

# **RocketRAID 2640/2642 SAS Controller**

## **Fedora Linux**

### **Installation Guide**

Version 1.1

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# 1 Overview

The purpose of this document is to provide clear instructions on how to install and use **RocketRAID** Controller on Fedora Linux system.

## 2 Installing Fedora Linux on RR2640/2642 controller

If you would like to install Fedora Linux onto drives attached to RR2640/2642 controller, please perform the following operations:

### Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR2640/2642 controller, you can use RR2640/2642 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 RR2640/2642 controller, from your system.

#### Note

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If you have other SCSI adapters installed, you must make sure the RR2640/2642 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.

Linux:

```
# mkdosfs /dev/fd0
# mkdir -p /mnt/floppy
# mount /dev/fd0 /mnt/floppy
# tar xzvf rr26xx-fedora-9.tar.gz -C /mnt/floppy
# umount /mnt/floppy
```

---

**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
```

The driver also could be put on a USB diskette, and the driver disk can be created as the floppy diskette. For example: use the first partition of the USB diskette **sdb**, then replace **fd0** in the upper command with **sdb1:**

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

Fedora Core 5 does not support install driver from USB diskette. You should extract driver to a floppy diskette to install Fedora Core 5.

---

**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 Fedora Core 5 should be formatted as ext2 filesystem.

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

---

## Step 4 Install Fedora 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 Fedora 6 and later.

- 1) Start installing Fedora Linux by booting from the installation DVD.
- 2) On the startup welcome screen. Just press **Enter**.
- 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 rr2640/2642 driver:

```
# mkdir /dd
# mount /dev/sda1 /dd
# cp -r /dd /tmp/hptdd
# umount /dd
# sh /tmp/hptdd/fedora-install-step1.sh
```

```
sh-3.2# mkdir /dd
sh-3.2# mount /dev/fd0 /dd
sh-3.2# cp -r /dd /tmp/hptdd
sh-3.2# umount /dd
sh-3.2# sh /tmp/hptdd/fedora-install-step1.sh
Driver Installation
Driver installation step 1 completed.
sh-3.2# _
```

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:

Installation requires partitioning of your hard drive. By default, a partitioning layout is chosen which is reasonable for most users. You can either choose to use this or create your own.

Remove linux partitions on selected drives and create default layout. ▾

Select the drive(s) to use for this installation.

<input type="checkbox"/>	sda	251 MB	ChipsBnk Flash Disk
<input checked="" type="checkbox"/>	sdb	19069 MB	HPT DISK_1_0

+ Advanced storage configuration

Review and modify partitioning layout

Release Notes Back Next

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"**:

The GRUB boot loader will be installed on /dev/sda.

No boot loader will be installed.

You can configure the boot loader to boot other operating systems. It will allow you to select an operating system to boot from the list. To add additional operating systems, which are not automatically detected, click 'Add.' To change the operating system booted by default, select 'Default' by the desired operating system.

Default	Label	Device
<input type="checkbox"/>	Other	/dev/sda1
<input checked="" type="checkbox"/>	Fedora Core	/dev/sdb3

Add Edit Delete

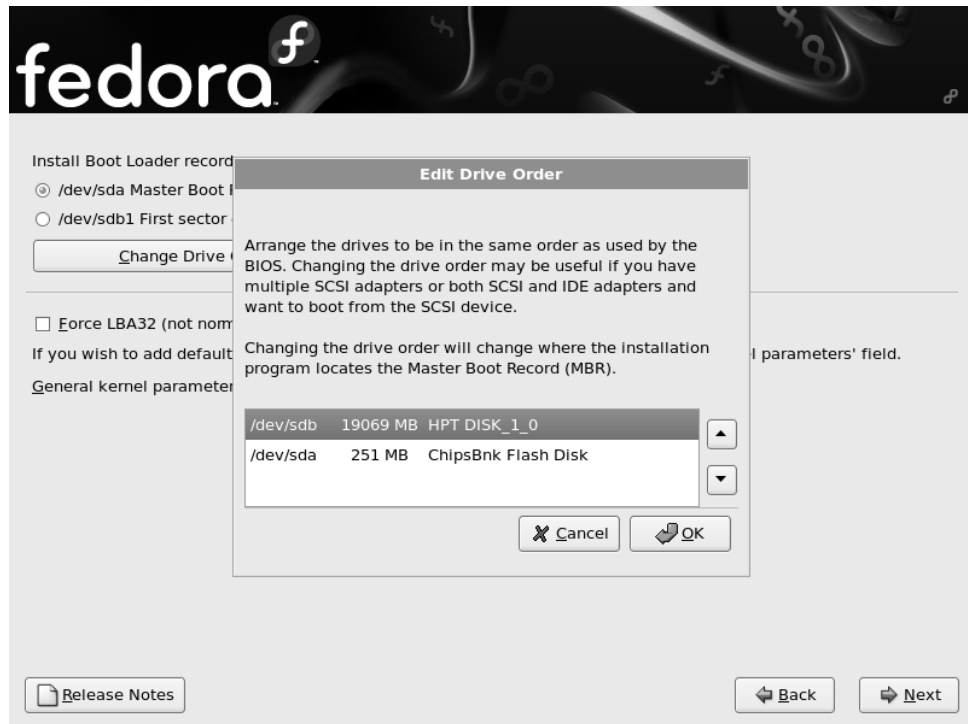
A boot loader password prevents users from changing options passed to the kernel. For greater system security, it is recommended that you set a password.

Use a boot loader password Change password

Configure advanced boot loader options

Release Notes Back Next

in the **"Next"** window, select the **"Change Driver Order"** and in the popup window, select the disk on the RR2640/2642 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 RR2640/2642: (As the sample graph shows: the disk on the RR2640/2642 is /dev/sdb and the Boot loader recorder will install to /dev/sdb):



For Fedora 9, as the installation changed, when it comes to installing the bootloader, select "**Change Device**" and in the popup window, select the disk on the RR2640/2642 and click the upper arrow to make it the first one, select "**OK**" and make sure the bootloader is installed to the disk on the RR2640/2642: (As the sample graph shows: the disk on the RR2640/2642 is /dev/sdb and the boot loader will be installed to /dev/sdb):

- 5) Refer to Fedora 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/fedora-install-step2.sh
# rm -rf /tmp/hptdd
# exit
```

```
sh-3.2# cp -r /tmp/hptdd/ /mnt/sysimage/tmp/hptdd
sh-3.2# chroot /mnt/sysimage/
sh-3.2# sh /tmp/hptdd/fedora-install-step2.sh
Driver Installation
Updating 2.6.25-14.fc9.i686...
Driver installation step 2 completed.
sh-3.2# rm -rf /tmp/hptdd/
sh-3.2# exit
exit
sh-3.2# _
```

Then switch back to console 6 and finish the installation.

#### Step 4.b Install driver from (USB) floppy diskette.

##### Installation steps for Fedora 9 and later

- 1) Start installing Fedora Linux by booting from the installation DVD.
- 2) On “**Welcome to Fedora 9**” installation screen. Just press **Enter**.
- 3) When the installation switches to the graphical installation, press “**Ctrl+ALT+F2**” to switch the shell on console 2 before select “**Next**”.



Insert the driver diskette into floppy drive and type the following commands:

```
# mkdir /dd
# mount /dev/fd0 /dd
```

```
# cp -r /dd /tmp/hptdd
# umount /dd
# sh /tmp/hptdd/fedora-install-step1.sh
```

```
sh-3.2# mkdir /dd
sh-3.2# mount /dev/fd0 /dd
sh-3.2# cp -r /dd /tmp/hptdd
sh-3.2# umount /dd
sh-3.2# sh /tmp/hptdd/fedora-install-step1.sh
Driver Installation
Driver installation step 1 completed.
sh-3.2# _
```

Unplug all USB storages from USB port. Press “**ALT+F6**” to switch back to installation screen and select “**Next**” to continue installation.

- 4) Continue the installation as usual. You can refer to Fedora Linux installation guide. Make sure you have finished the next step before system reboot.
- 5) 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/fedora-install-step2.sh
# rm -rf /tmp/hptdd
# exit
```

```
sh-3.2# cp -r /tmp/hptdd/ /mnt/sysimage/tmp/hptdd
sh-3.2# chroot /mnt/sysimage/
sh-3.2# sh /tmp/hptdd/fedora-install-step2.sh
Driver Installation
Updating 2.6.25-14.fc9.i686...
Driver installation step 2 completed.
sh-3.2# rm -rf /tmp/hptdd/
sh-3.2# exit
exit
sh-3.2# _
```

Then switch back to console 6 and finish the installation.

## Installation steps for Fedora 8

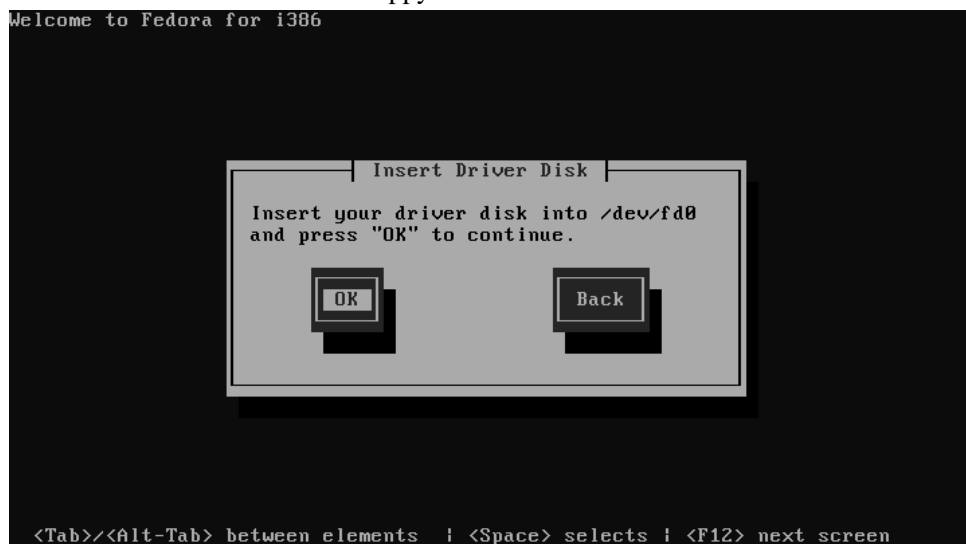
- 1) Start installing Fedora Linux by booting from the installation DVD.  
If the drive is on a **floppy diskette**, follow step 2 and 3:
- 2) On “**Welcome to Fedora 8!**” installation screen, press “**Tab**”, then a prompted label “> **vmlinuz initrd=initrd.img**” will appear at the middle of the screen. Type in “**dd**” (without quotation mark) and then press **Enter**.



- 3) When prompted “**Do you have a driver disk?**” Select “**Yes**”.



When prompted “**Insert your driver disk into /dev/fd0 and press OK to continue**”, insert the driver diskette in the floppy drive and then select “**OK**”.



The system will load RR2640/2642 driver automatically. When prompted “**Do you wish to load any more driver disks?**” Select “**No**” to continue installation.



- 4) Continue the installation as usual. You can refer to Fedora Linux installation guide.

- 5) When installation finishes and prompts you to reboot the system,



press “**CRL+ALT+F2**” to the shell and complete following actions:

if the driver is on a floppy diskette, type following:

```
# mkdir -p /mnt/sysimage/tmp/hptdd /tmp/hptdd
# mount /dev/fd0 /tmp/hptdd
# cp -r /tmp/hptdd /mnt/sysimage/tmp
# umount /tmp/hptdd
# chroot /mnt/sysimage
# sh /tmp/hptdd/fedora-install-step2.sh
# rm -rf /tmp/hptdd
# exit
```

```
sh-3.2# cp -r /tmp/hptdd /mnt/sysimage/tmp/
sh-3.2# chroot /mnt/sysimage/
sh-3.2# sh /tmp/hptdd/fedora-install-step2.sh
Driver Installation
Updating 2.6.23.1-42.fc8...
Driver installation step 2 completed.
sh-3.2# rm -rf /tmp/hptdd/
sh-3.2# exit
exit
sh-3.2# _
```

Then switch back to console 6 and finish the installation.

## Installation steps for Fedora 7

- 1) Start installing Fedora Linux by booting from the installation DVD.
- 2) On “**Welcome to Fedora!**” installation screen, press “**Tab**”, then a prompted label “>  
**vmlinuz initrd=initrd.img**” will appear at the middle of the screen. Type in “**dd**” (without quotation mark) and then press **Enter**.



- 3) When prompted **“Do you have a driver disk?”** Select **“Yes”**.



When prompted **“Driver Disk Source”**, select **“fd0”** or **“sda”** and **“OK”** .



When prompted “Insert your driver disk and press OK to continue”, select "OK".



- 4) The system will load RR2640/2642 driver automatically. When prompted “Do you wish to load any more driver disks?” Select “No”.



- 5) Continue the installation as usual. You can refer to Fedora Linux installation guide.

## Installation steps for Fedora Core 6

- 1) Start installing Fedora Linux by booting from the installation 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 "**Do you have a driver disk?**". Select "**Yes**".



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



When prompted “Insert your driver disk and press OK to continue”, select “OK”.



- 4) The system will load RR2640/2642 driver automatically. When prompted “Do you wish to load any more driver disks?” Select “No”.



- 5) Continue the installation as usual. You can refer to Fedora Linux installation guide.

## Installation steps for Fedora Core 5

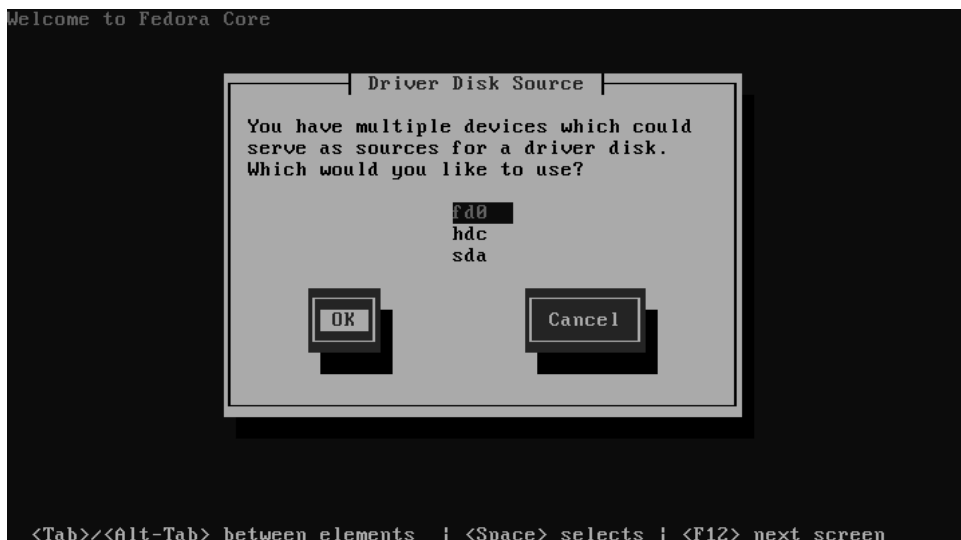
- 1) Start installing Fedora Linux by booting from the installation CD.
- 2) On the installation startup screen, a prompted label "**boot:**" will appear at the bottom of the screen. Type in "**linux dd updates**" (without quotation mark) and then press **Enter**.



- 3) When prompted "**Do you have a driver disk?**", select "**Yes**".



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



When prompted "Insert your driver disk and press OK to continue", select "OK".



- 4) The system will load RR2640/2642 driver automatically. When prompted "Do you wish to load any more driver disks?" Select "No".



- 5) After some steps, the installation 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 RR2640/2642 driver on an Existing System

### Note

If you use a SCSI adapter to boot your system, you must make sure the RR2640/2642 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 rr26xx-fedora-9.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/rr26xx/`.

### 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.

---

Using the following command to show driver status:

```
# cat /proc/scsi/rr26xx/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 RR2640/2642 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 RR2640/2642 controller. Installation of the management software is optional but recommended.

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

## 7 Rebuilding Driver Module for System Update

When the system updates the kernel packages, the driver module `rr26xx.ko` should be built and installed manually before reboot.

To build the driver module, the RR2640/2642 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 the Fedora project website: <http://fedoraproject.org>

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

Refer to the REAME file distributed with HighPoint RR2640/2642 open source package on how to build and install the driver module.