Storage Controller Considerations

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 RAID controller.

This server supports the RAID and HBA controller options and cable requirements shown in the following table.

Controller	Server Version/Maximum Drives Controlled	RAID Levels	Optional Supercap Backup?	Required Cables
Cisco 12G Modular RAID Controller UCSC-RAID-M6 Includes 4GB flash-back write cache (FBWC); controls up to 24 drives.	• SFF 24-drives Supports up to 24 internal SAS/SATA drives • Upto 4 front NVMe drives (not managed by the storage controller) • Upto 4 Rear NVMe drives (2 each in Riser 1B and 3B)	0, 1, 5, 6, 10, 50, 60, SRAID0 JBOD mode is also supported.	Yes	PCIe style controller. Plugs directly in to dedicated slot.

| Two Cisco 12G Modular SAS HBA

UCSC-SAS-M6

Each controller controls up to 12 drives. | • SFF 24-drives:

  Supports up to 16 SAS/SATA internal drives

• Upto 4 front NVMe drives (not managed by the storage controller)

• Upto 4 Rear NVMe drives (2 each in Riser 1B and 3B) | JBOD or pass-through mode (not RAID) | Yes | Plugs directly in to dedicated slot. |

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-M6, UCSC-RAID-M6HD, UCSC-SAS-M6, or UCSC-SAS-M6HD), 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. This is necessary to program the controller's suboem-id to the correct value for the server SKU. If you do not do this, drive enumeration might not display correctly in the software. This issue does not affect servers controlled in UCSM mode.

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).

Write-Cache Policy for Cisco 12G SAS Modular RAID Controllers

For this server and other Cisco Generation M6 servers, the default write-cache policy for the Cisco Modular RAID controllers is flash-back write cache (FBWC). This utilizes the optimal performance characteristics of the controller.

You can change the write policy using the following methods:

- For standalone servers, use the Cisco IMC interface to set Virtual Drive Properties > Write Policy. See the "Managing Storage Adapters" section in your Cisco IMC Configuration Guide.

  Cisco IMC GUI and CLI Configuration Guides

- Use the LSI Option ROM Configuration Utility.

Mixing Drive Types in RAID Groups

- When you mix HDDs and SSDs ensure that:

  - all HDDs have their own RAID volume

  - all SSDs have their own RAID volume

- When using a Cisco M6 12G SAS RAID controller or Cisco 12G SAS HBA, you can mix SAS HDDs and SAS/SATA SSDs.

- SED drives can be mixed with the non-SED drives

Storage Controller Cable Connectors and Backplanes

This section describes cabling for the storage controllers and backplanes. The SAS/SATA cables are factory-installed and are used for all supported internal controllers.

This section also contains diagrams that show the cable-to-drive mapping.

Cisco 12G Modular SAS RAID Controller or HBA For Up To 24 Drives (UCSC-RAID-M6HD or UCSC-SAS-M6HD)

These controller are supported SFF 24-Drives server version.

This HW RAID or HBA option can control up to 24 front-loading SAS/SATA drives in this server version, plus 2 rear-loading SAS/SATA drives.
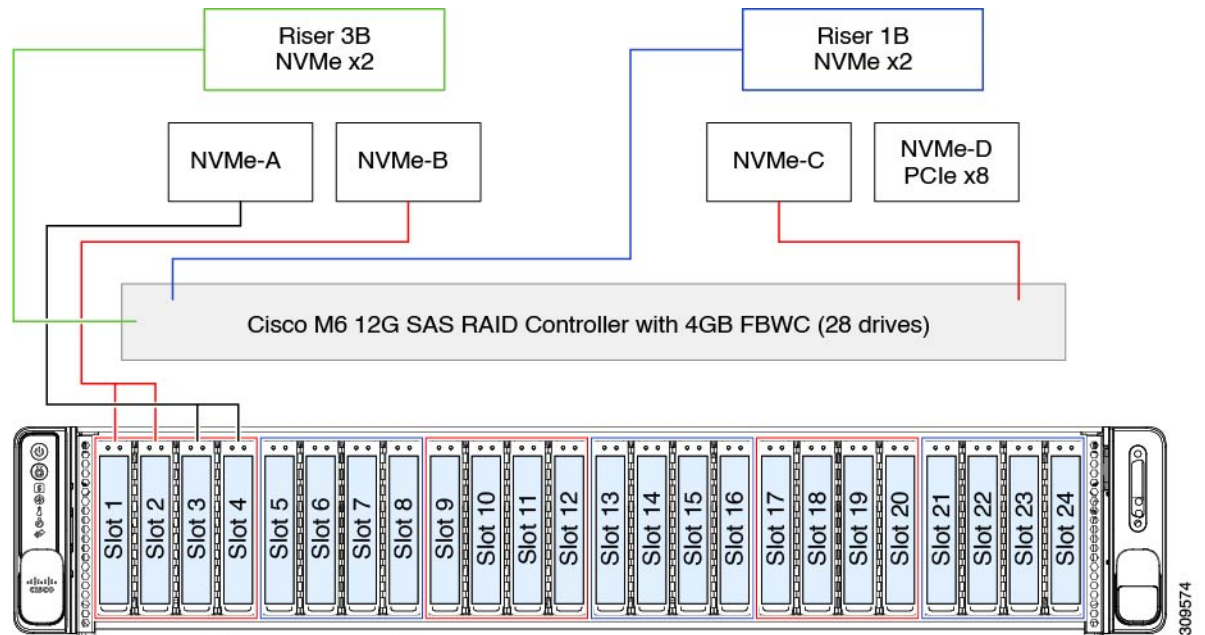
Note Front NVMe drives are not managed by the RAID controllers.

1. Server supports one Cisco M6 12G SAS RAID Controller that connects to the mother board.

   - Front-loading drive bays 1—24 support 2.5-inch SAS/SATA drives

   - Optionally, front-loading drive bays 1 to 4 support 2.5-inch NVMe SSDs (with optional front NVMe cables). These are not managed by the controller.

     Drives 1 and 2 connect to NVMe connector A. Drives 3 and 4 connect to NVMe connector B.

   - Riser 1B and 3B support up to 2 NVMe SSDs each. These are connected to the controller.

Figure 1: Cisco UCS C245 M6 Block Diagram with Cisco M6 12G SAS RAID Controller
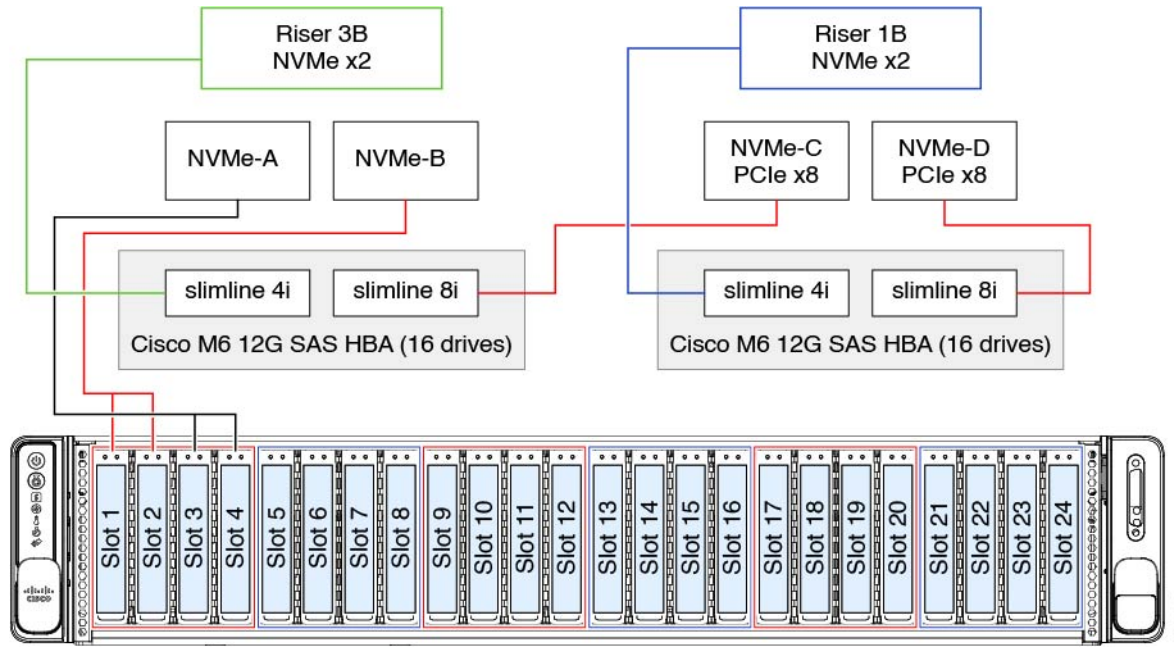

2. Server supports two Cisco M6 12G SAS HBA Controller that connects to the mother board.

   • Front-loading drive bays 1—24 support 2.5-inch SAS/SATA drives

   • Optionally, front-loading drive bays 1 to 4 support 2.5-inch NVMe SSDs (with optional front NVMe cables). These are not managed by the controller.

   Drives 1 and 2 connect to NVMe connector A. Drives 3 and 4 connect to NVMe connector B.

   • Riser 1B and 3B support up to 2 NVMe SSDs each. Drives in riser 3B are connected to the slimline 4i connector on the controller on the same side as the riser. Similarly, riser 1B drives are connected to the slimline 4i connector on the controller on the same side.

Figure 2: Cisco UCS C245 M6 Block Diagram with Two Cisco M6 12G SAS HBA Controller