



# APPENDIX C

## RAID Controller Considerations

This appendix provides RAID controller information, and it includes the following sections:

- [Supported RAID Controllers and Required Cables, page C-1](#)
- [Mixing Drive Types in RAID Groups, page C-2](#)
- [Battery Backup Unit, page C-2](#)
- [RAID Controller Cabling, page C-2](#)
- [Restoring RAID Configuration After Replacing a RAID Controller, page C-4](#)
- [For More Information, page C-5](#)

## Supported RAID Controllers and Required Cables

This server supports the RAID controller options and cable requirements shown in [Table C-1](#).



**Note**

Do not mix controller types in the server. Dual controllers are not supported.

**Table C-1** Cisco UCS C460 Server Supported RAID Options

Controller	Style	Max. Internal Drives	SAS	SATA	Opt. BBU	RAID Levels	Required Cables
LSI MegaRAID SAS 9240-8i	PCIe	8	Yes <sup>1</sup>	No	No	0, 1, 10	2 SAS (use cables included)
LSI MegaRAID SAS 9260-8i	PCIe	12	Yes <sup>2</sup>	Yes	Yes	0, 1, 5, 6, 10, 50, 60	2 SAS (use cables included)

1. You can mix SAS and SATA drives when using an LSI SAS3081E-R card. However, you cannot mix SAS and SATA drives within a volume.
2. You can mix SAS and SATA drives when using an LSI MegaRAID card. However, you cannot mix SAS and SATA drives within a volume.

# Mixing Drive Types in RAID Groups

[Table C-2](#) lists the technical capabilities for mixing hard disk drive (HDD) and solid state drive (SSD) types in a RAID group. However, see the best practices recommendations that follow for the best performance.

**Table C-2** Drive Type Mixing in RAID Groups

Mix of Drive Types in RAID Group	Allowed?
SAS HDD + SATA HDD	Yes
SAS SSD + SATA SSD	Yes
HDD + SSD	No

## Best Practices For 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.

# Battery Backup Unit

This server supports installation of one LSI RAID battery backup unit (BBU). The unit mounts to the chassis wall (see [Replacing the SAS Riser Battery Backup Unit, page 3-18](#)).

The optional LSI BBU is available only when using an LSI MegaRAID 9260-8i controller card. This BBU provides approximately 72 hours of battery backup for the disk write-back cache DRAM in the case of sudden power loss.

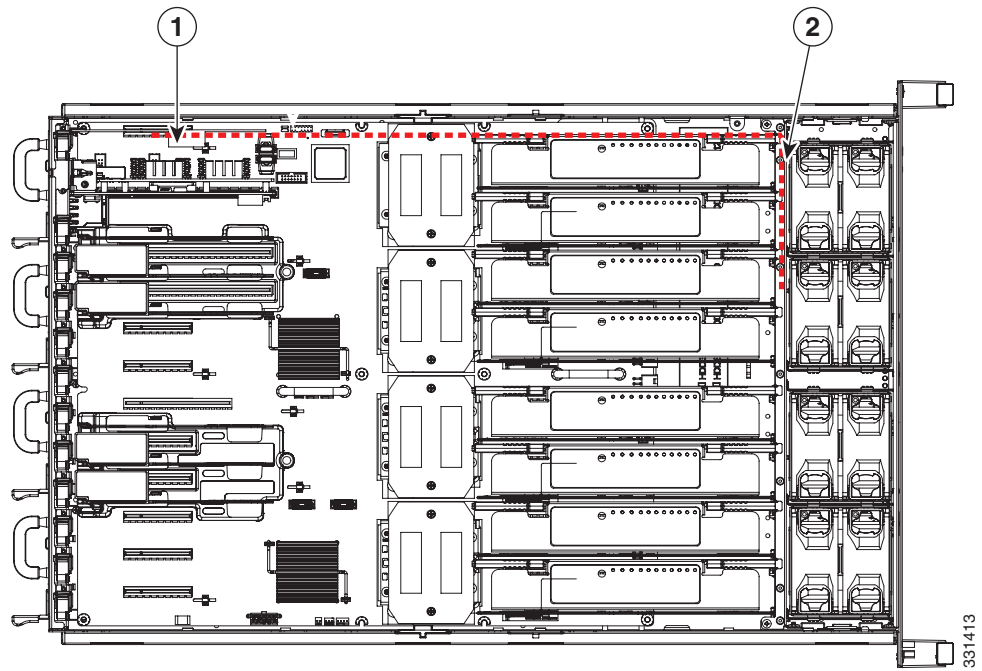
# RAID Controller Cabling

This section includes the following topics:

- [Cable Routing, page C-2](#)
- [Cisco UCS C460 Server Cabling, page C-4](#)

## Cable Routing

The red line in [Figure C-1](#) shows the recommended cable routing path from the backplane to the SAS riser connectors.

**Figure C-1 RAID Controller Connectors**

1	SAS riser slot (RAID controller)	2	Drive backplane
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## Cisco UCS C460 Server Cabling

The cable connections required for each type of supported controller are as follows:

### LSI MegaRAID SAS 9240-8i PCIe Card

This controller can control a maximum of 8 internal drives. The required two SAS cables are included with the server. Cable 1 controls drives 1–4 and cable 2 controls drives 5–8.

1. Connect SAS cable 1 from connector SAS1 on the controller to the SAS1 connector on the backplane.
2. Connect SAS cable 2 from connector SAS2 on the controller to the SAS2 connector on the backplane.

### LSI MegaRAID SAS 9260-8i PCIe Card

This controller can control a maximum of 12 internal drives. The required two SAS cables are included with the server. Cable 1 controls drives 1–6 and cable 2 controls drives 7–12.

1. Connect SAS cable 1 from connector SAS1 on the controller to the SAS1 connector on the backplane.
2. Connect SAS cable 2 from connector SAS2 on the controller to the SAS2 connector on the backplane.

## Restoring RAID Configuration After Replacing a RAID Controller

When you replace a RAID controller, the RAID configuration that is stored in the controller is lost. Use the following procedure to restore your RAID configuration to your new RAID controller.

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- Step 1** Replace your RAID controller. See [Replacing a SAS Riser \(RAID Controller\)](#), page 3-16.
- Step 2** If this was a full chassis swap, replace all drives into the drive bays, in the same order that they were installed in the old chassis.
- Step 3** If Quiet Boot is enabled, disable it in the system BIOS.
- Step 4** Reboot the server and watch for the prompt to press F.



**Note**

For newer RAID controllers, you are not prompted to press F. Instead, the RAID configuration is imported automatically. In this case, skip to [Step 7](#).

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- Step 5** Press F when you see the following on-screen prompt:
- ```
Foreign configuration(s) found on adapter.
Press any key to continue or 'C' load the configuration utility,
or 'F' to import foreign configuration(s) and continue.
```
- Step 6** Press any key (other than C) to continue when you see the following on-screen prompt:
- ```
All of the disks from your previous configuration are gone. If this is
an unexpected message, then please power of your system and check your cables
to ensure all disks are present.
Press any key to continue, or 'C' to load the configuration utility.
```

**Step 7** Watch the subsequent screens for confirmation that your RAID configuration was imported correctly.

- If you see the following message, your configuration was successfully imported. The LSI virtual drive is also listed among the storage devices.
- If you see the following message, your configuration was not imported. This can happen if you do not press F quickly enough when prompted. In this case, reboot the server and try the import operation again when you are prompted to press F.

```
N Virtual Drive(s) found on host adapter.
```

```
0 Virtual Drive(s) found on host adapter.
```

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## For More Information

The LSI utilities have help documentation for more information about using the utilities.

For basic information about RAID and for using the utilities for the RAID controller cards, see the [Cisco UCS Servers RAID Guide](#).

Full LSI documentation is also available:

- LSI MegaRAID SAS Software User's Guide (for LSI MegaRAID)

[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/3rd-party/lsi/mrsas/userguide/LSI\\_MR\\_SAS\\_SW\\_UG.pdf](http://www.cisco.com/en/US/docs/unified_computing/ucs/3rd-party/lsi/mrsas/userguide/LSI_MR_SAS_SW_UG.pdf)

■ For More Information