MegaRAID® SAS 9260CV-4i and SAS 9260CV-8i RAID Controllers

Quick Installation Guide

49660-00B

Revision History

Version and Date	Description of Changes
49660-00 Rev. B, July 2011	Second release of document.
49660-00 Rev. A, December 2010	Initial release of document.

Quick Installation Guide

MegaRAID SAS 9260CV-4i RAID Controller and SAS 9260CV-8i RAID Controller

Thank you for purchasing the LSI™ MegaRAID® 6Gb/s SAS 9260CV-4i RAID controller or the LSI MegaRAID 6Gb/s SAS 9260CV-8i RAID controller. Your MegaRAID controller provides reliability, high performance, and fault-tolerant drive subsystem management.

Before you install your RAID controller, please take a few minutes to read this quick installation guide. This guide documents how to install the RAID controller and connect the CacheVault Flash Module (CVFM01)to the remote CacheVault Power Module (CVPM01). If you need more information about any topic covered in this guide, refer to the related documents on your *MegaRAID Universal Software Suite* CD.

Figure 1 shows the MegaRAID SAS 9260CV-8i RAID controller.

Figure 1:   MegaRAID SAS 9260CV-8i RAID Controller
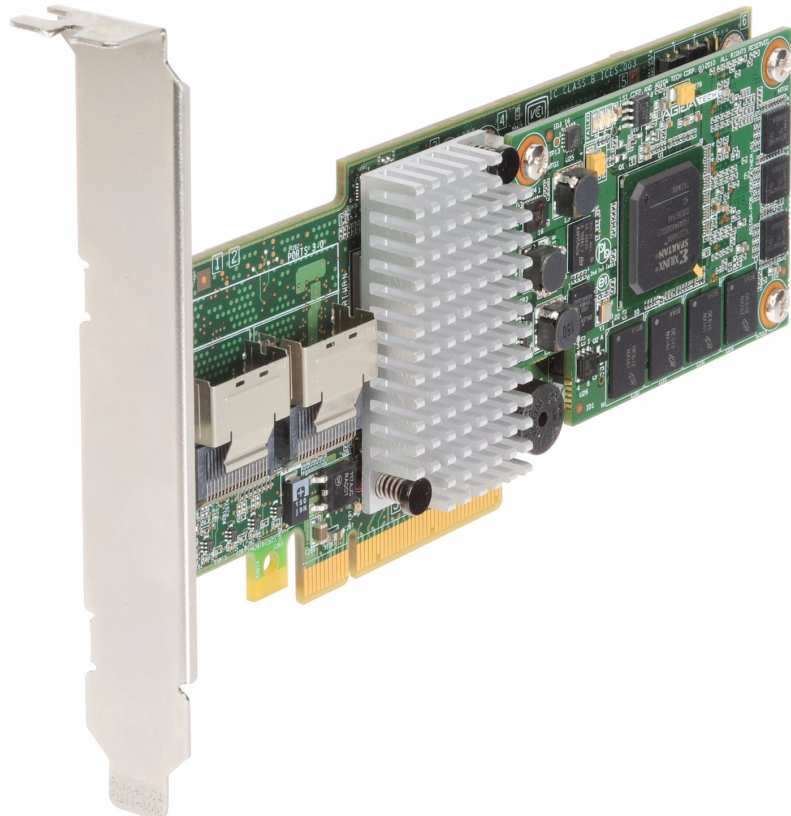
Product Overview

This MegaRAID SAS 9260CV RAID controller is a SAS2108 RAID-on-Chip (ROC)-based, low-profile, PCIe 2.0 internal RAID Host Bus Adapter (HBA) with vertical internal HDD connectors and non-volatile memory module with cache offload.

The controller offers a 6-Gb/s data transfer rate with the following options:

- The SAS 9260CV-4i RAID controller controls four internal SAS or SATA ports through one SFF-8087 x4 internal connector.
- The SAS 9260CV-8i RAID controller controls eight internal SAS or SATA ports through two SFF-8087 x4 internal connectors.

The MegaRAID SAS RAID controller has a CacheVault Flash Module. This includes on-board 512MB non-volatile DDR2 800MT/s memory. The CVFM01 connects to a remote CVPM01 power module. The CVPM01 provides power while the contents of the DRAM cache are being transferred to NAND flash in the event of power or server failure.

The CVPM01 unit is an intelligent backup power supply solution. It provides capacitor charge maintenance and capacitor health monitoring functions similar to those of an intelligent Battery Backup Unit (iBBU). The CVPM01 unit provides sufficient energy to transfer the cache memory contents from DRAM to a non-volatile flash memory array on the CVFM01 for cache data retention up to three years.

NOTE: Record your controller serial number in a safe location in case you need to contact LSI.

NOTE: SATA II is the only type of SATA supported by this RAID controller.

Installing the RAID Controller

⚠️ **CAUTION** Back up your data before changing your system configuration. Otherwise, you might lose data.

1. **Unpack the RAID Controller**

   Unpack the RAID controller in a static-free environment. Remove it from the antistatic bag, and inspect it for damage. If the RAID controller appears to be damaged, or if the *MegaRAID Universal Software Suite* CD is missing, contact LSI or your MegaRAID OEM support representative.

   The CD contains utility programs, device drivers for various operating systems, and the following documentation:

   — **MegaRAID 6Gb/s SAS RAID Controllers User Guide**
   — **MegaRAID SAS Software User Guide**
   — **MegaRAID Advanced Services Hardware Key Quick Installation Guide**
   — **MegaRAID SAS Device Driver Installation User Guide**
   — **Cache Backup Products for MegaRAID SAS RAID Controllers User Guide**
   — **Software license agreement**

2. **Prepare the Computer**

Turn off the computer, and unplug the power cords from the rear of the power supply. Remove the cover from the computer.

> ⚠️ **CAUTION**   Before you install the RAID controller, make sure that the computer is disconnected from the power and from any networks.

3. **Review the Jumpers and the Connectors**

   Figure 2 shows the location of the jumpers and the connectors on the RAID controller. The jumpers are set at the factory, and you do not usually need to change them.

> **NOTE:** The SAS 9260CV-4i RAID controller does not contain the JT2B1 connector, which supports ports 4–7. The SAS 9260CV-8i RAID controller contains the JT2B1 connector.

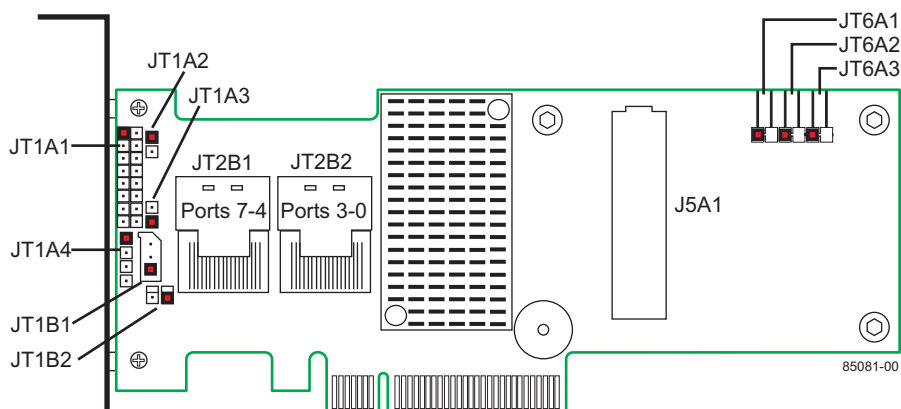**Figure 2:   Layout of the MegaRAID SAS 9260CV-8i RAID Controller**

Table 1 describes the jumpers and the connectors on the RAID controller.

> **NOTE:** Pin 1 on the headers and connectors is highlighted in red in Figure 2.
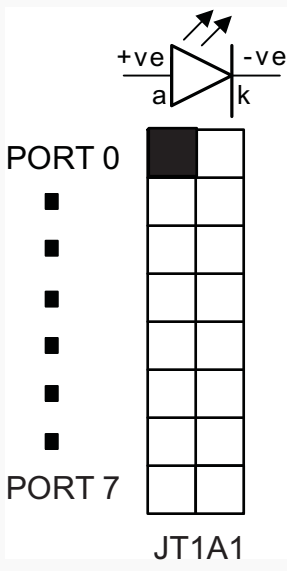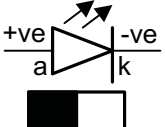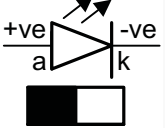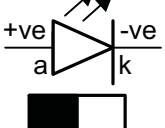
Table 1: Jumpers and Connectors

Jumper/ Connector	Type	Description
J5A1	Board-to-board mezzanine connector	Non-volatile memory module interface The RAID controller is attached directly to the CVFM01 non-volatile memory module using the J5A1 board-to-board mezzanine connector.
JT1A1	LED Locate and Fault Indication header Ports 3-0 Ports 7-4 JT1A1	2x8-pin header Connects to an LED array that indicates whether a drive is in a fault condition. There is one LED per port. When lit, each LED indicates that the corresponding drive has failed or is in the Unconfigured-Bad state. The LEDs function in a direct-attach configuration (there are no SAS expanders). Direct attach is defined as a maximum of one drive connected directly to each port. **NOTE:** This is a 2x4 pin header on the SAS 9260CV-4i RAID controller, for ports 3-0.
JT1A2	LSI Internal use header	Reserved for LSI internal use.
JT1A3	SBR Firmware Recovery header	2-pin header The SBR FW recovery header is used when SBR corruption is suspected. Installing the jumper allows the unit to boot while bypassing the SBR information. You can then reprogram the SEEPROM using external utility software. No jumper is present for normal operation.
JT1A4	Serial UART header	Reserved for LSI internal use.
JT1B1	SEP Enclosure Support header	3-pin header Used for connection to the Port0 enclosure.
JT1B2	RAID Key Socket	2-pin header The RAID Key socket is used when a feature upgrade requires the use of a modular RAID Key to be installed to activate the feature.

Table 1:   Jumpers and Connectors (Continued)

Jumper/Connector	Type	Description
JT2B1	x4 SAS Ports 7–4 Mini-SAS 4i internal connector **NOTE:** The SAS 9260CV-4i RAID controller does not contain the JT2B1 connector.	SFF-8087 x4 internal mini SAS connector Connects the controller by cable to SAS drives or SATA 2 drives.
JT2B2	x4 SAS Ports 3–0 Mini-SAS 4i internal connector	SFF-8087 x4 internal mini SAS connector Connects the controller by cable to SAS drives or SATA 2 drives.
JT2B3	Standard edge card connector	The RAID controller interfaces with the host system though a standard edge card. This interface provides power to the controller and an I^2C interface connected to the I^2C bus for IPMI.
JT6A1	Global drive fault LED header +ve ▷ -ve a k JT6A1	2-pin connector Connects to an LED that indicates whether a drive is in a fault condition.
JT6A2	Hard disk drive activity LED header +ve ▷ -ve a k JT6A2	2-pin connector Connects to an LED that indicates activity on the drives connected to the controller.
JT6A3	Write pending LED header +ve ▷ -ve a k JT6A3	2-pin connector Connects to an LED that indicates when the data in the cache has yet to be written to the storage devices. Used when the write-back feature is enabled.

4. **Connect the RAID Controller to the CVFM01**

   To connect the CVFM01 flash memory module on the RAID controller to a remote CVPM01 unit, follow these steps.

   a. Mount the CVFM01 unit to the chassis of your computer based on the location and the type of mounting option.

> **NOTE:** Because server and workstation chassis vary from vendor to vendor, no standard mounting option for the CVPM01 unit exists that is compatible with the various system configurations. Authorized resellers and chassis manufacturers can customize the location of the power module to provide the most flexibility within various environments.

   b. With the controller on a flat, clean, static-free surface, ground yourself, and make sure the system is grounded.

   c. Remove the cable included in the RAID controller box.

   d. Insert one end of the cable into the 15-pin P3 cable connector on the CVFM01 and the other end into the 15-pin P1 cable connector on the remote CVPM01, as shown in Figure 3.

      Align the recessed triangle indicators on the connectors to make sure they are connected properly.

> **NOTE:** The cable connectors are polarized. You can insert them into the connectors on the flash module and the remote power module only if the rails on the cable connectors align with the slots on the other connectors. **Do not** force the cable into the 15-pin connectors. The cable end inserts into the connector with minimal resistance.

Figure 3:   Connecting the CVFM01 Flash Module to the Remote CVPM01 Power Module


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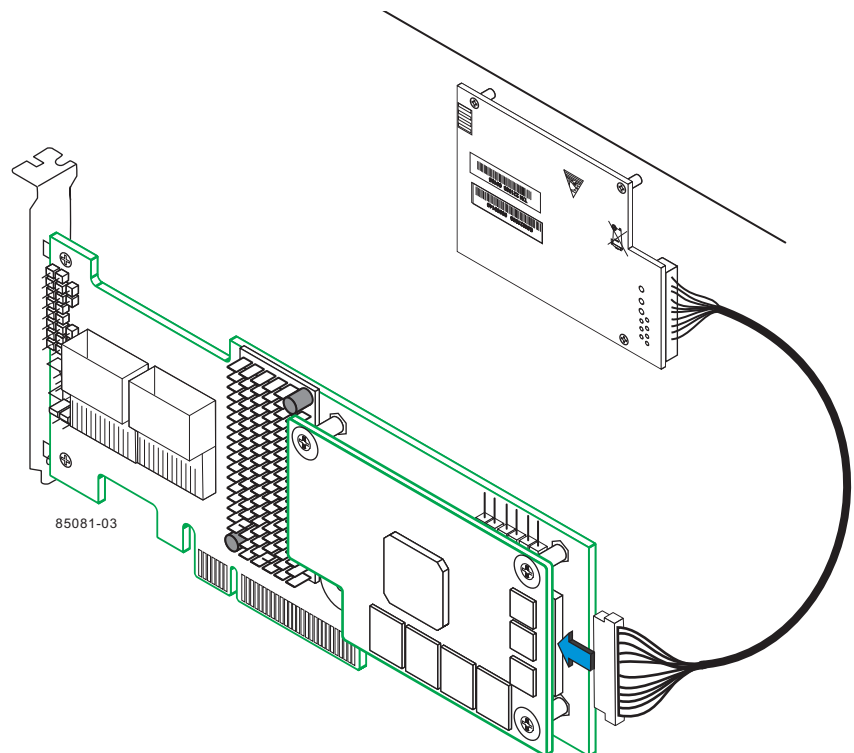
5. Install the RAID Controller

To install and secure the RAID controller, follow these steps.

a. Insert the controller into a PCI Express® slot on the motherboard, as shown in Figure 4.

b. Press down gently, but firmly, to seat the card correctly in the slot.

c. Secure the RAID controller to the computer chassis with the bracket screw.

NOTE: The MegaRAID SAS 9260CV-4i RAID controller and the MegaRAID SAS 9260CV-8i RAID controller are PCI Express x8 cards and they can operate in x8 or x16 slots. However, some PCIe slots support only PCIe graphics cards, and if you install a RAID controller, it will not function. Refer to the guide for your motherboard for information about the PCIe slot.

Figure 4:   Installing the MegaRAID SAS 9260CV-8i RAID Controller
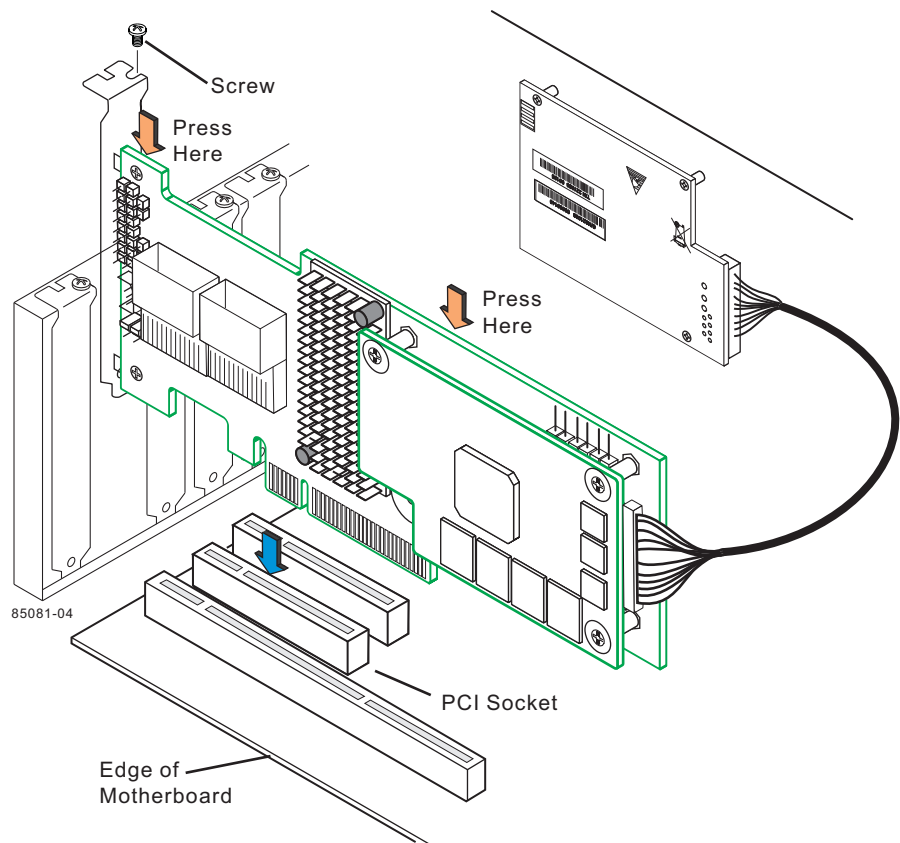
6. **Configure and Install the SAS Devices, SATA II Devices, or Both in the Host Computer Case**

   Refer to the documentation for the devices for any preinstallation configuration requirements.

7. **Connect the RAID Controller to the SAS Devices, SATA II Devices, or Both in the Host Computer Case**

   Use SAS cables to connect the RAID controller to SAS devices, SATA II devices, or both. See Figure 2 to view the connector locations.

NOTE: Refer to the **MegaRAID 6Gb/s SAS RAID Controllers User Guide** on the *MegaRAID Universal Software Suite* CD for detailed information about the SAS cables.

8. **Turn on the Power to the Computer**

   Reinstall the computer cover, and reconnect the power cords. Turn on the power to the computer.

   Make sure that the power is turned on to the SAS devices and the SATA II devices before or at the same time that the power to the host computer is turned on. If the power is turned on to the computer before it is turned on to the devices, the computer might not recognize the devices.

   The firmware takes several seconds to initialize. During this time, the controller scans the ports.

9. **Run the WebBIOS Configuration Utility**

   Run the WebBIOS Configuration Utility to configure the groups and the virtual drives. When the message `Press <Ctrl><H> for WebBIOS` appears on the screen, immediately press CTRL+H to run the utility.

NOTE: Refer to the **MegaRAID SAS Software User Guide** on the *MegaRAID Universal Software Suite* CD for detailed steps on configuring groups and virtual drives.

10. **Install the Operating System Driver**

   The controller can operate under various operating systems, but you must install the software drivers first.

   The *MegaRAID Universal Software Suite* CD includes the software drivers for the supported operating systems, along with documentation. You can view the supported operating systems and download the latest drivers for RAID controllers from the LSI web site at: http://www.lsi.com/cm/DownloadSearch.do. Access the download center, and follow the steps to download the driver.

NOTE: Refer to the **MegaRAID SAS Device Driver Installation User Guide** on the *MegaRAID Universal Software Suite* CD for more information about installing the driver. Make sure you use the latest service packs that are provided by the operating system manufacturer and review the `readme` file that accompanies the driver..

LEDs on the CVFM01 Flash Module

The LEDs on the CVFM01 flash module identify various system conditions and states, such as power states, activity states, and system condition. Table 2 identifies these conditions and states.

Table 2:   LED Status on the CVFM01 Flash Module

LED Name and Color	LED State	LED Meaning
DS1 - green	On	CVFM01 power is present.
	Off	CVFM01 power is not present.
DS2 - blue	Fast blink	A Power-on Restore action or a Force Restore action is in progress.
	Fast blink	A Power-off Save action or a Force Save action is in progress.
	On	When the Restore operation is complete, SDRAM has switched to host control
	Slow blink	The backup is complete and the residual capacitor charge is bleeding off.
	Off	The Save operation is complete.
DS5 - yellow	On	Fault indicated on CVFM01 cache offload system.
	Off	Normal operation.

LEDs on the CVPM01 Power Module

The LEDs on the CVPM01 power module identify various system conditions and states, such as power states, activity states, and system condition. Table 3 identifies these conditions and states.

Table 3:   LED Status on the CVPM01 Power Module

LED Name and Color	LED State	LED Meaning
D3 - green	On	12 volts of power are present.
	Off	12 volts of power are not present.
DS2 - green	Fast blink	The CVPM01 unit is charging.
	On	The CVPM01 unit has completed charging.
	Slow blink	The Save action is complete and residual energy is bleeding off.
	Off	The CVPM01 unit has completed discharging.
DS5 - yellow	On	Fault indicated on CVPM01 power module.
	Off	Normal Operation.

Supported RAID Levels

This RAID controller supports drive groups using the following RAID levels:

- **RAID 0 (data striping):** Data is striped across all drives in the group, enabling very fast data throughput. There is no data redundancy. All data is lost if any drive fails.

- **RAID 1 (drive mirroring):** Data is written simultaneously to both drives in the drive group, providing complete data redundancy if one drive fails. RAID 1 supports an even number of drives from 2 to 32 in a single span.

- **RAID 5 (drive striping with distributed parity):** Data is striped across all drives in the group. Part of the capacity of each drive stores parity information that reconstructs data if a drive fails. RAID 5 provides good data throughput for applications with high read request rates.

- **RAID 6 (drive striping with distributed parity across two drives):** Data is striped across all drives in the group and two parity drives are used to provide protection against the failure of up to two drives. In each row of data blocks, two sets of parity data are stored.

- **RAID 00 (data striping across RAID 0 drive groups):** RAID 00 is a spanned drive group that creates a striped set from a series of RAID 0 drive groups.

- **RAID 10 (RAID 1 and RAID 0 in spanned groups):** RAID 10 uses mirrored pairs of drives to provide complete data redundancy. RAID 10 provides high data throughput rates.

- **RAID 50 (RAID 5 and RAID 0 in spanned groups):** RAID 50 uses both parity and drive striping across multiple drives to provide complete data redundancy. RAID 50 provides high data throughput rates.

- **RAID 60 (RAID 6 and RAID 0 in spanned groups):** RAID 60 uses both distributed parity across two parity drives and drive striping across multiple drives to provide complete data redundancy and high fault tolerance.

NOTE: Refer to the **MegaRAID SAS Software User Guide** on the *MegaRAID Universal Software Suite* CD for more information about RAID levels

Technical Support

For assistance in installing, configuring, or running the your RAID controller, or the flash module, contact an LSI Technical Support representative.

Click the following link to access the LSI Technical Support page for storage and controller support:

http://www.lsi.com/support/storage/tech_support/index.html

From this page, you can send an email or call Technical Support, or submit a new service request and view its status.

Support Request:

http://www.lsi.com/support/support_form.html

Phone Support:

http://www.lsi.com/support/storage/phone_tech_support/index.html

1-800-633-4545 (North America)

00-800-5745-6442 (International)

NOTE: The international toll-free number does not require country-specific access codes.