

# **Rocket RAID 154x/1640 Controller**

## **SLES Linux**

### **Installation Guide**

Version 1.1

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## Table of Contents

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<b>1 Overview .....</b>	<b>1</b>
<b>2 Installing SLES Linux on RR154x/1640 Controller.....</b>	<b>1</b>
Step 1 Prepare Your Hardware for Installation.....	1
Step 2 Check System BIOS Settings.....	1
Step 3 Prepare the Driver Diskette.....	1
Step 4 Install SLES Linux.....	2
<b>3 Installing RR154x/1640 Driver on an Existing System.....</b>	<b>2</b>
Step 1 Update GRUB .....	2
Step 2 Install the Driver Module.....	3
Step 3 Test the Driver Module .....	3
Step 4 Configure System to Automatically Load the Driver.....	4
Step 5 Configure System to Mount Volumes when Startup .....	4
<b>4 Updating the Driver .....</b>	<b>4</b>
<b>5 Installing RAID Management Software.....</b>	<b>5</b>
<b>6 Uninstalling.....</b>	<b>5</b>

# 1 Overview

The purpose of this document is to provide clear instructions on how to install and use Rocket RAID 154x/1640 Controller on SLES Linux system.

## 2 Installing SLES Linux on RR154x/1640 Controller

If you would like to install SLES Linux onto drives attached to RR154x/1640 controller, please perform the following operations:

### Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR154x/1640 controller, you can use RR154x/1640 BIOS Setting Utility to configure your hard disks as RAID arrays, or just use them as single disks.

Before installation, you must remove all the disk drives, which are not physically attached to RR154x/1640 controller, from your system.

#### Note

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If you have other SCSI adapters installed, you must make sure the RR154x/1640 controller BIOS will be loaded firstly. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

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### Step 2 Check System BIOS Settings

In your system BIOS SETUP menu, change **Boot Sequence** in such a way that the system will first boot from floppy or CDROM, and then from SCSI. Refer to your BIOS manual to see how to set boot sequence.

If your BIOS settings do not support such a boot sequence, you can first set it to boot from floppy or CDROM. After you finish installation, set SCSI as the first boot device to boot up the system.

### Step 3 Prepare the Driver Diskette

The driver diskette is provided as an image file (slesdd.img).

On a DOS or Windows system, you can make the driver diskette using rawrite.exe. It can be found on the SLES Linux CD (under /dosutils). Just run it under a command window and follow its prompt.

On a Linux system, you can use the “dd” command to make the driver diskette. Insert a floppy disk into the floppy drive and type the command:

```
# dd if=SLESdd.img of=/dev/fd0
```

## Step 4 Install SLES Linux

- 1) Start installing by booting from SLES installation CD.
- 2) When CD boots, select "Installation" option and press F6 to load the driver.
- 3) Insert the Driver Disk when it displays "Please insert the Driver Update floppy".
- 4) When Diver Update Menu pop-up, press "OK" and "back" for back to installer.
- 5) For SLES 9.x, type "**hde=noprobe hdf=noprobe hdg=noprobe hdh=noprobe hdi=noprobe hdj=noprobe hdk=noprobe hdl=noprobe**" and then press "**enter**".

For SLES 10.x, type "**brokenmodules=hpt366**" and press enter.

- 6) Continue the installation as normal. You can refer to SLES Linux documents about OS installation.

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### Additional Installation Notes

1. The system device mapping order is the same as the order shown in RR154x/1640 BIOS Setting Utility. If you have no other SCSI adapters installed, the device marked as "BOOT" or "HDD0" will be /dev/sda, "HDD1" will be /dev/sdb, "HDD2" will be /dev/sdc, etc. When creating mount points, you must mount /boot on /dev/sda.
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## 3 Installing RR154x/1640 Driver on an Existing System

If you are currently running Linux and would like to access drives or arrays attached to the Rocket RAID 154x/1640 controller, you can perform the following steps.

### Note

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If you use a SCSI adapter to boot your system, you must make sure the RR154x/1640 controller BIOS will be loaded after that adapter's BIOS. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

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## Step 1 Update GRUB

For SLES 9.x, you must add below parameters to /boot/grub/menu.lst:

E.g.

```
default=0
timeout=8
title Linux
```

```
kernel (hd0,1)/vmlinux root=/dev/hda1 hde=noprobe
hdf=noprobe hdg=noprobe hdh=noprobe hdi=noprobe hdj=noprobe
hdk=noprobe hdl=noprobe
initrd (hd0,1)/initrd
```

you must update the initrd file to prevent hpt366 module to detect the hard drive on the RR154x/1640.

For SLES 10.x, please remove hpt366.ko from both initrd image and /lib/modules/.../kernel/drivers/ide/pci directory:

- Check /etc/sysconfig/kernel for INITRD\_MODULES=... line. If hpt366 module is configured you should remove it and run “**mkinitrd**” to recreate the initrd image.
- Remove /lib/modules/`uname -r`/kernel/drivers/ide/pci/hpt366.ko.

Then reboot the system to make new kernel parameter take effect.

## Step 2 Install the Driver Module

The driver modules are packed in file **/linux/suse /*[arch]*-*[version]*/install/update.tar.gz** on the driver diskette. The following example shows how to extract the driver modules for SLES 9 from driver diskette:

```
# mount /dev/fd0 /media/floppy
# cd /
# tar xzf /media/floppy/linux/suse/i386-sles9/install/update.tar.gz
```

The driver modules will be extracted to directory  
/lib/modules/*[kernel-ver]*/kernel/drivers/scsi/

## Step 3 Test the Driver Module

You can test out the module to ensure that it works for your system by typing in the command “**insmod hpt374.ko**”.

Sometimes insmod will report “**unresolved symbols**” when you attempt to load the module. This can be caused by two ways:

- 1) The SCSI module is not loaded in kernel. Try to load SCSI modules first.

E.g.

```
# modprobe sd_mod
# insmod hpt374.ko
```

- 2) You are using a kernel that is build off a different configuration with the driver. In this case the precompiled drivers cannot be used. You can build a driver for your kernel using the OpenSource package for RocketRAID 154x/1640 controller.

To ensure the module has been loaded successfully, you can check the driver status by typing in the command “**cat /proc/scsi/hpt374/x**”, where x is the filename you found

under `/proc/scsi/hpt374/`. You should see the driver banner and a list of attached drives. You can now access the drives as a SCSI device (the first device is `/dev/sda`, then `/dev/sdb`, etc.).

### Example

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You have configured a RAID 1/0 array using 4 disks. It will be registered to system as device `/dev/sda`. You can use “**fdisk /dev/sda**” to create a partition on it, which will be `/dev/sda1`, and use “**mkfs /dev/sda1**” to setup a file system on the partition. Then you can mount `/dev/sda1` to somewhere to access it.

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## Step 4 Configure System to Automatically Load the Driver

Most likely, you will not want to type in “**insmod hpt374**” each time you boot up the system. You can add the driver to the initial RAM disk image to load the driver at boot time:

- 1) Edit file `/etc/sysconfig/kernel` and add `hpt374` module to the line, remove the `hpt366` if it exists. `INITRD_MODULES=...`, e.g:

**INITRD\_MODULES="reiserfs hpt374"**

- 2) Run `depmod` to update module configuration:

**# depmod**

- 3) Run `mkinitrd` to update the `initrd` file:

**# mkinitrd**

- 4) If you are using `lilo` boot loader, run `lilo` again:

**# lilo**

## Step 5 Configure System to Mount Volumes when Startup

Now you can inform the system to automatically mount the array by modifying the file `/etc/fstab`. E.g. You can add the following line to tell the system to mount `/dev/sda1` to location `/mnt/raid` after startup:

<code>/dev/sda1</code>	<code>/mnt/raid</code>	<code>ext2</code>	<code>defaults</code>	<code>0 0</code>
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## 4 Updating the Driver

To update the driver, simply reinstall the driver following the steps in previous section, “**Install RR154x/1640 Driver on an Existing System**”.

If the driver is loaded in `initrd` (e.g. when system is installed on the controller), you need to run `mkinitrd` to update the `initrd` file. Also, if you are using `lilo` boot loader, you need to run `lilo` again.

## 5 Installing RAID Management Software

HighPoint RAID Management Software is used to configure and keep track of your hard disks and RAID arrays attached to RR154x/1640 controller. Installation of the management software is optional but recommended.

To configure HighPoint RAID Management Software to work with RR154x/1640 driver, you should setup `/etc/hptcfg` to be the driver name:

```
# echo hpt374 > /etc/hptcfg
```

Please refer to HighPoint RAID Management Software documents for more information.

## 6 Uninstalling

You can only uninstall the driver when your system is not booting from devices attached to RR154x/1640 controller. Just remove the lines you added to `/etc/modules.conf` and `/etc/fstab`.