



Storage Controller Considerations

This appendix contains the following topics:

- [Supported Storage Controllers and Cables, on page 1](#)
- [Storage Controller Card Firmware Compatibility, on page 2](#)
- [RAID Backup \(Supercap\), on page 3](#)
- [Mixing Drive Types in RAID Groups, on page 3](#)
- [Storage Controller Cable Connectors and Backplanes, on page 3](#)
- [For More RAID Utility Information, on page 4](#)

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 24 2.5-inch SFF front-loading + 4 2.5-inch rear-loading drives 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 2 controllers, each manages 14 drives. Controller 1: Slots 1-12 plus 103 and 104 Controller 2: Slots 13-24 plus 101 and 102	SAS HBA	NA
UCSC-9500-8E-D	Cisco 9500-8e 12G SAS HBA for external JBOD attach	All models of UCS C220 M7 and UCS C240 M7 server	NA	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 Two controllers, each manages 14 drives Controller 1: Slots 1-12 plus 103 and 104 Controller 2: 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 (UCSC-RAID-SD-D, UCSC-SAS-T-D, or UCSC-RAID-HP-D), 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 \(RAID Backup\)](#).

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.

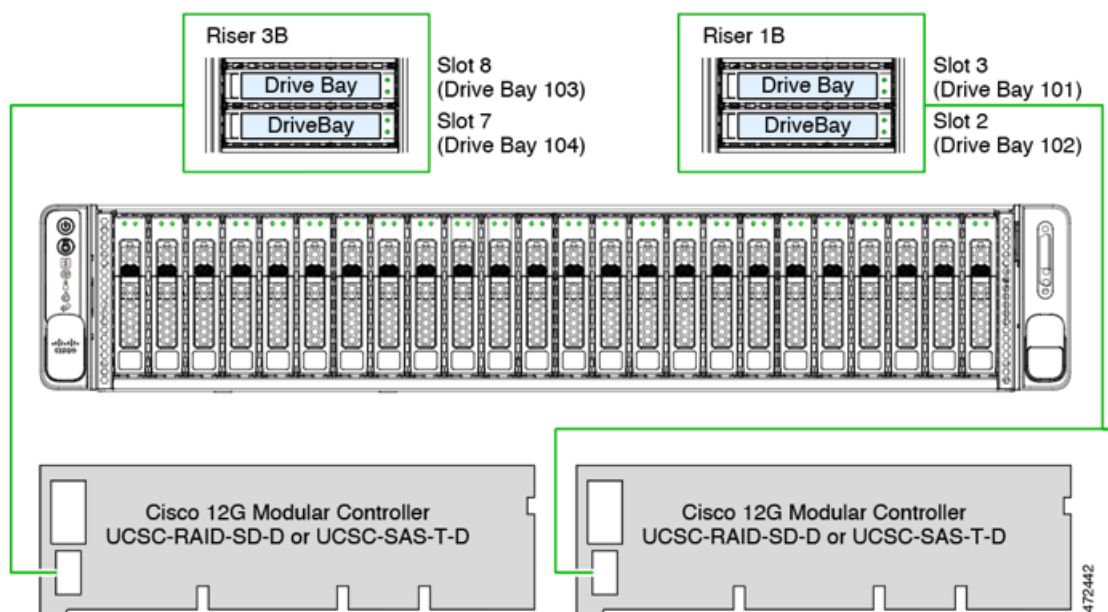
Cisco 12G Modular SAS RAID Controller or HBA For Up To 28 Drives (UCSC-RAID-SD-D or UCSC-SAS-T-D)

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 1: 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 M7 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](#).

