Rocket RAID 222x Controller

SuSE Linux

Installation Guide

Version 1.01

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1 Overview

The purpose of this document is to provide clear instructions on how to install and use Rocket RAID 222x Controller on SuSE Linux system.

2 Installing SuSE Linux on RR222x Controller

If you would like to install SuSE Linux onto drives attached to RR222x controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR222x controller, you can use RR222x 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 RR222x controller, from your system.

Note

If you have other SCSI adapters installed, you must make sure the RR222x 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.

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 (susedd.img).

On a DOS or Windows system, you can make the driver diskette using rawrite.exe. It can be found on the SuSE 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=susedd.img of=/dev/fd0**

Step 4 Install SuSE Linux

1) Start installing by booting from SuSE installation CD.

2) When CD boots, you need to press a key to update driver and select Installation option. For SuSE 8.x, press Alt; For SuSE9.0, press F3; For SuSE Linux 9.1/9.2, press F6 to load the driver; For SuSE 9.3/10.0, press F5.

3) Insert the Driver Disk when it displays "Please insert the Driver Update floppy".

   Note: For SuSE 9.1 x86_64, the setup kernel doesn't include a floppy controller driver so the floppy drive is not accessible. You have to use a USB floppy to load the driver.

4) For SuSE 8.1 SMP Installation type "**acpi=off**" and then press "**enter**"; for SuSE 8.2 Installation select "**Installation**" and then press "**enter**"; for others just press "**enter**".

5) If you are not installing SuSE 9.0, just skip this step. When Diver Update Menu pop-up, press "OK" and "back" for back to installer.

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

Additional Installation Notes

1. The system device mapping order is the same as the order shown in RR222x 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.

2. For SuSE 8.2, if you choose GRUB as boot loader, it's recommended to create a separate partition for /boot. Otherwise the GRUB installation may fail.

3. The driver may work incorrectly on some specific motherboard, such as DFI77B VIA KT400. You can type "**acpi=off**" when a prompted label "**boot:**" appears. When "**Error occurred while installing GRUB**" dialog appears, you can change boot loader from GRUB to LILO.

4. Since SuSE9.1 boot installation kernel does not load the driver for common floppy controller during installation, so it is necessary to install a USB floppy drive to load additional driver.

3 Installing RR222x Driver on an Existing System

If you are currently running Linux and would like to access drives or arrays attached to the Rocket RAID 222x controller, you can perform the following steps.

Note

1. If you use a SCSI adapter to boot your system, you must make sure the RR222x 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.

2. The driver may work incorrectly on some specific motherboard, such as DFI77B KT400. You can add "**acpi=off**" kernel parameter in the /boot/grub/menu.lst:

    kernel (hd0,1)/vmlinuz root=/dev/hda1 **acpi=off**

    initrd (hd0,1)/initrd

Step 1 Update Grub

If you are running **SuSE Linux 8.1 SMP System,** you must update /boot/grub/menu.lst first.

```
E.g.
   default=0
   timeout=8
   title Linux
        kernel (hd0,1)/vmlinux root=/dev/hda1 acpi=off
        initrd (hd0,1)/initrd
```

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 SuSE 8.2 from driver diskette:

> # **mount /dev/fd0 /mnt/floppy**
>
> # **cd /**
>
> # **tar xfz /mnt/floppy/linux/suse/i386-8.2/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 hptmv6**".

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.   # **insmod scsi_mod**
>
>   # **insmod sd_mod**
>
>   # **insmod hptmv6**

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 OpenBuild package for RocketRAID 222x controller.

To ensure the module has been loaded successfully, you can check the driver status by typing in the command "**cat /proc/scsi/hptmv6/x**", where x is the filename you found under /proc/scsi/hptmv6/. 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

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.

Step 4 Configure System to Automatically Load the Driver

Most likely, you will not want to type in "**insmod hptmv6**" 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 hptmv6 module to the line INITRD_MODULES=…, e.g:

   INITRD_MODULES="reiserfs hptmv6"

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:

   /dev/sda1   /mnt/raid   ext2   defaults   0 0

4 Monitoring the Driver

Once the driver is running, you can monitor it through the Linux proc file system support. There is a special file under /proc/scsi/hptmv6/. Through this file you can view driver status and send control commands to the driver.

Note

The file name is the SCSI host number allocated by OS. If you have no other SCSI cards installed, it will be 0. In the following sections, we will use x to represent this number.

Checking Devices Status

Using the following command to show driver status:

cat /proc/scsi/hptmv6/x

This command will show the driver version number, physical device list and logical device list.

5 Updating the Driver

To update the driver, simply reinstall the driver following the steps in previous section, " **Install RR222x Driver on an Existing System** ".

Replace the driver module hptmv6.ko in the /lib/modules/[*kernel-ver*]/kernel/drivers/scsi/. 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.

6 Installing RAID Management Software

HighPoint RAID Management Software is used to configure and keep track of your hard disks and RAID arrays attached to RR222x controller. Installation of the management software is optional but recommended.

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

7 Uninstalling

Uninstalling the Driver

You can only uninstall the driver when your system is not booting from devices attached to RR222x controller. Just remove the the added before in the file hptmv6 from the file /etc/sysconfig/kerne and /etc/fstab, then, then the new initrd file.