

# **RocketRAID 231x/230x SATA Controller Red Hat Enterprise/CentOS Linux Installation Guide**

Version 1.0

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Last updated on August 4, 2009

## Table of Contents

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<b>1 Overview .....</b>	<b>1</b>
<b>2 Installing Red Hat Enterprise/CentOS Linux on RR231x/230x 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 Red Hat Enterprise/CentOS Linux .....	2
Step 4.a Install driver from USB diskette for RHEL/CentOS Linux .....	2
Step 4.b Install driver from (USB) floppy diskette for RHEL/CentOS Linux. ....	7
<b>3 Installing RR231x/230x driver on an Existing System.....</b>	<b>11</b>
Step 1 Obtain and install the Driver Module.....	11
Step 2 Configure System to Mount Volumes when Startup .....	12
<b>4 Monitoring the Driver .....</b>	<b>12</b>
Checking Devices Status.....	12
<b>5 Updating the Driver .....</b>	<b>12</b>
<b>6 Installing RAID Management Software.....</b>	<b>12</b>
<b>7 Rebuilding Driver Module for System Update.....</b>	<b>13</b>

# 1 Overview

The purpose of this document is to provide clear instructions on how to install and use RR231x/230x Controller on Red Hat Enterprise/CentOS Linux system.

## 2 Installing Red Hat Enterprise/CentOS Linux on RR231x/230x controller

If you would like to install Red Hat Enterprise/CentOS Linux onto drives attached to RR231x/230x controller, please perform the following operations:

### Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR231x/230x controller, you can use RR231x/230x 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 RR231x/230x controller, from your system.

#### Note

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If you have other SCSI adapters installed, you must make sure the RR231x/230x 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:

Insert a floppy diskette into the floppy driver, create a MS-DOS filesystem and extract the archive file to the floppy diskette.

Linux:

```
# mkdosfs /dev/fd0
# mkdir -p /mnt/floppy
# mount /dev/fd0 /mnt/floppy
# tar xzvf rr231x_0x-rhel-5u2.tar.gz -C /mnt/floppy
# umount /dev/fd0
```

---

#### Note

If the floppy diskette is inserted into an external 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 put on a partition of a USB harddisk and the partition name in the linux system is **sdb1**, then replace **fd0** in the upper command with **sdb1**: (e.g.)

```
# mkdosfs /dev/sdb1
```

Only RHEL/CentOS **5.x** support load driver from USB diskette.

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#### Note

When the command line comes with "**updates**", eg you type "**updates**" before installation, then the driver disk should be ext2 filesystem or when the installation continues to after load the "**Update Disk Source**", it will complain of failing to load the update medium. So the driver disk for RHEL/CentOS 5u2 should be formatted as ext2 filesystem.

```
# mke2fs /dev/fd0
```

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## Step 4 Install Red Hat Enterprise/CentOS Linux

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

### Step 4.a Install driver from USB diskette for RHEL/CentOS Linux

- 1) Start installing RHEL/CentOS Linux by booting from the installation CD/DVD.
- 2) On the startup screen. For RHEL/CentOS 5.0 and lower, just press **Enter** to start installation; for RHEL/CentOS 5.1 and later, type in "**linux nostorage**"(without quotation mark) and press **Enter** to start installation:



- 3) When the installation switches to the graphical installation, press “**Ctrl+ALT+F2**” to switch the shell on console 2 before select "Next".



Type the following commands to load the rr231x/230x driver:

```
# mkdir /dd  
# mount /dev/sda1 /dd  
# cp -r /dd /tmp/hptdd  
# umount /dd
```

For RHEL 5u1 or CentOS 5.1 and later, unplug all USB storage devices from system

before execute following command:

```
# sh /tmp/hptdd/rhel-install-step1.sh
```

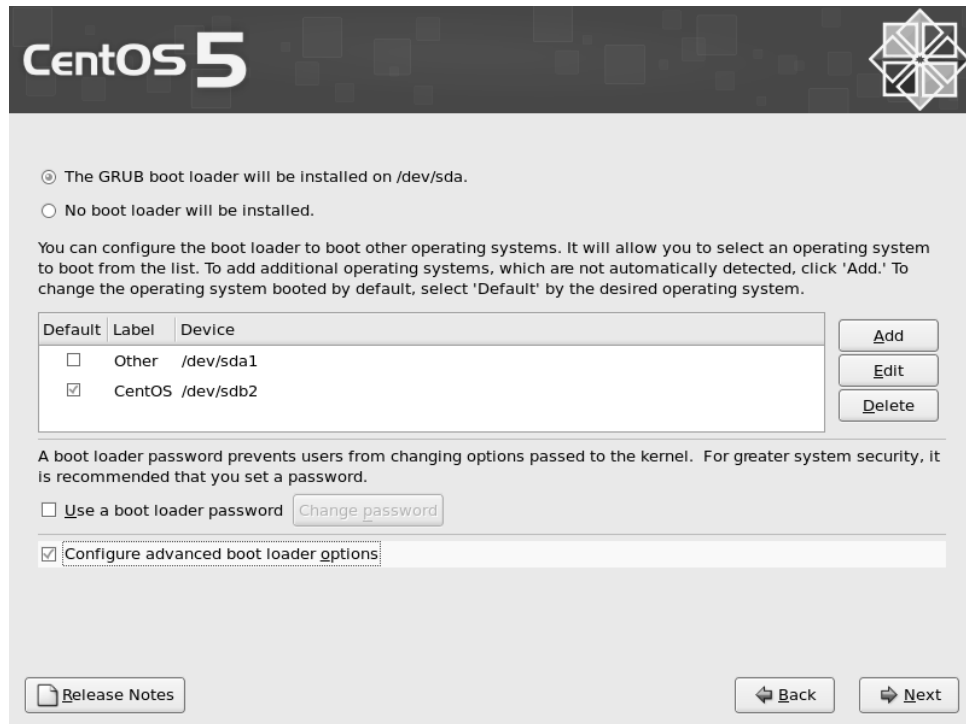
```
sh-3.1# mkdir /dd
sh-3.1# mount /dev/sda1 /dd
sh-3.1# cp -r /dd /tmp/hptdd
sh-3.1# umount /dd
sh-3.1# sh /tmp/hptdd/rhel-install-step1.sh
Driver Installation
Driver installation step 1 completed.
sh-3.1# _
```

Press “ALT+F6” to switch back to installation screen and select “Next” to continue installation.

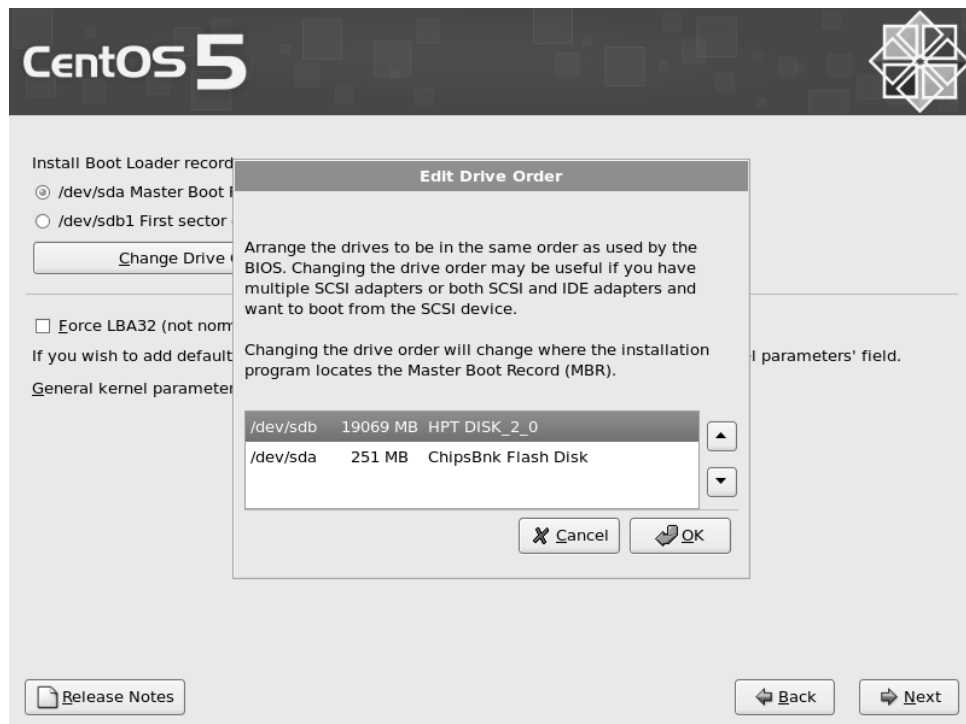
- 4) Continue the installation as usual. When it comes to partitioning the disk:

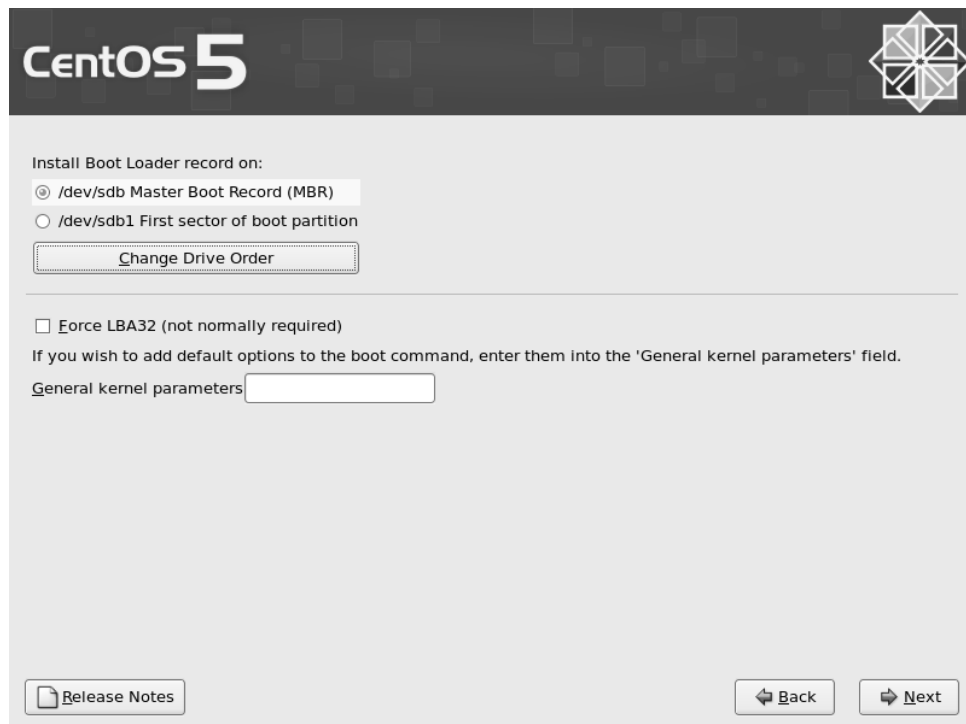


Make sure the "Review and modify partitioning layout" is selected. And when the installation continues to the boot loader settings, select "Configure advanced boot loader options":



in the "Next" window, select the "Change Driver Order" and in the popup window, select the disk on the RR231x/230x and click the upper arrow to make it the first one, select "OK" and make sure the "Install Boot Loader records" is installed to the disk on the RR231x/230x: (As the sample graph shows: the disk on the RR231x/230x is /dev/sdb and the Boot loader recorder will install to /dev/sdb):





- 5) Refer to RHEL/CentOS Linux installation guide to continue the installation and when installation finishes and prompts you to reboot the system:



press “**CRL+ALT+F2**” to switch console 2 and type the following commands:

```
# cp -r /tmp/hptdd /mnt/sysimage/tmp/hptdd
# chroot /mnt/sysimage
# sh /tmp/hptdd/rhel-install-step2.sh
# rm -rf /tmp/hptdd
# exit
```

```
sh-3.1# cp -r /tmp/hptdd /mnt/sysimage/tmp/  
sh-3.1# chroot /mnt/sysimage/  
sh-3.1# sh /tmp/hptdd/rhel-install-step2.sh  
Driver Installation  
Updating 2.6.18-53.el5...  
Driver installation step 2 completed.  
sh-3.1# rm -rf /tmp/hptdd/  
sh-3.1# exit  
exit  
sh-3.1# _
```

Then switch back to console 6 and finish the installation.

#### Step 4.b Install driver from (USB) floppy diskette for RHEL/CentOS Linux.

For system release number below 5u1:

- 1) Start installing RHEL/CentOS Linux by booting from the installation DVD/CD.
- 2) On the installation startup screen, a prompted label "**boot:**" will appear at the bottom of the screen. Type in "**linux dd**" (without quotation mark) and then press **Enter**.



- 3) When prompted "**Driver disk**" Select "**Yes**".



When prompted "Driver Disk Source", select "fd0" or "sda" and "OK".



When prompted "Insert Driver Disk", select "OK".



- 4) The system will load RR231x/230x driver automatically. When prompted "More Driver Disks?" Select "No".



- 5) Continue the installation as usual. You can refer to RHEL/CentOS Linux installation guide.

**For system release number above 5u1 (including):**

- 1) Start installing RHEL/CentOS Linux by booting from the installation DVD/CD.
- 2) On the installation startup screen, a prompted label "**boot:**" will appear at the bottom of the screen. Type in "**linux dd updates**" (without quotation mark) and then press **Enter**.



- 3) When prompted "Driver disk" Select "Yes".



When prompted "Driver Disk Source", select "fd0" or "sda" and "OK".



When prompted "Insert Driver Disk", select "OK".



- 4) The system will load RR231x/230x driver automatically. When prompted "More Driver Disks?" Select "No".



- 5) After some steps, the instation prompts "Update Disk Source", do the following step just like loads the driver from the driver disk.



- 6) After the update disk loaded, continue the installation as usual. You can refer to Fedora Linux installation guide.

## 3 Installing RR231x/230x driver on an Existing System

### Note

If you use a SCSI adapter to boot your system, you must make sure the RR231x/230x 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 Obtain and 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 rr231x_0x-rhel-5u2.tar.gz -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    ext3    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/rr231x/230x/`. 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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### Checking Devices Status

Using the following command to show driver status:

```
# cat /proc/scsi/rr2310_00/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 RR231x/230x 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 RR231x/230x 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 `rr2310_00.ko` should be built and installed manually before reboot.

To build the driver module, the RR231x/230x open source package and the following building packages are needed: `gcc`, `kernel-devel`. The open source package can be got from HighPoint website: <http://www.highpoint-tech.com> while the building tools can be installed from RedHat website: <http://www.redhat.com> or CentOS website: <http://www.centos.org>

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

Refer to the REAME file distributed with HighPoint RR231x/230x open source package on how to build and install the driver module.