

# LSI Logic MegaRAID®

SAS Device Driver

Installation



# **USER'S GUIDE**

## **MegaRAID<sup>®</sup> SAS Device Driver Installation**

**May 2006**

*Version 1.0*

**LSI LOGIC<sup>®</sup>**

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# Preface

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This manual is the primary reference for the operating system drivers provided with the LSI Logic MegaRAID® devices. It describes the drivers for all supported operating systems and explains how to install them.

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## Audience

This document is intended for people installing an operating system driver for a MegaRAID SAS controller.

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## Organization

This document has the following chapters:

- [Chapter 1, Overview](#), describes the MegaRAID SAS controller and lists the operating systems for which drivers are provided.
  - [Chapter 2, Windows Driver Installation](#), provides installation instructions for Windows operating systems.
  - [Chapter 3, Red Hat Linux 3.0 and 4.0 Driver Installation](#), provides installation instructions for Red Hat Linux.
  - [Chapter 4, SuSE Linux Enterprise Server \(SLES\) 9 Driver Installation](#), provides installation instructions for SLES Linux.
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## MegaRAID System Installation Sequences and Document Organization

The following table outlines the installation, configuration, and management sequences for a MegaRAID SAS system. Each sequence consists of a series of steps and operations that the reference manual explains. LSI Logic recommends performing the sequences in the order listed when you install and configure your SAS system.

Sequence	Task	Reference Manual
1	Understand RAID system theory and operation.	<i>MegaRAID Configuration Software User's Guide</i>
2	Install the MegaRAID SAS storage adapter and the related hardware.	<i>MegaRAID SAS Storage Adapters User's Guide</i>
3	Configure the physical arrays and logical devices using either the MegaRAID Configuration Utility (CU) or the WebBIOS CU.	<i>MegaRAID SAS Software User's Guide</i>
4	Install the MegaRAID SAS device drivers.	<i>MegaRAID SAS Device Driver Installation User's Guide</i>
5	Use the MegaRAID software tools to configure, monitor, and maintain storage configurations on LSI Logic SAS controllers. These tools make it easy for you to create and manage storage configurations.	<i>MegaRAID SAS Software User's Guide</i>

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## Related Publications

*MegaRAID SAS Storage Adapters User's Guide*,  
Document No. DB15-000336-01

This document explains how to install your MegaRAID SAS storage adapter in the host system. In addition, it provides the electrical and physical specifications, jumper definitions, and connector locations for the SAS storage adapters.

*MegaRAID SAS Software User's Guide*, Document No. DB15-000339-00

This document explains how to use the MegaRAID WebBIOS and Command Line Interface (CLI) utilities to configure, monitor, and maintain MegaRAID SAS RAID controllers and the storage-related devices connected to them.

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## Conventions Used in This Manual

Notation	Example	Meaning and Use
→	Start → Programs.	Used to indicate a series of selections in a GUI.
all caps	ALT+CTRL+DEL	Key presses display in all capital letters.

Notation	Example	Meaning and Use
Courier typeface	.nwk file	Names of commands, directories, filenames, and on-screen text are shown in Courier typeface.
bold typeface	<b>fd1sp</b>	In a command line, keywords are shown in bold, non-italic typeface. Enter them exactly as shown.
italics	<i>module</i>	In command lines and names, italics indicate user variables. Italicized text must be replaced with appropriate user-specified items. Enter items of the type called for, using lower case.
initial capital letters	Undo Edit Apply	Names of menu commands, options, check buttons, text buttons, options buttons, text boxes, list boxes, etc., are shown in text with initial capital lettering to avoid misreading. These elements may appear on your screen in all lower case.
ellipses	option...	In command formats, elements preceding ellipses may be repeated any number of times. Do not enter the ellipses. In menu items, if an ellipsis appears in an item, clicking that item brings up a dialog box.

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## Revision History

Document Number	Version/Date	Remarks
DB15-000358-00	Version 1.0 February 2006	Initial release of document.

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## Technical Support

LSI Logic provides technical support only for LSI Logic products purchased directly from LSI Logic or from an LSI Logic-authorized reseller. If you need help installing, configuring, or running your MegaRAID SAS controller, contact LSI Logic Technical Support at:

**E-mail:**

support@lsil.com

eurosupport@lsil.com (Europe)

**Phone Support:**

1-800-633-4545 (North America)

+44 1344 413 441 (Europe)

**Web Site:**

<http://www.lsillogic.com/support/>

If the MegaRAID SAS controller was installed as part of a system manufactured by a company other than LSI Logic, or if you purchased an LSI Logic product from an unauthorized reseller, call the technical support department of the computer manufacturer or the unauthorized reseller. LSI Logic does not provide direct technical support in these cases.

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# Chapter 1

## Overview

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This chapter provides an overview of the drivers for the MegaRAID controllers. It consists of the following sections:

- [Section 1.1, “Driver Description”](#)
- [Section 1.2, “Driver Names”](#)

Subsequent chapters in this manual provide detailed installation instructions for the operating systems. Use the latest updates provided by the operating system manufacturer and review the `readme` file that accompanies the driver for any updated information.

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## 1.1 Driver Description

You can install the MegaRAID SAS controller in any IBM AT-compatible computer that has a PCI Express local bus. The RAID controller can run under various operating systems.

To use the controller with these operating systems, you must install software drivers. LSI Logic provides software drivers for the following operating systems:

- Microsoft Windows 2000, XP, XP x64, Server 2003 (x86), Server 2003 (x64)
- Red Hat Linux versions 3.0 and 4.0
- SuSE SLES version 9

## 1.1.1 Driver Functions

MegaRAID provides drivers for the MegaRAID SAS RAID Storage Adapters, which bring 3.0 Gbit/s Serial Attached SCSI and 3.0 Gbit/s SATA II performance to host adapter, workstation, and server designs. The controllers support internal and external storage devices, which allows you to use a system that supports enterprise-class SAS and desktop-class SATA II drives.

The SAS controllers integrate eight high-performance SAS/SATA II PHYs and a PCI Express bus master DMA core. Each of the eight PHYs is capable of 3.0 Gbit/s SAS link rates, and 3.0 Gbit/s SATA II link rates.

The SAS RAID controllers support the SAS protocol as described in the *Serial Attached SCSI Standard, version 1.1*. The controllers also support the Serial ATA II (SATA II) protocol defined by the *Serial ATA specification, version 1.0a*. SATA II is an extension to SATA 1.0a.

The drivers do the following:

- Support the PCI Express protocol
- Support multiple RAID Storage Adapters (RSAs)
- Provide the ability to see newly configured logical drives in the configuration software utility without rebooting the system
- Allow random deletion of logical drives created using the MegaRAID software (see the *MegaRAID SAS Software User's Guide* for more information)
- Support use of the remaining array capacity by MegaRAID software.

## 1.1.2 Driver Updates

Because LSI Logic regularly updates device drivers, there might be a feature added to your driver that is not included in the most recent manual publication. If you have a question about a feature, consult the `readme` file that accompanies the driver, or contact your MegaRAID support representative. Be sure to use the latest Service Packs provided by the operating system manufacturer.

You can download the latest drivers and software on the LSI Logic web site: <http://www.lsillogic.com>. Access the download center and follow the steps to download the driver.

## 1.2 Driver Names

**Table 1.1** lists the device driver files for MegaRAID controllers. The driver files are available on the Universal Driver Suite CD that accompanied your MegaRAID controller. LSI Logic updates the MegaRAID device drivers frequently. To ensure you have the current version of this driver, download the driver from the LSI Logic web site: <http://www.lsillogic.com>. See the `readme` file that accompanies the driver for any updated information.

To make the driver diskette, extract the files from the Universal Driver Suite CD to a blank floppy diskette, or download the driver files from the LSI Logic web page and extract them to an empty floppy diskette. Label the diskette as the MegaRAID driver diskette for the given operating system.

**Table 1.1 MegaRAID Device Driver Files**

Operating System	SCSI Driver Filenames	Installation Reference
Windows 2000	<code>megasas.cat</code> , <code>megasas.sys</code> , <code>NODEV.INF</code> , <code>OEMSETUP.INF</code> , <code>TXTSETUP.OEM</code>	Chapter 2
Windows XP	<code>megasas.cat</code> , <code>megasas.sys</code> , <code>NODEV.INF</code> , <code>OEMSETUP.INF</code> , <code>TXTSETUP.OEM</code>	
Windows XP x64	<code>megasas.cat</code> , <code>megasas.sys</code> , <code>NODEV.INF</code> , <code>OEMSETUP.INF</code> , <code>TXTSETUP.OEM</code>	
Windows Server 2003 (x86)	<code>msas2k3.cat</code> , <code>msas2k3.sys</code> , <code>NODEV.INF</code> , <code>OEMSETUP.INF</code> , <code>TXTSETUP.OEM</code>	
Windows Server 2003 (x64)	<code>msas2k3.cat</code> , <code>msas2k3.sys</code> , <code>NODEV.INF</code> , <code>OEMSETUP.INF</code> , <code>TXTSETUP.OEM</code>	
Red Hat Linux 3	<code>megaraid_sas.o</code>	Chapter 3
Red Hat Linux 4	<code>megaraid_mm.ko</code> , <code>megasas_mbox.ko</code>	
SuSE Linux Enterprise Server 9	<code>megaraid_mm.ko</code> , <code>megasas_mbox.ko</code>	Chapter 4



# Chapter 2

## Windows Driver Installation

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This chapter describes the installation of the following Windows operating systems:

- Windows 2000
- Windows XP
- Windows XP x64
- Windows Server 2003 (x86)
- Windows Server 2003 (x64)

This chapter consists of the following sections:

- [Section 2.1, “Installing the Windows System Driver in a New Windows System”](#)
- [Section 2.2, “Installing or Updating the MegaRAID Driver in an Existing Windows System”](#)
- [Section 2.3, “Installing the Windows System Driver in a New Windows System”](#)

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## 2.1 Installing the Windows System Driver in a New Windows System

Perform the following steps to install the MegaRAID device driver in a new Windows system. The Windows operating system automatically adds the driver to the registry and copies the driver to the appropriate directory.

- Step 1. Start the Windows installation by booting from the appropriate Windows CD-ROM.



The system BIOS must support booting from a CD-ROM. BIOS settings might require changes to allow CD-ROM booting. See your system documentation.

- Step 2. Press F6 when the following displays at the bottom of the screen:

"Press F6 if you need..."

Note: You must press F6 for the system to recognize the new driver.

- Step 3. Select "S" to specify an additional device when the screen displays:

"Setup could not determine the type of one or more mass storage devices..."

The system prompts for the manufacturer-supplied hardware support disk.

Note: If the screen does not display this message after you press F6, then the setup program did not recognize the F6 command. Reboot the system, and return to [step 2](#).

- Step 4. Insert the driver diskette containing the Windows device driver and press ENTER.
- Step 5. Select the appropriate Windows adapter from the menu by using the arrow key to highlight it, and then press ENTER to proceed.
- Step 6. Press ENTER again to proceed.
- Step 7. Return to the Windows Setup screen.  
Windows displays a "Welcome to Setup" window.
- Step 8. Press ENTER to continue.
- Step 9. Press C to continue the Microsoft Windows installation procedure.
- Step 10. Follow the Windows installation procedure.
- Step 11. Repeat this process for all the adapters on your system.

---

## 2.2 Installing or Updating the MegaRAID Driver in an Existing Windows System

Perform the following steps to install or update the MegaRAID device driver in an existing Windows system:

Step 1. Boot the Windows operating system.

The Found New Hardware Wizard starts.

Step 2. Click the Next button and insert the driver diskette into the A:\ drive.

Step 3. Click the Search for a Suitable Driver... button, and click Next.

Step 4. Click the Next button.

In some cases, a message displays saying that this driver is not digitally signed. This message informs you that a nonsigned driver is being installed. If this message displays, click Continue Anyway.

Step 5. Select Floppy only, and then click the Next button in the Driver Files Search Results window.

Step 6. Click the Finish button to complete the driver installation, then repeat this process for all the adapters on your system.

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## 2.3 Installing the Windows System Driver in a New Windows System

Perform the following steps to install the MegaRAID device driver in a new Windows system. Windows automatically adds the driver to the registry and copies the driver to the appropriate directory.

Step 1. Start the Windows installation by booting from the Windows CD-ROM.

The system BIOS must support booting from a CD-ROM. BIOS settings might require changes to allow CD-ROM booting. See your system documentation.

Step 2. Press F6 when the following displays at the bottom of the screen:

"Press F6 if you need..."

Note: You must press F6 for the system to recognize the new driver.

Step 3. Select "S" to specify an additional device when the screen displays:

"Setup could not determine the type of one or more mass storage devices..."

The system prompts for the manufacturer-supplied hardware support disk.

Note: If the screen does not display this message after you press F6, then the setup program did not recognize the F6 command. Reboot the system, and return to [step 2](#).

Step 4. Insert the driver diskette containing the Windows device driver and press ENTER.

Step 5. Select the Windows adapter from the menu by using the arrow key to highlight it and pressing ENTER.

Step 6. Press ENTER again to proceed.

Step 7. Return to the Windows Setup screen.

Windows displays a "Welcome to Setup" window.

Step 8. Press ENTER to continue.

Step 9. Follow the Microsoft Windows installation procedure by pressing C to continue.

Step 10. Repeat this process for all the adapters on your system.

# Chapter 3

## Red Hat Linux 3.0 and 4.0 Driver Installation

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This chapter describes the installation of the device driver in new Red Hat Linux 3.0 and 4.0 systems and the update to the Red Hat Linux driver on an existing Red Hat Linux system. It consists of the following sections:

- [Section 3.1, “Installing the Driver in a New Red Hat Linux System”](#)
- [Section 3.2, “Adding the Red Hat Linux Driver to an Existing Installation”](#)
- [Section 3.3, “Updating the Red Hat Linux System Driver”](#)

Refer to the release notes that accompanied the driver for information on an existing Red Hat Linux system.

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### 3.1 Installing the Driver in a New Red Hat Linux System

Perform the following steps to install the MegaSAS device driver in a new Red Hat Linux system:

- Step 1. Create a driver diskette using the Linux driver image from the Universal Driver Suite CD.
- Step 2. Boot to CD-ROM with Disk 1.
- Step 3. Type:  

```
linux dd
```
- Step 4. Insert the driver diskette.  
The utility locates and loads the driver for your device.
- Step 5. Press ALT+CTRL+F4 to verify the driver is loaded.
- Step 6. Follow the Red Hat Linux installation procedure to complete the installation.

---

## 3.2 Adding the Red Hat Linux Driver to an Existing Installation

Perform the following procedure to add the Red Hat Linux 4.0 driver to an existing installation:

Step 1. Power-up the system.

The system will initialize hardware.

Step 2. The system detects the controller and invokes Kudzu, the Red Hat Linux hardware configuration utility. The following RAID controller is added to your system:

```
LSI Logic / Symbios Logic MegaSAS
```

You can select one of the following options:

- Configure the device.
- Ignore the device. No configuration will be added, but you will not be prompted if the device is detected on subsequent reboots.
- Do nothing. No configuration will be added, and the device will show up as new if it is detected on subsequent reboots.

Step 3. Highlight the Configure tab, and press ENTER.

The system configures the controller and installs the appropriate driver in the kernel.

Step 4. The system boots and displays the devices connected or configured on the controller.

---

## 3.3 Updating the Red Hat Linux System Driver

Perform the following procedure to update to the latest version of the driver:

- Step 1. Boot the system.
- Step 2. Go to Console (your terminal GUI).
- Step 3. Run Dynamic Kernel Module Support (DKMS) and follow the update instructions on the screen.

Note: You may need to be download the DKMS package online.

- Step 4. Run RPM (package manager) and follow the on-screen instructions.



# Chapter 4

## SuSE Linux Enterprise Server (SLES) 9 Driver Installation

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This chapter describes how to install the SuSE Linux Enterprise Server (SLES) 9.0 driver in the RAID-configured drives. It consists of the following sections:

- [Section 4.1, “Installing the Driver in a New SuSE SLES Linux System”](#)
  - [Section 4.2, “Updating the SuSE SLES 9 Driver”](#)
- 

### 4.1 Installing the Driver in a New SuSE SLES Linux System

**Note:** If you use Service Pack (SP) 1 or SP 2, you need to load the driver. If you use SP 3 RC 2, the MegaSAS driver is already on the CD.

Perform the following steps to install the MegaRAID device driver in a new SuSE SLES Linux system:

Step 1. Boot the server with the SLES SP CD-ROM Disk 1.

The system BIOS must support booting from a CD-ROM. BIOS settings might require changes to allow CD-ROM booting. See your system documentation.

Step 2. At the installation message, press F6, then select `Installation` and press ENTER.

**Note:** Follow screen instructions to switch between operating system CDs and operating system CD service packs.

Step 3. Put the driver update diskette in the drive bay, and install normally.



The installation process should pick up the new driver from the floppy diskette.

Step 4. Press ALT+CTRL+F4 to see whether the driver is loaded.

---

## 4.2 Updating the SuSE SLES 9 Driver

Perform the following procedure to update to the latest version of the SuSE SLES 9 Linux driver:

Step 1. Boot the system.

Step 2. Go to Console (your terminal GUI).

Step 3. Run Dynamic Kernel Module Support (DKMS) and follow the update instructions on the screen.

Note: You may need to be download the DKMS package online.

Step 4. Run RPM (package manager) and follow the update instructions on the screen.

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