

# **Rocket RAID 271x/272x SAS 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 271x/272x Controller on openSUSE Linux system.

## 2 Installing openSUSE Linux on RR271x/RR272x Controller

If you would like to install openSUSE Linux onto drives attached to RR271x/RR272x controller, please perform the following operations:

### Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR271x/RR272x controller, you can use RR271x/RR272x 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 RR271x/RR272x controller, from your system.

#### Note

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If you have other SCSI adapters installed, you must make sure the RR271x/RR272x 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

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 rr62x-suse-x-x.tgz -C /mnt/floppy
# umount /dev/fd0
```

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#### 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.)

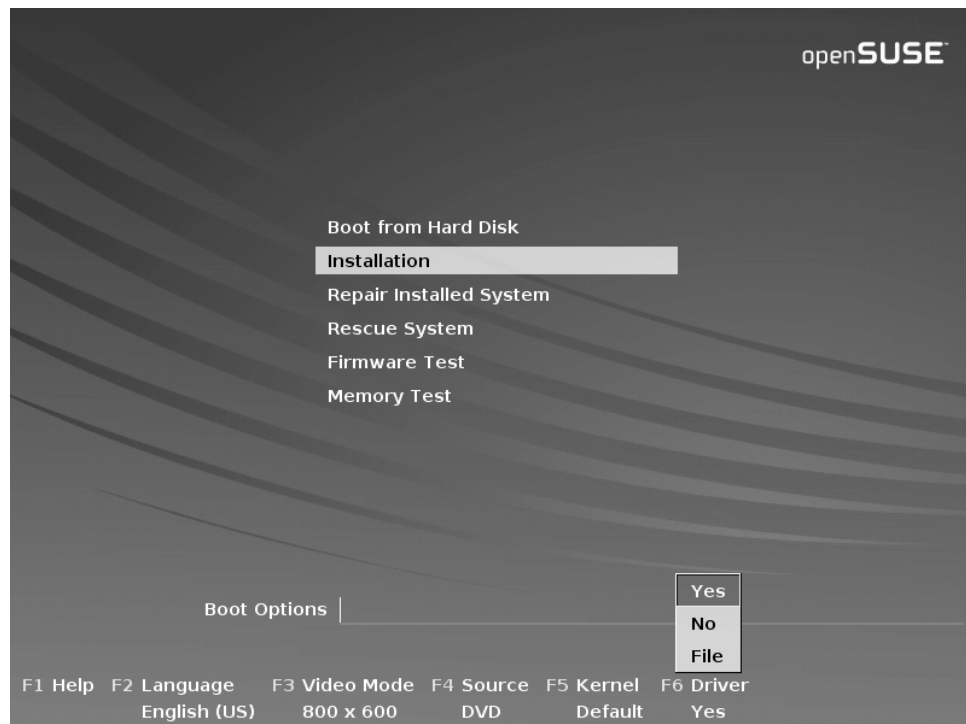
```
# mkdosfs /dev/sda1
```

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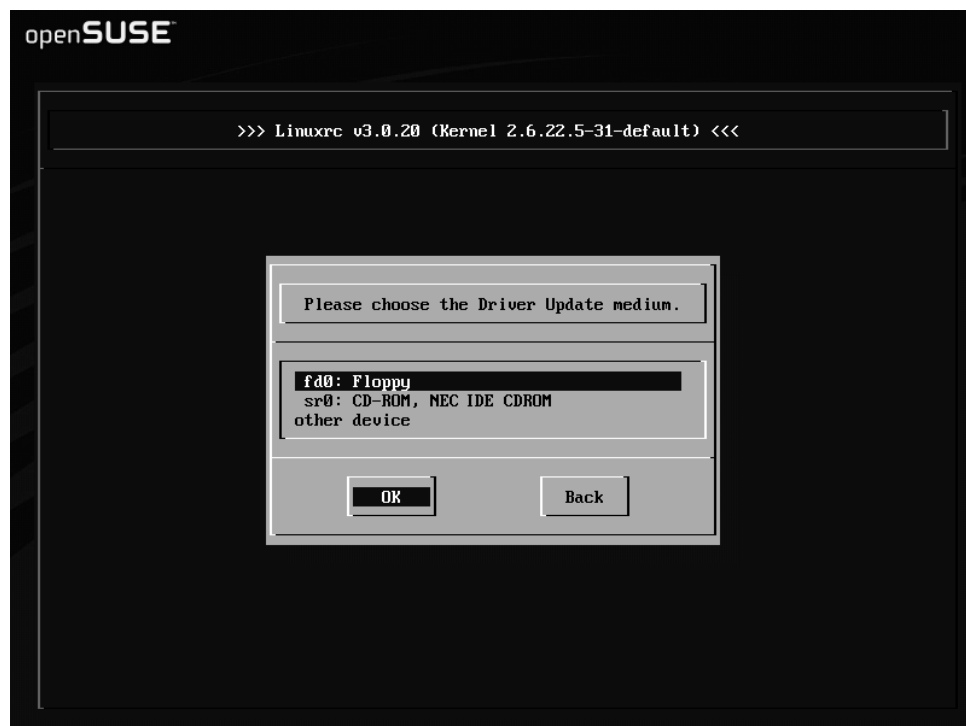
## Step 4 Install openSUSE Linux

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 USB storage driver disk is used during installation, some SLES version may fails to boot up. Since USB storage occupied /dev/sda device node during installation, and RAID disk is /dev/sdb or the following. After the first reboot, USB storage is removed

from system, RAID disk use /dev/sda now, but boot loader configure file and fstab are not changed.

The solution is to change boot loader configure file and fstab to make it same as the RAID disk new device node.

For example supposed RAID disk device node is /dev/sdb during installation:

Reboot the system and press **ESC** when the boot loader screen shows and select **OK** to confirm to switch to the 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 **sdb?** to **sda?** (? stands for partition number 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, execute following commands when enter the system:

```
# cd /etc
# mv fstab fstab.bak
# sed s/sdb/sda/g fstab.bak > fstab
# mount -a
# cd /boot/grub
# mv menu.lst menu.lst.bak
# sed s/sdb/sda/g menu.lst.bak > menu.lst
```

## 3 Installing RR271x/RR272x Driver on an Existing System

If you are currently running Linux and would like to access drives or arrays attached to the Rocket RAID 271x/272x 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 RR271x/RR272x 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 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 rr272x_1x-suse-x-x.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/rr272x_1x/`. Through this file you can view driver status and send control commands to the driver.

### Note

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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.

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Using the following command to show driver status:

```
# cat /proc/scsi/rr272x_1x/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 RR271x/RR272x 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 RR271x/RR272x controller. Installation of the management software is optional but recommended.

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 `rr272x_1x.ko` should be built and installed manually before reboot.

To build the driver module, the RR271x/RR272x 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 RR271x/RR272x open source package on how to build and install the driver module.