Rocket RAID 182x Controller

SLES Linux

Installation Guide

Version 1.0

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1 Overview

The purpose of this document is to provide clear instructions on how to install and use Rocket RAID 182x Controller on SLES Linux system.

2 Installing SLES Linux on RR182x Controller

If you would like to install SLES Linux onto drives attached to RR182x controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR182x controller, you can use RR182x 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 RR182x controller, from your system.

Note

If you have other SCSI adapters installed, you must make sure the RR182x 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 (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) Continue the installation as normal. You can refer to SLES Linux documents about OS installation.

Additional Installation Notes

1. The system device mapping order is the same as the order shown in RR182x 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.

3 Installing RR182x Driver on an Existing System

If you are currently running Linux and would like to access drives or arrays attached to the Rocket RAID 182x controller, you can perform the following steps.

Note

1. If you use a SCSI adapter to boot your system, you must make sure the RR182x 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 **SLES 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 SLES 9 from driver diskette:

> # **mount /dev/fd0 /mnt/floppy**
> # **cd /**
> # **tar xfz /mnt/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 hptmv**".

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 hptmv**

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 182x controller.

To ensure the module has been loaded successfully, you can check the driver status by typing in the command "**cat /proc/scsi/hptmv/x**", where x is the filename you found under /proc/scsi/hptmv/. 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 hptmv**" 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 hptmv module to the line
    INITRD_MODULES=…, e.g:

    INITRD_MODULES="reiserfs hptmv"

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/hptmv/. 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/hptmv/x

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

Rebuilding a Critical Array

A RAID 1 array may become critical after a disk member fails. When an array is in
critical status, it will loss the ability of fault tolerance until you finish rebuilding.

Generally rebuilding will automatically start if you have a spare disk or you have put
back the failed disk. In these cases, the array only needs to be synchronized to ensure

data consistency. If the array is broken, you must first add a disk to the array. To add a disk to an array and start rebuilding, you can use the following command:

> # echo "hpt rebuild a,b" > /proc/scsi/hptmv/x

In the command, "**a**" is array number shown in the logical device list. "**b**" is channel number. E.g.

> # echo "hpt rebuild 1,2" > /proc/scsi/hptmv/x

will rebuild the array with logical device number 1 using the disk on secondary channel.

If rebuilding cannot be automatically started, you can use command

> # echo "hpt rebuild start" > /proc/scsi/hptmv/x

to start rebuilding. To stop the rebuilding process, use command

> # echo "hpt rebuild stop" > /proc/scsi/hptmv/x

Verifying RAID 1/RAID 5

To RAID 1/RAID 5,verifying will ensure data consistency.

You can use the following command to start verifying:

> # echo "hpt verify start a" > /proc/scsi/hptmv/x

To stop the verifying process, use command:

> # echo "hpt verify stop a" > /proc/scsi/hptmv/x

In the command, "**a**" is array number shown in the logical device list.

Rescanning Devices

If you attach a disk after the system boots up, the driver will not detect the disk automatically. In this case, you can tell the driver to rescan the devices attached to it by typing in the following command:

> # echo "hpt rescan all" > /proc/scsi/hptmv/x

This command will rescan all devices and refresh their states.

5 Updating the Driver

To update the driver, simply reinstall the driver following the steps in previous section, "**Install RR182x 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.

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 RR182x controller. Installation of the management software is optional but recommended.

Checking System Requirements

To run the RAID Management GUI, you must have the following software packages installed on your system:

1) X-Window system
2) gtk library v1.2 or later.

If you are using KDE or GNOME workstation, they are already installed. Otherwise you may check your system and refer to your Linux system manual for how to install these packages.

Preparing the Installation Files

You should have two files to finish the installation.

hptinstall.sh	Installation script file
hptraid.tar.gz	Package of software components

Installing the Software Package

Before installation, you must log on as root and change the directory to the location where your installation files are. Then you can use the command "**sh hptinstall.sh –i**" to install the software.

The following is an example.

```
[root@tmp]# ls
hptinstall.sh hptraid.tar.gz
[root@tmp]# sh hptinstall.sh –i
Starting hptsvr daemon:                                    done
HighPoint ATA RAID Management Software has been installed successfully!
[root@tmp]#
```

Note

If an old version is installed on your system, you will be prompted to choose whether to overwrite existing files or not. To continue installation, type in "**Y**".

Running the Management Software

You must log on as root to run the management software.

To run the software from a console window, you can just type in "**hptraid**" to start it. If you do not want to block the console, type in "**hptraid&**".

The management software requires the management daemon program, hptsvr, to be running. Run "**hptsvr**" first if it's not running.

7 Uninstalling

Uninstalling the Driver

You can only uninstall the driver when your system is not booting from devices attached to RR182x controller. Just remove the lines you added to /etc/modules.conf and /etc/fstab.

Uninstalling the Management Software

Before you uninstall the software, you must log on as root. Then you can use the command "**hptinstall.sh –u**" to uninstall the software.

```
[root@tmp]# hptinstall.sh –u
Are you sure to uninstall HighPoint ATA RAID Management Software?(Y/N)y
Stopping hptsvr daemon:                                    done
Uninstall finished!
[root@tmp]#
```