

# **RocketRAID 3xxx/4xxx Controller FreeBSD Installation Guide**

Version 1.0

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## Table of Contents

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<b>1 Overview .....</b>	<b>1</b>
<b>2 Installing FreeBSD on RR3xxx/4xxx 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 FreeBSD.....	2
<b>3 Installing RR3xxx/4xxx Driver on an Existing System .....</b>	<b>5</b>
Step 1 Copy the Driver Module .....	5
Step 2 Test the Driver Module .....	5
Step 3 Configure System to Automatically Load the Driver.....	5
Step 4 Configure System to Mount Volumes when Startup .....	6
<b>4 Updating the Driver .....</b>	<b>6</b>
<b>5 Installing RAID Management Software.....</b>	<b>6</b>
<b>6 Uninstalling.....</b>	<b>6</b>

## 1 Overview

The purpose of this document is to provide clear instructions on how to install and use RR3xxx/4xxx Controller on a FreeBSD system.

## 2 Installing FreeBSD on RR3xxx/4xxx Controller

If you would like to install FreeBSD 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.

#### Note

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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.

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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 CDROM, next from and then from floppy drive, 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 CDROM. After you finish installation, set SCSI as the first boot device to boot up the system.

### Step 3 Prepare the Driver Diskette

If you are installing FreeBSD, you must prepare a driver disk for RR3xxx/4xxx before installation.

First obtain the driver diskette tgz file, freebsd.tgz.

On a DOS or Windows system, create a MS-DOS filesystem and extract the archive file to the (USB) floppy diskette or USB hard disk.

On a FreeBSD system,

```
#newfs_msdos /dev/fd0
```

```
#mount -t msdosfs /dev/fd0 /mnt
```

```
#tar xxx.tgz -C /mnt
```

#umount /mnt

## Step 4 Install FreeBSD

- 1) Start installing the FreeBSD by booting from installation CD.

```

CD Loader 1.2

Building the boot loader arguments
Looking up /BOOT/LOADER... Found
Relocating the loader and the BTX
Starting the BTX loader

BTX loader 1.00 BTX version is 1.01
Consoles: internal video/keyboard
BIOS CD is cd0
BIOS drive A: is disk0
BIOS drive C: is disk1
BIOS 638kB/161728kB available MEMORY

FreeBSD/i386 bootstrap loader, Revision 1.1
(root@x64.samsco.home, Thu Nov 3 07:33:10 UTC 2005)
Loading /boot/defaults/loader.conf
/boot/kernel/kernel text=0x408dc8 data=0x80520+0x4ce28 syms=[0x4+0x61550+0x4+0x7
008c1
=
    
```

- 2) When “Welcome to FreeBSD” screen appears, select “6”.

```

Welcome to FreeBSD!

1. Boot FreeBSD [default]
2. Boot FreeBSD with ACPI disabled
3. Boot FreeBSD in Safe Mode
4. Boot FreeBSD in single user mode
5. Boot FreeBSD with verbose logging
6. Escape to loader prompt
7. Reboot

Select option, [Enter] for default
or [Space] to pause timer 9

Type '?' for a list of commands, 'help' for more detailed help.
OK _
    
```

- 3) Insert RR3xxx/4xxx driver diskette into floppy drive now. Type in "load diskx:hptiop-x.x" (without quotation mark) and then press enter.

```

Welcome to FreeBSD!

1. Boot FreeBSD [default]
2. Boot FreeBSD with ACPI disabled
3. Boot FreeBSD in Safe Mode
4. Boot FreeBSD in single user mode
5. Boot FreeBSD with verbose logging
6. Escape to loader prompt
7. Boot FreeBSD with USB keyboard
8. Reboot

Select option, [Enter] for default
or [Space] to pause timer 10

Type '?' for a list of commands, 'help' for more detailed help.
OK load disk0:hptiop-7.0.ko_
    
```

If using USB hard disk, please copy the content of tgz file onto USB hard disk., which file system is vfat or ufs. Assume it is disk1s1, then type in "**load disk1s1:hptiop-x.x**" (without quotation mark) and then press **enter**.

In the following document we assume the driver diskette is inserted into the on-board's floppy controller.

```
for FreeBSD 6.0-RELEASE
  ok load disk0:hptiop-6.0.ko

for FreeBSD 6.0-AMD64-RELEASE
  ok load disk0:hptiop-6.0-amd64.ko

for FreeBSD 6.1-RELEASE
  ok load disk0:hptiop-6.1.ko

for FreeBSD 6.1-AMD64-RELEASE
  ok load disk0:hptiop-6.1-amd64.ko

for FreeBSD 6.2-RELEASE
  ok load disk0:hptiop-6.2.ko

for FreeBSD 6.2-AMD64-RELEASE
  ok load disk0:hptiop-6.2-amd64.ko

for FreeBSD 6.3-RELEASE
  ok load disk0:hptiop-6.3.ko

for FreeBSD 6.3-AMD64-RELEASE
  ok load disk0:hptiop-6.3-amd64.ko

for FreeBSD 7.0-RELEASE
  ok load disk0:hptiop-7.0.ko

for FreeBSD 7.0-AMD64-RELEASE
  ok load disk0:hptiop-7.0-amd64.ko

for FreeBSD 7.1-RELEASE
  ok load disk0:hptiop-7.1.ko

for FreeBSD 7.1-AMD64-RELEASE
  ok load disk0:hptiop-7.1-amd64.ko

for FreeBSD 7.2-RELEASE
  ok load disk0:hptiop-7.2.ko

for FreeBSD 7.2-AMD64-RELEASE
  ok load disk0:hptiop-7.2-amd64.ko
```

- 4) After the driver has been loaded, remove the floppy diskette from the floppy drive.
- 5) Type in "boot" and continue the installation as normal. You can refer to FreeBSD installation guide.

```

1. Boot FreeBSD [default]
2. Boot FreeBSD with ACPI disabled
3. Boot FreeBSD in Safe Mode
4. Boot FreeBSD in single user mode
5. Boot FreeBSD with verbose logging
6. Escape to loader prompt
7. Boot FreeBSD with USB keyboard
8. Reboot

Select option, [Enter] for default
or [Space] to pause timer ?

Type '?' for a list of commands, 'help' for more detailed help.
DK load disk0:hptiop-7.0.ko
disk0:hptiop-7.0.ko text=0x37354 data=0xe30+0x5a4 syms=[0x4+0x2150+0x4+0x27f6]
DK boot_

```

**Note**

On some systems with ACPI enabled, FreeBSD may not work. You can try to disable ACPI in system BIOS or type the command “**set hint.acpi.0.disabled="1"**” under boot prompt to solve the problem.

- 6) Before exit install, an additional step must be taken to copy RR3xxx/4xxx driver module to system. On the driver disk, there is a setup script "**postinstall**" which will do this work for you. Before you reboot the system, press **Alt-F4** to the command shell and type the following commands:

For common ISA floppy controller:

```
# mount -t msdosfs /dev/fd0 /mnt
```

For USB floppy controller, we assume it is da0

```
# mount -t msdosfs /dev/da0 /mnt
```

For USB hard disk, we assume it is da1

```
# mount -t msdosfs /dev/dals1 /mnt
```

Then run script to do postinstall

```
# sh /mnt/postinstall
# umount /mnt
```

```

# mount -t msdosfs /dev/dals1 /mnt
# sh /mnt/postinstall
Post Install for hptiop
Copying driver
Configuring system
End of hptiop Post Install
type "umount /mnt" then remove the driver diskette from floppy
# umount /mnt

```

Then press **Alt-F1** to return to the setup screen and choose [**X Exit Install**] to finish setup.

***Note:** On some systems the floppy may be inaccessible during installation. In this case, please remove the CD, reboot from the installed system and load the driver manually from floppy again when booting from controller. After system boots up you can run the postinstall script to install the driver.*

## 3 Installing RR3xxx/4xxx Driver on an Existing System

If you are currently running FreeBSD and would like to access drives or arrays attached to the RR3xxx/4xxx Controller, you can perform the following steps.

### Step 1 Copy the Driver Module

If you have made freebsd drivers into a diskette, you can insert the driver diskette to floppy drive, then using the following commands to copy the driver module:

```
for FreeBSD 6.x/7.x:
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hptiop-xxx.ko /boot/kernel/hptiop.ko
# umount /mnt
```

You can also extract the files from .tgz files directly, without using a floppy diskette:

```
For FreeBSD 6.x/7.x:
# tar zxvf xxx.tgz
# cp hptiop-xxx.ko /boot/kernel/hptiop.ko
```

### Step 2 Test the Driver Module

You can test out the module to ensure that it works for your system by load it during system booting.

If the module has been loaded successfully you should see the RR3xxx/4xxx banner and a display screen of the attached drives. You can now access the drives as a SCSI device (if you have no other SCSI device, the first device is /dev/da0, then /dev/da1, etc.).

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If you have configured a RAID using all disks, it will be registered to system as device **/dev/da0**. You can use **"/stand/sysinstall"** to create partitions and disklabels (*like da0s1e*) on **da0**. Then you can create new filesystem using **"newfs /dev/da0s1e"**. Now you can mount **/dev/da0s1e** to somewhere to access it.

---

### Step 3 Configure System to Automatically Load the Driver

Most likely, you will not want to type "load hptiop" each time you boot up the system. Therefore you must install the module and tell the system about it. To configure system to automatically load the driver, type in the following commands:

```
# echo 'hptiop_load="YES"' >> /boot/defaults/loader.conf
```

This tells the loader to try loading the RR3xxx/4xxx module together with the kernel.

Now, reboot the system. RR3xxx/4xxx module should be automatically loaded each time system start up.

## Step 4 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/da1s1e` to location `/mnt/hpt` after startup:

```
    /dev/da1s1e    /mnt/hpt    ufs    rw    0    0
```

## 4 Updating the Driver

To update the driver with a new version you simply reinstall the driver following the previous section, "Install the driver on an existing system".

## 5 Installing RAID Management Software

HighPoint RAID Management Software is used to configure and keep track of your hard disks and RAID arrays attached to RR3xxx/4xxx controller. Installation of the management software is optional but recommended.

To configure HighPoint RAID Management Software to work with RR3xxx/4xxx 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.

## 6 Uninstalling

You can only uninstall the driver when your system is not booting from devices attached to RR3xxx/4xxx controller. Just remove the line

```
hptiop_load="YES"
```

in `/boot/defaults/loader.conf`, and then delete the driver module `/modules/hptiop.ko` or `/boot/kernel/hptiop.ko`.