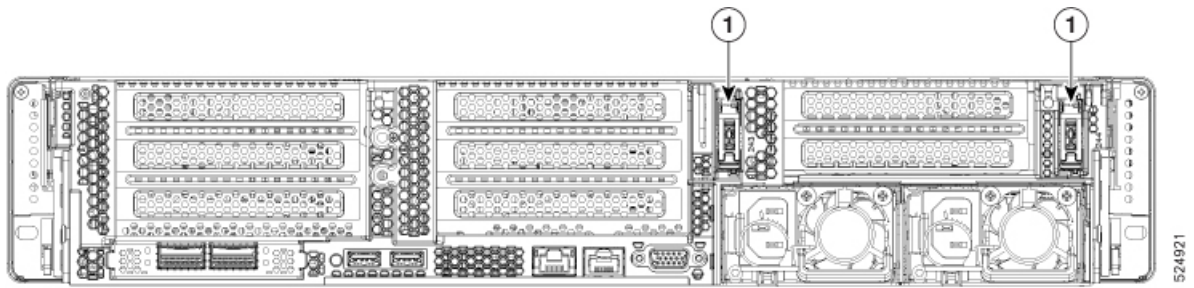
- Install the M.2 Modules into the E1.S cages, if needed.
- If you are done with field-service, replace the top cover.

## Removing the UCSC-M2RR-240M8 Boot Optimized RAID Controller

Use this procedure to remove one, or both, of the hot swappable, UCSC-M2RR-240M8 boot optimized RAID controllers.

### Procedure

- Step 1** Locate the two M.2 module slots on the rear of the server.



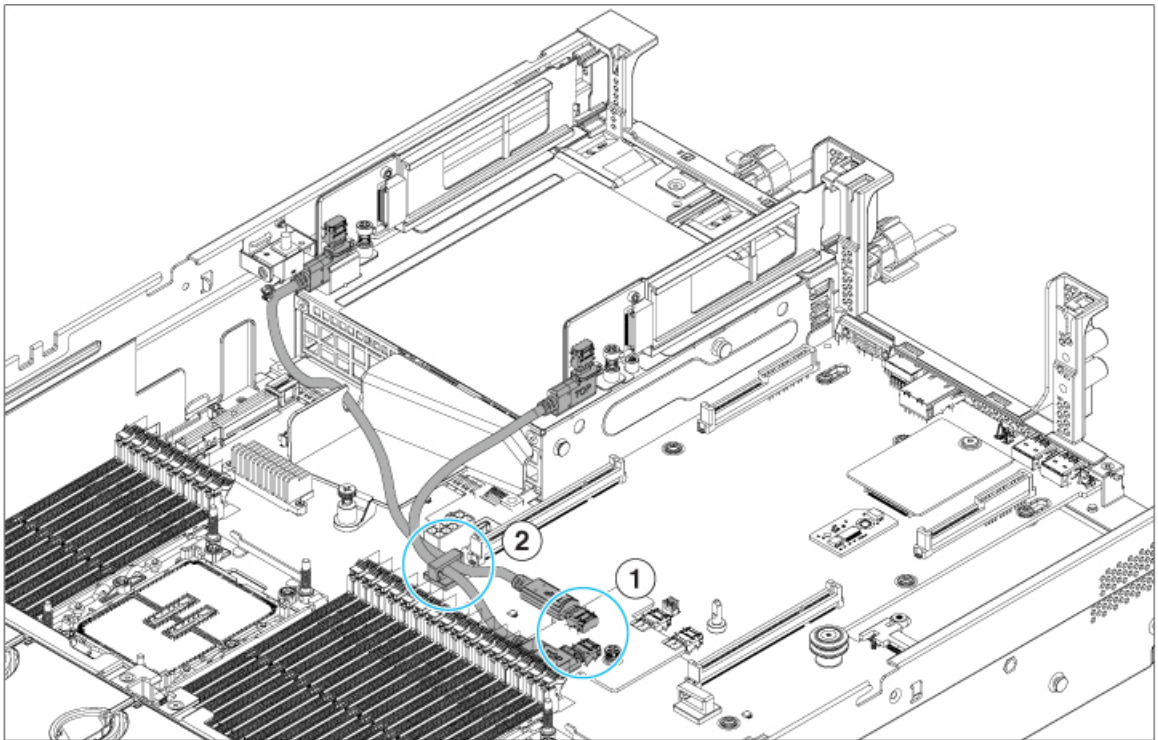
524921

**Step 2** If you have not already done so, remove the top cover.

See [Removing the Server Top Cover](#), on page 56.

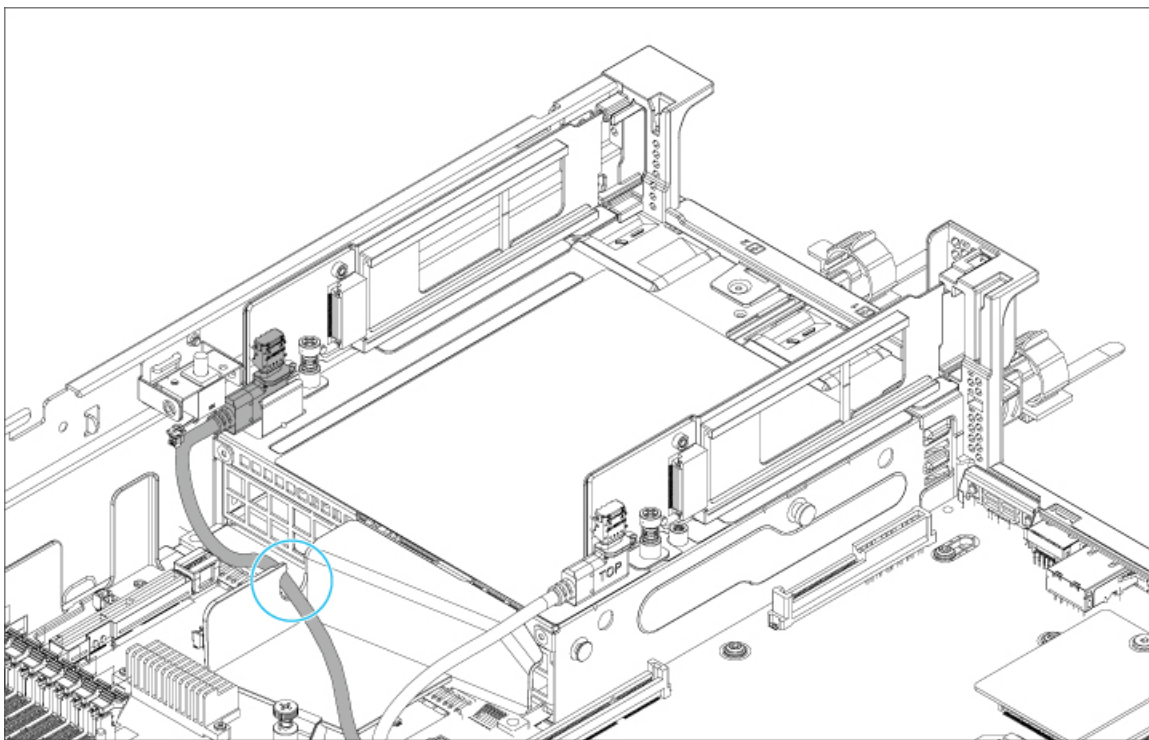
**Step 3** Disconnect the cables from the rear SATA controller card.

- a) Detach each connector from the controller card (1).
- b) Carefully slide each cable through the cable retainer (2).



524964

**Step 4** Carefully remove the cable from the notch in the baffle.



**Step 5** Disconnect the cables from the rear of each E1.S cage.

**Step 6** Remove each E1.S cage.

- a) Using your fingers, remove the thumbscrews at the rear of each cage (1).
- b) Slide the cages out of their slot, making sure that the bottom (horizontal) tabs are clear of their notches. (2).

- c) Lift the E1.S cages out of the server.

---

**What to do next**

Choose the appropriate option:

- Install a boot optimized RAID Controller. See [Installing the UCSC-M2RR-240M8 Boot Optimized RAID Controller, on page 187](#).
- Install M.2 modules.
- If you will not be installing another RAID Controller, install a blanking panel.
- If you are done with field service, replace the top cover.

## Removing UCSC-M2RR-240M8 Boot Controller M2 Modules

The M.2 modules for the UCSC-M2RR-240M8 Boot RAID Controller are hot swappable. Each module consists of an E1.S carrier and the M.2 NVMe SSD on it. The modules install into an E1.S cage.

The M.2 modules for boot optimized RAID controllers can be individually removed and inserted. Each M.2 module that has an ejector lever, and by using the ejector lever, you can detach the module from the E1.S cage.

Removal is toolless, and each module is accessible from the rear of the server. You do not need to remove the server's top cover to install or remove the RAID controller or its M.2 modules.

Use the following procedure to replace one, or both, of the M.2 Modules. You can remove the M.2 modules regardless of whether a RAID controller is installed in the server or not. If the server is running, it is a best practice to replace only one M.2 module at a time.

### Procedure

---

- Step 1** Grasp the ejector lever at the bottom of the M.2 module, and gently swing it up (1).

**Caution**

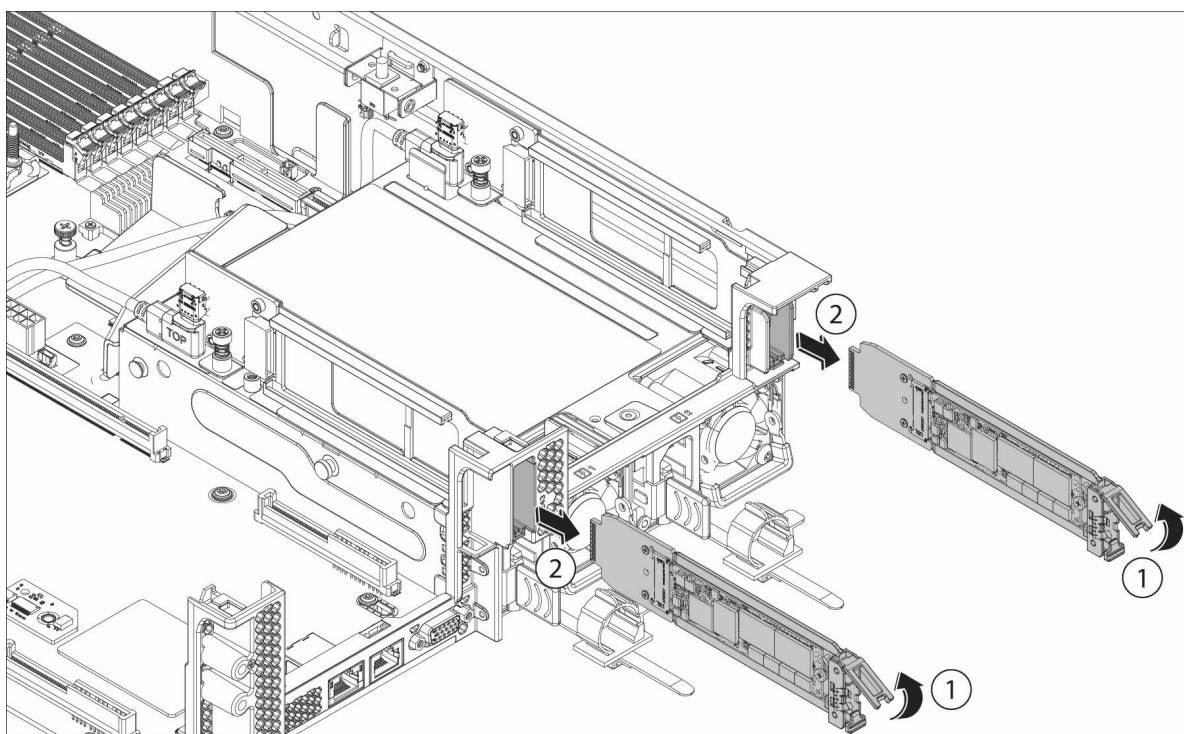
Do not swing the ejector more than 45 degrees. If you force the ejector past its range of motion, you risk damaging the ejector.

- Step 2** When the module is dislodged from the E1.S cage, grasp the top and bottom edges and gently slide the module out of the cage.

**Caution**

Make sure to hold the module level while removing it! Do not lift, twist, or rotate the module while removing it.





524965

## Installing the UCSC-M2RR-240M8 Boot Controller M2 Modules

The UCSC-M2RR-240M8 Boot RAID Controller consists of two individual M.2 modules. Each M.2 module consists of an E.1S carrier and a single M.2 NVMe SSD on it. The M.2 module installs into an E1.S cage.

Each M.2 module is field-replaceable. The M.2 modules are keyed so that they can install only one way into the E1.S cage.

The M.2 modules can be installed into the cage either when the controller is installed or removed. Installation is toolless, and each module is accessible from the rear of the server. You do not need to remove the server's top cover to install or remove the Boot RAID controller or its M.2 modules.

Use this procedure to install one, or both, of the Boot RAID controller's M.2 modules.

### Before you begin

- Cables are different lengths, and they are labelled to help identify which cable attaches to which USB connector on the rear SATA controller card.
- Cables have different connectors. The long cable has two right angle connectors, but the short cable has one right angle connector and one straight through connector.
- Cable connectors are USB type and have the word **TOP** on each connector end to help you correctly orient and connect the cables.
- If you are replacing the Boot Optimized RAID Controller, or if you are switching between rear hot-swappable Boot RAID Controllers, will replace the M.2 modules, cables, and the Rear SATA controller card. All these parts are included in the replacement kit.

## Procedure

---

- Step 1** For each module, make sure that the ejector is in the open position.
- Step 2** Orient the module so that it is facing you and the ejector is on the top.
- Step 3** Holding the module vertical, gently slide it into the E1.S cage until you feel some resistance (1).  
This resistance is normal. It occurs when the module's rear connector contacts its socket on the cage.
- Step 4** When you feel resistance, push the ejector down (the closed position) until the ejector is flush with the faceplate of the cage (2).

## Installing the UCSC-M2RM-M8 Boot RAID Controller

The server offers one boot-optimized RAID controller that can be installed into the mLOM/VIC slot on the rear of the server. The controller hosts two M.2 modules, each with a single M.2 NVME SSD. The controller supports RAID for boot info, OS, and logging. Boot RAID controllers do not affect data I/O to the user storage drives (SFF, NVMe, or LFF) in the front, middle (for LFF servers), or rear of the server.

Use this procedure to install the controller.

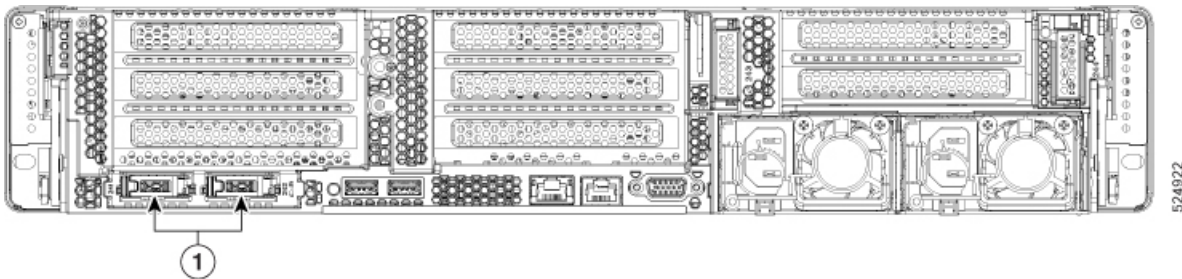
### Before you begin

To install the UCSC-M2RM-M8 RAID controller, you will need the cable it to the rear SATA controller card on the motherboard. Make sure that you have the appropriate cables. Cable connectors are USB type and have the word **TOP** on each connector end to help you correctly orient and connect the cables.

To perform this procedure, you will need a # 2 Phillips screwdriver.

### Procedure

**Step 1** Locate the mLOM slot on the rear of the server.



**Step 2** If you have not already done so, remove the top cover.

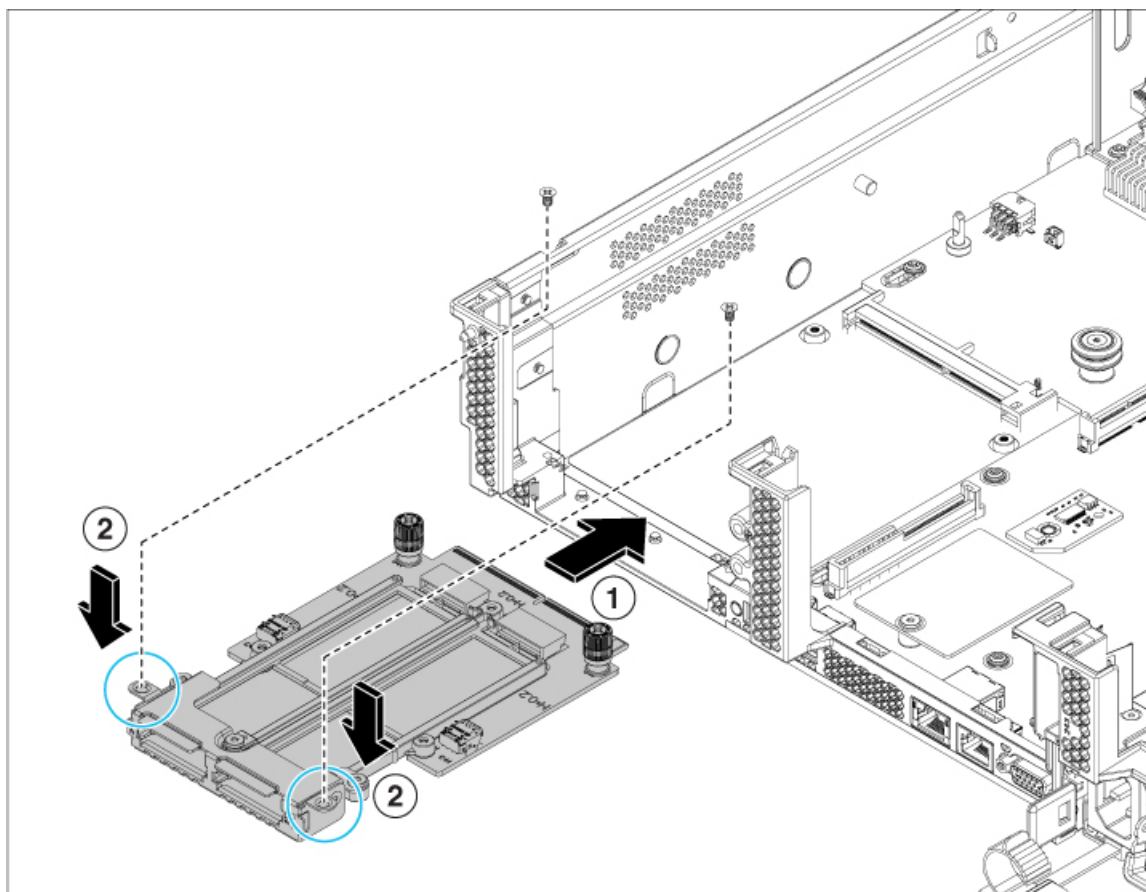
See [Removing the Server Top Cover](#), on page 56.

**Step 3** Remove PCIe Riser 1.

**Step 4** Install the controller.

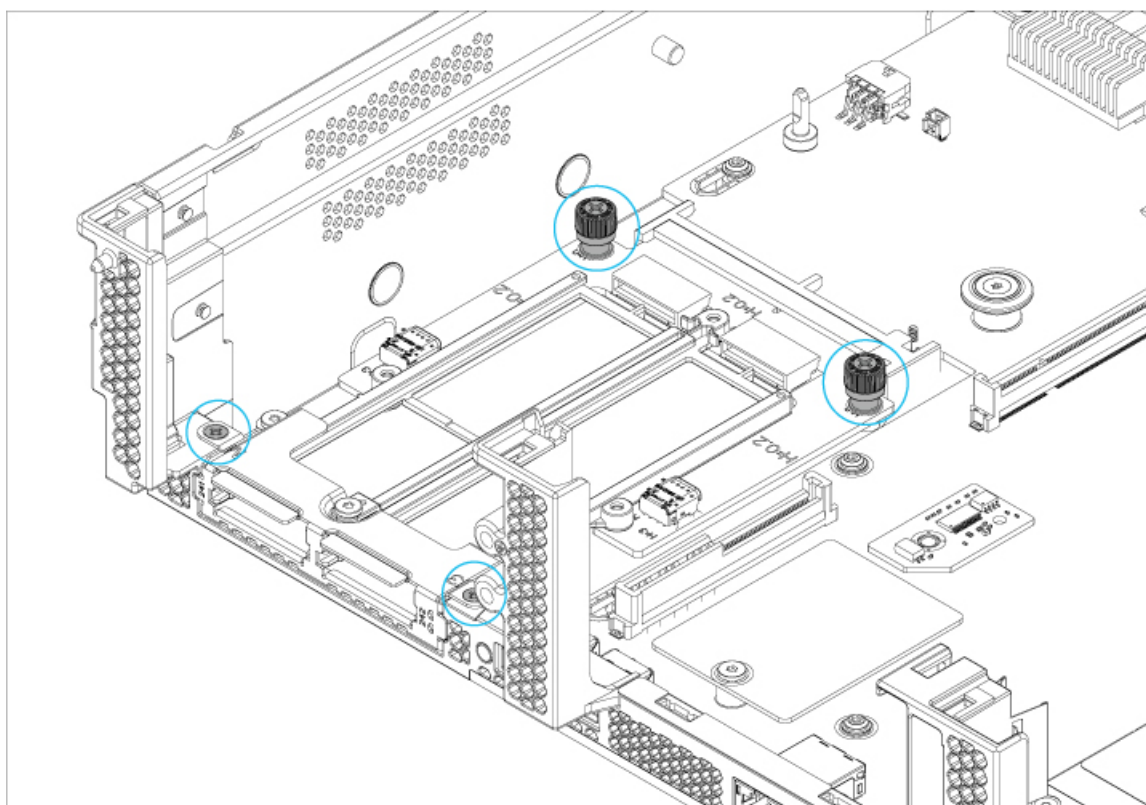
- a) Slide the card into the mLOM slot.
- b) Insert the two screws into the RAID controller bracket.





524967

- c) Tighten the screws to secure the controller to the server.

**Step 5** Connect the cables.

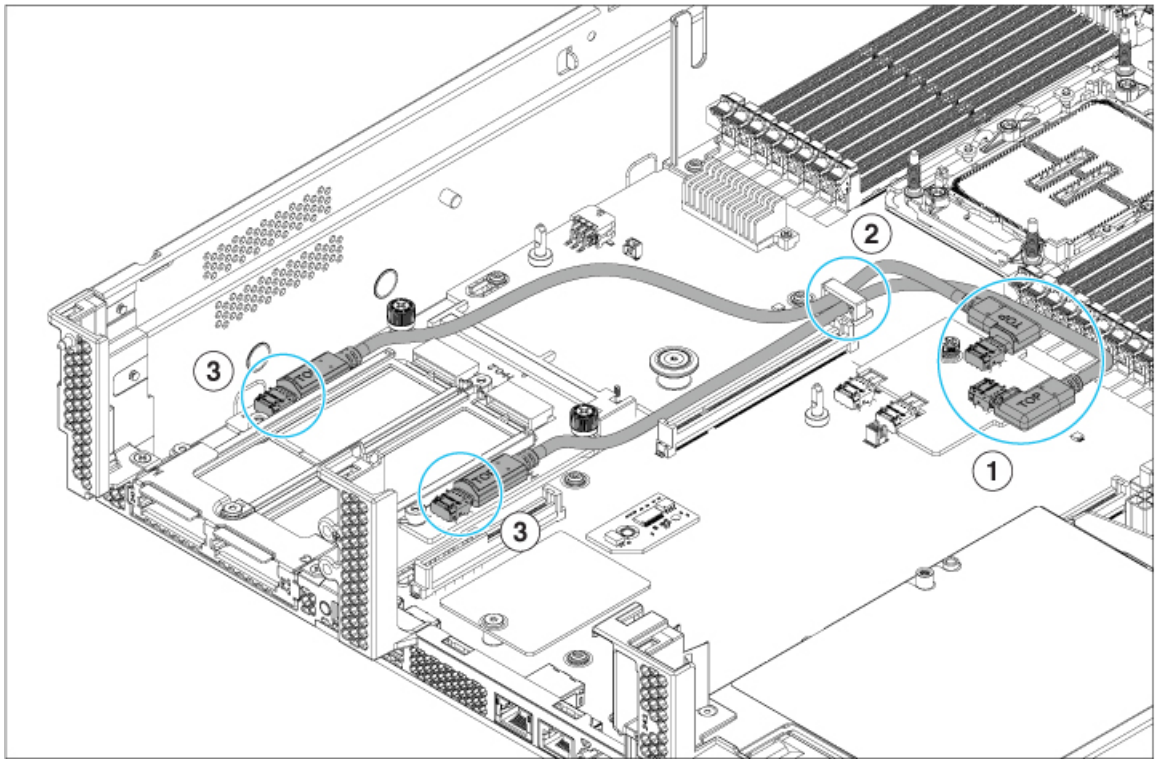
- a) Connect both ends of the cables to the rear SATA controller card (1).

Make sure to connect the right-angle connectors to the interposer with the word **TOP** facing up.

- b) Route the cables, one at a time, through the cable stay (2).

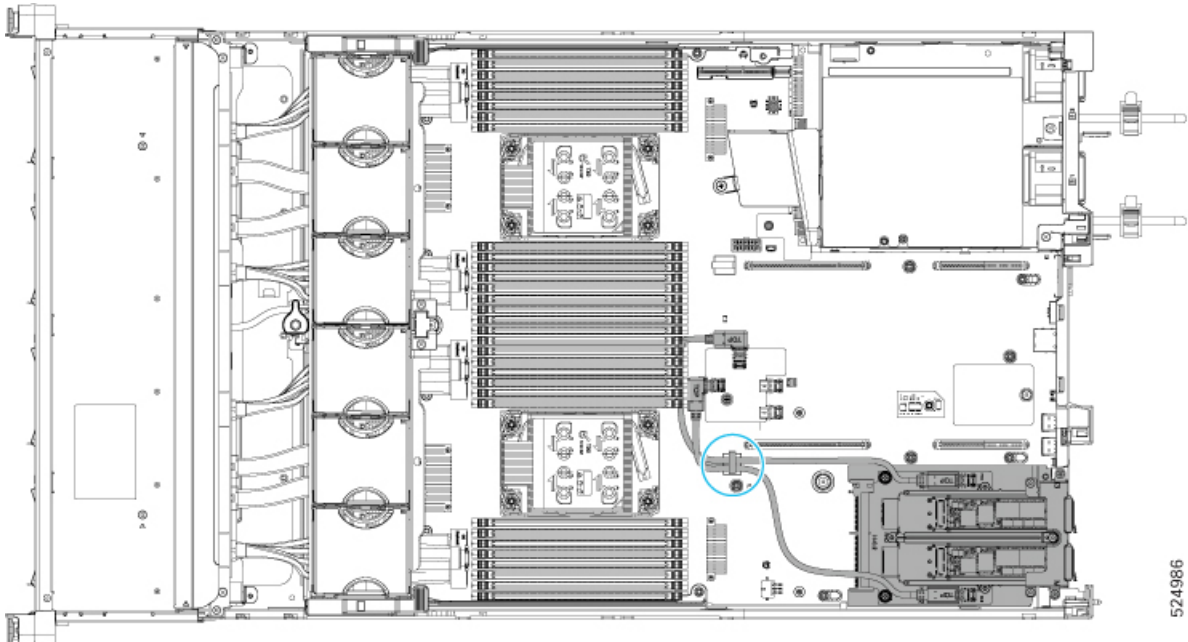
- c) Connect the both ends of the cables to the controller (3).

Make sure to connect the straight-through connectors to the controller with the word **TOP** facing up.



524970

**Step 6** When completely installed and cabled, the RAID controller should be installed as shown.



524986

**Step 7** Install PCIe Riser 1.

**Step 8** Install the server top cover.

## Removing the UCSC-M2RM-M8 Boot RAID Controller

The server offers one boot-optimized RAID controller that can install into the mLOM/VIC slot on the rear of the server.

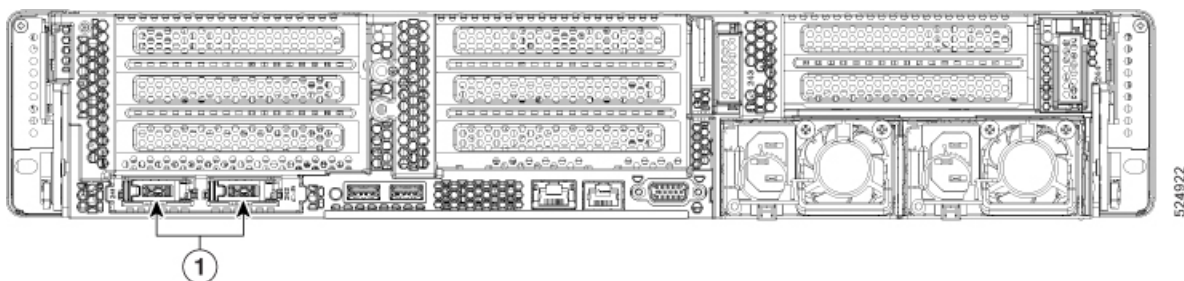
Use this procedure to remove the UCSC-M2RM-M8 Boot RAID controller.

### Before you begin

To perform this procedure, you will need a # 2 Phillips screwdriver.

### Procedure

**Step 1** Locate the mLOM slot on the rear of the server.



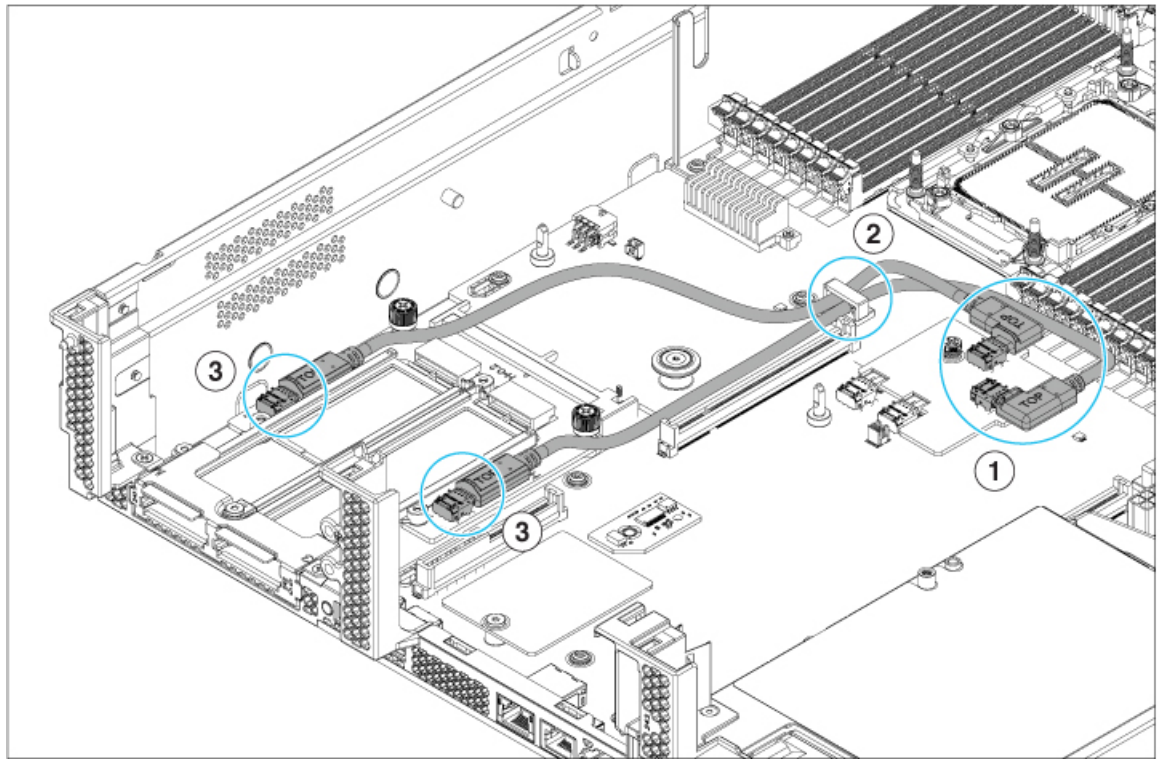
**Step 2** If you have not already done so, remove the top cover.

See [Removing the Server Top Cover, on page 56](#).

**Step 3** Remove PCIe Riser 1.

**Step 4** Disconnect the cables.

- a) Detach the cables from the rear of the E1.S cage (3).
- b) Choose the appropriate option:
  - If you will be re-installing a controller, skip to Step 5.
  - If you will be completely removing the controller, feed both cables through the cable retainer so that it no longer restrains them (2), then disconnect the cables from the rear controller card (1).



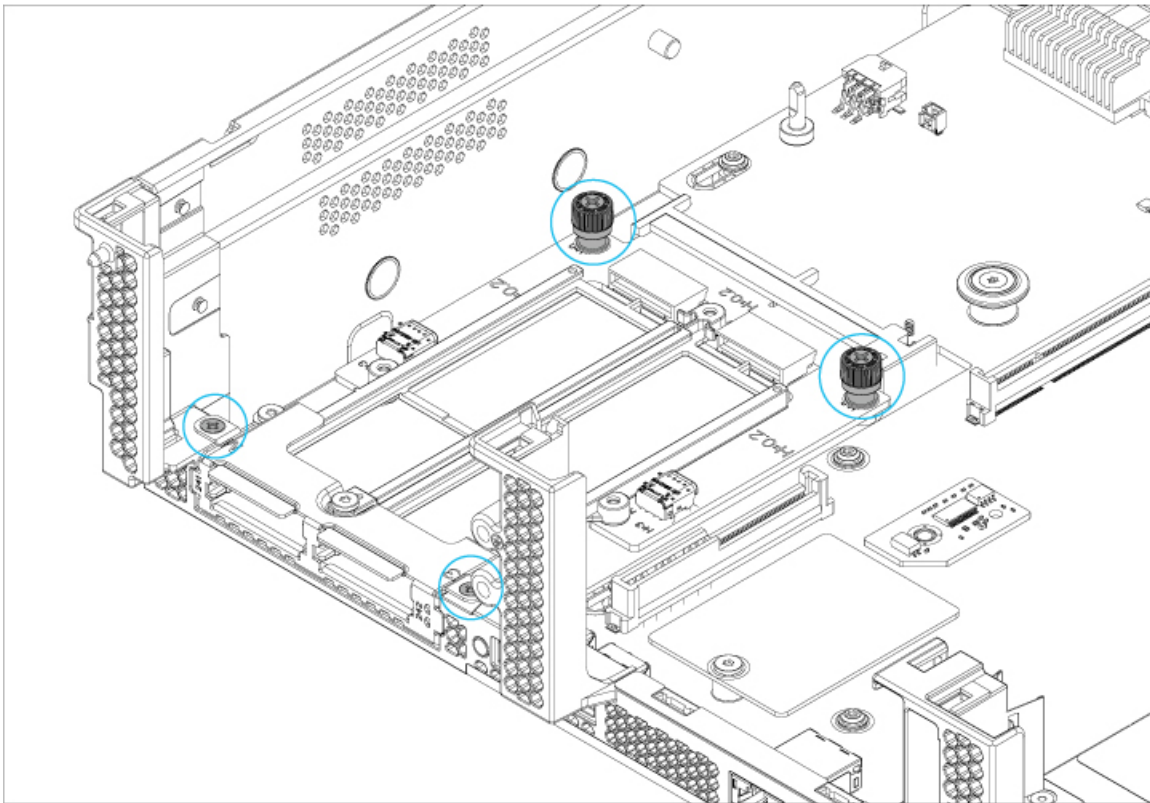
524970

**Step 5**

Loosen the screws that secure the cage to the server.

- a) Using a #2 Phillips screwdriver, loosen the screws on the bracket.
- b) Using your fingers, loosen the two thumbscrews at the rear of the cage.



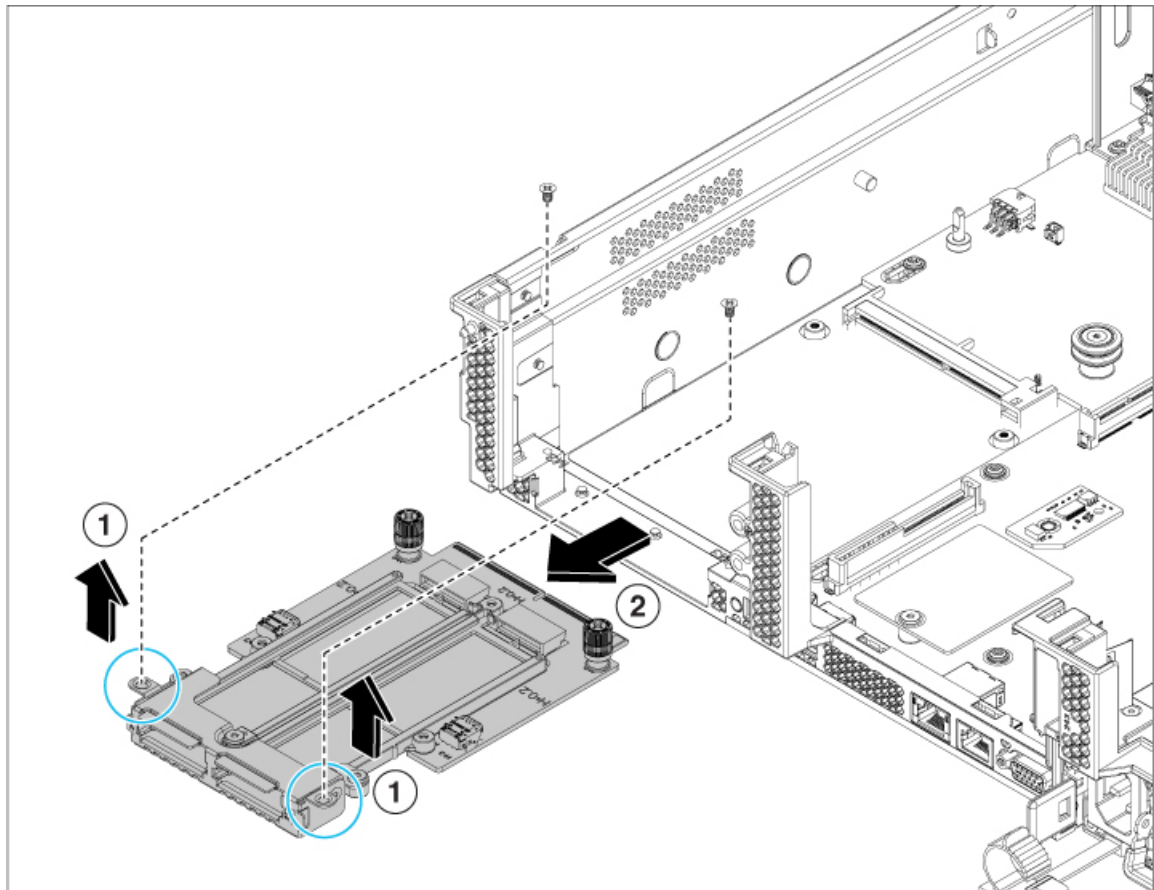


524969

**Step 6**

Remove the cage.

- a) Remove two screws from the bracket.
- b) Slide the cage out of the server.



524968

**Step 7** If you will not be installing the controller, an mLOM, or an OCP card, install a blank filler panel.

**Step 8** Install Riser 1.

**Step 9** Replace the server top cover.

## Installing UCSC-M2RM-M8 Boot RAID Controller M.2 Modules

The server's mLOM/VIC slot can support a hot-swappable, boot optimized M.2 RAID Controller. The controller consists of two M.2 NVMe modules, and E.1S cage, a rear storage controller card, and USB cables. Each M.2 module has one M.2 NVMe SSD that sits on an E1.S carrier. Each M.2 module is field-replaceable. The M.2 modules are keyed so that they can install only one way into the E1.S cage.

The M.2 modules can be installed when the cage is in the server or when the cage is removed. Installation is toolless, and each M.2 module is accessible from the rear of the server. You do not need to remove the server's top cover to install or remove the controller or its M.2 modules.

Use this procedure to install one, or both, of the controller's M.2 modules.

## Procedure

---

- Step 1** For each module, make sure that the ejector is in the open position.
- Step 2** Orient the module so that it is facing you and the ejector is on the right side.
- Step 3** Holding the module level, gently slide it into the cage until you feel some resistance.  
This resistance is normal. It occurs when the module's rear connector contacts its socket on the cage.
- Step 4** When you feel resistance, push the ejector horizontally to the left (the closed position) until the ejector is flush with the faceplate of the cage.



---

## Removing UCSC-M2RM-M8 Boot RAID Controller M.2 Modules

The M.2 modules for the UCSC-M2RM-M8 Boot RAID Controller are hot swappable. Each module consists of an E1.S carrier and an M.2 NVMe SSD on it.

The M.2 modules for boot optimized RAID controllers can be individually removed and inserted. Each M.2 module that has an ejector lever, and by using the ejector lever, you can detach the module from the cage.

Removal is toolless, and each module is accessible from the rear of the server. You do not need to remove the server's top cover to install or remove the M.2 modules.

Use the following procedure to replace one, or both, of the M.2 Modules. You can remove the M.2 modules regardless of whether cage is installed in the server or not. If the server is running, it is a best practice to replace only one M.2 module at a time.

### Procedure

---

**Step 1** Grasp the left edge of the module and gently swing the ejector horizontally to the right (1).

**Caution**

Do not swing the ejector more than 45 degrees. If you force the ejector past its range of motion, you risk damaging the ejector.

**Step 2** When the module is dislodged from the cage, grasp the module by the edges and slide it out of the cage (2).

**Caution**

Make sure to hold the module level while removing it! Do not lift, twist, or rotate the module while removing it.

---

## Replacing Boot-Optimized M2 SSDs

This topic describes how to remove and replace an M.2 SATA or NVMe SSD in a E1.S carrier for M.2 (UCS-HWRAID-M2-D). The carrier is mounted on the riser, and has one M.2 SSD socket on either side (front or back) of the vertical riser.

### Population Rules For Mini-Storage M.2 SSDs

- Both M.2 SSDs must be either SATA or NVMe; do not mix types in the carrier.
- You can use one or two M.2 SSDs in the carrier. It is a best practice to use two SSDs.
- M.2 socket 1 is on the front side of the carrier, which faces PCI riser 3; M.2 socket 2 is on the back of the carrier, which faces PCI riser 2.

### Before you begin

You will need a #1 Phillips screwdriver to complete this procedure.

### Procedure

---

**Step 1** Remove the M.2 controllers from the server.

See the appropriate topic.

- [Replacing a Boot-Optimized M.2 RAID Controller Module, on page 185](#)
- [Replacing the Internal Boot-Optimized M.2 RAID Controller, on page 208](#)

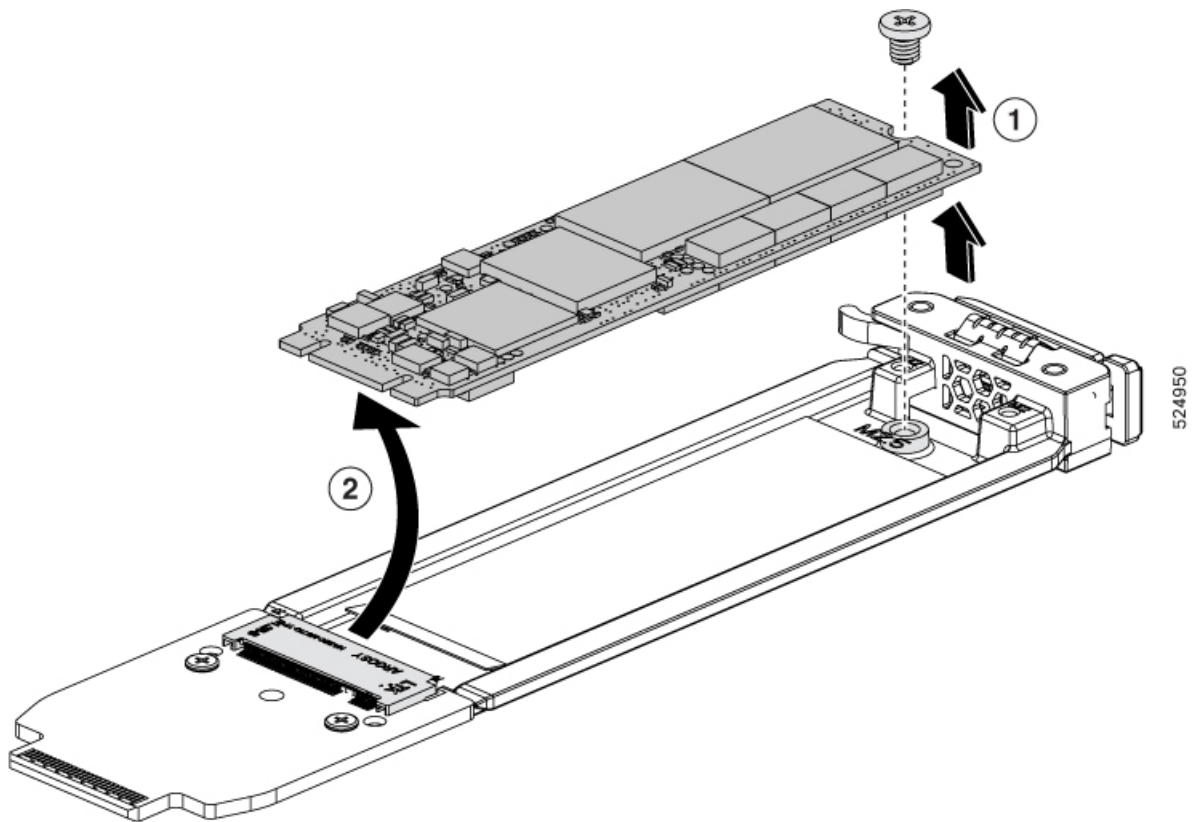
**Step 2** Remove an M.2 SSD:

#### Note

The following procedure shows removal and installation of the M.2 SSD on one of the Riser 3 M.2 modules, but the process is the same for the M.2 SSDs on the mLOM Boot RAID controller and the internal Boot RAID controller.

- a) Use a #1 Phillips-head screwdriver to remove the single screw that secures the M.2 SSD to the carrier (1).
- b) Remove the M.2 SSD from its socket on the carrier (2).

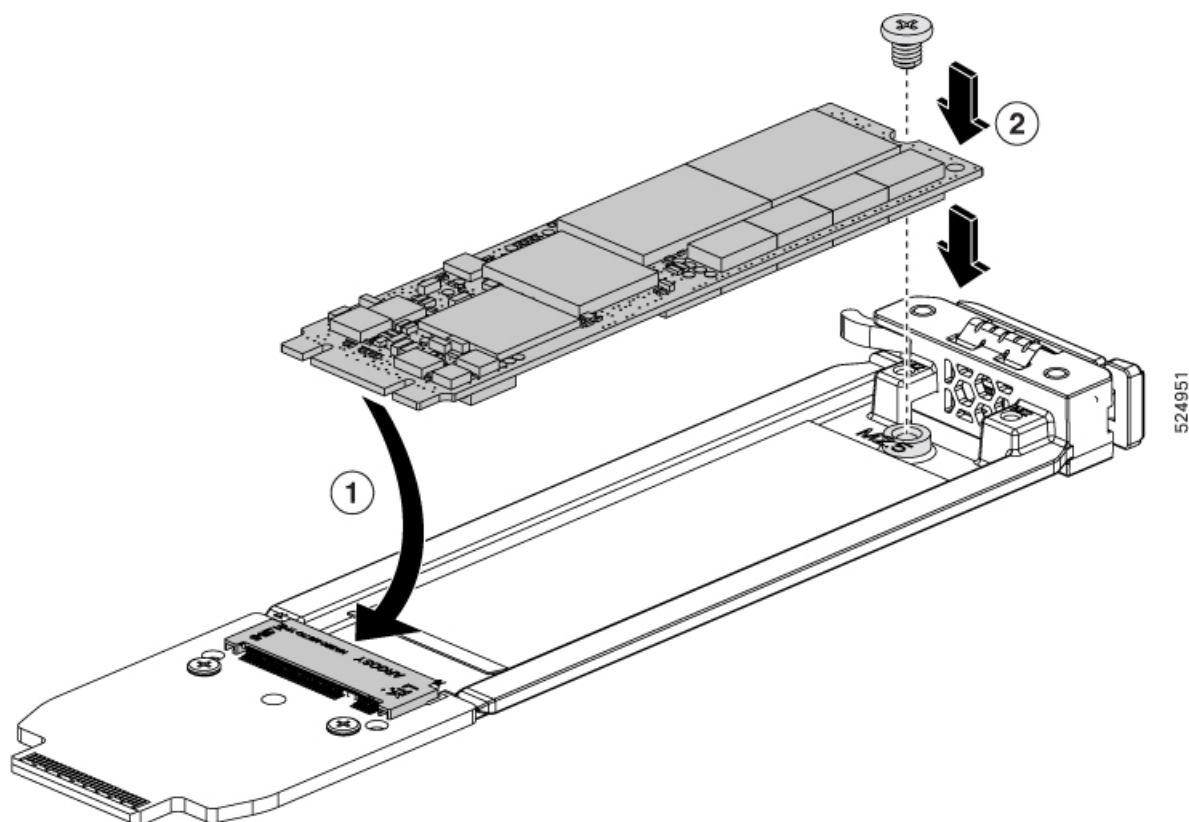
To get the SSD to unseat into the socket on the carrier, you might need to slightly tilt or angle the screw-end of the M.2 as you lift it off of the carrier.

**Step 3** Install a new M.2 SSD:

- a) Insert the new M.2 SSD connector-end into the socket on the carrier with its label side facing up.

To get the SSD to seat into the socket on the carrier, you might need to slightly tilt or angle the screw-end of the M.2 as you lower it off of the carrier.

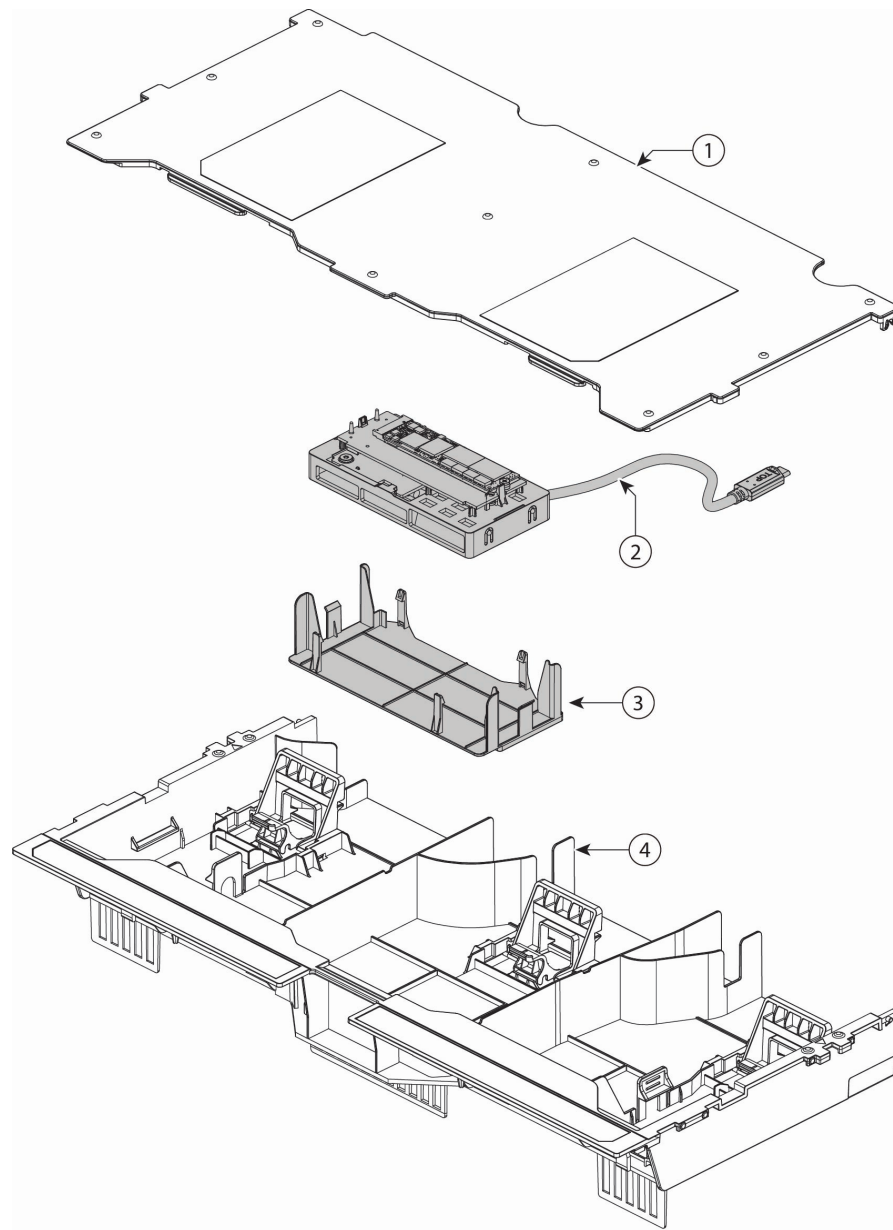
- b) Press the M.2 SSD flat against the carrier.
- c) Install the single screw that secures the end of the M.2 SSD to the carrier.



## Replacing the Internal Boot-Optimized M.2 RAID Controller

The server offers an internal Cisco Boot-Optimized M.2 RAID Controller module, which includes slots for two SATA M.2 drives, plus an integrated 6-Gbps SATA RAID controller that can control the SATA M.2 drives in a RAID 1 array. Although two M.2 SSDs are recommended, the server can operate on only one.

The boot-optimized RAID controller is a module that consists of a carrier and M.2 SSDs. The drives install onto the carrier, and the carrier installs into the module. Each controller supports up to two NVMe SSDs. The boot-optimized M.2 RAID controller sits on the CPU air baffle and connects to the RAID controller card on the motherboard.



487381

|   |                                             |
|---|---------------------------------------------|
| 1 | Air Baffle Top Cover                        |
| 2 | Internal M.2 Boot Optimized RAID Controller |
| 3 | M.2 Carrier                                 |
| 4 | Air Baffle                                  |

The internal Boot RAID controller is installed in different locations depending on which server model you have.

**Table 13: Internal Boot Optimized M.2 RAID Controllers**

| Description                      | PID             | Installation Location                                                                                                                               |
|----------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| UCS C240 M8 Internal M.2 Module  | UCSC-M2I-240M8  | For the 24 SFF or 32 E3.S models, the M.2 module is installed on the CPU air baffle and is cabled to the RAID controller module on the motherboard. |
| UCS C240 M8L Internal M.2 Module | UCSC-M2I-240M8L | For the 16 LFF module, the M.2 module is installed vertically on the motherboard and is cabled to the RAID controller.                              |



**Note** Two options of hot swappable, rear-loading M.2 boot-optimized RAID controller are available. Each option installs to a different location of the server depending on which server type you order. For more information, see [Replacing a Boot-Optimized M.2 RAID Controller Module, on page 185](#).

## Cisco Boot-Optimized M.2 RAID Controller Considerations

Review the following considerations:

- This controller supports RAID 1 (single volume) and JBOD mode.



**Note** Do not use the server's embedded SW MegaRAID controller to configure RAID settings when using this controller module. Instead, you can use the following interfaces:

- Cisco IMC 4.3(6) and later
- BIOS HII utility, BIOS 4.3(6) and later
- Cisco UCS Manager 4.3(6) and later (UCS Manager-integrated servers)

- The M.2 module locations differ depending on which RAID controller is installed.

**Table 14: M.2 Drive Locations and Identifiers**

| PID             | Location                               | Identifier                                                                                                           |
|-----------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| UCSC-M2RR-240M8 | Near Riser 3 at the rear of the server | The left drive is the first device (slot 1, drive 253) and the right drive is the second device (slot 2, drive 254). |

| PID            | Location                          | Identifier                                                                                                           |
|----------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------|
| UCSC-M2RM-M8   | mLOM Slot                         | The left drive is the first device (slot 1, drive 253) and the right drive is the second device (slot 2, drive 254). |
| UCS-M2-HWRAID2 | Inside the server by Rise 3 (LFF) | The left drive is the first device (slot 1, drive 251) and the right drive is the second device (slot 2, drive 252). |

- When using RAID, we recommend that both SATA M.2 drives are the same capacity. If different capacities are used, the smaller capacity of the two drives is used to create a volume and the rest of the drive space is unusable.

JBOD mode supports mixed capacity SATA M.2 drives.

- Drives can be hot pluggable depending on which ones are used.
  - The UCSC-M2RR-240M8 and UCSC-M2RM-M8 support hot-plug (OS informed removal or installation) of its M.2 SSDs.
  - The UCS-M2-HWRAID2 does not support hot-plug replacements of M.2 SSDs.
- Monitoring of the controller and installed SATA M.2 drives can be done using Cisco IMC and Cisco UCS Manager. They can also be monitored using other utilities such as UEFI HII, PMCLI, XMLAPI, and Redfish.
- Updating firmware of the controller and the individual drives:
  - For standalone servers, use the Cisco Host Upgrade Utility (HUU). Refer to the [HUU Documentation](#).
  - For servers integrated with Cisco UCS Manager, refer to the [Cisco UCS Manager Firmware Management Guide](#).
- The SATA M.2 drives can boot in UEFI mode only. Legacy boot mode is not supported.
- If you replace a single SATA M.2 drive that was part of a RAID volume, rebuild of the volume is auto-initiated after the user accepts the prompt to import the configuration. If you replace both drives of a volume, you must create a RAID volume and manually reinstall any OS.
- We recommend that you erase drive contents before creating volumes on used drives from another server. The configuration utility in the server BIOS includes a SATA secure-erase function.
- The server BIOS includes a configuration utility specific to this controller that you can use to create and delete RAID volumes, view controller properties, and erase the physical drive contents. Access the utility by pressing **F2** when prompted during server boot. Then navigate to **Advanced > Cisco Boot Optimized M.2 RAID Controller**.

## Removing Internal Boot-Optimized RAID Controller From SFF and E3S Servers

The internal boot-optimized RAID controller is a module that consists of a carrier and M.2 SSDs. Each controller supports up to two NVMe SSDs. The SSDs install onto the carrier, and the carrier sits on the interior of the server on the air baffle (duct) and connects to the motherboard.

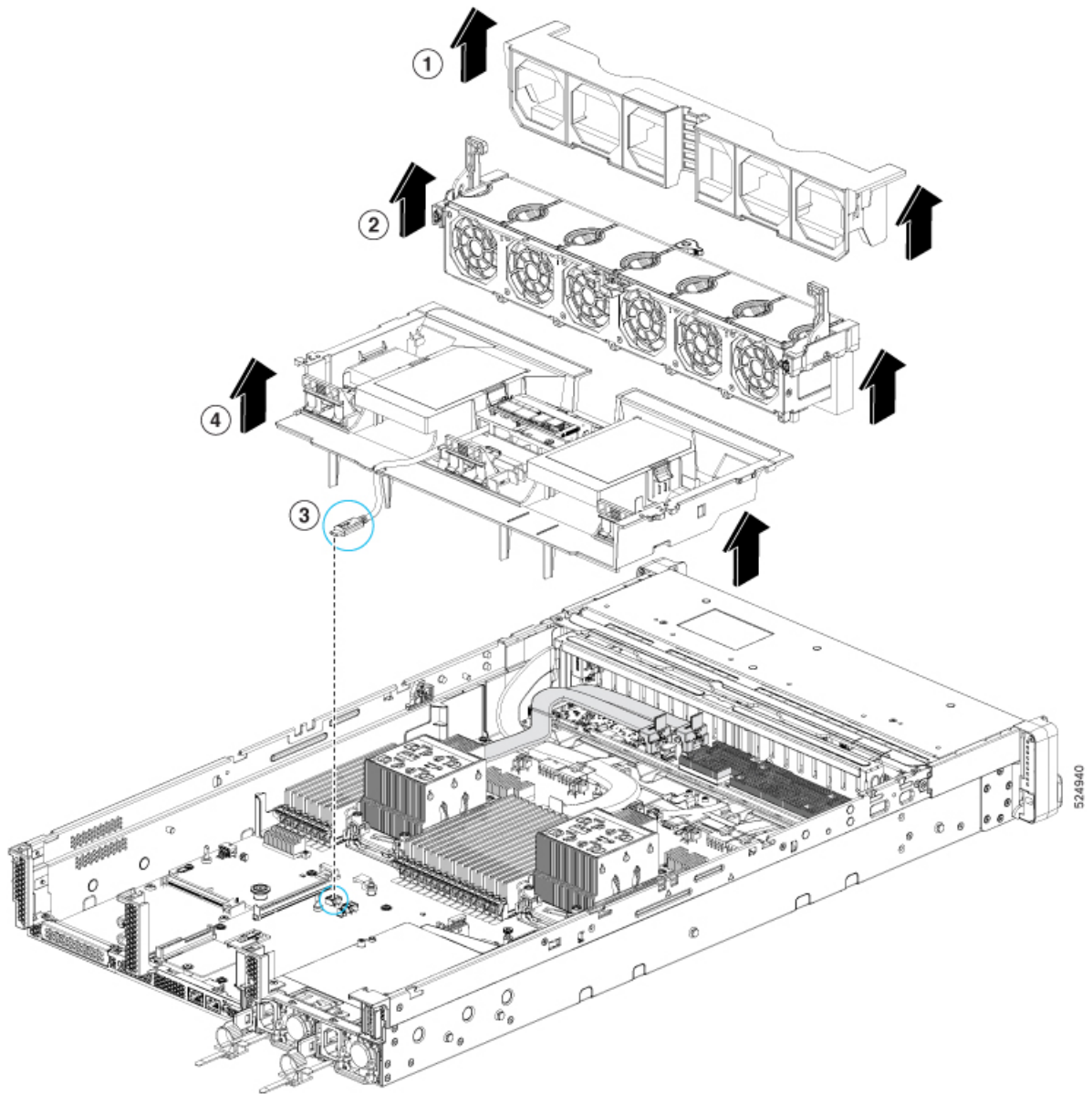
Use this task to remove the internal boot-optimized RAID controller (internal controller) when it is installed on SFF or E3.S configurations of the server.

### Procedure

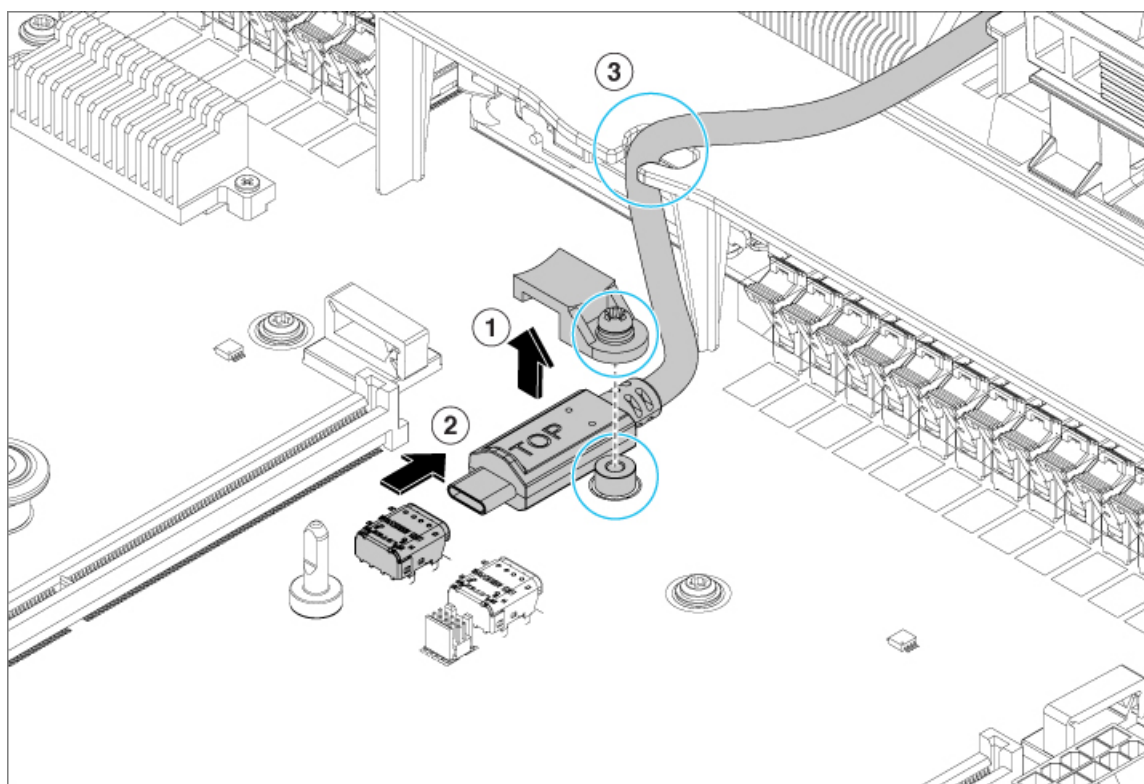
---

- Step 1** If you have not already removed the server top cover, do so now.  
Go to [Removing the Server Top Cover, on page 56](#).
- Step 2** Remove PCIe riser 2
- Step 3** Remove the fan components.
- a) Remove the RV baffle for the fans (1).
  - b) Remove the Fan Modules. (2).





- Step 4** Disconnect the controller cable from the motherboard.
- Using a screwdriver, remove the cable detainer (1).
  - Unplug the cable (2).
  - Gently remove the cable from the notch in the air duct (3).



524958

**Step 5** Remove the air duct.

[Removing the Air Duct, on page 64.](#)

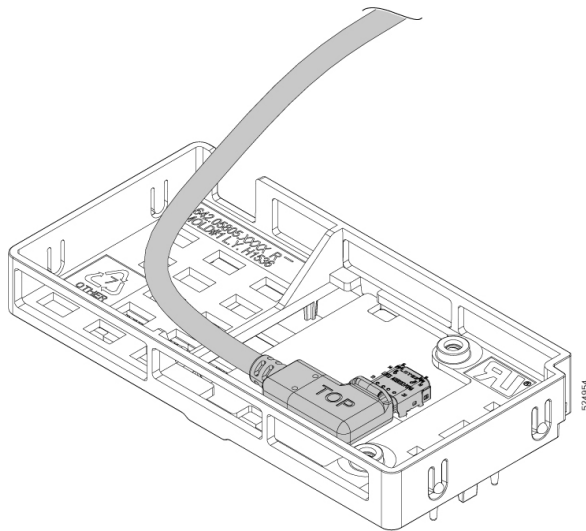
**Step 6** Grasp and lift the RAID controller out of the air duct.

**Step 7** Choose the appropriate option.

- If you will replace the internal controller, go to step 7.

See

- If you are completely removing the internal controller and will not install another, disconnect the cable from the M.2 carrier.



**Step 8** Choose the appropriate option:

- Replace the internal controller.

See [Installing the Internal Boot-Optimized RAID Controller in SFF and E3S Servers, on page 215](#).

- Replace the top cover.

---

## Installing the Internal Boot-Optimized RAID Controller in SFF and E3S Servers

The internal boot-optimized RAID controller is a module that consists of a carrier and M.2 SSDs. Each controller supports up to two NVMe SSDs. The SSDs install onto the carrier, and the carrier sits on the interior of the server on the air baffle (duct) and connects to the motherboard.

Use this task to remove the internal boot-optimized RAID controller (internal controller) when it is installed on SFF or E3.S configurations of the server.

### Procedure

---

**Step 1** Install the air duct.

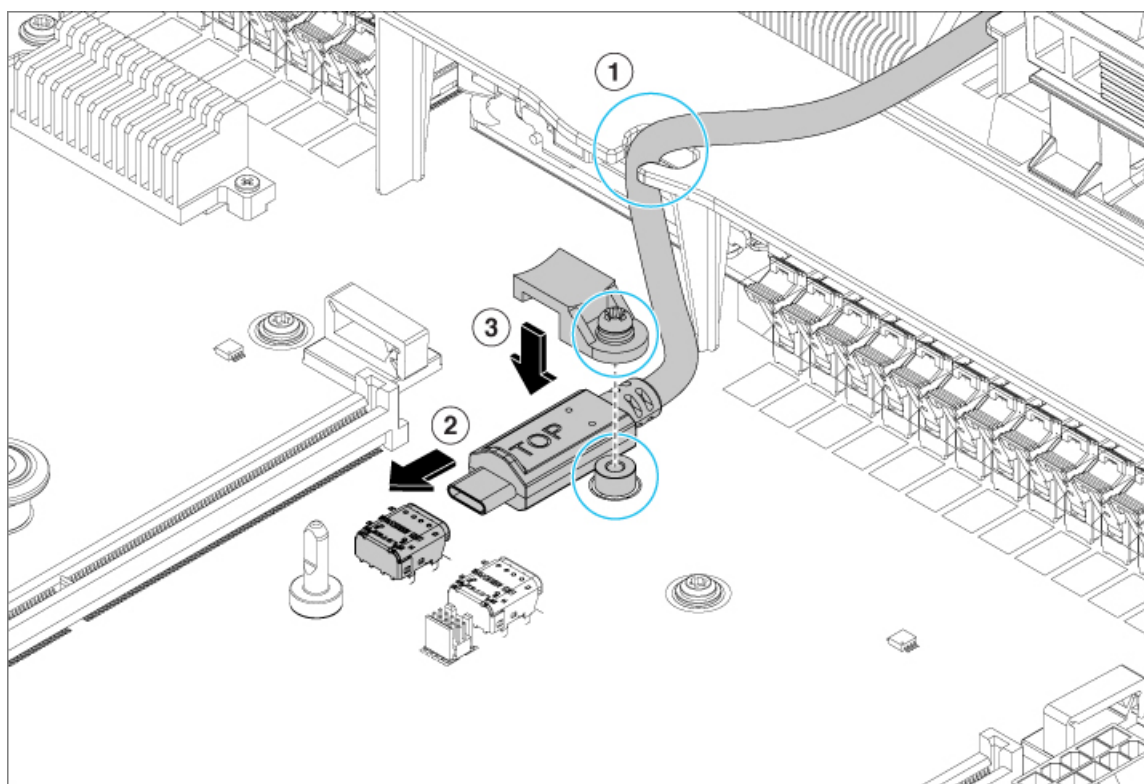
See [Installing the Air Duct, on page 65](#).

**Step 2** Lower the controller onto the air duct.

The controller sits in a rectangular area in the center of the air duct.

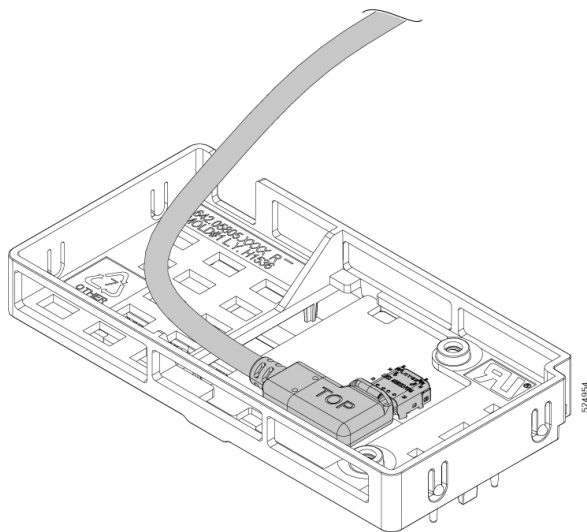
**Step 3** Attach the cable to the motherboard.

- Gently route the cable through the notch in the air duct. (1).
- Connect the cable to the motherboard connector (2).
- Using a #2 Phillips screwdriver, install the cable detainer to secure the cable in place (3).



524957

**Step 4** Attach the cable to the controller.



524954

**Step 5** Install the fan components.

- a) Install the Fan Modules.
- b) Install the RV baffle for the fans.

**Step 6** Install PCIe riser 2

**Step 7** Replace the server's top cover.

---

## Removing Internal Boot RAID Controller SSDs from SFF and E3S Servers

The SSDs on the internal boot controller for SFF and E3S configurations of the server sit horizontally in a module in the server's air duct. The controller consists of a carrier, which is a tray that holds the SSDs, and the SSDs themselves. A maximum of two SSDs, are held in place horizontally on each side of the carrier by pressure clips and the SSDs are attached to the carrier by a connector at one end and a retaining screw at the other.

Use this task to remove one, for both, of the SSDs from the internal Boot-Optimized RAID Controller.

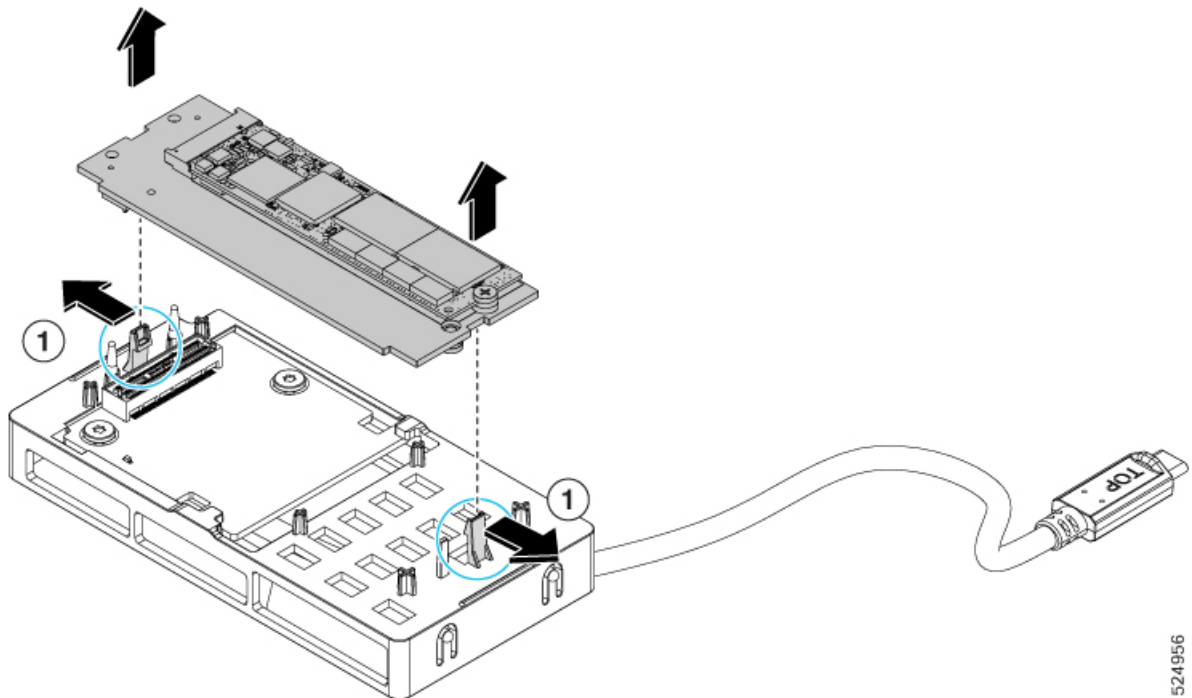
### Before you begin

You will need a #1 Phillips screwdriver to complete this procedure.

### Procedure

---

- Step 1** Remove the server's top cover.  
See [Removing the Server Top Cover, on page 56](#).
- Step 2** Remove the internal Boot RAID Controller.  
[Removing Internal Boot-Optimized RAID Controller From SFF and E3S Servers, on page 211](#).
- Step 3** When the internal controller is disconnected from the server, release the carrier.
- Press outward on the retaining clip at each end of the controller to release the carrier .
  - While holding the clips out, grasp the edges of the carrier and lift it off of the controller.

**Step 4** Release the M.2 SSD.

- a) Using a #1 Phillips screwdriver, remove the retaining screw to detach the M.2 SSD from the carrier.

**Note**

You might need to gently tilt or angle the SSD to disconnect it from its connector on the carrier.

- b) Lift the SSD off of the carrier.

**Step 5** Repeat step 3 and 4 as needed to replace the other M.2 SSD.**What to do next**

When all SSDs have been removed, install the appropriate number of SSDs. See [Installing Internal Boot RAID Controller SSDs for SFF and ES3 Servers, on page 218](#).

**Installing Internal Boot RAID Controller SSDs for SFF and ES3 Servers**

The SSDs on the internal boot controller for SFF and E3S configurations of the server install horizontally onto each side of a carrier. When installed, the SSDs are attached to the carrier by a connector at one end and a retaining screw at the other end.

Use this procedure to install one, or both, of the M.2 SSD onto the carrier, then install the carrier onto the controller. You will need to install the controller back into the server.

**Before you begin**

You will need a #2 Phillips screwdriver to complete this procedure.

## Procedure

### Step 1 Install the SSD.

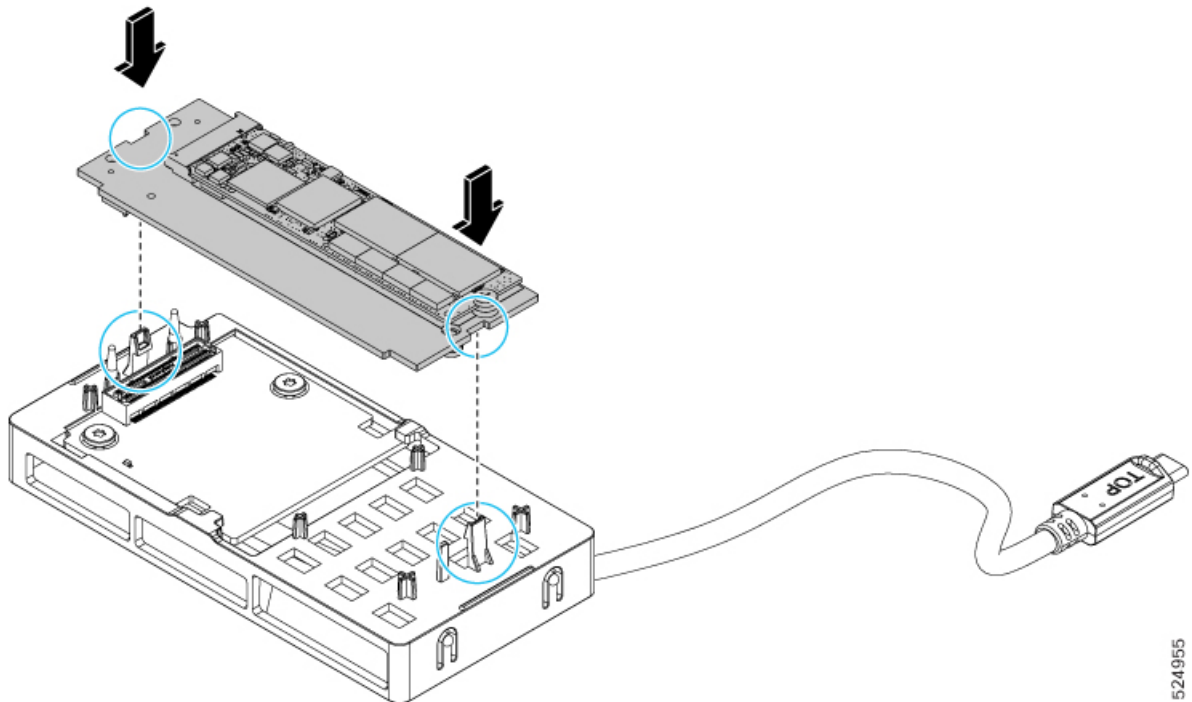
- Orient the SSD with the carrier so that the retraining screwhole in the SSD lines up with the screwhole in the carrier.
- Lower the SSD onto the carrier and insert the screw into SSD screwhole.
- Using a #2 Phillips screwdriver, tighten the screw to secure the SSD to the carrier.

### Step 2 If needed, repeat step 1 to install the additional SSD.

### Step 3 When the correct number of SSDs are installed, attach the carrier to the controller.

- Align the notches at each end of the carrier with the retaining clips on the controller.
- Lower the carrier onto the controller until the carrier is fully seated on the controller.

You should feel some resistance as the retaining clips meet the controller. This resistance is normal due to some pressure required to flex the retaining clips outward enough to allow the carrier to snap into place.



### Step 4 Install the internal Boot RAID Controller.

[Installing the Internal Boot-Optimized RAID Controller in SFF and E3S Servers, on page 215.](#)

### Step 5 Replace the server's top cover.

## Removing the Internal Boot-Optimized RAID Controller from LFF Servers

The internal boot-optimized RAID controller is a module that consists of a carrier and M.2 SSDs. Each controller supports up to two NVMe SSDs. Each controller supports up to two NVMe SSDs. The controller



board has one M.2 socket on its top (Slot 1) and one M.2 socket on its underside (Slot 2). The SSDs install onto sockets on the carrier, and the carrier sits on the interior of the server and connects to the motherboard.

Use this task to remove the internal boot-optimized RAID controller (internal controller) when it is installed on 16 LFF drive configurations of the server.

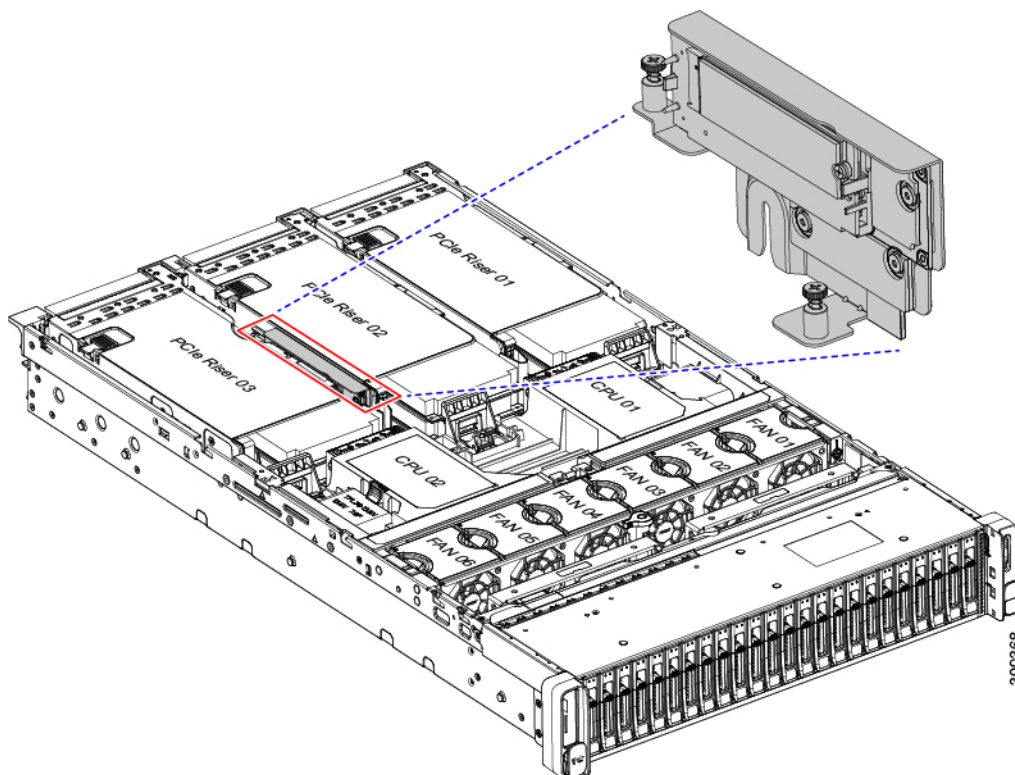
### Before you begin

You will need a #2 Phillips screwdriver to complete this task.

## Procedure

- Step 1** Locate the controller in its socket between PCIe Riser 2 and 3.

*Figure 46: Cisco Boot-Optimized M.2 RAID Controller on Motherboard*



- Step 2** Remove PCIe Riser 3 and Riser 2.

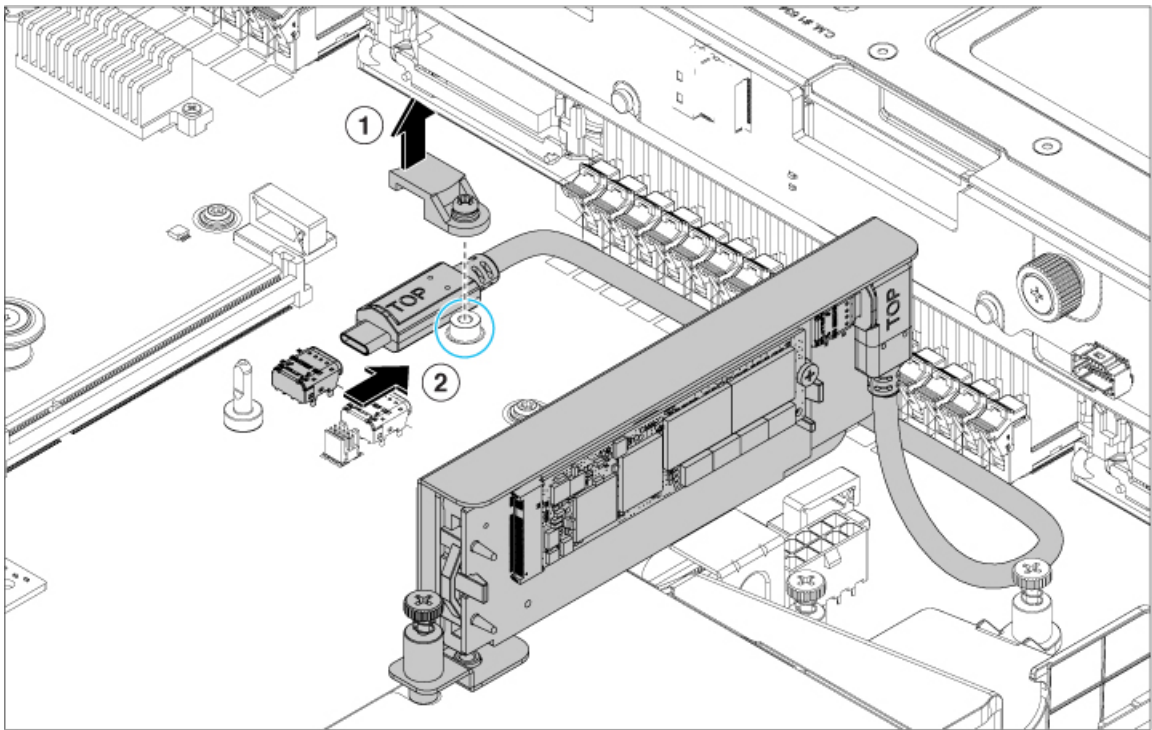
### Caution

Do not twist or angle the controller while removing it. Do not apply any sideways force to the part.

- Step 3** Remove the controller.

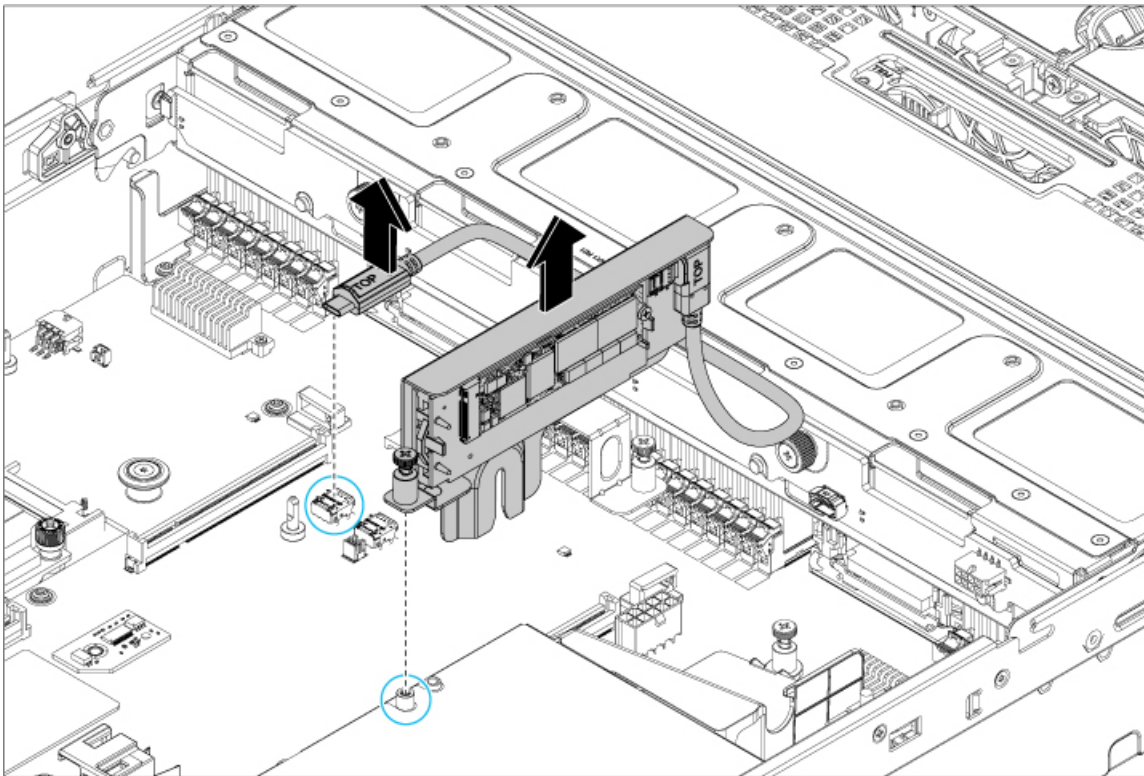
- Using a #2 Phillips screwdriver, remove the cable detainer that secures the cable to the motherboard (1).
- Disconnect the cable from its motherboard connector (2).





524937

- c) Using the screwdriver, remove the captive screw on the controller.
- d) Lift the controller and cable off of the motherboard.



524935

- Step 4** If you will be removing or replacing the M.2 SSDs, go to [Removing Internal Boot RAID Controller SSDs from SFF and E3S Servers](#), on page 217.

## Installing the Internal Boot-Optimized RAID Controller in LFF Servers

The internal boot-optimized RAID controller is a module that consists of a carrier and M.2 SSDs. Each controller supports up to two NVMe SSDs. Each controller supports up to two NVMe SSDs. The controller board has one M.2 socket on its top (Slot 1) and one M.2 socket on its underside (Slot 2). The SSDs install onto sockets on the carrier, and the carrier sits on the interior of the server and connects to the motherboard.

### Before you begin

You will need a #2 Phillips screwdriver to complete this task.

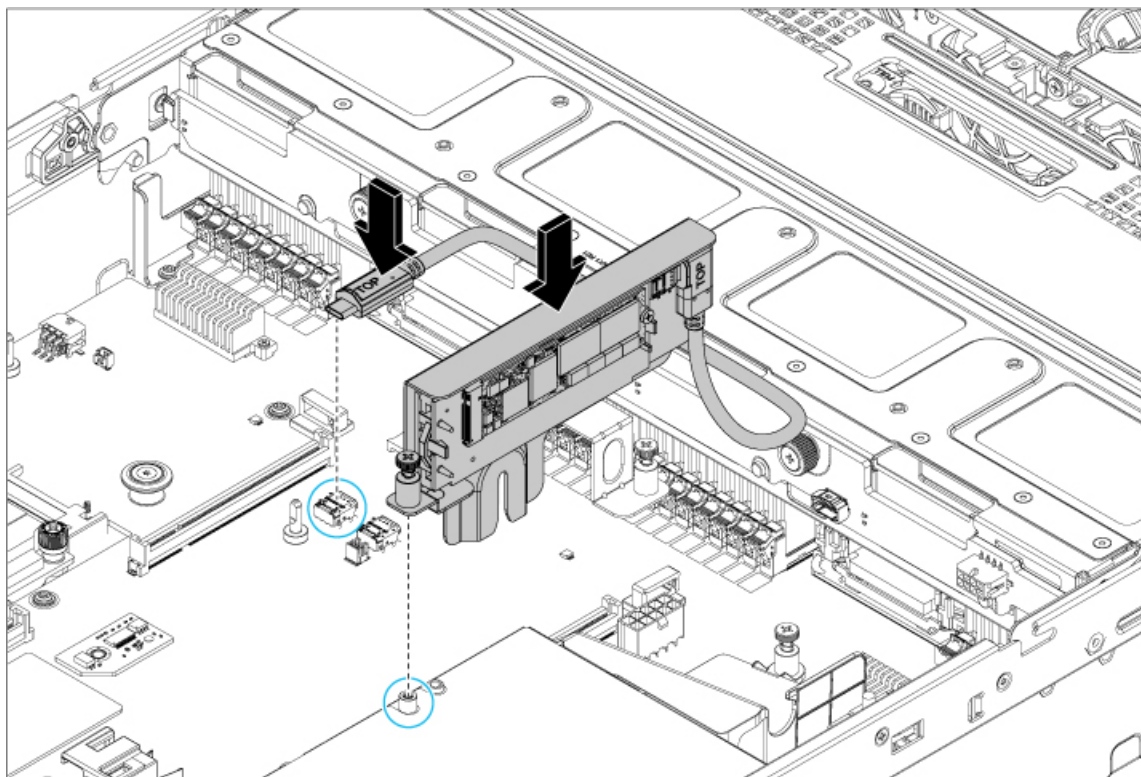
### Procedure

- Step 1** Orient the controller so that the captive screw on the controller aligns with the screwhole on the motherboard

- Step 2** Holding the controller level, lower it onto the motherboard.

#### Note

The bottom of the controller has an elongated slot that receives a catch pin on the inside of the server. When lowering the controller into place make sure that these alignment features meet.



524934

**Step 3** Connect the cable to the motherboard connector.

**Step 4** Holding the card vertical, use the screwdriver to tighten the securing screw.

**Caution**

Do not twist or angle the controller while installing it. Keep the controller vertical so that the screws and alignment features meet and no sideways force is applied to the part.

**Step 5** Replace PCIe Riser 2 and Riser 3.

**Step 6** Replace the server's top cover.

---

## Removing Internal Boot RAID Controller SSDs from LFF Servers

The SSDs on the internal boot controller for the LFF configuration of the server sit vertically on the controller between PCIe Riser 3 and PCIe Riser 2. The controller consists of a carrier, which is a tray that holds the SSDs, and the SSDs themselves. A maximum of two SSDs are vertically attached to each side of the carrier by a connector at one end and a retaining screw at the other.

Use this task to remove one, for both, of the SSDs from the internal Boot-Optimized RAID Controller.

**Before you begin**

You will need a #2 Phillips screwdriver to complete this procedure.

**Procedure**

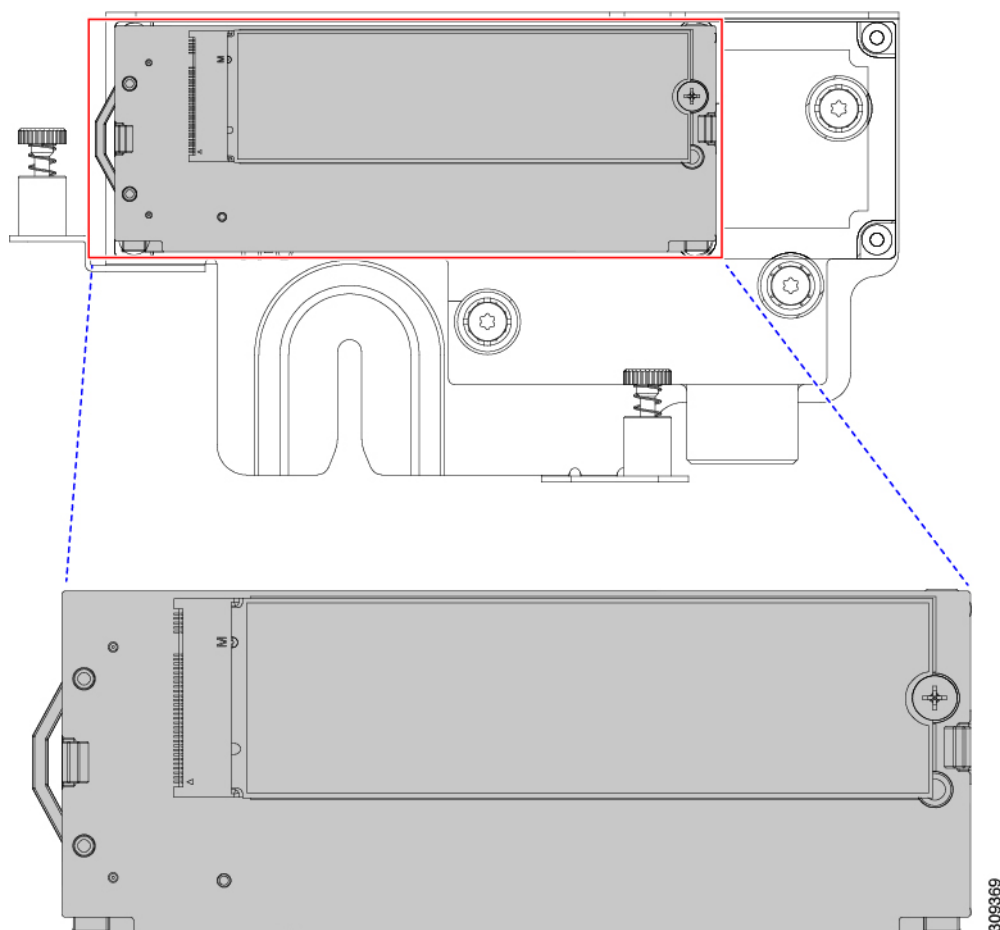
---

**Step 1** Remove the server's top cover.

See [Removing the Server Top Cover, on page 56](#).

**Step 2** Remove the M.2 SSDs.

- a) Using a #2 Phillips screwdriver, loosen the captive screws and remove the M.2 module.
- b) At each end of the controller board, push outward on the clip that secures the carrier.
- c) Lift both ends of the controller to disengage it from the carrier.



**Step 3** Repeat step 2 to remove the additional M.2 SSD, if needed.

### What to do next

Install the proper number of M.2 SSDs. See [Installing the Internal Boot RAID Controller SSDs for an LFF Server, on page 224](#).

## Installing the Internal Boot RAID Controller SSDs for an LFF Server

The SSDs for the LFF server's internal Cisco Boot-Optimized RAID Controller are installed vertically on a carrier that sits on the controller. The carrier contains the M.2 SSDs, which are attached by a retaining screw at one end and a connector at the other end. When you install the SSDs, you will need to seat them into the connector, then secure them with the retaining screw.

Use this procedure to install one, or both, of the M.2 SSD onto the carrier, then install the carrier onto the controller. You will need to install the controller back into the server.

### Before you begin

You will need a #2 Phillips screwdriver to complete this procedure.

## Procedure

- 
- Step 1** Install the M.2 SSD.
- Orient the SSD with the carrier so that the retraining screwhole in the SSD lines up with the screwhole in the carrier.
  - Lower the SSD onto the carrier and insert the screw into SSD screwhole.
  - Using a #2 Phillips screwdriver, tighten the screw to secure the SSD to the carrier.
- Step 2** When the correct number of SSDs are installed, attach the carrier to the controller.
- Align the notches at each end of the carrier with the retaining clips on the controller.
  - Lower the carrier onto the controller until the carrier is fully seated on the controller.
- You should feel some resistance as the retaining clips meet the controller. This resistance is normal due to some pressure required to flex the retaining clips outward enough to allow the carrier to snap into place.
- Step 3** Replace the top cover to the server.
- Step 4** Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.
- 

## Replacing the Rear SATA Controller Card

The server has an rear SATA controller card that connects the hot swappable Cisco Boot-Optimized M.2 Boot RAID Controllers to the motherboard. The interposer features four separate USB-type connectors that support cabling the following rear Boot RAID controllers:

- UCS C240 M8 Rear Hot-Plug M.2 Module for Riser 3, UCSC-M2RR-240M8
- UCS C220/240 M8 Rear Hot-plug M.2 module (MLOM), UCSC-M2RM-M8

Use the following tasks to replace the rear SATA controller Card:

- [Removing the Rear SATA Controller Card, on page 225](#)
- [Installing the Rear SATA Controller Card, on page 226](#)

## Removing the Rear SATA Controller Card

The M.2. Interposer card is located near the rear of the server under PCIe Riser 1. When the card is removed, hot swappable Cisco Boot-Optimized RAID Controllers at the rear of the chassis are not supported.

Use this procedure to remove the rear SATA controller card.

### Before you begin

You will need a #2 Phillips screwdriver to complete this procedure.

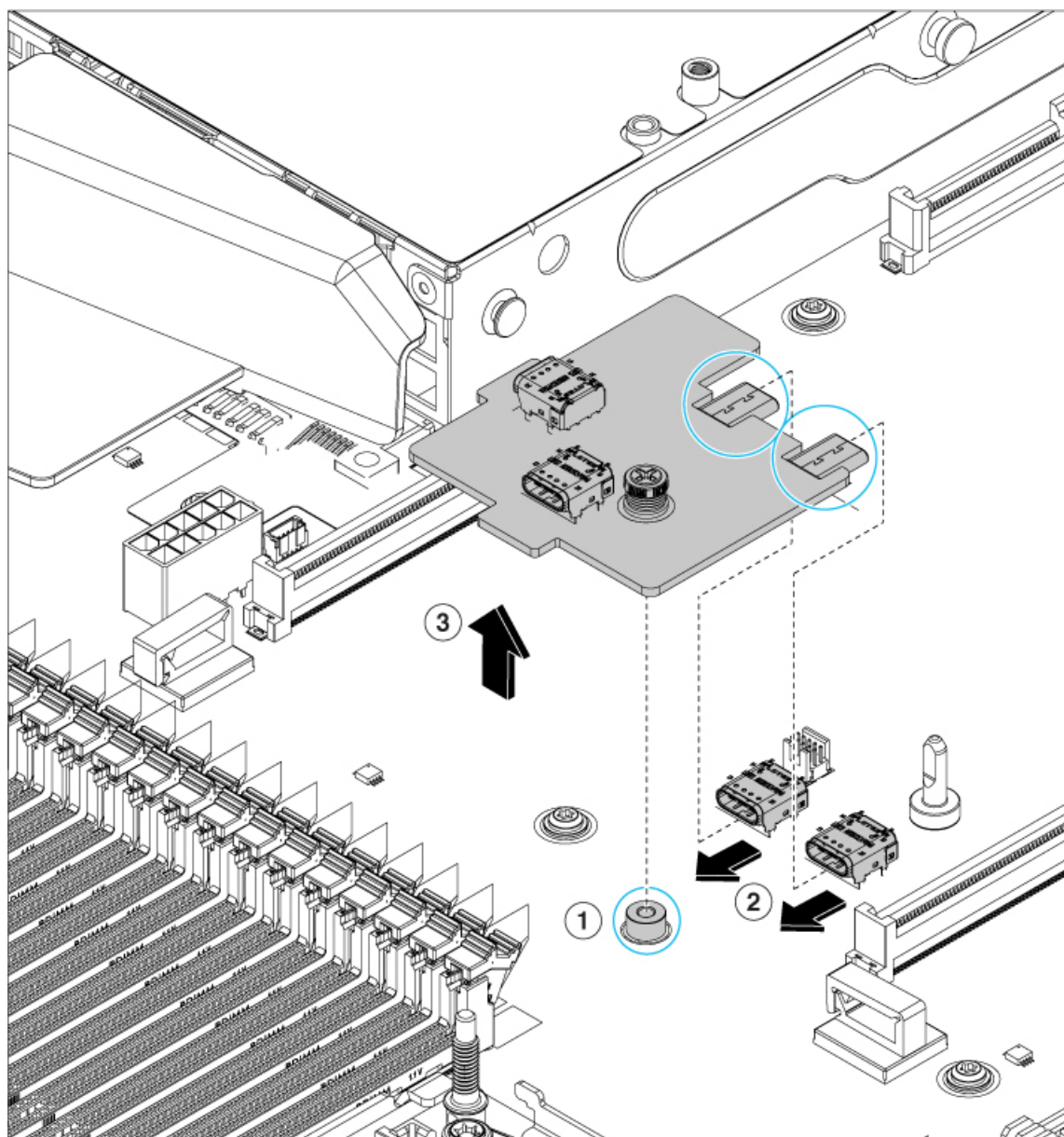
## Procedure

- 
- Step 1** Using a #2 Phillips screwdriver, remove the thumbscrew that secures the card to the motherboard.



**Step 2** Disconnect the card from the motherboard connectors.

**Step 3** Lift the card off of the motherboard.



## Installing the Rear SATA Controller Card

The rear SATA controller card is located at the rear of the server under Riser 1. The card is attached to the motherboard and supports cabling either of the rear hot swappable Cisco Boot-Optimized RAID controllers.

Use this procedure to install the rear SATA controller card.

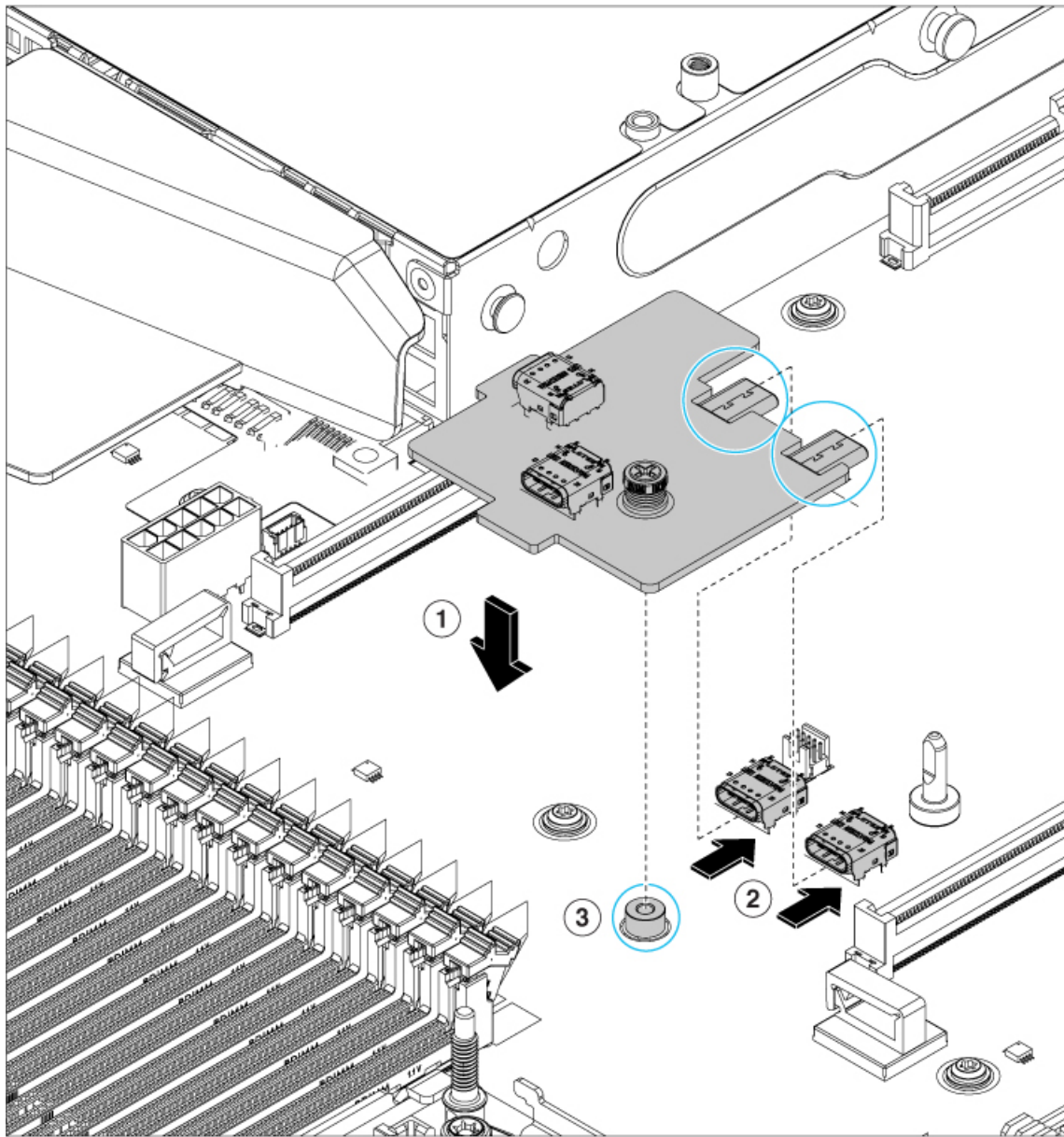
**Before you begin**

You will need a #2 Phillips screwdriver to complete this procedure.

**Procedure**

---

- Step 1** Orient the card so that the thumbscrew aligns with the screwhole on the motherboard.  
In this position, the male connectors on the card align with the female connectors on the motherboard.
- Step 2** Lower the card onto the motherboard
- Step 3** Attach the connectors on the card to the motherboard connectors.
- Step 4** Using a #2 Phillips screwdriver, secure the card to the motherboard.



524952

## Replacing a Chassis Intrusion Switch

The chassis intrusion switch is an optional security feature that logs an event in the system event log (SEL) whenever the cover is removed from the chassis.



## Procedure

**Step 1** Prepare the server for component installation:

- Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

If you cannot safely view and access the component, remove the server from the rack.

- Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).

**Step 2** Remove an existing intrusion switch:

- Disconnect the intrusion switch cable from the socket on the motherboard.
- Use a #1 Phillips-head screwdriver to loosen and remove the single screw that holds the switch mechanism to the chassis wall.
- Slide the switch mechanism straight up to disengage it from the clips on the chassis.

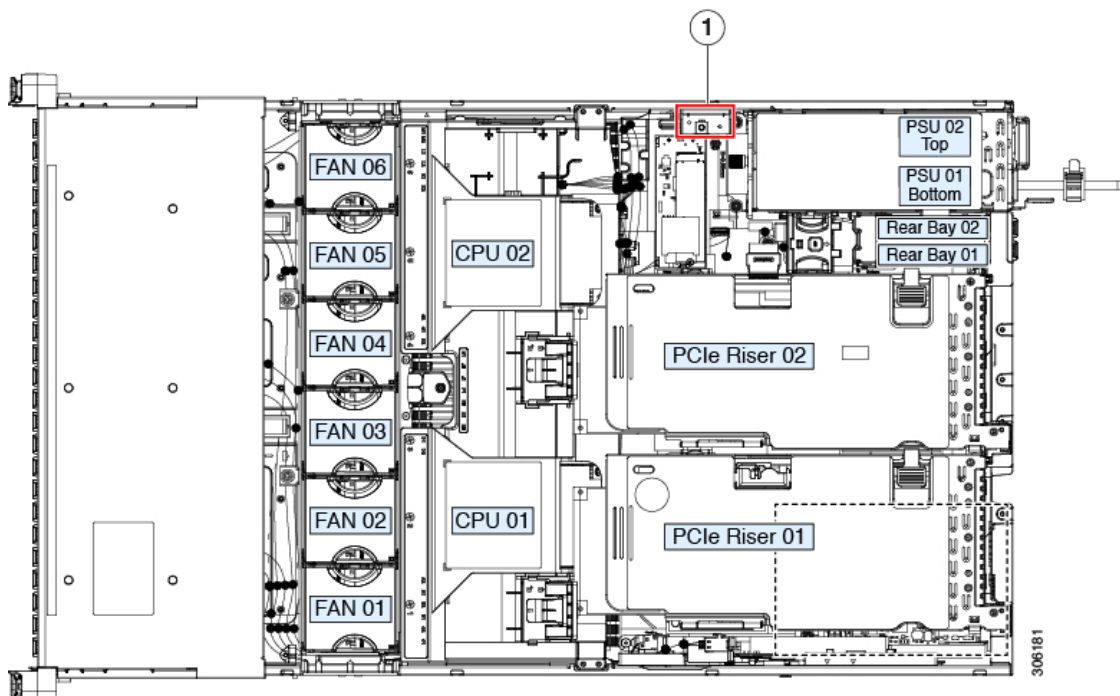
**Step 3** Install a new intrusion switch:

- Slide the switch mechanism down into the clips on the chassis wall so that the screwholes line up.
- Use a #1 Phillips-head screwdriver to install the single screw that secures the switch mechanism to the chassis wall.
- Connect the switch cable to the socket on the motherboard.

**Step 4** Replace the cover to the server.

**Step 5** Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

**Figure 47: Replacing a Chassis Intrusion Switch**



|                           |   |
|---------------------------|---|
| Intrusion switch location | - |
|---------------------------|---|

## Installing a Trusted Platform Module (TPM)

The trusted platform module (TPM) is a small circuit board that plugs into a motherboard socket and is then permanently secured with a one-way screw. The socket location is on the motherboard below PCIe riser 2.

### TPM Considerations

- This server supports TPM version 2.0 (UCSX-TPM-002D-D) as defined by the Trusted Computing Group (TCG). The TPM is also SPI-based.
- Field replacement of a TPM is not supported; you can install a TPM after-factory only if the server does not already have a TPM installed.
- If the TPM 2.0 becomes unresponsive, reboot the server.

### Installing TPM Hardware



**Note** For security purposes, the TPM is installed with a one-way screw. It cannot be removed with a standard screwdriver.

#### Procedure

- Step 1** Prepare the server for component installation:
- a) Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
  - b) Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- c) Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Step 2** Remove PCIe riser 2 from the server to provide clearance to the TPM socket on the motherboard.
- Step 3** Install a TPM:
- a) Locate the TPM socket on the motherboard.
  - b) Align the connector that is on the bottom of the TPM circuit board with the motherboard TPM socket. Align the screw hole on the TPM board with the screw hole that is adjacent to the TPM socket.
  - c) Push down evenly on the TPM to seat it in the motherboard socket.
  - d) Install the single one-way screw that secures the TPM to the motherboard.
- Step 4** Replace PCIe riser 2 to the server. See [Replacing a PCIe Riser, on page 124](#).

- Step 5** Replace the cover to the server.
- Step 6** Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.
- Step 7** Continue with [Enabling the TPM in the BIOS, on page 231](#).

---

## Enabling the TPM in the BIOS

After hardware installation, you must enable TPM support in the BIOS.



**Note** You must set a BIOS Administrator password before performing this procedure. To set this password, press the **F2** key when prompted during system boot to enter the BIOS Setup utility. Then navigate to **Security > Set Administrator Password** and enter the new password twice as prompted.

---

### Procedure

---

- Step 1** Enable TPM Support:
- Watch during bootup for the F2 prompt, and then press **F2** to enter BIOS setup.
  - Log in to the BIOS Setup Utility with your BIOS Administrator password.
  - On the BIOS Setup Utility window, choose the **Advanced** tab.
  - Choose **Trusted Computing** to open the TPM Security Device Configuration window.
  - Change TPM SUPPORT to **Enabled**.
  - Press **F10** to save your settings and reboot the server.
- Step 2** Verify that TPM support is now enabled:
- Watch during bootup for the F2 prompt, and then press **F2** to enter BIOS setup.
  - Log into the BIOS Setup utility with your BIOS Administrator password.
  - Choose the **Advanced** tab.
  - Choose **Trusted Computing** to open the TPM Security Device Configuration window.
  - Verify that TPM SUPPORT and TPM State are Enabled.
- Step 3** Continue with [Enabling the Intel TXT Feature in the BIOS, on page 231](#).
- 

## Enabling the Intel TXT Feature in the BIOS

Intel Trusted Execution Technology (TXT) provides greater protection for information that is used and stored on the business server. A key aspect of that protection is the provision of an isolated execution environment and associated sections of memory where operations can be conducted on sensitive data, invisibly to the rest of the system. Intel TXT provides for a sealed portion of storage where sensitive data such as encryption keys can be kept, helping to shield them from being compromised during an attack by malicious code.

## Procedure

---

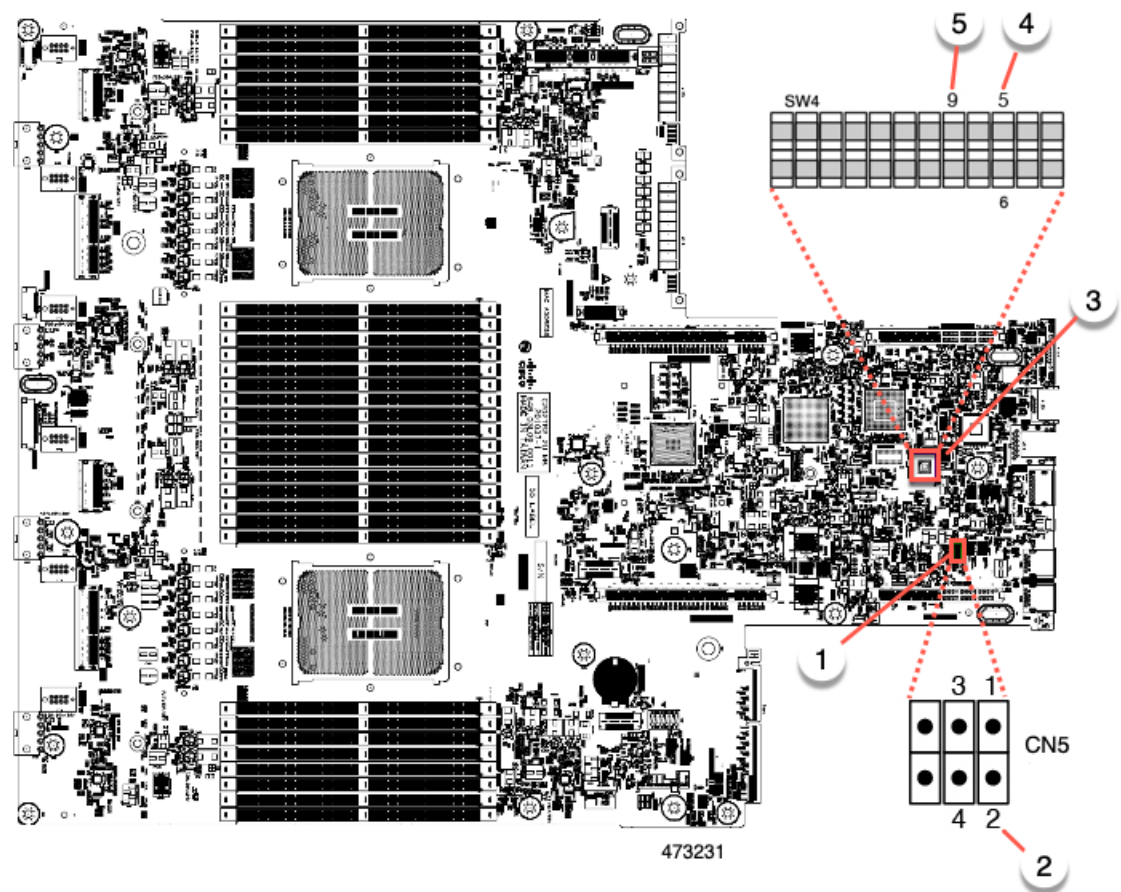
- Step 1** Reboot the server and watch for the prompt to press F2.
- Step 2** When prompted, press **F2** to enter the BIOS Setup utility.
- Step 3** Verify that the prerequisite BIOS values are enabled:
- a) Choose the **Advanced** tab.
  - b) Choose **Intel TXT(LT-SX) Configuration** to open the Intel TXT(LT-SX) Hardware Support window.
  - c) Verify that the following items are listed as Enabled:
    - VT-d Support (default is Enabled)
    - VT Support (default is Enabled)
    - TPM Support
    - TPM State
  - d) Do one of the following:
    - If VT-d Support and VT Support are already enabled, skip to step 4.
    - If VT-d Support and VT Support are not enabled, continue with the next steps to enable them.
  - e) Press **Escape** to return to the BIOS Setup utility **Advanced** tab.
  - f) On the Advanced tab, choose **Processor Configuration** to open the Processor Configuration window.
  - g) Set Intel (R) VT and Intel (R) VT-d to **Enabled**.
- Step 4** Enable the Intel Trusted Execution Technology (TXT) feature:
- a) Return to the Intel TXT(LT-SX) Hardware Support window if you are not already there.
  - b) Set TXT Support to **Enabled**.
- Step 5** Press **F10** to save your changes and exit the BIOS Setup utility.
- 

## Service Headers and Jumpers

This server includes blocks of headers and switches (SW12, CN3) that you can use for certain service and debug functions.

This section contains the following topics:

- [Using the Clear CMOS Switch \(SW4, Switch 9\) , on page 233](#)
- [Using the Clear BIOS Password Switch \(SW4, Switch 6\), on page 234](#)
- [Using the Boot Alternate Cisco IMC Image Header \(CN5, Pins 1-2\), on page 235](#)



|   |                                                 |   |                                                                               |
|---|-------------------------------------------------|---|-------------------------------------------------------------------------------|
| 1 | Location of header block CN5                    | 4 | Clear BIOS Password Switch (SW4 Switch 6)<br>Clear CMOS Switch (SW4 Switch 9) |
| 2 | Boot Alternate Cisco IMC Header: CN5 pins 1 - 2 | 5 | Clear CMOS Switch (SW4 Switch 9)                                              |
| 3 | Location of SW4 DIP switches                    | - |                                                                               |

## Using the Clear CMOS Switch (SW4, Switch 9)

You can use this switch to clear the server's CMOS settings in the case of a system hang. For example, if the server hangs because of incorrect settings and does not boot, use this switch to invalidate the settings and reboot with defaults.

You will find it helpful to refer to the location of the SW4 switch block. See [Service Headers and Jumpers](#), on page 232.



### Caution

Clearing the CMOS removes any customized settings and might result in data loss. Make a note of any necessary customized settings in the BIOS before you use this clear CMOS procedure.

## Procedure

- 
- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#).
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Step 4** Using your finger, gently push the SW4 switch 9 to the side marked ON.
- Step 5** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 6** Return the server to main power mode by pressing the Power button on the front panel. The server is in main power mode when the Power LED is green.
- Note**  
You must allow the entire server to reboot to main power mode to complete the reset. The state of the switch cannot be determined without the host CPU running.
- Step 7** Press the Power button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 8** Remove the top cover from the server.
- Step 9** Using your finger, gently push switch 9 to its original position (OFF).
- Note**  
If you do not reset the switch to its original position (OFF), the CMOS settings are reset to the defaults every time you power-cycle the server.
- Step 10** Replace the top cover, replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the Power button.
- 

## Using the Clear BIOS Password Switch (SW4, Switch 6)

You can use this switch to clear the BIOS password.

You will find it helpful to refer to the location of the SW4 switch block. See [Service Headers and Jumpers, on page 232](#).

## Procedure

- 
- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#). Disconnect power cords from all power supplies.
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

If you cannot safely view and access the component, remove the server from the rack.

- Step 3** Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Step 4** Using your finger, gently slide the SW4 switch 6 to the ON position.
- Step 5** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 6** Return the server to main power mode by pressing the Power button on the front panel. The server is in main power mode when the Power LED is green.

**Note**

You must allow the entire server to reboot to main power mode to complete the reset. The state of the switch cannot be determined without the host CPU running.

- Step 7** Press the Power button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 8** Remove the top cover from the server.
- Step 9** Reset the switch to its original position (OFF).

**Note**

If you do not remove the switch to its original position (OFF), the BIOS password is cleared every time you power-cycle the server.

- Step 10** Replace the top cover, replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the Power button.

---

## Using the Boot Alternate Cisco IMC Image Header (CN5, Pins 1-2)

You can use this Cisco IMC debug header to force the system to boot from an alternate Cisco IMC image.

You will find it helpful to refer to the location of the CN5 header. See [Service Headers and Jumpers, on page 232](#).

### Procedure

---

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Server, on page 56](#). Disconnect power cords from all power supplies.
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Server Top Cover, on page 56](#).
- Step 4** Install a two-pin jumper across CN5 pins 1 and 2.
- Step 5** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.

**Step 6** Return the server to main power mode by pressing the Power button on the front panel. The server is in main power mode when the Power LED is green.

**Note**

When you next log in to Cisco IMC, you see a message similar to the following:

```
'Boot from alternate image' debug functionality is enabled.  
CIMC will boot from alternate image on next reboot or input power cycle.
```

**Note**

If you do not remove the jumper, the server will boot from an alternate Cisco IMC image every time that you power cycle the server or reboot Cisco IMC.

**Step 7** To remove the jumper, press the Power button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.

**Step 8** Remove the top cover from the server.

**Step 9** Remove the jumper that you installed.

**Step 10** Replace the top cover, replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the Power button.

---





## CHAPTER 4

# Recycling Server Components

This chapter contains the following topics.

- [Server Recycling and E-Waste, on page 237](#)
- [Battery Warning, on page 237](#)
- [Recycling the UCSC-240-M8SX and UCSC-240-M8E3S Main Motherboard PCB Assembly \(PCBA\) , on page 238](#)
- [Recycling the UCSC-240-M8L Main Motherboard PCB Assembly \(PCBA\) , on page 240](#)
- [Recycling the UCSC-240-M8E3S Front Mezzanine Module PCBA \(NVMe Backplane\) , on page 242](#)
- [Recycling the UCSC-240-M8SX Front Mezzanine Module PCBA \(SAS Backplane\) , on page 245](#)
- [Recycling the UCSC-240-M8L Front Mezzanine Module PCBA \(SAS Backplane\) , on page 248](#)
- [Recycling the USB Board, on page 251](#)
- [Recycling the Server KVM PCBA, on page 252](#)
- [Recycling the Server Front Panel PCBA, on page 256](#)

## Server Recycling and E-Waste

The server has various components that can be recycled. When recycling the server and its components, always comply with your local laws governing recycling and e-waste.



### Warning

The procedures in this chapter are destructive and can render the server unusable, so this content is not for standard use or FRU procedures! These procedures are for recyclers only.

## Battery Warning

The server has a round button-style battery which is used for the real-time clock.



### Warning

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

For information about removing the battery, see [Replacing the RTC Battery, on page 119](#).

# Recycling the UCSC-240-M8SX and UCSC-240-M8E3S Main Motherboard PCB Assembly (PCBA)

The PCBA for Cisco UCSC-240-M8SFF and UCSC-240-M8E3S servers is secured to the server's sheet metal. You must disconnect the PCBA from the tray before recycling the PCBA. The PCBA is secured by different types of fasteners.

## 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 server must be disconnected from facility power.
- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover, on page 56](#).

Gather the following tools before beginning this procedure:

- Pliers
- T10 Torx screwdriver
- #2 Phillips screwdriver

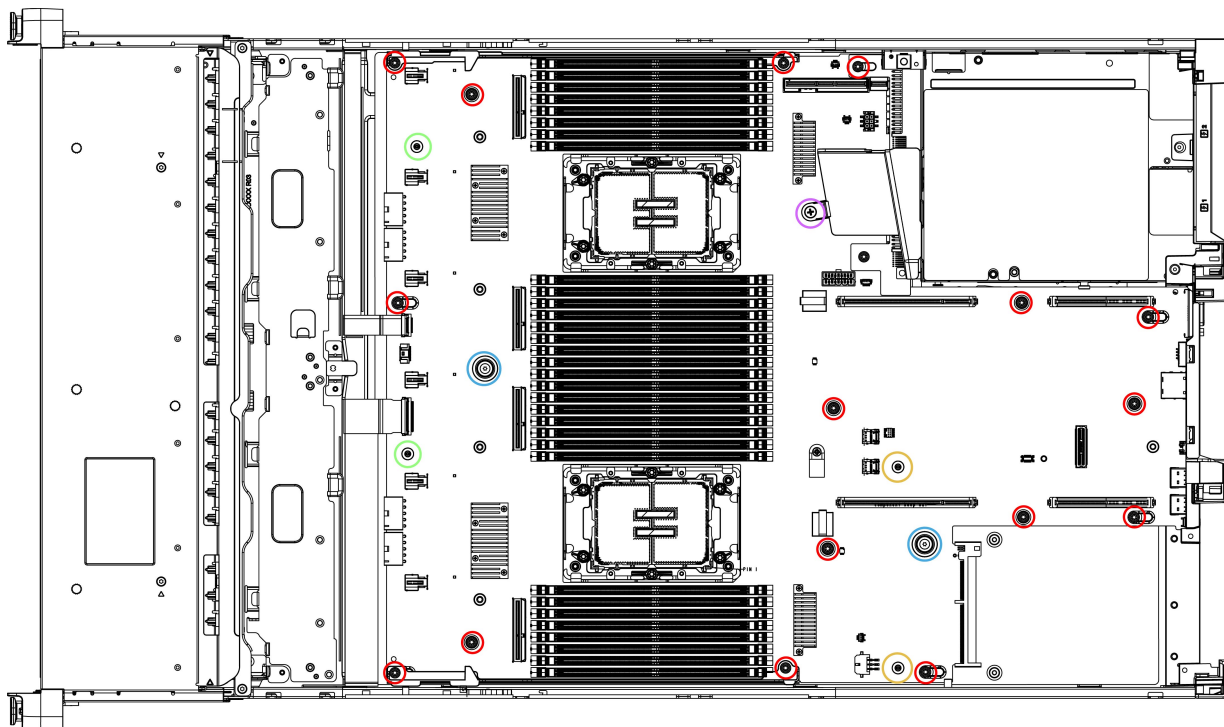
## Procedure

### Step 1

Locate the PCBA's mounting screws.

The following figure shows the location of the mounting screws.

Figure 48: Screw Locations for Removing the UCS C240 M8 SFF and E3S PCBA



487386

| Indicator           | Fastener                              | Required Tool           |
|---------------------|---------------------------------------|-------------------------|
| Red circles (○)     | M3.5x0.6 mm screws (18)               | Torx T10 screwdriver    |
| Green circles (○)   | H15 M4x0.7 mm lock screws (2)         | Pliers                  |
| Blue circles (○)    | M3.5x0.6 mm Thumb screws (2)          | Torx T10 screwdriver    |
| Yellow circles (○)  | H12 M4x0.7 mm locking screws (2)      | Pliers                  |
| Lavender circle (○) | M3.5 Thumb screw (1), on the air duct | #2 Phillips screwdriver |

**Step 2** Using the appropriate tools, remove the screws.

**Step 3** Remove the PCBA from the sheet metal and dispose of each in compliance with your local e-waste and recycling regulations.

# Recycling the UCSC-240-M8L Main Motherboard PCB Assembly (PCBA)

The main motherboard PCBA for a Cisco UCSC-240-M8L server is secured to the server's sheet metal. You must disconnect the PCBA from the tray before recycling the PCBA. The PCBA is secured by different types of fasteners.

## 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 server must be disconnected from facility power.
- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover, on page 56](#).

Gather the following tools before beginning this procedure:

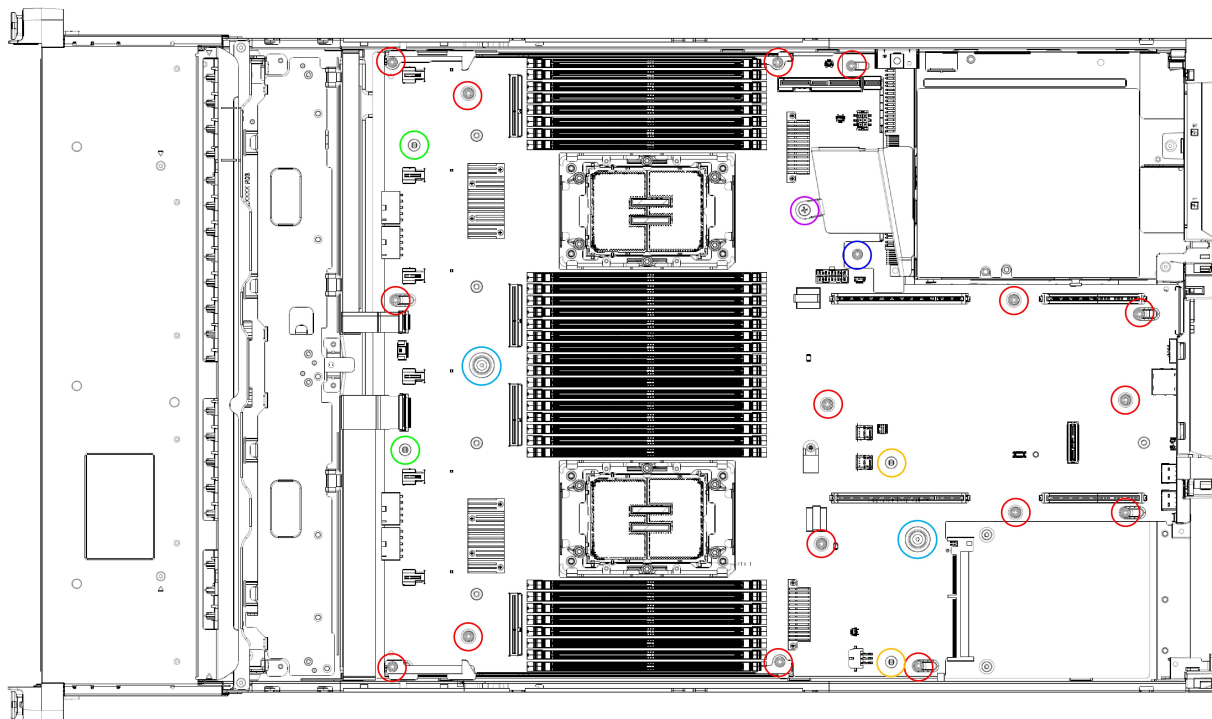
- Pliers
- T10 Torx screwdriver
- #2 Phillips screwdriver

## Procedure

**Step 1** Locate the PCBA's mounting screws.

The following figure shows the location of the mounting screws.

Figure 49: Screw Locations for Removing the UCS C240 M8L PCBA



487387

| Indicator           | Fastener                                    | Required Tool           |
|---------------------|---------------------------------------------|-------------------------|
| Red circles (●)     | M3.5x0.6 mm screws (18)                     | Torx T10 screwdriver    |
| Green circles (●)   | H15 M4x0.7 mm lock screws (2)               | Pliers                  |
| Blue circles (●)    | M3.5x0.6 mm Thumb screws (2)                | Torx T10 screwdriver    |
| Yellow circles (●)  | H12 M4x0.7 mm locking screws (2)            | Pliers                  |
| Purple circle (●)   | M3.5 Thumb screw (1), on the M.2 riser cage | #2 Phillips screwdriver |
| Lavender circle (●) | M3.5 Thumb screw (1), on the air duct       | #2 Phillips screwdriver |

**Step 2** Using the appropriate tools, remove the screws.

**Step 3** Remove the PCBA from the sheet metal and dispose of each in compliance with your local e-waste and recycling regulations.

# Recycling the UCSC-240-M8E3S Front Mezzanine Module PCBA (NVMe Backplane)

The UCSC-240-M8E3S server's front mezzanine module contains one PCBA, which is the vertical PCB for the NVMe drive backplane. The PCBA is attached to the server's sheetmetal by 13 T10 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 server must be disconnected from facility power.
- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover, on page 56](#).

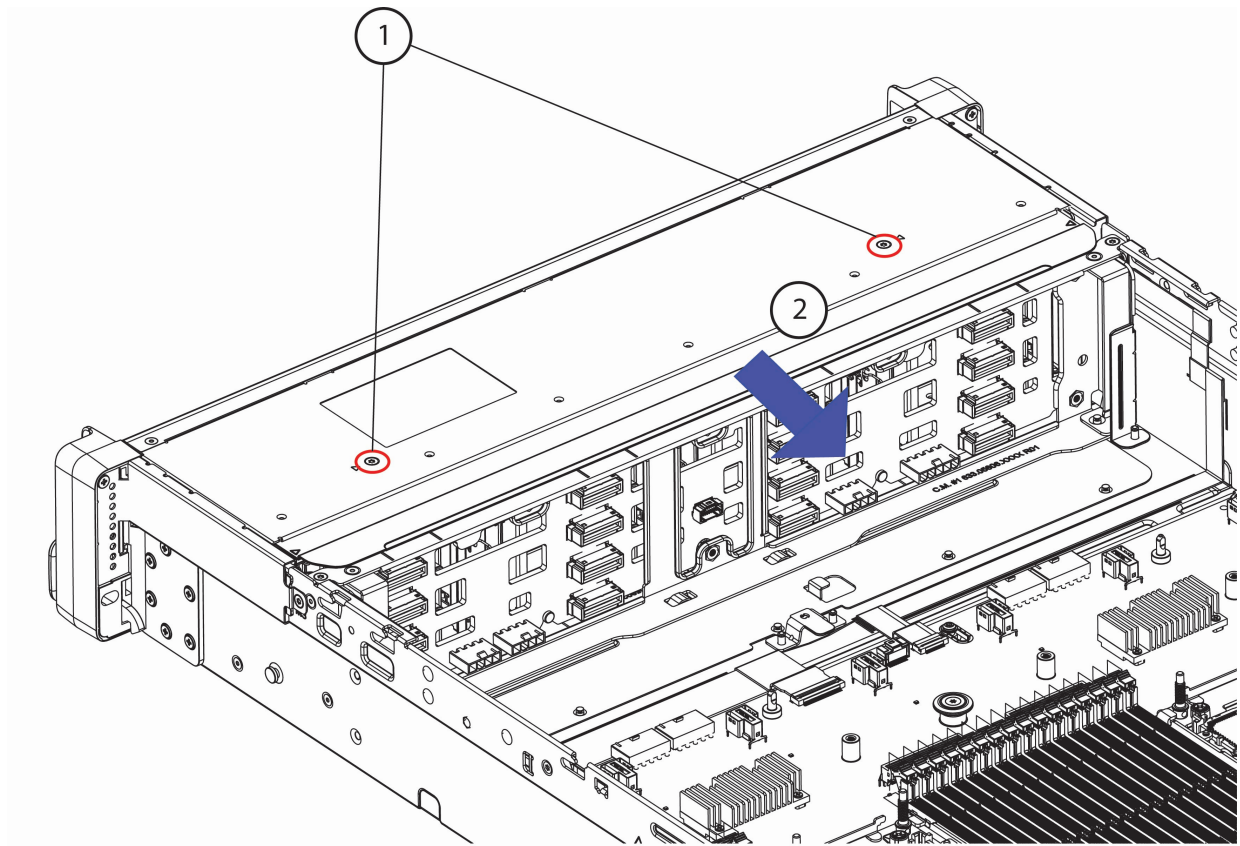
Gather a T10 Torx screwdriver.

## Procedure

### Step 1

Remove the front mezzanine top cover.

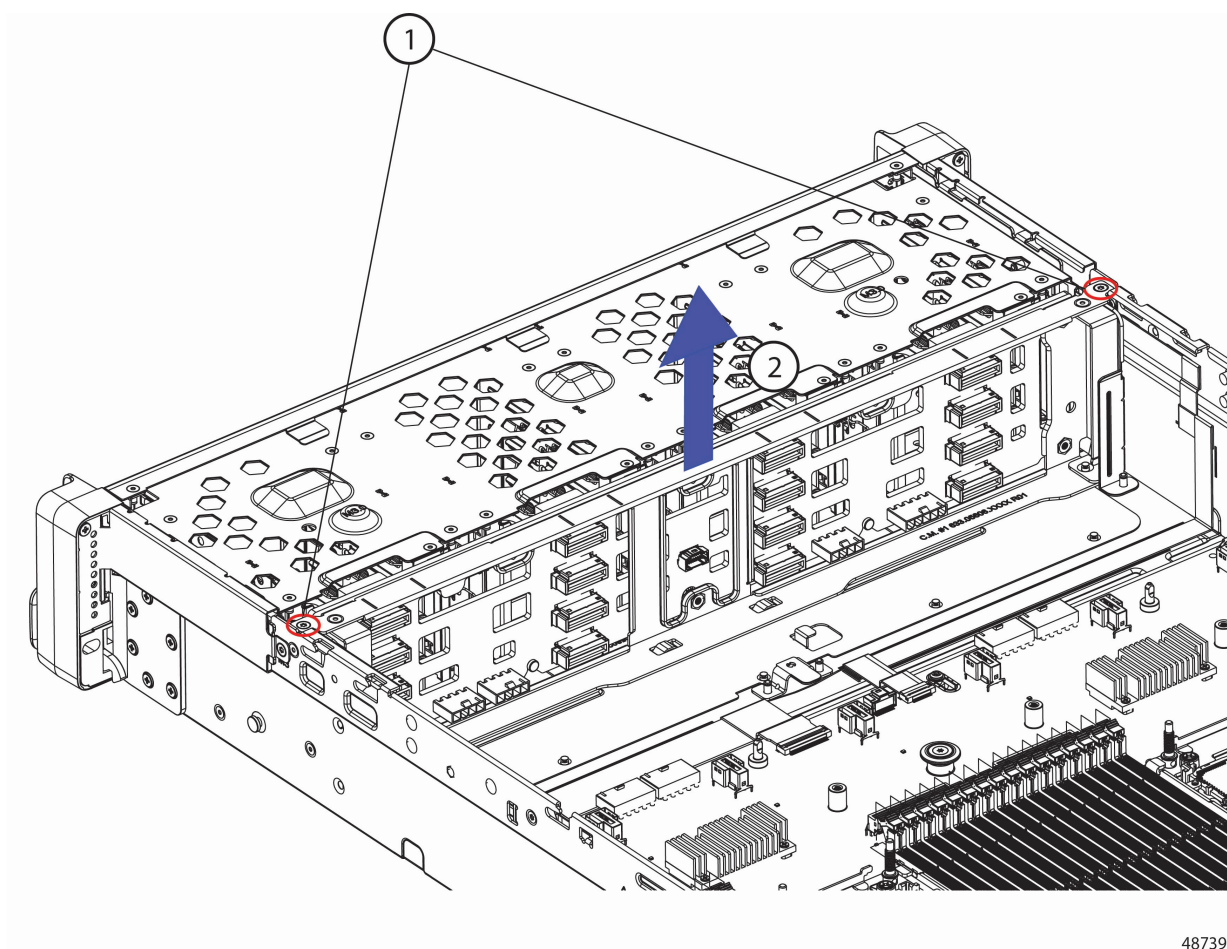
- a) Using a T10 Torx driver, remove the two screws on the top of the front mezzanine module.
- b) Grasp the top of the front mezzanine module, and slide it off of the server chassis.



487395

- Step 2** Disconnect the vertical drive backplane.
- Using a T10 Torx driver, remove the two screws on the top of the vertical drive backplane near the server chassis sidewalls.
  - Grasp the drive backplane and disconnect it from the sheetmetal frame.

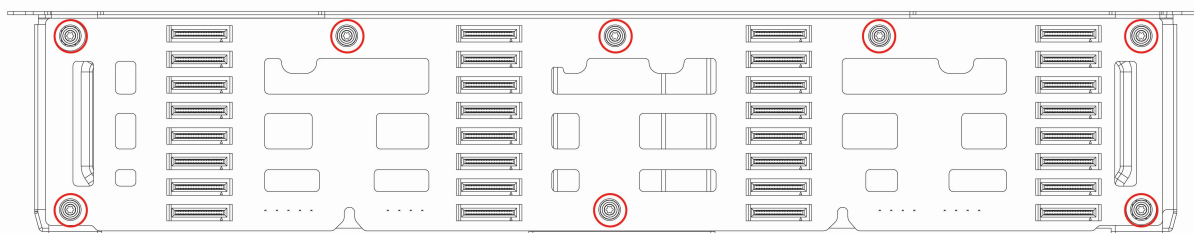




487396

### Step 3 Disconnect the PCBA from the sheetmetal frame.

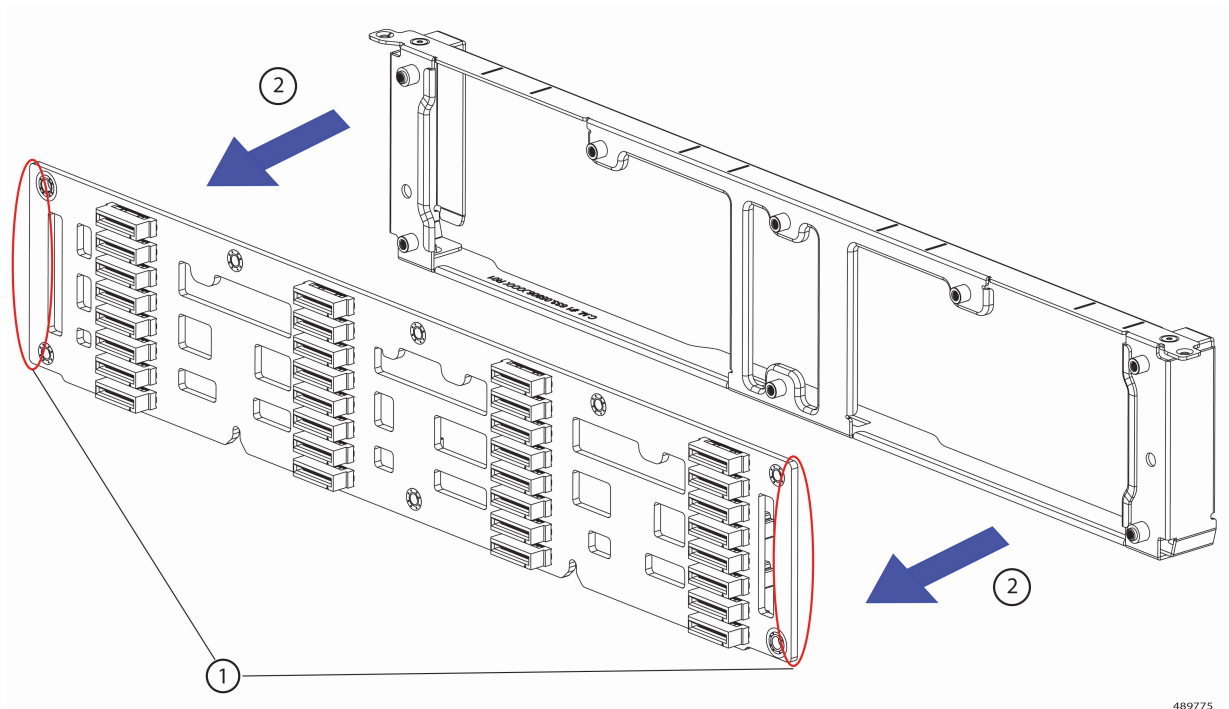
- a) Using a T10 Torx screwdriver, remove the nine screws that secure the PCBA to the sheetmetal frame.



487397

- b) Grasp the PCBA and detach it from the frame.





489775

**Step 4** Remove the PCBA and dispose of it properly in accordance with your local recycling and e-waste laws.

## Recycling the UCSC-240-M8SX Front Mezzanine Module PCBA (SAS Backplane)

The UCSC-240-M8SX server's front mezzanine module contains one PCBA, which is the vertical PCB for the SAS drive backplane. The PCBA is attached to the server's sheetmetal by 13 T10 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 server must be disconnected from facility power.
- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover, on page 56](#).

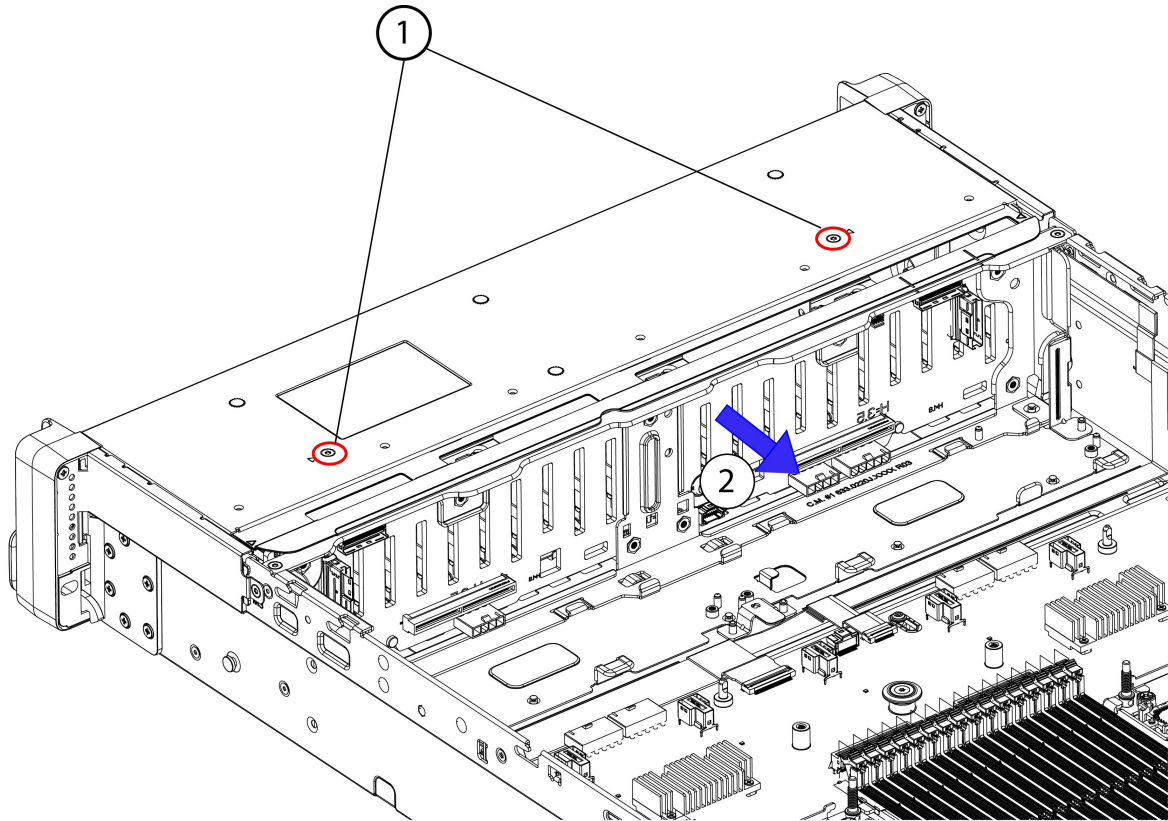
Gather a T10 Torx screwdriver.

## Procedure

### Step 1

Remove the front mezzanine top cover.

- a) Using a T10 Torx driver, remove the two screws on the top of the front mezzanine module.
- b) Grasp the top of the front mezzanine module, and slide it off of the server chassis.

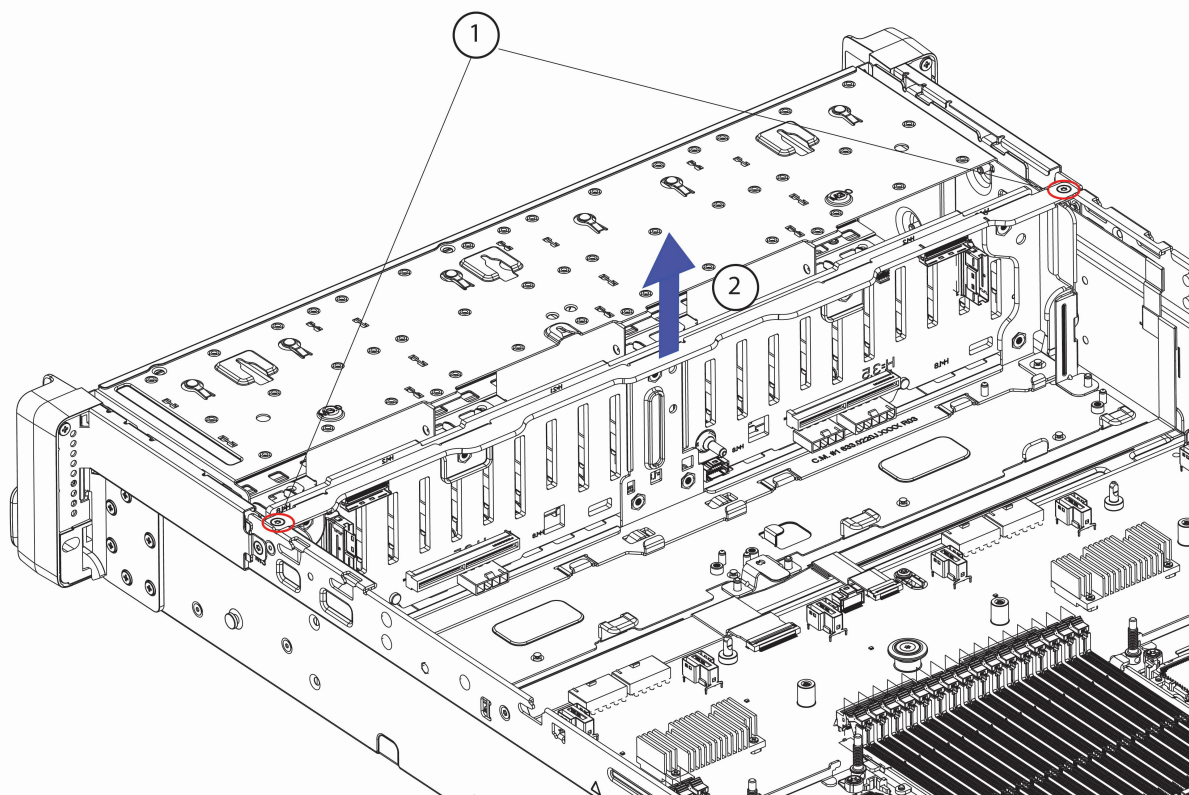


487391

### Step 2

Disconnect the vertical drive backplane.

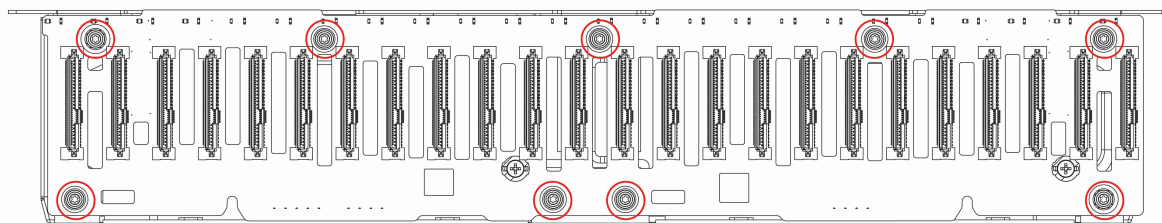
- a) Using a T10 Torx driver, remove the two screws on the top of the vertical drive backplane near the server chassis sidewalls.
- b) Grasp the drive backplane and disconnect it from the sheetmetal frame.



487392

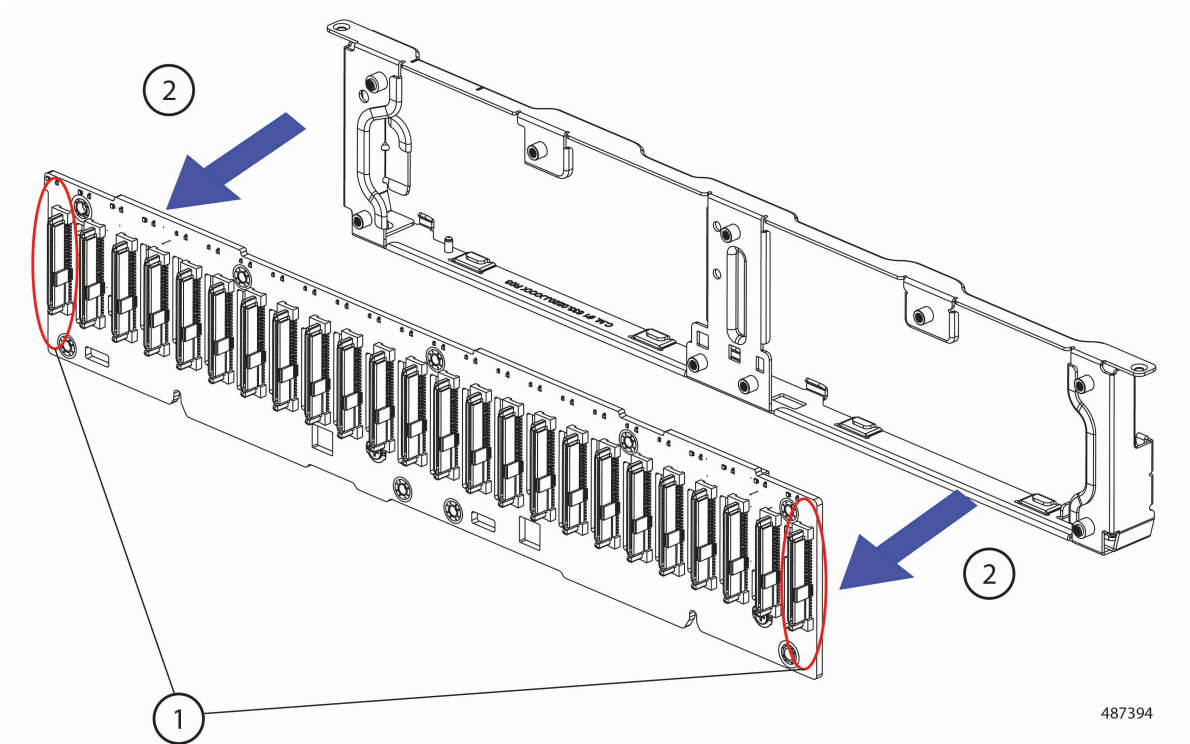
**Step 3** Disconnect the PCBA from the sheetmetal frame.

- a) Using a T10 Torx screwdriver, remove the nine screws that secure the PCBA to the sheetmetal frame.



487393

- b) Grasp the PCBA and detach it from the frame.



**Step 4** Remove the PCBA and dispose of it properly in accordance with your local recycling and e-waste laws.

## Recycling the UCSC-240-M8L Front Mezzanine Module PCBA (SAS Backplane)

The UCSC-240-M8L server's front mezzanine module contains one PCBA, which is the vertical PCB for the SAS drive backplane. The PCBA is attached to the server's sheetmetal by 13 T10 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 server must be disconnected from facility power.
- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover](#), on page 56.

Gather a #2 Phillips screwdriver and a T10 Torx screwdriver.

### Procedure

#### Step 1

Remove the front mezzanine top cover.

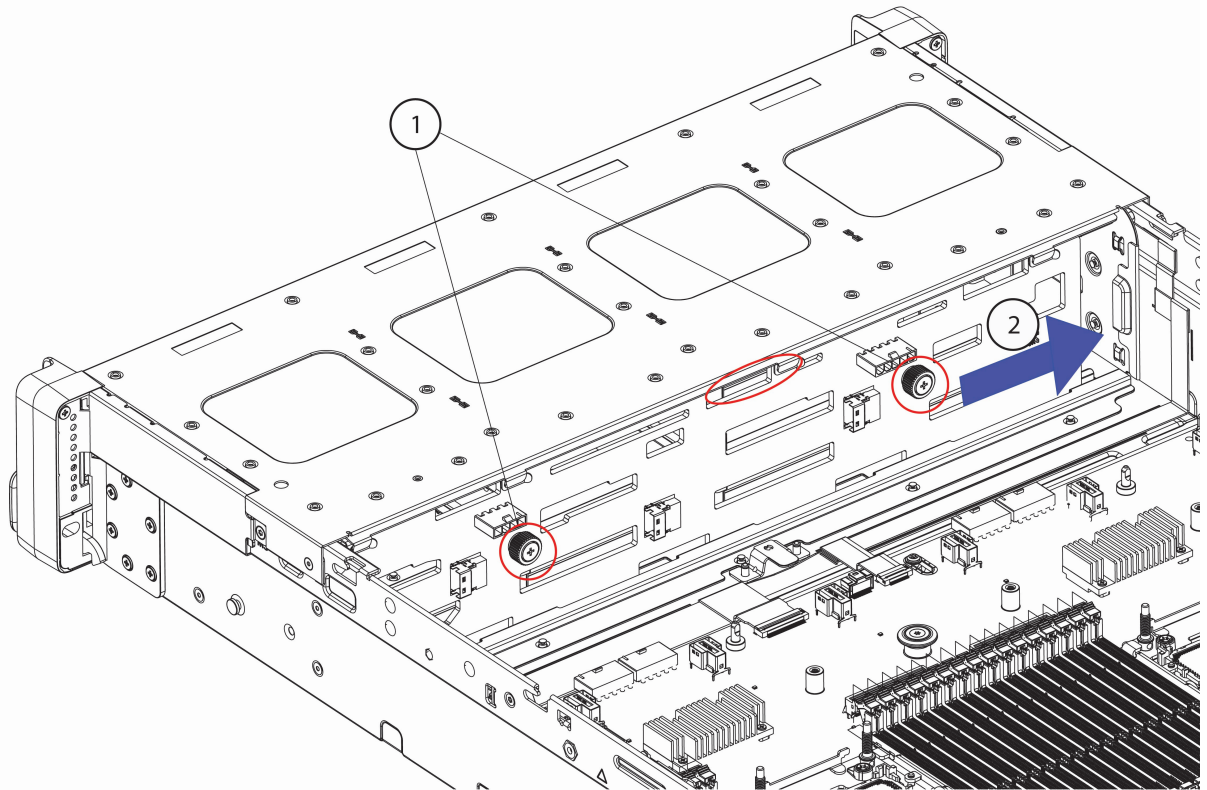
- a) Using a T10 Torx driver, remove the two screws on the top of the front mezzanine module.
- b) Grasp the top of the front mezzanine module, and slide it off of the server chassis.

#### Step 2

Remove the vertical drive backplane.

- a) Using a #2 Phillips screwdriver, remove the two captive screws.
- b) Facing the drive backplane, slide it to the right to disengage the detainer at the top center of the backplane.

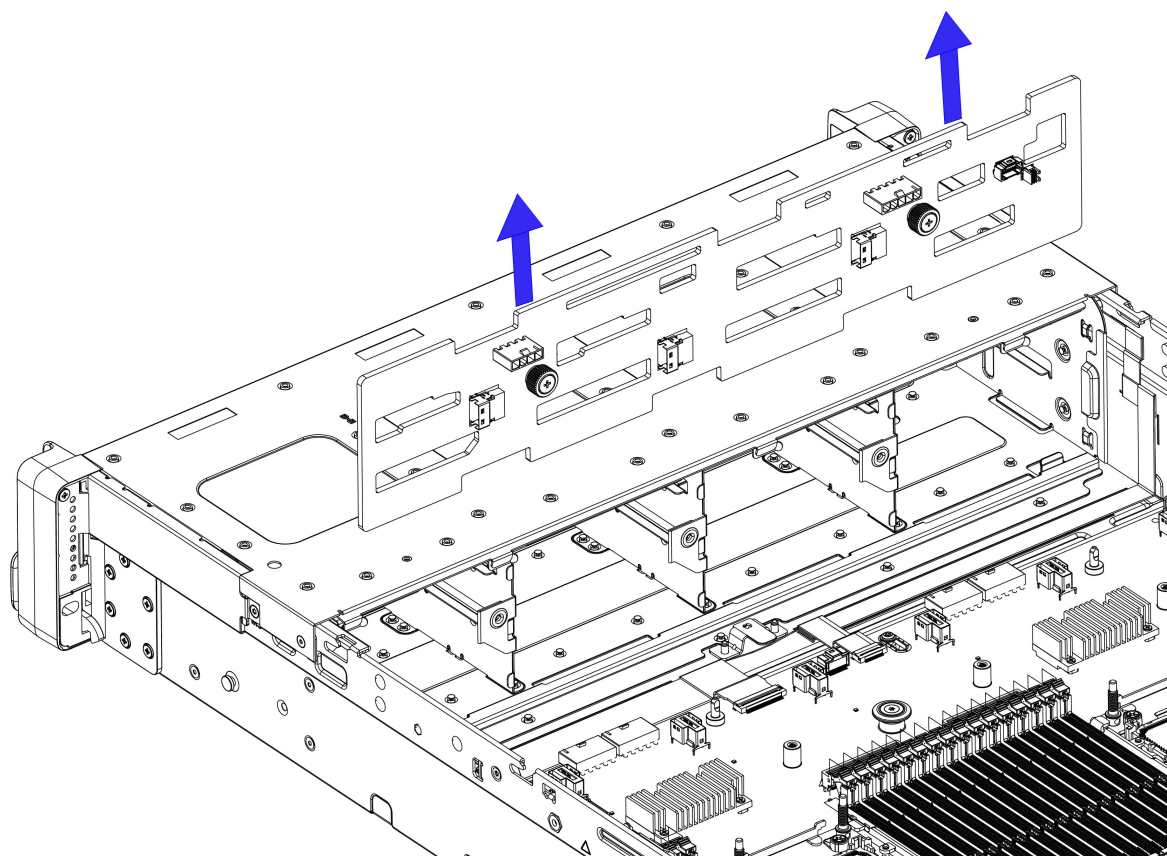
The metal tab on the server must slide into the notch on the top of the backplane.



487389

- c) Lift the drive backplane off of the server.

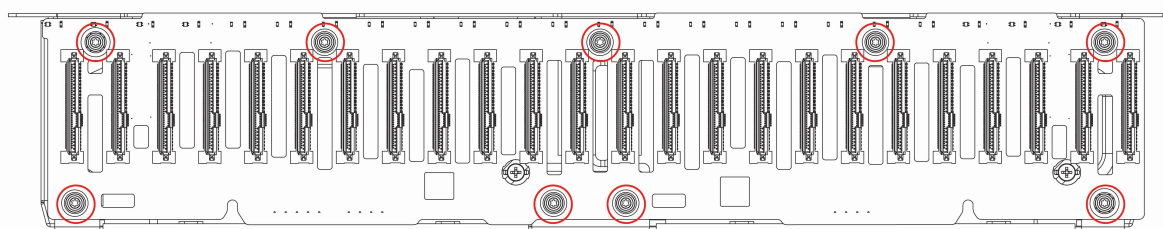




487390

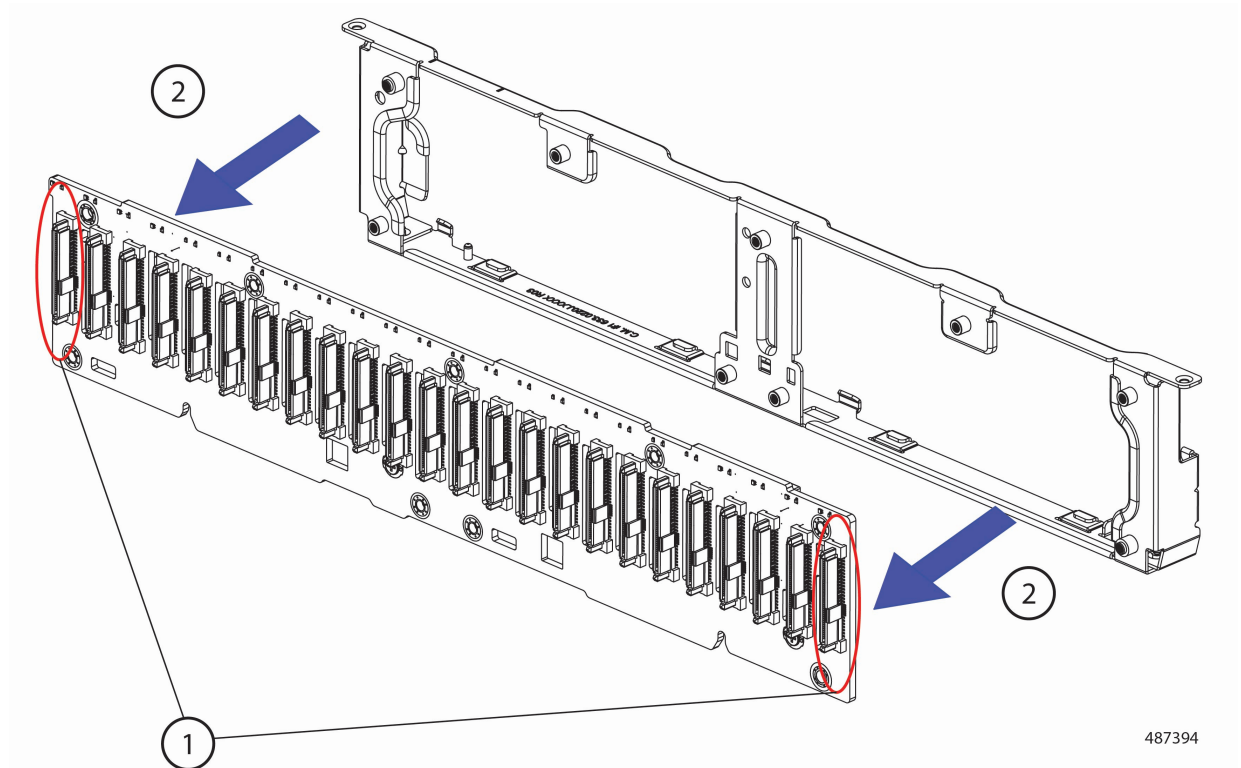
**Step 3** Disconnect the PCBA from the sheetmetal frame.

- a) Using a T10 Torx screwdriver, remove the nine screws that secure the PCBA to the sheetmetal frame.



487393

- b) Grasp the PCBA and detach it from the frame.



487394

**Step 4** Remove the PCBA and dispose of it properly in accordance with your local recycling and e-waste laws.

## Recycling the USB Board

The server has a USB board that is attached to the motherboard by a single M3.5x0.6mm screw located under Riser 2. You will need to remove this component for recycling.

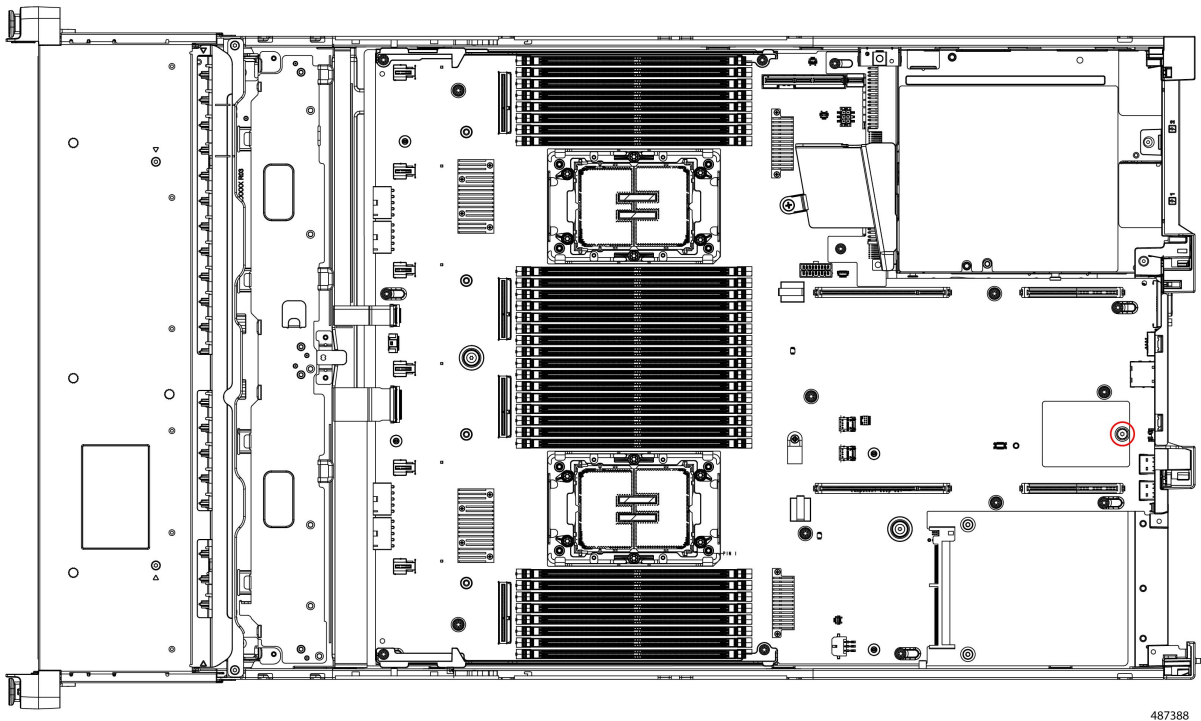
Use this procedure to remove the USB board for recycling.

### Before you begin

Gather a T10 Torx screwdriver.

### Procedure

- Step 1** If you have not done so already, remove PCI Riser 2.
- Step 2** When the USB board is accessible, use the T10 Torx screwdriver to remove the board's securing screw.



**Step 3** Recycle the USB board in accordance with your local recycling and ewaste regulations.

## Recycling the Server KVM PCBA

The server contains a KVM port, which is vertically mounted in the front right mounting ear. The KVM has a small PCB attached to a flat ribbon cable.

- Two size 2.5 slotted screws on the face of the tray.
- One #1 Phillips-head screw.
- One T10 Torx screws that secure the PCBA to the interior of the tray.

You must disconnect the PCBA from the server 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 server must be disconnected from facility power.



- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover, on page 56](#).

Gather the following tools:

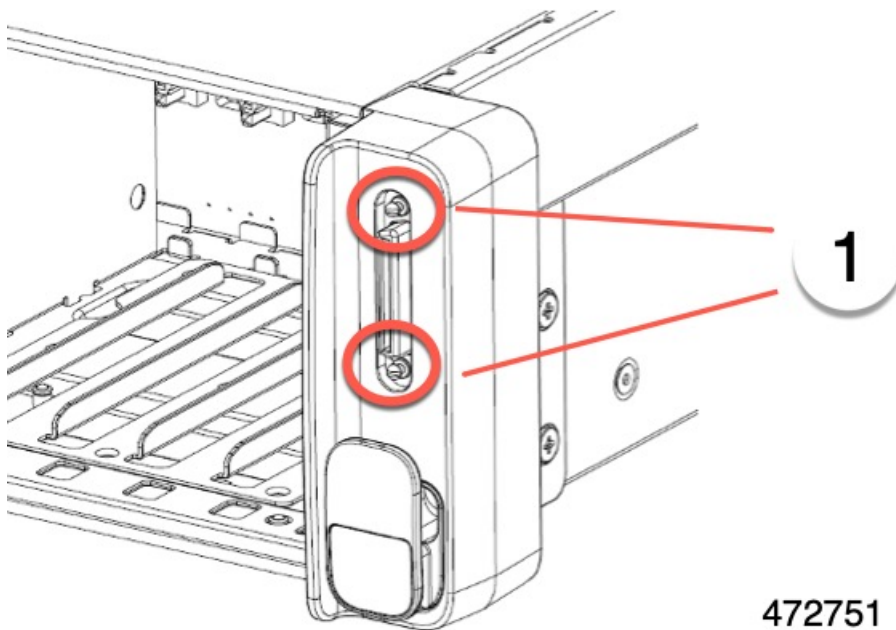
- A size 2.5 slotted screwdriver.
- A #1 Phillips screwdriver
- A T10 Torx screwdriver.

## Procedure

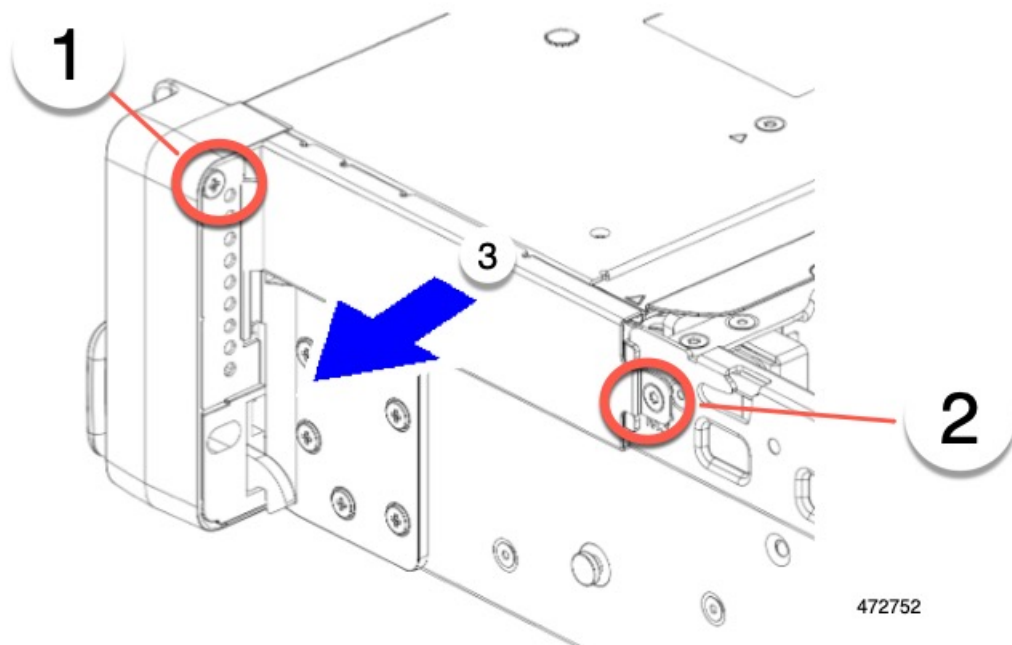
### Step 1

Disconnect the KVM port from the front panel.

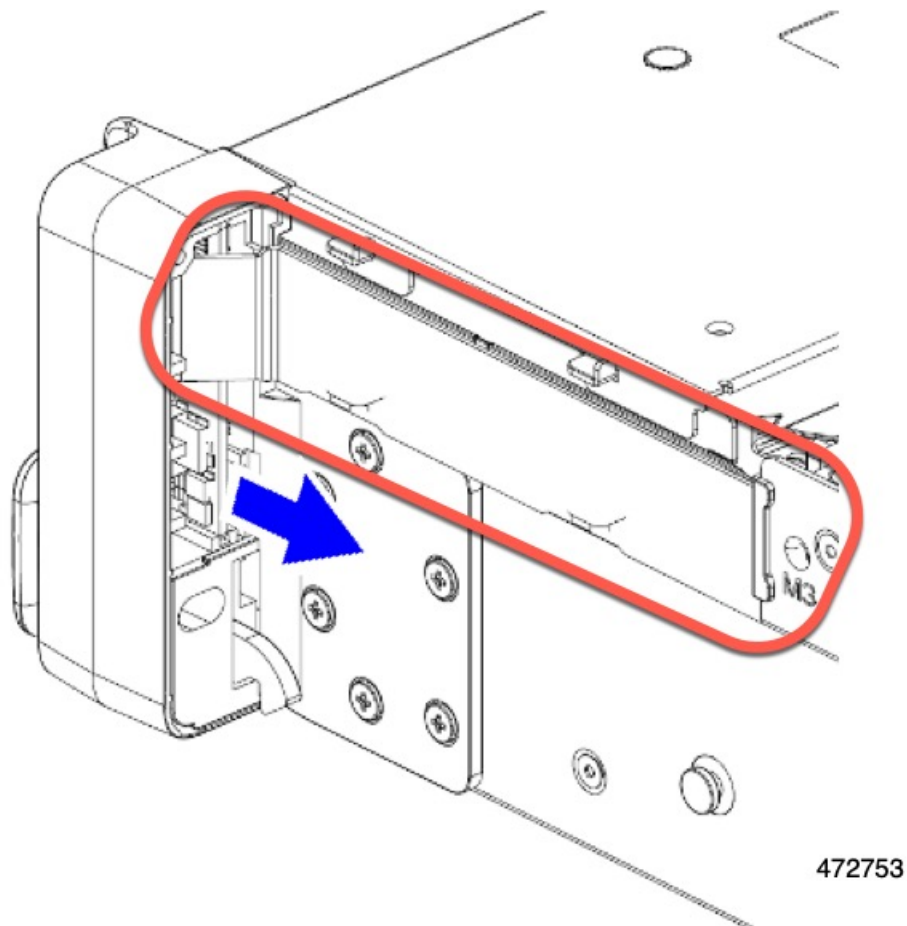
- a) Using a 2.5 Phillips screwdriver, remove the two screws on the face of the front panel.



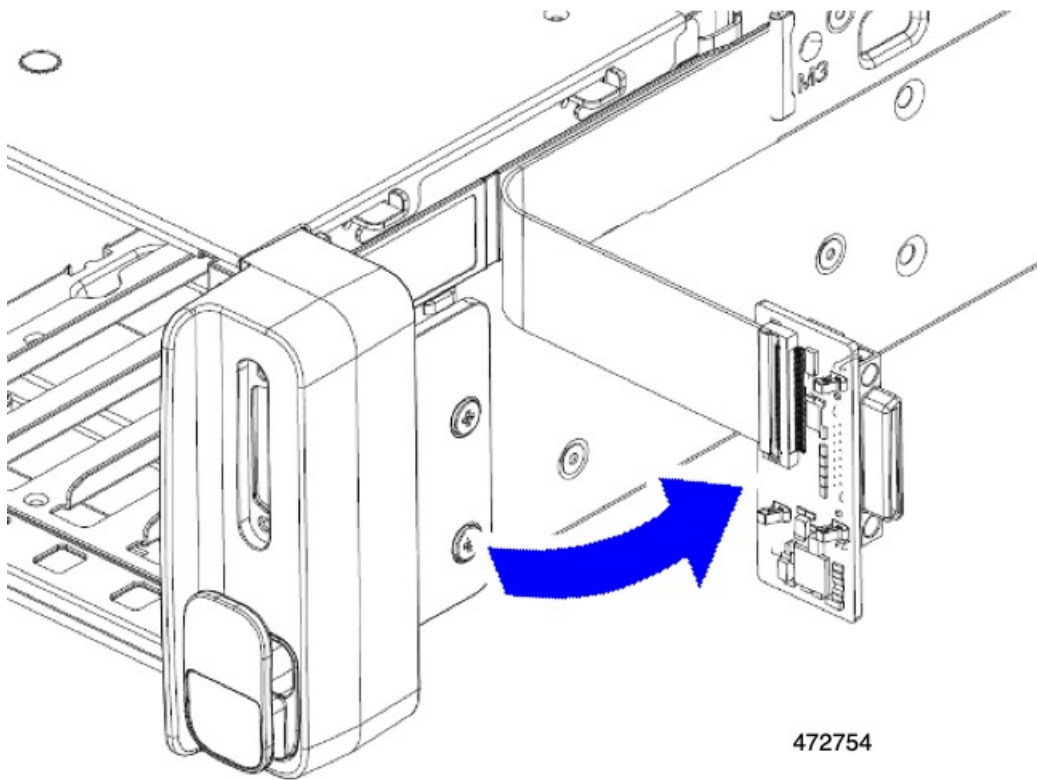
- b) On the back of the front panel, use a #1 Phillips head screwdriver to remove the 1 screw that secures the KVM port to the front panel.
- c) On the side of the chassis, use a T10 Torx driver to remove the one T10 screw.
- d) Grasp the side trim piece and remove it.



- Step 2** Disconnect the KVM port from the server.
- Grasp the cable and pull it backwards.
  - Grasp the rear of the KVM port and slide it backwards through the opening in the front panel.



- c) Continue to peel the cable off of the server to remove the PCBA.



**Step 3** Remove the PCBA and dispose of it properly in accordance with your local recycling and e-waste laws.

## Recycling the Server Front Panel PCBA

The server contains a front panel PCBA, which is vertically mounted in the front left mounting ear. The front panel has a small PCBA that is attached to the server by two flat ribbon cables. To recycle the PCBA, you will need to remove the following

- One #1 Phillips-head screw.
- One T10 Torx screws that secure the PCBA to the interior of the tray.

You must disconnect the PCBA from the server 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 server must be disconnected from facility power.
- The server must be removed from the equipment rack.
- The server's top cover must be removed. See [Removing the Server Top Cover, on page 56](#).

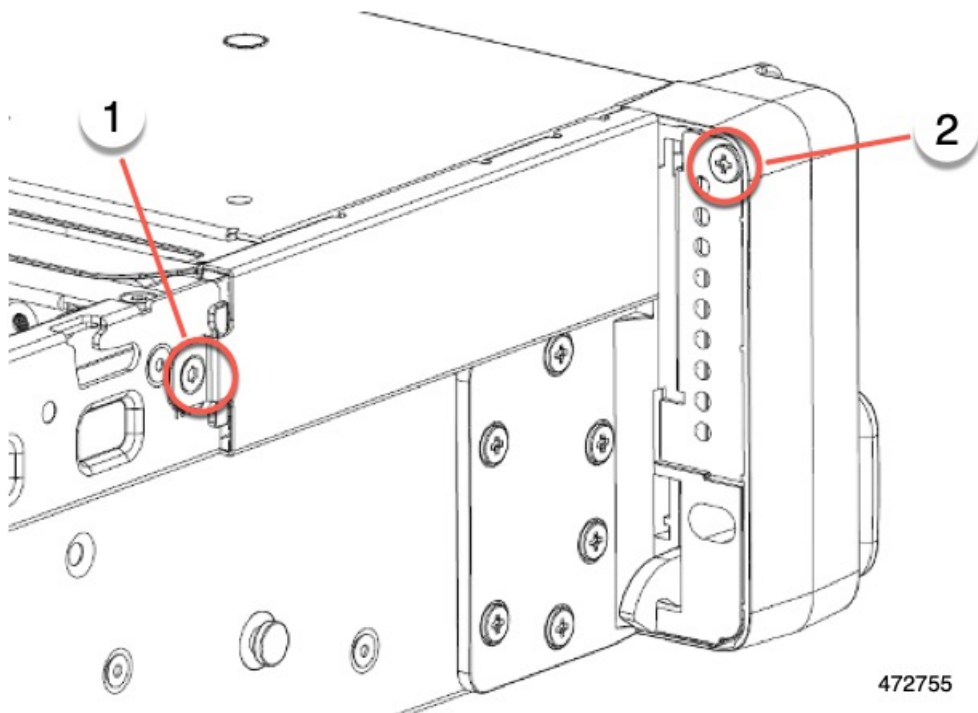
Gather the following tools:

- A #1 Phillips screwdriver
- A T10 Torx screwdriver.

## Procedure

**Step 1** Disconnect the front panel from the server.

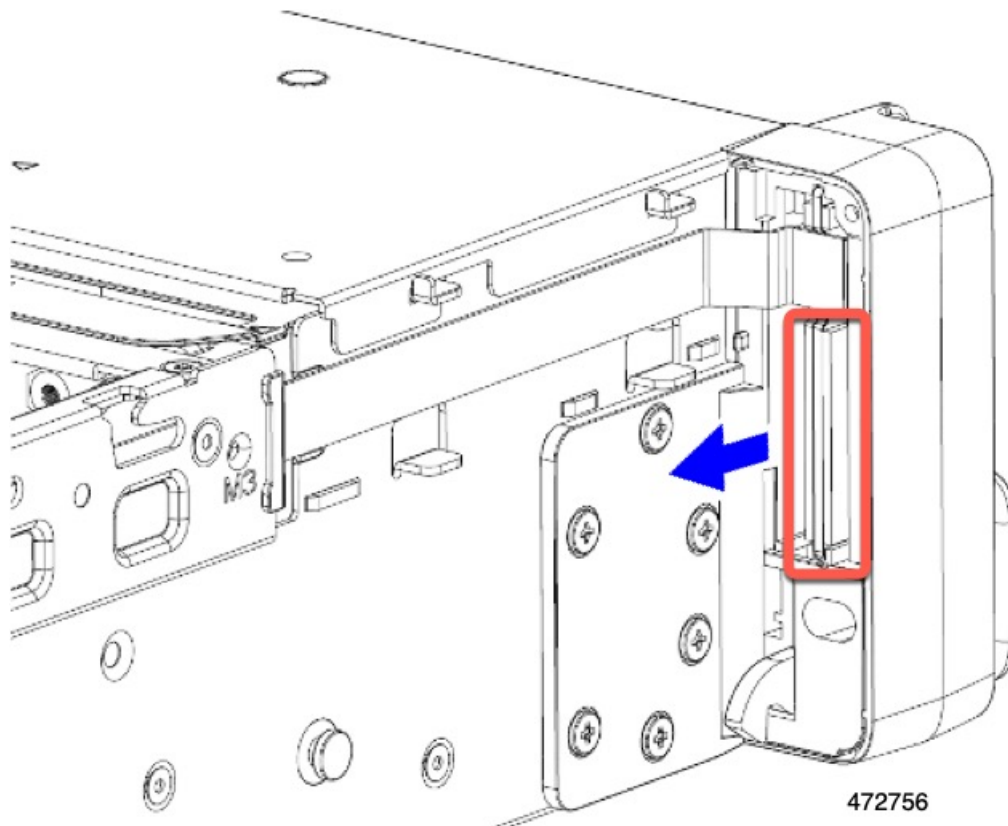
- On the back of the front panel, use a #1 Phillips head screwdriver to remove the 1 screw that secures the KVM port to the front panel.
- On the side of the chassis, use a T10 Torx driver to remove one T10 screw.



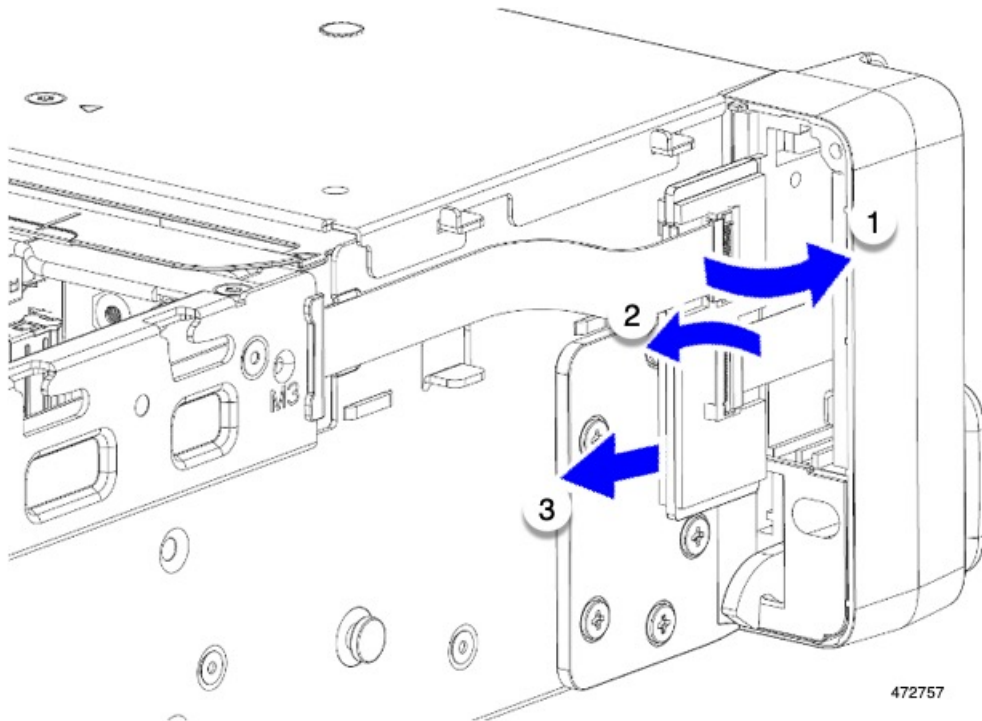
- Grasp the side trim piece and remove it.

**Step 2** Remove the front panel PCBA.

- Grasp the PCBA and slide it backwards until it is halfway out of the front panel.



- b) Grasp the top cable and simultaneously lift it up and pull it toward the front panel to disconnect the cable.
- c) Grasp the bottom cable and simultaneously lift it up and pull it away from the front panel to disconnect the cable.
- d) When both cables are disconnected, completely slide the PCBA out of the front panel.



**Step 3** Dispose of the PCBA properly in accordance with your local recycling and e-waste laws.

---







## APPENDIX **A**

# Server Specifications

This appendix contains the following topics.

- [Power Specifications, on page 261](#)
- [Server Specifications, on page 265](#)
- [Power Cord Specifications, on page 268](#)

## Power Specifications



**Note** Do not mix power supply types or wattages in the server. Both power supplies must be identical.

You can get more specific power information for your exact server configuration by using the Cisco UCS Power Calculator:

<http://ucspowercalc.cisco.com>

The power specifications for the supported power supply options are listed in the following sections.

### 1050 W DC Power Supply

This section lists the specifications for each 1050 W DC power supply (Cisco part number UCSC-PSUV21050D-D).

**Table 15: 1050 W DC Specifications**

| Description              | Specification                  |
|--------------------------|--------------------------------|
| DC Input Voltage         | -48<br>(Range: -40 to -72 VDC) |
| Maximum DC input current | N32 A at -40 VDC               |
| Maximum input wattage    | 1234 W                         |
| Maximum inrush current   | 35 A (sub-cycle duration)      |

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Maximum hold-up time         | 5 ms at 100% load (1050 W main and 36 W standby)            |
| Maximum output power per PSU | 1050 W on 12 VDC main power<br>36 W on 12 VDC standby power |
| Power supply output voltage  | 12 VDC                                                      |
| Power supply standby voltage | 12 VDC                                                      |
| Efficiency rating            | ≥ 91% at 50% load                                           |
| Form factor                  | RSP2                                                        |
| Input connector              | Fixed 3-wire block                                          |

## 1200 W AC Power Supply

This section lists the specifications for each 770 W AC power supply (Cisco part number UCSC-PSU1-1200W-D).



**Note** For the 80PLUS platinum certification documented in the following table, you can find test results at <https://www.clearesult.com/80plus/>.

| Parameter                                                                                        | Specification |       |      |      |
|--------------------------------------------------------------------------------------------------|---------------|-------|------|------|
| Input Connector                                                                                  | IEC320 C14    |       |      |      |
| Input Voltage Range (V rms)                                                                      | 100 to 240    |       |      |      |
| Maximum Allowable Input Voltage Range (V rms)                                                    | 90 to 264     |       |      |      |
| Frequency Range (Hz)                                                                             | 50 to 60      |       |      |      |
| Maximum Allowable Frequency Range (Hz)                                                           | 47 to 63      |       |      |      |
| Maximum Rated Output (W)<br>Limited to 1100W when operating at low-line input voltage, 100-127 V | 1100          |       | 1200 |      |
| Maximum Rated Standby Output (W)                                                                 | 48            |       |      |      |
| Nominal Input Voltage (V rms)                                                                    | 100           | 120   | 208  | 230  |
| Nominal Input Current (A rms)                                                                    | 12.97         | 10.62 | 6.47 | 5.84 |
| Maximum Input at Nominal Input Voltage (W)                                                       | 1300          | 1264  | 1343 | 1340 |
| Maximum Input at Nominal Input Voltage (VA)                                                      | 1300          | 1266  | 1345 | 1342 |

| Parameter                                                                                                                                 | Specification |      |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|------|------|------|
| Maximum Rated Efficiency (%)<br>Minimum rating required to achieve 80PLUS platinum certification.                                         | 90            | 90   | 91   | 91   |
| Maximum Rated Power Factor<br>Minimum rating required to achieve 80PLUS platinum certification.                                           | 0.97          | 0.97 | 0.97 | 0.97 |
| Maximum Inrush Current (peak A)                                                                                                           | 20            |      |      |      |
| Maximum Inrush Current (ms)                                                                                                               | 0.2           |      |      |      |
| Maximum Ride-Through Time<br>The time that the output voltage remains within regulation limits at 100% load, during input voltage dropout | 12            |      |      |      |

## 1600 W AC Power Supply

This section lists the specifications for each 1600 W AC power supply (Cisco part number UCSC-PSU1-1600W-D).

**Table 16: 100W AC Power Specifications**

| Parameter                                                                                        | Specification |     |      |      |
|--------------------------------------------------------------------------------------------------|---------------|-----|------|------|
| Input Connector                                                                                  | IEC320 C14    |     |      |      |
| Input Voltage Range (V rms)                                                                      | 200 to 240    |     |      |      |
| Maximum Allowable Input Voltage Range (V rms)                                                    | 180 to 264    |     |      |      |
| Frequency Range (Hz)                                                                             | 50 to 60      |     |      |      |
| Maximum Allowable Frequency Range (Hz)                                                           | 47 to 63      |     |      |      |
| Maximum Rated Output (W)<br>Limited to 1100W when operating at low-line input voltage, 100-127 V | 1600          |     |      |      |
| Maximum Rated Standby Output (W)                                                                 | 36            |     |      |      |
| Nominal Input Voltage (V rms)                                                                    | 100           | 120 | 208  | 230  |
| Nominal Input Current (A rms)                                                                    | NA            | NA  | 8.8  | 7.9  |
| Maximum Input at Nominal Input Voltage (W)                                                       | NA            | NA  | 1778 | 1758 |
| Maximum Input at Nominal Input Voltage (VA)                                                      | NA            | NA  | 1833 | 1813 |

| Parameter                                                                                                                                 | Specification |    |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|----|------|------|
| Maximum Rated Efficiency (%)<br>Minimum rating required to achieve 80PLUS platinum certification.                                         | NA            | NA | 90   | 91   |
| Maximum Rated Power Factor<br>Minimum rating required to achieve 80PLUS platinum certification.                                           | NA            | NA | 0.97 | 0.97 |
| Maximum Inrush Current (peak A)                                                                                                           | 30            |    |      |      |
| Maximum Inrush Current (ms)                                                                                                               | 0.2           |    |      |      |
| Maximum Ride-Through Time<br>The time that the output voltage remains within regulation limits at 100% load, during input voltage dropout | 12            |    |      |      |

## 2300 W AC Power Supply



**Note** For the 80PLUS platinum certification documented in the following table, you can find test results at <https://www.cleareresult.com/80plus/>.

This section lists the specifications for each 2300 W AC power supply (Cisco part number UCSC-PSU1-2300W-D).

| Parameter                                                                                        | Specification |     |     |      |
|--------------------------------------------------------------------------------------------------|---------------|-----|-----|------|
| Input Connector                                                                                  | IEC320 C20    |     |     |      |
| Input Voltage Range (V rms)                                                                      | 100 to 240    |     |     |      |
| Maximum Allowable Input Voltage Range (V rms)                                                    | 90 to 264     |     |     |      |
| Frequency Range (Hz)                                                                             | 50 to 60      |     |     |      |
| Maximum Allowable Frequency Range (Hz)                                                           | 47 to 63      |     |     |      |
| Maximum Rated Output (W)<br>Limited to 1200W when operating at low-line input voltage, 100-127 V | 2300          |     |     |      |
| Maximum Rated Standby Output (W)                                                                 | 36            |     |     |      |
| Nominal Input Voltage (V rms)                                                                    | 100           | 120 | 208 | 230  |
| Nominal Input Current (A rms)                                                                    | 13            | 11  | 12  | 10.8 |

| Parameter                                                                                                                    | Specification |      |      |      |
|------------------------------------------------------------------------------------------------------------------------------|---------------|------|------|------|
| Maximum Input at Nominal Input Voltage (W)                                                                                   | 1338          | 1330 | 2490 | 2480 |
| Maximum Input at Nominal Input Voltage (VA)                                                                                  | 1351          | 1343 | 2515 | 2505 |
| Maximum Rated Efficiency (%)<br>Minimum rating required to achieve 80PLUS platinum certification.                            | 92            | 92   | 93   | 93   |
| Maximum Rated Power Factor<br>Minimum rating required to achieve 80PLUS platinum certification.                              | 0.99          | 0.99 | 0.97 | 0.97 |
| Maximum Inrush Current (peak A)                                                                                              | 30            |      |      |      |
| Maximum Inrush Current (ms)                                                                                                  | 0.2           |      |      |      |
| Maximum Ride-Through Time<br>Time output voltage remains within regulation limits at 100% load, during input voltage dropout | 12            |      |      |      |

## Server Specifications

This appendix lists the physical, environmental, and power specifications for the server.

- 
- 
- 

## Physical Specifications

The following table lists the physical specifications for the server versions.



**Note** The weight of the server will vary depending on its configuration, so a range is presented. Physical Specifications

| Description    | Specification                                                                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------------|
| Height         | 3.42 in. (86.9 mm)                                                                                                  |
| Width          | 16.9 in. (429.3 mm)                                                                                                 |
| Depth (length) | Server only: 30.5 in. (775 mm)<br>Server with slide rail: 30.5 in. (775 mm)<br>Server with bezel: 31.5 in. (800 mm) |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Server weight | <ul style="list-style-type: none"> <li>• UCSC-C240-M8 SX: <ul style="list-style-type: none"> <li>• Minimally configured, no CMA: 19.47 kg (42.92 lb)</li> <li>• Minimally configured, with CMA: 20.27 (44.67 lb)</li> <li>• Fully configured, no CMA: 32.72 kg (72.14 lb)</li> <li>• Fully configured, with CMA: 33.52 kg (73.89 lb)</li> </ul> </li> <li>• UCSC-C240-M8E3S: <ul style="list-style-type: none"> <li>• Minimally configured, no CMA: 19.82 kg (43.69 lb)</li> <li>• Minimally configured, with CMA: 20.62 (44.67 lb)</li> <li>• Fully configured, no CMA: 30.23 kg (66.65 lb)</li> <li>• Fully configured, with CMA: 31.03 kg (68.4 lb)</li> </ul> </li> <li>• UCSC-C240-M8L: <ul style="list-style-type: none"> <li>• Minimally configured, no CMA: 20.12 kg (44.36 lb)</li> <li>• Minimally configured, with CMA: 20.92 (46.11 lb)</li> <li>• Fully configured, no CMA: 37.83 kg (83.40 lb)</li> <li>• Fully configured, with CMA: 38.63 kg (85.15 lb)</li> </ul> </li> </ul> |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Environmental Specifications

As a Class A2 product, the server has the following environmental specifications.

**Table 17: Environmental Specifications**

| Description | Specification |
|-------------|---------------|
|-------------|---------------|

|                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature, Operating                                                                        | <p>Dry bulb temperature of 10°C to 35°C (50°F to 95°F)</p> <p>Maximum temperature change of 20°C (36°F) per hour<br/>(a temperature change within a specified period of time and not a rate of change)</p> <p>Humidity condition: Uncontrolled, not to exceed 50% RH starting condition</p> <p>Derate the maximum temperature by 1°C (33.8°F) per every 305 meters of altitude above 900m</p> |
| Temperature, Extended Operating                                                               | <p>5°C to 40°C (41°F to 104°F) with no direct sunlight</p> <p>Humidity condition: Uncontrolled, not to exceed 50% RH starting condition</p> <p>Derate the maximum temperature by 1°C (33.8°F) per every 305 meters of altitude above 900m</p>                                                                                                                                                 |
| Temperature, non-operating<br>(when the server is stored or transported)                      | Dry bulb temperature of 40 °C to 65 °C (-40°F to 149 °F)                                                                                                                                                                                                                                                                                                                                      |
| Humidity (RH), operating                                                                      | <p>10% to 90% and 28°C (82.4°F) maximum dew-point temperature, non-condensing environment</p> <p>Minimum to be higher (more moisture) of -12 °C (10.4 °F) dew point or 8% relative humidity</p> <p>Maximum to be 24 °C (75.2 °F) dew point or 90% relative humidity</p>                                                                                                                       |
| Humidity (RH), non-operating<br>(when the server is stored or transported)                    | 5% to 93% relative humidity, non-condensing, with a maximum wet bulb temperature of 28 °C across the 20 °C to 40 °C dry bulb range.                                                                                                                                                                                                                                                           |
| Altitude, operating                                                                           | A maximum elevation of 3050 meters (10,006 feet)                                                                                                                                                                                                                                                                                                                                              |
| Altitude, non-operating<br>(when the server is stored or transported)                         | An elevation of 0 to 12,000 meters (39,370 feet)                                                                                                                                                                                                                                                                                                                                              |
| Maximum Operating Duration                                                                    | Unlimited                                                                                                                                                                                                                                                                                                                                                                                     |
| Sound power level<br>Measure A-weighted per ISO7779 LwAd (Bels)<br>Operation at 73°F (23°C)   | 5.5                                                                                                                                                                                                                                                                                                                                                                                           |
| Sound pressure level<br>Measure A-weighted per ISO7779 LpAm (dBA)<br>Operation at 73°F (23°C) | 40                                                                                                                                                                                                                                                                                                                                                                                            |

# Power Cord Specifications

Each power supply in the server has a power cord. Standard power cords or jumper power cords are available for connection to the server. The shorter jumper power cords, for use in racks, are available as an optional alternative to the standard power cords.



---

**Caution** Operate the server with only the approved power cords or jumper power cords.

---

For detailed information about the support cords, go to the appropriate Specifications Sheet.

- For UCSC-C240-M8SX: [Cisco UCS C240 M8 SFF Rack Server Spec Sheet](#)
- For UCSC-C240-M8E3S: [Cisco UCS C240 M8 EDSFF E3.S Rack Server Spec Sheet](#)
- For UCSC-C240-M8L: [Cisco UCS C240 M8 LFF Rack Server Spec Sheet](#)





## APPENDIX **B**

# Storage Controller Considerations

This appendix contains the following topics.

- [Supported Storage Controllers and Cables, on page 269](#)
- [Storage Controller Card Firmware Compatibility, on page 270](#)
- [RAID Backup \(Supercap\), on page 271](#)
- [Mixing Drive Types in RAID Groups, on page 271](#)
- [Storage Controller Cable Connectors and Backplanes, on page 271](#)
- [For More RAID Utility Information, on page 272](#)

## Supported Storage Controllers and Cables

This server supports a single, PCIe-style, SAS RAID or HBA controller that plugs into a dedicated internal socket.



**Note** NVMe PCIe SSDs cannot be controlled by a SAS/SATA RAID controller.

This server supports the RAID and HBA controller options and cable requirements shown in the following table.

| Storage Adapter (PID) | Product Name                                            | Supported Server | Maximum Number of Drives Supported                                                                        | Supported RAID Type | Cache Size (GB) |
|-----------------------|---------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| UCSC-RAID-SD-D        | Cisco 12G SAS RAID Controller with 4GB FBWC (28 Drives) | UCSC-C240-M7SX   | 28<br><br>24 2.5-inch SFF front-loading + 4 2.5-inch rear-loading drives<br><br>Slots 1-24 plus 101 - 104 | RAID                | 4               |

| Storage Adapter (PID) | Product Name                                                            | Supported Server               | Maximum Number of Drives Supported                                                                                                                         | Supported RAID Type | Cache Size (GB) |
|-----------------------|-------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| UCSC-SAS-T-D          | Cisco 12G SAS HBA (16 Drives)                                           | UCSC-C240-M7SX                 | 28<br><br>2 controllers, each manages 14 drives.<br><br>Controller 1:<br>Slots 1-12 plus 103 and 104<br><br>Controller 2:<br>Slots 13-24 plus 101 and 102  | SAS HBA             | NA              |
| UCSC-RAID-HP-D        | Cisco UCSC 24G Trim-Mode RAID Controller with 4GB FBWC (16 drives each) | Only the UCSC-C240-M7SX server | 28<br><br>Two controllers, each manages 14 drives<br><br>Controller 1:<br>Slots 1-12 plus 103 and 104<br><br>Controller 2:<br>Slots 13-24 plus 101 and 102 | RAID                | 4GB FBWC        |

## Storage Controller Card Firmware Compatibility

Firmware on the storage controller (RAID or HBA) must be verified for compatibility with the current Cisco IMC and BIOS versions that are installed on the server. If not compatible, upgrade or downgrade the storage controller firmware using the Host Upgrade Utility (HUU) for your firmware release to bring it to a compatible level.



**Note** **For servers running in standalone mode only:** After you replace controller hardware, you must run the Cisco UCS Host Upgrade Utility (HUU) to update the controller firmware, even if the firmware Current Version is the same as the Update Version. Running HUU is necessary to program any controller specific values to the storage controller for the specific server. If you do not run HUU, the storage controller may not be discovered..

See the HUU guide for your Cisco IMC release for instructions on downloading and using the utility to bring server components to compatible levels: [HUU Guides](#).

## RAID Backup (Supercap)

This server supports installation of one Supercap unit. The unit mounts to a bracket in-line with the fan modules.

The optional SCPM provides approximately three years of backup for the disk write-back cache DRAM in the case of a sudden power loss by offloading the cache to the NAND flash.

For Supercap unit replacement instructions, see [Replacing the Supercap \(RAID Backup\)](#), on page 181.

## Mixing Drive Types in RAID Groups

For the best performance follow these guidelines:

- Use either all SAS or all SATA drives in a RAID group.
- Use the same capacity for each drive in the RAID group.
- Never mix HDDs and SSDs in the same RAID group.

## Storage Controller Cable Connectors and Backplanes

This section describes cabling for the storage controllers and backplanes. The SAS/SATA/U.3 cables are factory-installed and are used for all supported internal controllers.

This section also contains diagrams that show the cable-to-drive mapping.

- SFF 24-Drives SAS/SATA/U.3 NVMe
- SFF 24 Drives NVMe

### Cisco 24G Tri-Mode RAID Controller or HBA for Up To 16 Drives

This controller is supported only in this server version:

- SFF 16-Drives SAS/SATA
- SFF 16 Drives U.3 NVMe

This HW RAID or HBA option can control up to 24 front-loading SAS/SATA/U.3 drives in this server version, plus 4 rear-loading SAS/SATA/U.3 drives.

1. Connect a SAS/SATA/U.3 cable from the small Slimline connector on the RAID card.
2. Connect a SAS/SATA/U.3 cable to the Riser 3B connector on the PCE Riser 3 cage.
3. Connect a SAS/SATA/U.3 cable from the second small Slimline connector on the RAID card.
4. Connect a SAS/SATA/U.3 cable to the Riser 1B connector on the PCE Riser 1 cage.

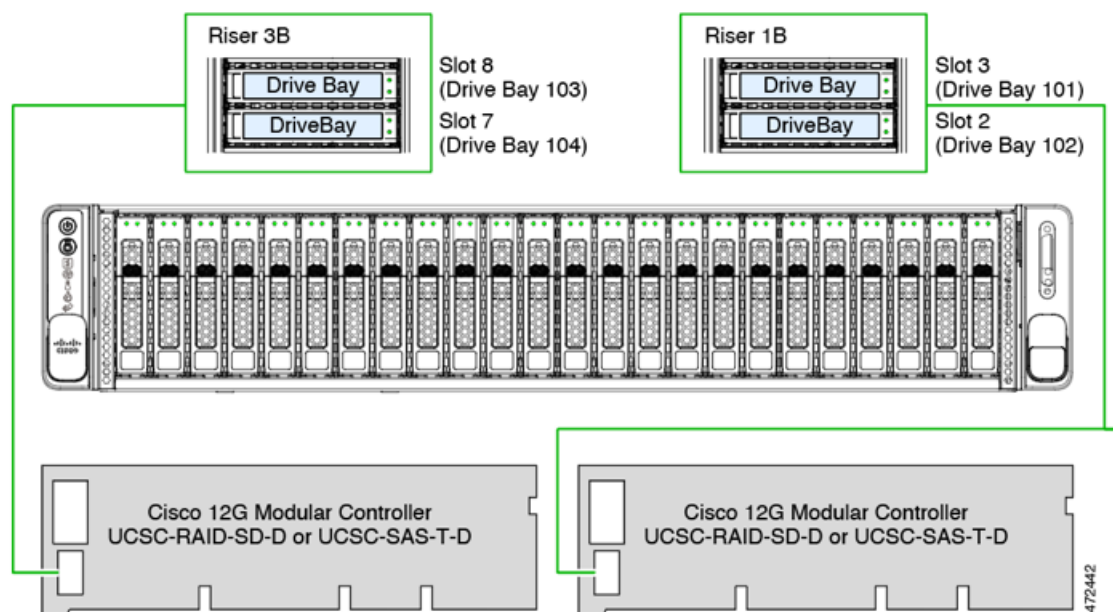
### Cisco 12G Modular SAS RAID Controller or HBA For Up To 28 Drives (UCSC-RAID-SD-D or UCSC-SAS-T-D)

This controller is supported only in the SFF 24-drive SAS/SATA version of the server.

This HW RAID or HBA option can control up to 24 front-loading SAS/SATA drives in this server version, plus 4 rear-loading SAS/SATA drives.

1. Connect a SAS/SATA cable from the small Slimline connector on the RAID card.
2. Connect a SAS/SATA cable to the Riser 3B connector on the PCE Riser 3 cage.
3. Connect a SAS/SATA cable from the second small Slimline connector on the RAID card.
4. Connect a SAS/SATA cable to the Riser 1B connector on the PCE Riser 1 cage.

*Figure 50: SFF, 24-Drive UCSC-C240-M7SX Cabling With UCSC-RAID-SD-D or UCSC-SAS-T-D*



## For More RAID Utility Information

### Cisco RAID Information

- The Cisco UCS C Series M8 storage adapter supports SAS/SATA/U.3 drives. Tri-mode RAID support is supported.
- For basic information about RAID and for using the utilities for the RAID controller cards that are supported in Cisco servers, see the [Cisco UCS Servers RAID Guide](#).

### Broadcom RAID Information

- For hardware SAS MegaRAID configuration—[Broadcom 12Gb/s MegaRAID® Tri-Mode Software User Guide](#).

- The Broadcom utilities have help documentation for more information about using the utilities. Go to [Broadcom StorCLI 12Gb/s MegaRAID® Tri-Mode User Guide](#).





## APPENDIX C

# GPU Card Installation

This appendix contains the following topics:

- [Server Firmware Requirements, on page 275](#)
- [GPU Card Configuration Rules, on page 275](#)
- [Requirement For All GPUs: Memory-Mapped I/O Greater Than 4 GB, on page 277](#)
- [Installing a Double-Wide GPU Card, on page 277](#)
- [Enabling GPU Display Ports, on page 280](#)
- [Replacing the GPU Air Blocker, on page 285](#)
- [Installing GRID Licenses From the NVIDIA Licensing Portal to the License Server, on page 291](#)
- [Managing GRID Licenses , on page 293](#)
- [Using gpumodeswitch, on page 294](#)
- [Installing Drivers to Support the GPU Cards, on page 295](#)

## Server Firmware Requirements

The following table lists the minimum server firmware versions for the supported GPU cards.

| GPU Card         | Cisco IMC/BIOS Minimum Version Required |
|------------------|-----------------------------------------|
| UCSC-GPU-A16-D   | 4.3(6)                                  |
| UCSC-GPU-H100-D  | 4.3(6)                                  |
| UCSC-GPU-L4-D    | 4.3(6)                                  |
| UCSC-GPU-L40S-D) | 4.1(3)                                  |

## GPU Card Configuration Rules

Note the following rules when populating a server with GPU cards.

- The UCS C240 M8 servers support a GPU-Ready configuration which presets the server to accept a GPU at a later date.

This configuration sets the server with a with low-profile heatsink (UCSC-HSLP-C220M7) and GPU air blocker (UCSC-RISAB-24XM7) that installs in the middle slot of some individual risers (Riser 2 slot

5, and Riser 3 slot 7). The GPU air blocker is a double width part that blocks the slot in which it is installed, plus the slot above, to properly control airflow and ventilation.

The GPU air blocker is pre-installed in the GPU Ready configuration so that only the GPU is required when you choose to expand the server's compute power. The GPU Ready config has the following considerations:

- The server must follow the same temperature limits as a server with a GPU installed, even if the server does not currently have a GPU installed. By following the temperature limits even when the GPU is not present, you ensure correct operation when the GPU is installed later.
- This configuration requires a low-profile heatsink, a GPU air duct, and GPU air blockers. If you are ordering the GPU-Ready configuration, you must select the GPU air duct PID to enable the GPU-ready configuration when ordering the server through the Cisco online ordering and configuration tool. Follow the additional rules displayed in the tool.
- Two versions of GPU air duct exist. One is for UCSC-C240-M8L servers, and one is for UCSC-C240-M8SX and UCSC-C240-M8E3S servers. For detailed information about GPUs and appropriate GPU air ducts, go to the appropriate Spec Sheet:
  - For UCSC-C240-M8SX: [Cisco UCS C240 M8 SFF Rack Server Spec Sheet](#)
  - For UCSC-C240-M8E3S: [Cisco UCS C240 M8 EDSFF E3.S Rack Server Spec Sheet](#)
  - For UCSC-C240-M8L: [Cisco UCS C240 M8 LFF Rack Server Spec Sheet](#)
- The GPU air blocker is required in any empty GPU slots in a GPU-configured server or a GPU-ready server.
  - In these servers, the GPU air blocker is installed at the factory where needed.
  - However, if you remove a NIC or GPU from the GPU slot, the air blocker must be installed to ensure proper airflow.
- All GPU cards must be procured from Cisco because of a unique SBIOS ID that is required by CIMC and UCSM.
- Do not mix different brands or models of GPU cards in the server.
- GPUs are not supported in Riser 1B, Riser 3B, Riser 1D, or Riser 3D. These risers cannot mechanically accept a GPU.
- The following table shows additional details for the different supported GPUs.
- Use the UCS power calculator at the following link to determine the power needed based on your server configuration: <http://ucspowercalc.cisco.com>



# Requirement For All GPUs: Memory-Mapped I/O Greater Than 4 GB

All supported GPU cards require enablement of the BIOS setting that allows greater than 4 GB of memory-mapped I/O (MMIO).

- **Standalone Server:** If the server is used in standalone mode, this BIOS setting is enabled by default:

Advanced > PCI Configuration > Memory Mapped I/O Above 4 GB [**Enabled**]

If you need to change this setting, enter the BIOS Setup Utility by pressing **F2** when prompted during bootup.

- If the server is integrated with Cisco UCS Manager and is controlled by a service profile, this setting is enabled by default in the service profile when a GPU is present.

To change this setting manually, use the following procedure.

## Procedure

- 
- Step 1** Refer to the Cisco UCS Manager configuration guide (GUI or CLI) for your release for instructions on configuring service profiles:
- [Cisco UCS Manager Configuration Guides](#)
- Step 2** Refer to the chapter on Configuring Server-Related Policies > Configuring BIOS Settings.
- Step 3** In the section of your profile for PCI Configuration BIOS Settings, set `Memory Mapped IO Above 4GB Config` to one of the following:
- **Disabled**—Does not map 64-bit PCI devices to 64 GB or greater address space.
  - **Enabled**—Maps I/O of 64-bit PCI devices to 64 GB or greater address space.
  - **Platform Default**—The policy uses the value for this attribute contained in the BIOS defaults for the server. Use this only if you know that the server BIOS is set to use the default enabled setting for this item.
- Step 4** Reboot the server.

### Note

Cisco UCS Manager pushes BIOS configuration changes through a BIOS policy or default BIOS settings to the Cisco Integrated Management Controller (CIMC) buffer. These changes remain in the buffer and do not take effect until the server is rebooted.

---

## Installing a Double-Wide GPU Card

Use the following procedure to install or replace an NVIDIA Double-Wide GPU.



- Note** When a GPU that is greater than 75W rated power is installed:
- The normal operating temperature is 30°C (86°F), lowered to 25°C (77°F) with a fan fault
  - CPUs with TDP greater than 330W are not supported

With Cisco IMC version 4.3(1) and later, the server can support up to three NVIDIA GPUs. For a list of supported GPUs, see [Server Firmware Requirements, on page 275](#).



- Caution** A GPU air blocker must be installed in any empty GPU middle slot in a GPU-configured or GPU-ready server! Do not operate the server with an empty GPU slot!

## Procedure

**Step 1** Shut down and remove power from the server. .

**Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

**Caution**

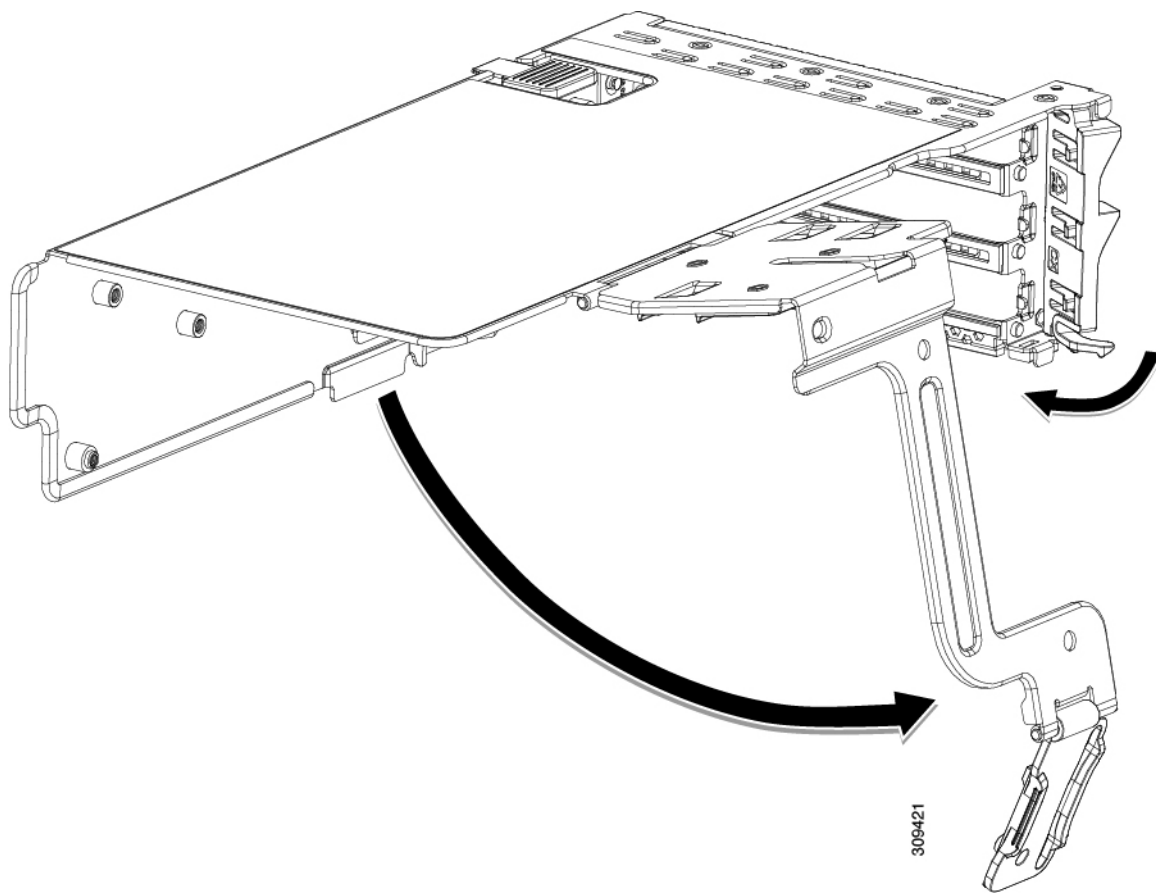
If you cannot safely view and access the component, remove the server from the rack.

**Step 3** Remove the top cover from the server. .

**Step 4** Remove an existing GPU card:

- Disconnect any existing cable from the GPU card.
- Use two hands to grasp the metal bracket of the PCIe riser and lift straight up to disengage its connector from the socket on the motherboard. Set the riser on an antistatic surface.
- On the bottom of the riser, press down on the clip that holds the securing plate.
- Swing open the hinged securing plate to provide access.
- Open the hinged plastic retainer that secures the rear-panel tab of the card.
- Disconnect the GPU card's power cable from the power connector on the PCIe riser.
- Pull evenly on both ends of the GPU card to remove it from the socket on the PCIe riser.

Figure 51: PCIe Riser Card Securing Mechanisms



|   |                                        |   |                          |
|---|----------------------------------------|---|--------------------------|
| 1 | Release latch on hinged securing plate | 3 | Hinged card-tab retainer |
| 2 | Hinged securing plate                  | - |                          |

### Step 5 Install a new GPU card:

#### Note

Observe the configuration rules for this server, as described in [GPU Card Configuration Rules, on page 275](#).

- Align the GPU card with the socket on the riser, and then gently push the card's edge connector into the socket. Press evenly on both corners of the card to avoid damaging the connector.
- Connect the GPU power cable. The straight power cable connectors are color-coded. Connect the cable's black connector into the black connector on the GPU card and the cable's white connector into the white GPU POWER connector on the PCIe riser.

#### Caution

Do not reverse the straight power cable. Connect the *black* connector on the cable to the *black* connector on the GPU card. Connect the *white* connector on the cable to the *white* connector on the PCIe riser.

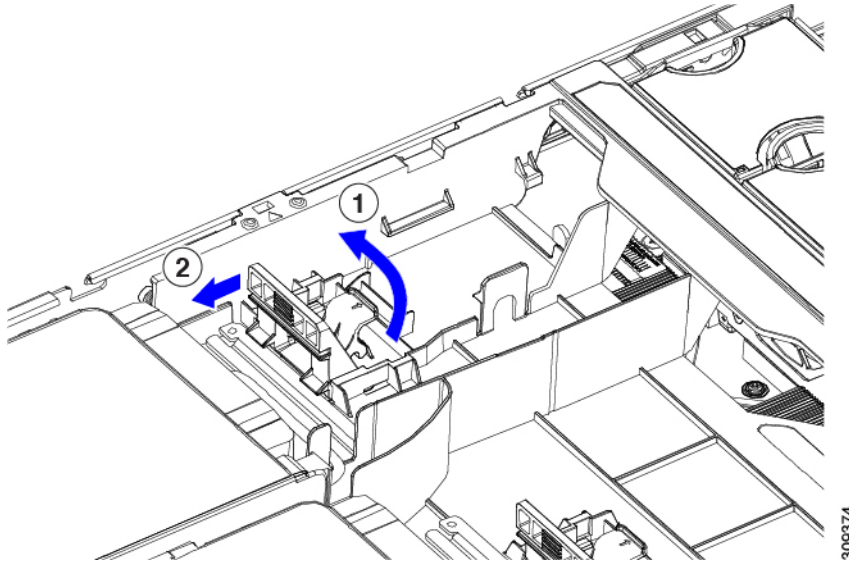
- Close the card-tab retainer over the end of the card.
- Swing the hinged securing plate closed on the bottom of the riser. Ensure that the clip on the plate clicks into the locked position.

- e) Position the PCIe riser over its socket on the motherboard and over the chassis alignment channels.
- f) Carefully push down on both ends of the PCIe riser to fully engage its connector with the sockets on the motherboard.

At the same time, align the GPU front support bracket (on the front end of the GPU card) with the securing latch that is on the server's air baffle.

**Step 6** Insert the GPU front support bracket into the latch that is on the air baffle:

- a) Pinch the latch release tab and hinge the latch toward the front of the server.
- b) Hinge the latch back down so that its lip closes over the edge of the GPU front support bracket.
- c) Ensure that the latch release tab clicks and locks the latch in place.



**Step 7** Replace the top cover to the server.

**Step 8** Replace the server in the rack, replace power and network cables, and then fully power on the server by pressing the Power button.

**Step 9** Optional: Continue with [Installing Drivers to Support the GPU Cards, on page 295](#).

## Enabling GPU Display Ports

By default, system output (including from GPUs) is sent to the KVM. However, some models of NVIDIA GPU, such as the A40 and L10, have the ability to send output to the GPU display port. Where supported, this feature might be disabled by default depending on which GPU you are using.

You can selectively control enabling or disabling the GPU display mode by using a free tool (called **displaymodeselector**) which is available through a shared Cisco Box folder. This tool enables sending output to the GPU display ports instead of the KVM.

See the following topics:

- [GPU Display Port Considerations, on page 281](#)
- [Understanding the displaymodeselector Tool, on page 281](#)

- [Enabling or Disabling GPU Display Ports, on page 282](#)
- [Creating the xconf File for Linux Servers, on page 284](#)
- [Reverting Display Mode to KVM, on page 285](#)

## GPU Display Port Considerations

When enabling or disabling the GPU display ports on NVIDIA GPUs, be aware of the following guidelines and considerations.

- By default, display port functionality is disabled on NVIDIA A40 and L40 GPUs. With the display port functionality disabled, standard server output is sent to the KVM. If you want to use display ports on these GPUs, you must explicitly enable them through the **displaymodeselector** tool.
- When display port functionality is disabled, both CUDA compute drivers and GRID graphics drivers work in this mode.
- When the display mode is enabled state, the NVIDIA Accelerated Linux Graphics Driver must be used.
  - <https://cisco.box.com/s/wf8flcrfvobd8i8vgap1xstzt8ls3x17>
  - vGPU drivers cannot be used.
  - When the display mode is in enabled state, an A40 GPU can never be the primary graphics boot device. You must keep any A40 GPU as a secondary and use either an on-board VGA (in server) or another NVIDIA GPU as the primary boot device to drive displays.
- After changing the display mode state, do not run NVQUAL.
- When running **displaymodeselector** on a Windows server, additional configuration steps are required. Use the documentation at:  
<https://cisco.box.com/s/wf8flcrfvobd8i8vgap1xstzt8ls3x17>
- When running **displaymodeselector** on a Linux server, you must also create the `xorg.conf` file.
- Anytime you change the state of GPU display ports through **displaymodeselector**, or edit or change the **xconf.org** file, you must reboot the server.

## Understanding the displaymodeselector Tool

The displaymodeselector tool is freeware available to download and install from the following shared Cisco Box:

<https://cisco.box.com/s/26yx4j82hbxce6r80tbhmnkuyvnivj9q>

The tool is supported on both Linux and Windows. You run the tool by issuing the following command:

**displaymodeselector --gpumode <mode\_name> [-i num]**



**Note** If you are running this tool on Windows, additional steps are required. See the documentation in the following shared Cisco Box:

<https://cisco.box.com/s/wf8flcrfvobd8i8vgap1xstzt8ls3x17>

The tool supports the following display options.

| Display Option                                 | Used For                                                                                                                                                                                                                                                             |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical Display Ports Enabled with 256MB BAR1 | Standard workstation deployments that contain physically attached displays.                                                                                                                                                                                          |
| Physical Display Ports Enabled with 8GB BAR1   | Specific use cases, such as broadcast, virtual production, and location-based entertainment deployments, which require physical display ports as well as the support of additional performance optimizations through an 8 BAR1 such as the NVIDIA Rivermax software. |
| Physical Display Ports Disabled                | Running NVIDIA virtual GPU (vGPU) software or compute use cases where no physically attached displays are required.                                                                                                                                                  |

## Enabling or Disabling GPU Display Ports

Use the **gpumodeselector** tool to set the state of display port functionality.

### Before you begin

Review the [GPU Display Port Considerations](#), on page 281.

### Procedure

**Step 1** After starting the tool, execute the command:

```
displaymodeselector --gpumode <mode_name> [-i num]
```

where:

|                  |                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>mode-name</b> | <p>Is one of the following mandatory arguments:</p> <ul style="list-style-type: none"> <li>• physical_display_enabled_256MB_bar1</li> <li>• physical_display_enabled_8GB_bar1</li> <li>• physical_display_disabled</li> </ul> <p><b>Note</b><br/>For Linux servers, you can also disable the GPU display ports by either deleting the <code>xconf.org</code> file or making it an empty (zero-byte) file.</p> |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|               |                                                              |
|---------------|--------------------------------------------------------------|
| <b>-i num</b> | Is an optional argument that specifies the GPU index number. |
|---------------|--------------------------------------------------------------|

**Step 2** Verify the register specification.

**Note**

By default, BIOS assigns the BAR1 registers. You can use **lspci** to verify which registers are in use. Consult the following table to determine which registers to use with the **mode-name** argument.

| Software Specification           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SR-IOV Support                   | 32 VF (virtual functions)                                                                                                                                                                                                                                                                                                                                                                                                                         |
| BAR address (physical functions) | <ul style="list-style-type: none"> <li>• BAR0: 16 MiB (mebibyte)</li> <li>• BAR1: 64 GiB (gibibyte). Display Off mode, which is the default.</li> <li>• BAR1: 8 GiB (gibibyte). Display mode on, 8 GB (gigabyte) BAR1 mode..</li> <li>• BAR1: 256 MiB (mibibyte). Display On mode, 256 MB (megabyte) BAR1 mode.</li> <li>• BAR3: 32 MiB (mebibytes)</li> </ul>                                                                                    |
| BAR address (virtual functions)  | <p>With Display Off modes (default):</p> <ul style="list-style-type: none"> <li>• BAR0: 8 MiB (32 VF * 256 KiB, or kibibytes)</li> <li>• BAR1: 64 GiB, 64 bit (32 VF * 2 GiB)</li> <li>• BAR3: 1 GiB, 64 bit (32 VF * 32 MiB)</li> <li>• BAR1: 256 MiB (mibibyte). Display mode on, 256 MB (megabyte) BAR1 mode.</li> <li>• BAR3: 32 MiB (mebibytes)</li> </ul> <p>With display mode on, VF BAR sizes are not applicable to Display On modes.</p> |

**Step 3** Choose one of the following, depending the OS running on the server:

- For Windows servers, after setting the display mode, complete the configuration as described in the documentation here:

<https://cisco.box.com/s/wf8flcrfvobd8i8vgap1xstzt8ls3x17>

- For Linux servers, after setting the display mode, create the `xconf.org` file.

Go to [Creating the xconf File for Linux Servers](#), on page 284.

**Step 4** You must reboot the server to complete configuring the display ports after configuring the server with OS specific settings.

## Creating the xconf File for Linux Servers

By default, the `xconf.gor` file does not exist, so you will need to create it. Use this task to create the file and add the required parameters.



**Note** This task is applicable only to servers running Linux.

### Procedure

**Step 1** Execute **`nvidia-xconfig`** to create the file with default parameters.

When the command completes, the default `xconf.org` file is in `/etc/X11/`

**Step 2** Using `vi`, `emacs`, or another ASCII text editor, view the newly created file and verify that `/etc/X11/xconf.org` contains the following stanzas.

```
File Edit View Search Terminal Help
Section "Monitor"
    Identifier      "Monitor0"
    VendorName      "Unknown"
    ModelName       "Unknown"
    Option          "DPMS"
EndSection

Section "Device"
    Identifier      "Device0"
    Driver          "nvidia"
    VendorName      "NVIDIA Corporation"
EndSection

Section "Screen"
    Identifier      "Screen0"
    Device          "Device0"
    Monitor         "Monitor0"
    DefaultDepth    24
    SubSection      "Display"
        Depth       24
    EndSubSection
EndSection
```

### Caution

Multiple displays might be listed. Multiple displays are not supported.

**Step 3** Reboot the server whenever you change the `xconf.org` file.

**Step 4** After the server reboots, check `/var/log/Xorg.0.log` to see the GPU entry (an A40 in the following example) and the supported display.



```

root@rhel83M2:/var/log
File Edit View Search Terminal Help
[ 8.978] (II) Module glxserver_nvidia: vendor="NVIDIA Corporation"
[ 8.978]     compiled for 1.6.99.901, module version = 1.0.0
[ 8.978]     Module class: X.Org Server Extension
[ 8.978] (II) NVIDIA GLX Module 470.63.01 Tue Aug  3 20:35:52 UTC 2021
[ 8.978] (II) NVIDIA: The X server supports PRIME Render Offload.
[ 10.101] (-- NVIDIA(0): Valid display device(s) on GPU-0 at PCI:65:0:0
[ 10.101] (-- NVIDIA(0):      DFP-0
[ 10.101] (-- NVIDIA(0):      DFP-1
[ 10.101] (-- NVIDIA(0):      DFP-2 (boot)
[ 10.101] (-- NVIDIA(0):      DFP-3
[ 10.101] (-- NVIDIA(0):      DFP-4
[ 10.101] (-- NVIDIA(0):      DFP-5
[ 10.101] (II) NVIDIA(G0): NVIDIA GPU NVIDIA A40 (GA102GL-A) at PCI:65:0:0 (G
PU-0)
[ 10.101] (-- NVIDIA(G0): Memory: 50319360 kBytes
[ 10.101] (-- NVIDIA(G0): VideoBIOS: 94.02.5c.00.03
[ 10.101] (II) NVIDIA(G0): Detected PCI Express Link width: 16X
[ 10.102] (-- NVIDIA(GPU-0): DFP-0: disconnected
[ 10.102] (-- NVIDIA(GPU-0): DFP-0: Internal DisplayPort
[ 10.102] (-- NVIDIA(GPU-0): DFP-0: 2670.0 MHz maximum pixel clock
[ 10.102] (-- NVIDIA(GPU-0):
[ 10.102] (-- NVIDIA(GPU-0): DFP-1: disconnected
[ 10.102] (-- NVIDIA(GPU-0): DFP-1: Internal TMDS

```

## Reverting Display Mode to KVM

At any time, you can revert the display from the GPU display ports to the default KVM. Use the following task to return output signals to the KVM. The KVM must be connected to see the output.

### Procedure

- Step 1** Choose the appropriate option.
- Using vi, emacs, or another ASCII-text editor, delete all contents of xconf.org, leaving it a zero-byte file.
  - Completely delete (**rm**) the xconf.org file.
- Step 2** Reboot the server to activate the changes, which send the output to the KVM.

## Replacing the GPU Air Blocker

The GPU air blocker is a molded part that installs into the PCIe risers in slots 2, 5, or 7 and extends upward to cover the slot above it. The GPU air blocker provides proper airflow and reduces the levels of dust or other potential particulate contaminants.

For GPU-configured or GPU-ready servers, a GPU air blocker is installed where needed as part of the riser (UCSC-RISAB-24MX7). The air blocker is also available as a separately orderable part (UCSC-RISAB-24MX7=).

To replace the GPU air blockers, use the appropriate task:



---

**Note** Riser 1 does not accept a GPU air blocker. If you are performing service tasks, do not attempt to install an air blocker for Riser 1.

---

- [Removing the Riser 2 GPU Air Blocker, on page 286](#)
- [Installing the Riser 2 GPU Air Blocker, on page 287](#)
- [Removing the Riser 3 GPU Air Blocker, on page 289](#)
- [Installing the Riser 3 GPU Air Blocker, on page 290](#)

## Removing the Riser 2 GPU Air Blocker

The GPU air blocker is a molded part that installs into slot 5 in Riser 2 and extends upward to cover the slot above it (slot 6).



---

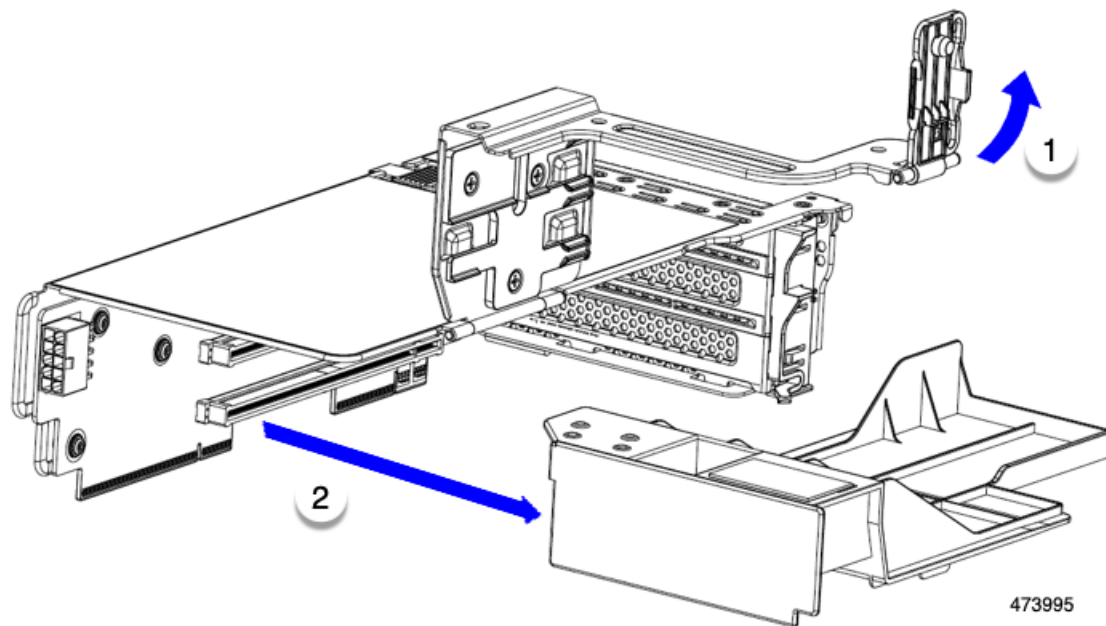
**Caution** In a GPU-configured or GPU-ready server, the GPU air blocker is required in any middle slot that does not contain a GPU! Do not operate the server with any empty GPU slot!

---

Use this procedure to remove the GPU air blocker.

### Procedure

- 
- Step 1** Shut down and remove power from the server. .
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server. .
- Step 4** Remove the air blocker from the riser cage:
- Use two hands to grasp the metal bracket of the PCIe riser and lift straight up to disengage its connector from the socket on the motherboard.
  - Set the riser on an antistatic surface.
  - On the bottom of the riser, press down on the clip that holds the securing plate.
  - Swing open the hinged securing plate to provide access.
  - Open the hinged plastic retainer that secures the rear-panel tab of the card.
  - Grasp the air blocker, and holding it level, pull it horizontally out of the riser cage.



|   |                                        |   |                 |
|---|----------------------------------------|---|-----------------|
| 1 | Release latch on hinged securing plate | 2 | GPU Air Blocker |
|---|----------------------------------------|---|-----------------|

### What to do next

Choose the appropriate option.

- Install a GPU. See [Installing a Double-Wide GPU Card, on page 277](#).
- Install a GPU air blocker. See [Installing the Riser 2 GPU Air Blocker, on page 287](#).

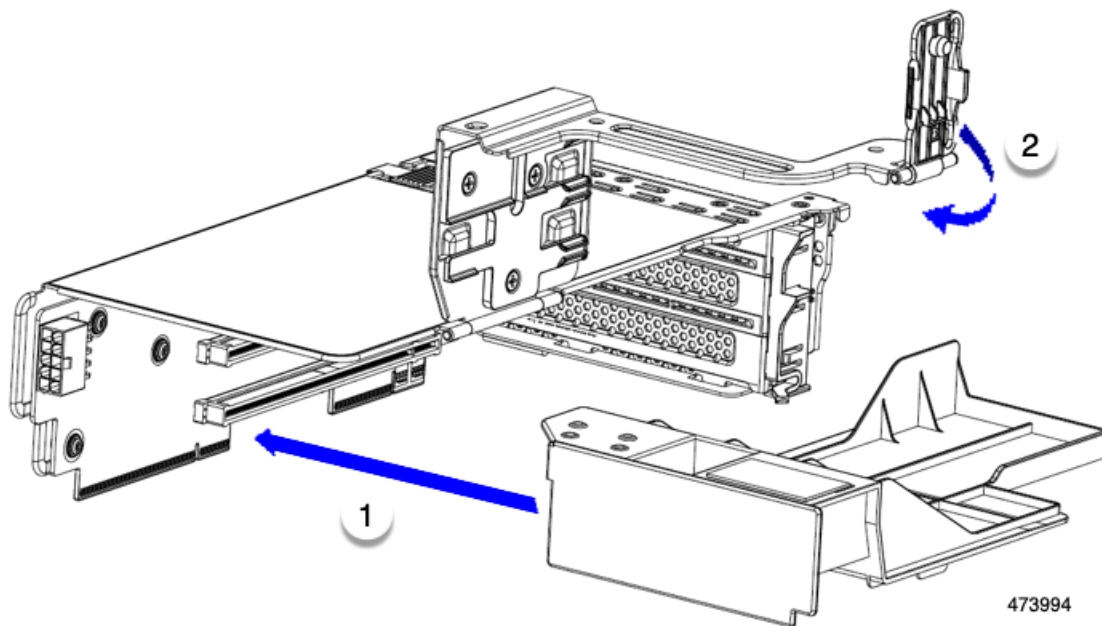
## Installing the Riser 2 GPU Air Blocker

After removing a GPU or a GPU air blocker, you must reinstall a GPU or air blocker. You cannot operate the GPU configured or GPU-enabled server with an empty GPU slot.

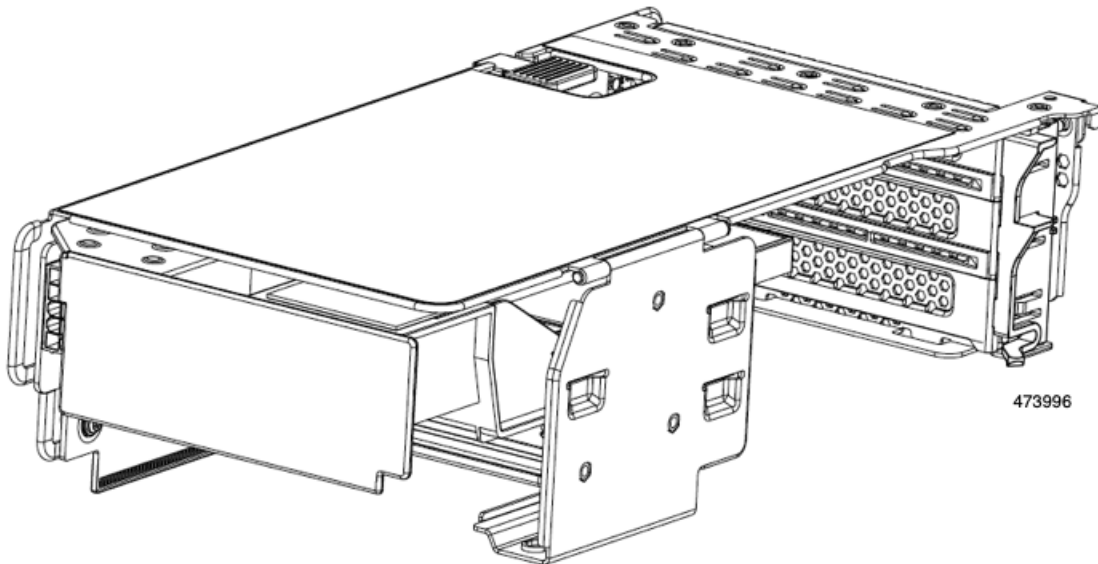
Use the following procedure to install the GPU air blocker in slot 5 of Riser 2.

### Procedure

- Step 1** Orient the part so that it will insert into the connector of slot 5.
- Step 2** Holding the air blocker level, slide it into the riser cage and insert it into the riser cage connector.  
When the air blocker is installed, the air blocker should fit snugly into the riser and cover slot 5 and slot 6.
- Step 3** Close and latch the hinged door on the riser cage.



When the GPU air blocker is correctly installed, the hinged door easily closes, the air blocker is seated level, and it fits securely in the riser cage.



**Step 4** Install the riser cage into the server.

#### What to do next

If no other maintenance work is required, replace the top cover and return the server to operation. Otherwise, continue with the additional maintenance tasks.

## Removing the Riser 3 GPU Air Blocker

The GPU air blocker is a molded part that installs into slot 7 in Riser 3 and extends upward to cover the slot above it (slot 8).

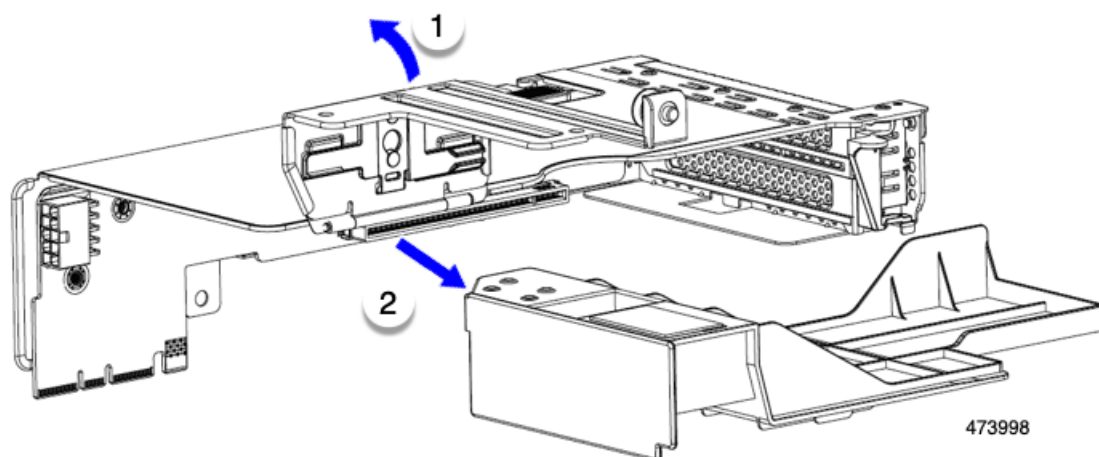


**Caution** In a GPU-configured or GPU-ready server, the GPU air blocker is required in any slot that does not contain a GPU. Do not operate the server with any empty GPU slot!

Use this procedure to remove the GPU air blocker.

### Procedure

- Step 1** Shut down and remove power from the server. .
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution**  
If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server..
- Step 4** Remove the air blocker from the riser cage:
- Use two hands to grasp the metal bracket of the PCIe riser and lift straight up to disengage its connector from the socket on the motherboard.
  - Set the riser on an antistatic surface.
  - On the bottom of the riser, press down on the clip that holds the securing plate.
  - Swing open the hinged securing plate to provide access.
  - Open the hinged plastic retainer that secures the rear-panel tab of the card.
  - Grasp the air blocker, and holding it level, pull it horizontally out of the riser cage.



|   |                                        |   |                 |
|---|----------------------------------------|---|-----------------|
| 1 | Release latch on hinged securing plate | 2 | GPU Air blocker |
|---|----------------------------------------|---|-----------------|

### What to do next

Choose the appropriate option.

- Install a GPU. See [Installing a Double-Wide GPU Card, on page 277](#).
- Install a GPU air blocker. See [Installing the Riser 3 GPU Air Blocker, on page 290](#).

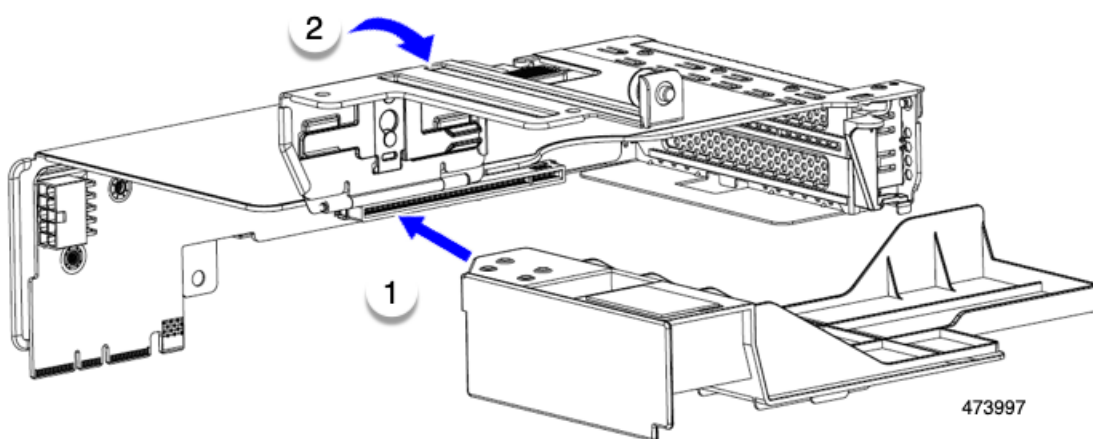
## Installing the Riser 3 GPU Air Blocker

After removing a GPU or a GPU air blocker, you must reinstall a GPU or air blocker. You cannot operate the GPU configured or GPU-enabled server with an empty GPU slot.

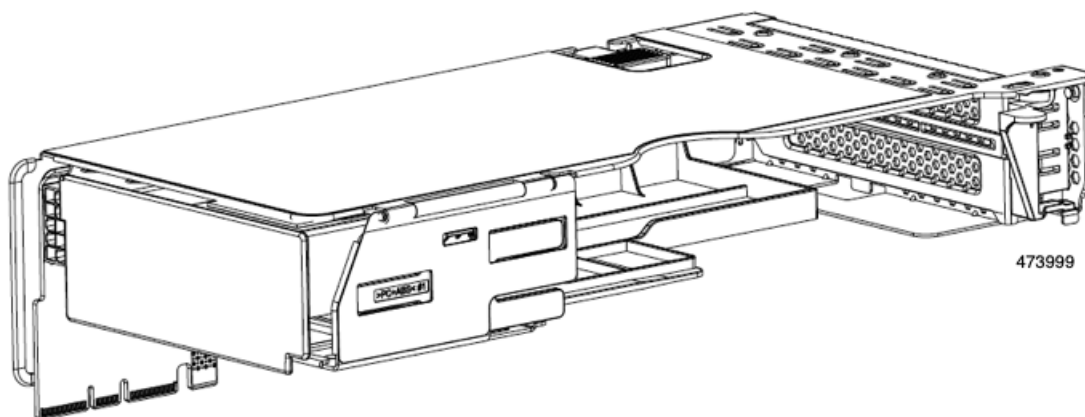
Use the following procedure to install the GPU air blocker in slot 7 of Riser 3.

### Procedure

- Step 1** Orient the part so that it will insert into the riser cage connector of slot 7.
- Step 2** Holding the air blocker level, slide it into the riser cage.
- When the air blocker is installed, the air blocker should fit snugly into the riser and cover slot 7 and slot 8.
- Step 3** Close the hinged door on the riser cage.



When the GPU air blocker is correctly installed, the hinged door easily closes, the air blocker is seated level, and it fits securely in the riser cage.



**Step 4** Install the riser cage into the server.

#### What to do next

If no other maintenance work is required, replace the top cover and return the server to operation. Otherwise, continue with the additional maintenance tasks.

## Installing GRID Licenses From the NVIDIA Licensing Portal to the License Server

### Accessing the GRID License Server Management Interface

Open a web browser on the License Server host and access the URL <http://localhost:8080/licserver>.

If you configured the License Server host's firewall to permit remote access to the License Server, the management interface is accessible from remote machines at the URL <http://hostname:8080/licserver>

## Reading Your License Server's MAC Address

Your License Server's Ethernet MAC address is used as an identifier when registering the License Server with NVIDIA's Licensing Portal.

### Procedure

**Step 1** Access the GRID License Server Management Interface in a browser.

**Step 2** In the left-side License Server panel, select **Configuration**.

The License Server Configuration panel opens. Next to **Server host ID**, a pull-down menu lists the possible Ethernet MAC addresses.

**Step 3** Select your License Server's MAC address from the **Server host ID** pull-down.

#### Note

It is important to use the same Ethernet ID consistently to identify the server when generating licenses on NVIDIA's Licensing Portal. NVIDIA recommends that you select one entry for a primary, non-removable Ethernet interface on the platform.

---

## Installing Licenses From the Licensing Portal

### Procedure

---

- Step 1** Access the GRID License Server Management Interface in a browser.
- Step 2** In the left-side License Server panel, select **Configuration**.  
The License Server Configuration panel opens.
- Step 3** Use the License Server Configuration menu to install the .bin file that you generated earlier.
- a) Click **Choose File**.
  - b) Browse to the license .bin file that you want to install and click **Open**.
  - c) Click **Upload**.
- The license file is installed on your License Server. When installation is complete, you see the confirmation message, "Successfully applied license file to license server."
- 

## Viewing Available GRID Licenses

Use the following procedure to view which licenses are installed and available, along with their properties.

### Procedure

---

- Step 1** Access the GRID License Server Management Interface in a browser.
- Step 2** In the left-side License Server panel, select **Licensed Feature Usage**.
- Step 3** Click on a feature in the **Feature** column to see detailed information about the current usage of that feature.
- 

## Viewing Current License Usage

Use the following procedure to view information about which licenses are currently in-use and borrowed from the server.



### Procedure

---

- Step 1** Access the GRID License Server Management Interface in a browser.
- Step 2** In the left-side License Server panel, select **Licensed Clients**.
- Step 3** To view detailed information about a single licensed client, click on its **Client ID** in the list.
- 

## Managing GRID Licenses

Features that require GRID licensing run at reduced capability until a GRID license is acquired.

## Acquiring a GRID License on Windows

### Procedure

---

- Step 1** Open the NVIDIA Control Panel using one of the following methods:
- Right-click on the Windows desktop and select **NVIDIA Control Panel** from the menu.
  - Open Windows Control Panel and double-click the **NVIDIA Control Panel** icon.
- Step 2** In the NVIDIA Control Panel left-pane under Licensing, select **Manage License**.
- The Manage License task pane opens and shows the current license edition being used. The GRID software automatically selects the license edition based on the features that you are using. The default is Tesla (unlicensed).
- Step 3** If you want to acquire a license for GRID Virtual Workstation, under License Edition, select **GRID Virtual Workstation**.
- Step 4** In the **License Server** field, enter the address of your local GRID License Server. The address can be a domain name or an IP address.
- Step 5** In the **Port Number** field, enter your port number or leave it set to the default used by the server, which is 7070.
- Step 6** Select **Apply**.

The system requests the appropriate license edition from your configured License Server. After a license is successfully acquired, the features of that license edition are enabled.

### Note

After you configure licensing settings in the NVIDIA Control Panel, the settings persist across reboots.

---

# Acquiring a GRID License on Linux

## Procedure

- 
- Step 1** Edit the configuration file `/etc/nvidia/gridd.conf`:
- ```
sudo vi /etc/nvidia/gridd.conf
```
- Step 2** Edit the `ServerUrl` line with the address of your local GRID License Server.
- The address can be a domain name or an IP address. See the example file below.
- Step 3** Append the port number (default 7070) to the end of the address with a colon. See the example file below.
- Step 4** Edit the `FeatureType` line with the integer for the license type. See the example file below.
- GRID vGPU = 1
  - GRID Virtual Workstation = 2
- Step 5** Restart the `nvidia-gridd` service.
- ```
sudo service nvidia-gridd restart
```
- The service automatically acquires the license edition that you specified in the `FeatureType` line. You can confirm this in `/var/log/messages`.

### Note

After you configure licensing settings in the NVIDIA Control Panel, the settings persist across reboots.

Sample configuration file:

```
# /etc/nvidia/gridd.conf - Configuration file for NVIDIA Grid Daemon
# Description: Set License Server URL
# Data type: string
# Format: "<address>:<port>"
ServerUrl=10.31.20.45:7070

# Description: Set Feature to be enabled
# Data type: integer
# Possible values:
# 1 => for GRID vGPU
# 2 => for GRID Virtual Workstation
FeatureType=2
```

---

## Using gpumodeswitch

The command line utility `gpumodeswitch` can be run in the following environments:

- Windows 64-bit command prompt (requires administrator permissions)
- Linux 32/64-bit shell (including Citrix XenServer dom0) (requires root permissions)



**Note** Consult NVIDIA product release notes for the latest information on compatibility with compute and graphic modes.

The `gpumodeswitch` utility supports the following commands:

- `--listgpumodes`

Writes information to a log file named `listgpumodes.txt` in the current working directory.

- `--gpumode graphics`

Switches to graphics mode. Switches mode of all supported GPUs in the server unless you specify otherwise when prompted.

- `--gpumode compute`

Switches to compute mode. Switches mode of all supported GPUs in the server unless you specify otherwise when prompted.



**Note** After you switch GPU mode, reboot the server to ensure that the modified resources of the GPU are correctly accounted for by any OS or hypervisor running on the server.

## Installing Drivers to Support the GPU Cards

After you install the hardware, you must update to the correct level of server BIOS and then install GPU drivers and other software in this order:

1. Update the server BIOS.
2. Update the GPU drivers.

### 1. Updating the Server BIOS

Install the latest Cisco UCS C240 M4 server BIOS by using the Host Upgrade Utility for the Cisco UCS C240 M4 server.



**Note** You must do this procedure before you update the NVIDIA drivers.

#### Procedure

- Step 1** Navigate to the following URL: <http://www.cisco.com/cisco/software/navigator.html>.
- Step 2** Click **Servers–Unified Computing** in the middle column.

- Step 3** Click **Cisco UCS C-Series Rack-Mount Standalone Server Software** in the right-hand column.
- Step 4** Click the name of your model of server in the right-hand column.
- Step 5** Click **Unified Computing System (UCS) Server Firmware**.
- Step 6** Click the release number.
- Step 7** Click **Download Now** to download the `ucs-server_platform-huu-version_number.iso` file.
- Step 8** Verify the information on the next page, and then click **Proceed With Download**.
- Step 9** Continue through the subsequent screens to accept the license agreement and browse to a location where you want to save the file.
- Step 10** Use the Host Upgrade Utility to update the server BIOS.
- The user guides for the Host Upgrade Utility are at [Utility User Guides](#).
- 

## 2. Updating the GPU Card Drivers

After you update the server BIOS, you can install GPU drivers to your hypervisor virtual machine.

### Procedure

---

- Step 1** Install your hypervisor software on a computer. Refer to your hypervisor documentation for the installation instructions.
- Step 2** Create a virtual machine in your hypervisor. Refer to your hypervisor documentation for instructions.
- Step 3** Install the GPU drivers to the virtual machine. Download the drivers from either:
- NVIDIA Enterprise Portal for GRID hypervisor downloads (requires NVIDIA login): <https://nvidia.flexnetoperations.com/>
  - NVIDIA public driver area: <http://www.nvidia.com/Download/index.aspx>
- Step 4** Restart the server.
- Step 5** Check that the virtual machine is able to recognize the GPU card. In Windows, use the Device Manager and look under Display Adapters.
-



## APPENDIX D

# Installation for UCS Software Management

---

This appendix contains the following topics.

- [Installation For Cisco UCS Manager Integration, on page 297](#)
- [Installation For Cisco Intersight, on page 297](#)

## Installation For Cisco UCS Manager Integration

The Cisco UCS Manager integration instructions are in the integration guides found here:

[Cisco UCS C-Series Server Integration with UCS Manager Configuration Guides](#)

Refer to the guide that is for the version of Cisco UCS Manager that you are using.

Also refer to the release notes for Cisco UCS Manager software and C-Series Cisco IMC software for any special considerations regarding integration in your release.

- [Cisco UCS Manager Release Notes](#)
- [Cisco C-Series Software Release Notes](#)

## Installation For Cisco Intersight

Through Cisco Intersight, the server can be claimed, configured, and managed. Intersight information is available for standalone servers through online help, which you can access through:

[Cisco Intersight](#)

Also, refer to the Intersight release notes for any special considerations regarding integration in your release. Release notes are available through:

[Cisco Intersight Release Notes](#)





## INDEX

### A

air duct, installing [65](#)  
air duct, removing [64](#)  
alternate boot image, CIMC [235](#)

### B

baffle, installing [67](#)  
baffle, RV [67](#)  
BIOS password, clearing [234](#)  
boot image, alternate [235](#)  
boot optimized SSD, replacing [206](#)  
boot RAID controller [193, 196, 200](#)  
Boot RAID controller [203, 205](#)  
boot RAID controller, installation [187, 196](#)  
boot RAID controller, internal [211, 215, 219, 222](#)  
boot RAID controller, removal [190, 200](#)

### C

CIMC, alternate boot image [235](#)  
clear BIOS password [234](#)  
clearing CMOS [233](#)  
CMOS clearing [233](#)  
controller, boot RAID [187, 190, 196, 200](#)  
CPUs, installing [99](#)  
CPUs, removing [93](#)  
creating xconf.org file [284](#)

### D

disable GPU display mode [282](#)  
disabling GPU display ports [285](#)  
drive (SAS/SATA), reseating [74](#)  
drive, E3.S [79](#)  
drive, installing [81](#)  
dual storage controllers, installing [143](#)  
dual storage controllers, removing [138](#)

### E

E3.S drive, installing [81](#)  
E3.S drive, removing [79](#)

E3.S PCBA recycling [238, 240](#)  
EDSFF ES.3 backplane, recycling [242](#)  
enable GPU display mode [282](#)  
ES.3 backplane, recycling [242](#)

### F

fan tray, installing [91](#)  
fan tray, removing [90](#)  
front mezzanine PCB assembly, recycling [242, 245, 248](#)  
front panel PCB assembly, recycling [252, 256](#)

### G

gpu air blocker, riser 1 [289](#)  
gpu air blocker, riser 2 [286–287](#)  
gpu air blocker, riser 3 [290](#)  
GPU display ports, disabling [285](#)

### H

heatsinks, installing [99](#)  
heatsinks, removing [93](#)

### I

installing SSDs, LFF [224](#)  
installing CPUs [99](#)  
installing heatsinks [99](#)  
installing internal Boot RAID controller [222](#)  
installing M.2 modules [194](#)  
installing OCP card [134](#)  
installing rear SATA controller [226](#)  
installing RV baffle [67](#)  
installing SSDs, E3S [218](#)  
installing SSDs, SDF [218](#)  
installing, air duct [65](#)  
installing, E3.S drive [81](#)  
installing, fan tray [91](#)  
installing, GPU air blocker [287, 290](#)  
installing, M.2 modules [203](#)  
installing, storage controller [150](#)  
installing, storage controllers [143](#)  
internal Boot Controller, SSDs, E3S [217–218](#)

internal Boot Controller, SSDs, LFF [223–224](#)  
 internal Boot Controller, SSDs, SFF [217–218](#)  
 internal boot RAID controller [211, 215, 219, 222](#)  
 interposer card, installing [226](#)  
 interposer card, removing [225](#)

## K

KVM, returning display [285](#)

## M

M.2 module, installing [203](#)  
 M.2 module, removing [193, 205](#)  
 M.2 modules, installing [194](#)  
 M.2 modules, UCSC-M2RR-240M8 [194](#)  
 M.2 SSD, boot optimized [206](#)  
 main motherboard PCBA, recycling [238, 240](#)  
 mid-mount drives, replacing [83](#)

## O

OCP card [134](#)  
 OCP card, installing [134](#)  
 OCP card, removing [132](#)

## P

password (BIOS), clearing [234](#)

## R

RAID controller, installation [187, 196](#)  
 RAID controller, installing [222](#)  
 RAID controller, removal [190, 200](#)  
 RAID controller, removing [211, 215, 219](#)  
 RAID controller, tri mode [112](#)  
 RAID controller, tri-mode [107](#)  
 rear SATA controller card, installing [226](#)  
 rear SATA controller card, removing [225](#)  
 recycling, E3S main motherboard PCBA [238, 240](#)  
 recycling, front mezzanine PCBA [242, 245, 248](#)  
 recycling, front panel PCBA [256](#)  
 recycling, front panel PCBAs [252](#)  
 recycling, SAS backplane [245, 248](#)  
 recycling, SFF main motherboard PCBA [238, 240](#)  
 recycling, USB board [251](#)  
 removing CPUs [93](#)

removing drive, E3.S [79](#)  
 removing heatsinks [93](#)  
 removing internal Boot RAID controller [211, 215, 219](#)  
 removing OCP card [132](#)  
 removing rear SATA controller [225](#)  
 removing SSDs, E3S [217](#)  
 removing SSDs, LFF [223](#)  
 removing SSDs, SDF [217](#)  
 removing tri-mode RAID controller [107, 112](#)  
 removing, air duct [64](#)  
 removing, dual storage controllers [138](#)  
 removing, fan tray [90](#)  
 removing, GPU air blocker [286, 289](#)  
 removing, M.2 modules [193, 205](#)  
 removing, storage controller [146](#)  
 replacing boot optimized SSD [206](#)  
 replacing mid-mount drives [83](#)  
 reseating drives, SAS/SATA [74](#)  
 riser 1, GPU air blocker [289](#)  
 riser 2, GPU air blocker [286–287](#)  
 riser 3, GPU air blocker [290](#)  
 RV baffle, installing [67](#)

## S

SAS backplane, recycling [245, 248](#)  
 SAS/SATA drive, reseating [74](#)  
 SFF PCBA recycling [238, 240](#)  
 SSD, M.2 [206](#)  
 SSDs, installing, LFF [224](#)  
 SSDs, installing, E3S [218](#)  
 SSDs, removing, E3S [217](#)  
 SSDs, removing, LFF [223](#)  
 storage controller, installing [150](#)  
 storage controller, removing [146](#)

## T

tri-mode RAID controller, removing [107](#)  
 tri-mode RAID controller, removing [112](#)

## U

USB board, recycling [251](#)

## X

xconf.org file, creating [284](#)