

Rocket RAID 3xxx/4xxx SATA Controller

openSUSE 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 3xxx/4xxx Controller on openSUSE Linux system.

2 Installing openSUSE Linux on RR3xxx/4xxx Controller

If you would like to install openSUSE Linux onto drives attached to RR3xxx/4xxx controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR3xxx/4xxx controller, you can use RR3xxx/4xxx 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 RR3xxx/4xxx controller, from your system.

Note

If you have other SCSI adapters installed, you must make sure the RR3xxx/4xxx 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

In the following document, the floppy diskette stands for the floppy diskette which is inserted into the on-board floppy controller, the USB floppy diskette stands for the floppy diskette inserted into the USB floppy controller, the USB diskette stands for USB flash disk and USB harddisk, the USB storage stands for USB diskette and USB floppy controller.

Put the driver files on a (USB) floppy diskette.

Windows:

Create a MS-DOS filesystem and extract the archive file to the (USB) floppy diskette or USB diskette.

Linux:

```
# mkdosfs /dev/fd0
# mkdir -p /mnt/floppy
# mount /dev/fd0 /mnt/floppy
# tar xzvf rr3xxx_4xxx-suse-11.0-i386.tgz -C /mnt/floppy
# umount /dev/fd0
```

Note

If the floppy diskette is inserted into an USB floppy controller and the device name in the linux system is **sda**, then replace **fd0** in the upper command with **sda:** (e.g.)

```
# mkdosfs /dev/sda
```

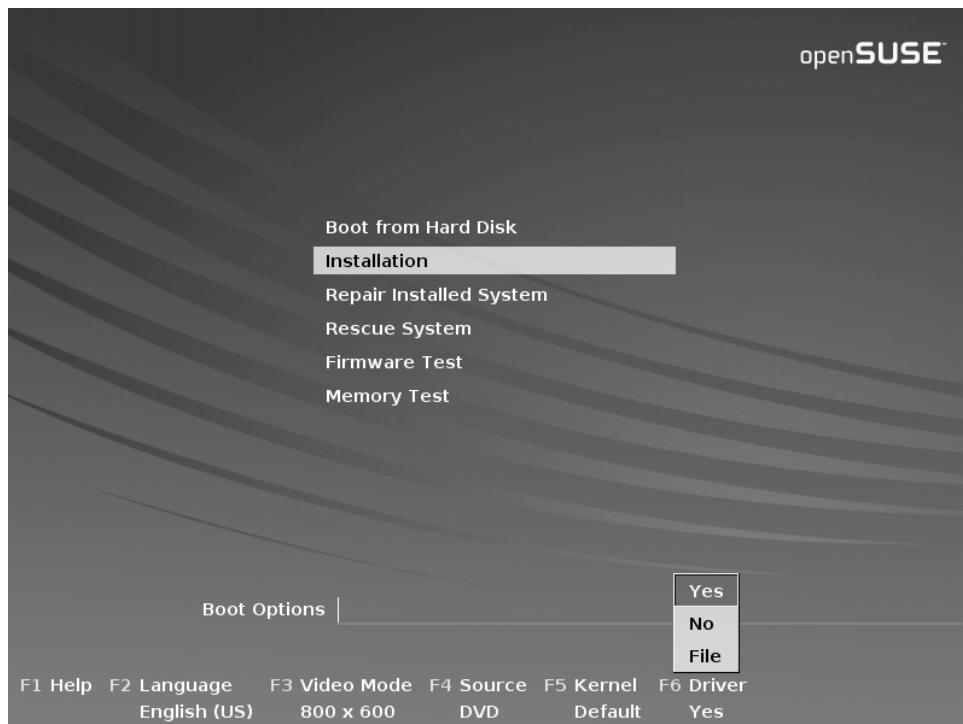
If the driver will be put on the first partition of a USB diskette, then replace **fd0** in the upper command with **sda1:** (e.g.)

```
# mkdosfs /dev/sda1
```

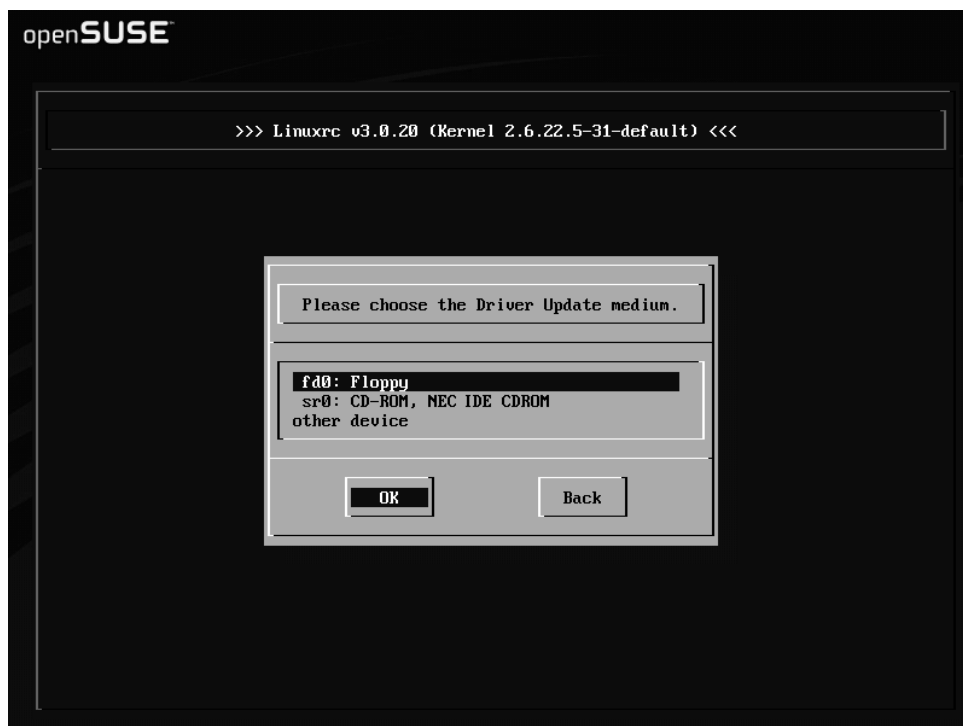
Step 4 Install openSUSE Linux

Insert the driver floppy diskette in the floppy drive or insert the USB diskette in to the USB port.

- 1) Start installing by booting from openSUSE installation medium.
- 2) In the welcome screen, select "**Installation**", press **F6** and select **Yes** to load driver update medium, if the driver is on the floppy diskette and the to be installed system is OpenSuSE 10.3 x86_64, after the Boot Options: type in "**insmod=floppy**" (without quotation mark) to load floppy controller driver, press **Enter** to start installation.



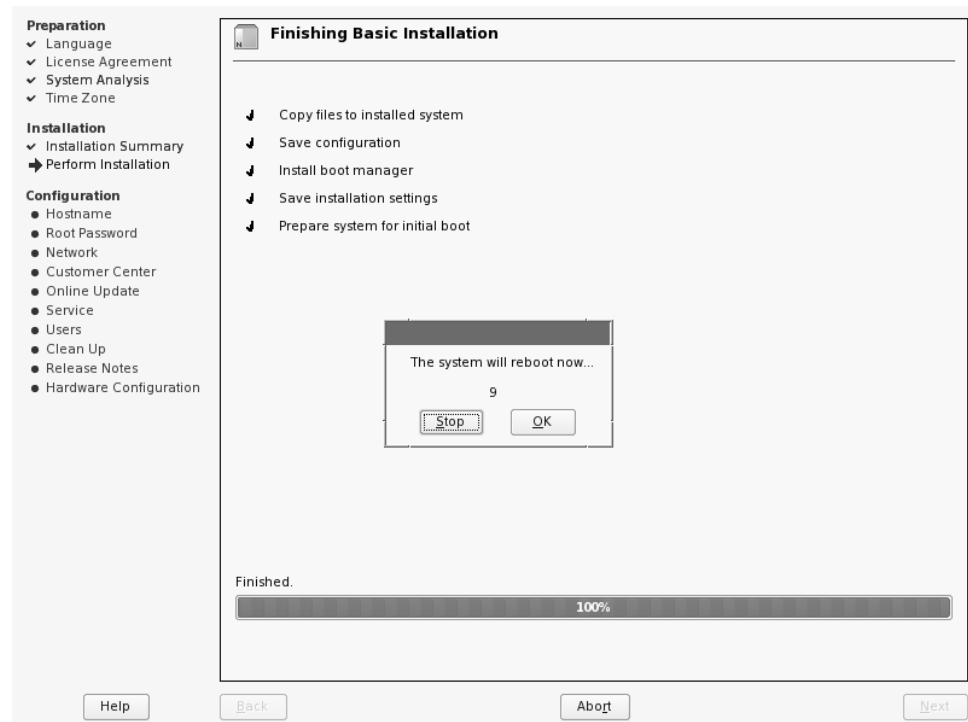
- 3) If it displays "**Please insert the Driver Update floppy**", press "enter" to continue.
- 4) When pop-up the dialog "**Please choose the Driver Update Medium**", select "**fd0**" or "**sda1**" and press "**OK**" to load the driver update diskette, then press "Back" to continue installation.



- 5) If the driver disk is one USB storage, as the driver of USB storage is loaded before rr3xxx/4xxx, and the device mapping may be not correct after system rebooting and the system will not start up, so you should perform the following actions to modify

the configure files before reboot the system (Suppose the RAID disk in the installation is **/dev/sdb**, and the root(/) filesystem is **/dev/sdb2**, the /boot filesystem is **/dev/sdb1**).

When the installation notice that "**The system will reboot now...**", press "**Stop**",



and then press "**Ctrl-Alt-F2**" to switch to console 2, unplug all USB storages from the USB port:

```
# mkdir /target
# mount /dev/sdb2 /target
# mount /dev/sdb1 /target/boot
# cd /target/boot/grub
# cp menu.lst menu.lst.bak
# sed s/sdb/sda/g menu.lst.bak > menu.lst
# cd /target/etc
# cp fstab fstab.bak
# sed s/sdb/sda/g fstab.bak > fstab
# cd /
# umount /target/boot
# umount /target
```

```

/ # mkdir /target
/ # mount /dev/sdb2 /target
/ # mount /dev/sdb1 /target/boot
/ # cd /target/boot/
/target/boot # cd /target/boot/grub/
/target/boot/grub # cp menu.lst menu.lst.bak
/target/boot/grub # sed s/sdb/sda/g menu.lst.bak > menu.lst
/target/boot/grub # cd /target/etc/
/target/etc # cp fstab fstab.bak
/target/etc # sed s/sdb/sda/g fstab.bak > fstab
/target/etc # cd /
/ # umount /target/boot/
/ # umount /target
/ # _

```

then press "**Ctrl-Alt-F7**" to switch back to the graphical installation screen to complete the installation.

If forget to execute the upper command and system fails to startup, reboot the system and press **ESC** when the boot loader screen shows and select **OK** to confirm to switch to text boot mode, and refer to the help text in the bottom of the screen to complete following commands: select and edit the entry to boot the system and change all **sd x ?** to **sda?** (here **x** stands for b, c, d... and **?** stands for 1, 2, 3...), e.g.:

```
kernel /boot/vmlinuz-2.6.16.12-default root=/dev/sdb1 resume=/dev/sdb1...
changed to:
```

```
kernel /boot/vmlinuz-2.6.16.12-default root=/dev/sda1 resume=/dev/sda1...
```

and then press **b** to boot up the system, when enter the system, edit files `/boot/grub/medu.lst` and `/etc/fstab` and change all **sd x ?** to **sda?** and save these files and reboot the system again.

3 Installing RR3xxx/4xxx Driver on an Existing System

If you are currently running Linux and would like to access drives or arrays attached to the Rocket RAID 3xxx/4xxx controller, you can perform the following steps.

Note

If you use a SCSI adapter to boot your system, you must make sure the RR3xxx/4xxx 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.

Step 1 Install the Driver Module

Extract the driver archive to a temporary directory and execute the **install.sh** to install the driver to the system. For example:

```

# mkdir /tmp/dd
# tar xzvf rr3xxx_4xxx-suse-11.0-i386.tgz -C /tmp/dd
# cd /tmp/dd

```

```
# sh install.sh
```

If the driver of previous version has been in the initrd image, the installer will update the initrd image or it will make the driver automatically loaded while system up.

Step 2 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/hptiop/. 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/hptiop/x
```

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

5 Updating the Driver

Update the driver is the same as installing driver on an Existing System, so refer to section **3 Installing RR3xxx/4xxx driver on an Existing System.**

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

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

```
# echo hptiop > /etc/hptcfg
```

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

7 Rebuilding Driver Module for System Update

When the system updates the kernel packages, the driver module `hptiop.ko` should be built and installed manually before reboot.

To build the driver module, the RR3xxx/4xxx open source package and the following building packages are needed: `gcc`, `kernel-source`. The open source package can be got from HighPoint website: <http://www.highpoint-tech.com> while the building tools can be installed from the openSUSE project website: <http://www.opensuse.org>

Note: the package version of `kernel-source` should be the same to the version of updated kernel package.

Refer to the REAME file distributed with HighPoint RR3xxx/4xxx open source package on how to build and install the driver module.