RocketRAID 2240 SATA Controller

FreeBSD Installation Guide

Version 1.0

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Table of Contents

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1 Overview

The purpose of this document is to provide clear instructions on how to install and use RocketRAID 2240 Controller on a FreeBSD system.

2 Installing FreeBSD on RocketRAID 2240 Controller

If you would like to install FreeBSD onto drives attached to RocketRAID 2240 controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR2240 controller, you can use RR2240 BIOS Setting Utility to configure your hard disks as RAID arrays, or just use them as single disks.

Note

If you have other SCSI adapters installed, you must make sure the RR2240 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 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 RR2240 before installation.

First obtain the driver diskette image file, freebsd.img.

On a DOS or Windows system, you can make the boot diskette using rawrite.exe. It can be found on the FreeBSD CD (under \tools). Just run it under a command window and follow its prompt.

On a FreeBSD system, you can use the "dd" command to make the driver diskette. For example, Insert a floppy disk into the floppy drive and type the following command if you are installing FreeBSD 5.x versions:

> # **dd if=freebsd_5.x.img of=/dev/fd0**

Step 4 Install FreeBSD

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

2) If you are installing FreeBSD 5.0 or earlier versions, skip this step. When "**Welcome to FreeBSD**" screen appears, select "**6**".

3) When "**Hit [enter] to boot immediately or any other key for command prompt**" screen appears, press SPACE key to stop loader from autobooting.

```
BTX loader 1.00  BTX version is 1.01
Console: internal video/keyboard
BIOS driver A: is disk0
BIOS driver B: is disk1
BIOS driver C: is disk2
BIOS 636kB/74512kB available memory

FreeBSD/i386 bootstrap loader, Revision 0.8
(mailto:jkh@narf.osd.bsdi.com, Sat Apr 21 08:46:19 GMT 2001)
-
Hit [Enter] to boot immediately, or any other key for command prompt.
Booting [kernel] in 9 seconds…
```

   <-press SPACE key
   A prompted label "**ok**" will appear at the bottom of the screen.

4) Insert RR2240 driver diskette into floppy drive now. Type in "**load diskx:hptmv6-x.x**" (without quotation mark) and then press **enter**.

```
for FreeBSD 4.3-RELEASE
  ok load kernel
  ok load disk1:hptmv6-4.3.ko

for FreeBSD 4.4-RELEASE
  ok load kernel
  ok load disk1:hptmv6-4.4.ko

for FreeBSD 4.5-RELEASE
  ok load disk1:hptmv6-4.5.ko

for FreeBSD 4.6.2-RELEASE
  ok load disk1:hptmv6-4.6.2.ko

for FreeBSD 4.7-RELEASE
  ok load disk1:hptmv6-4.7.ko

for FreeBSD 4.8-RELEASE
  ok load disk1:hptmv6-4.8.ko

for FreeBSD 4.9-RELEASE
  ok load disk1:hptmv6-4.9.ko

for FreeBSD 4.10-RELEASE
  ok load disk1:hptmv6-4.10.ko

for FreeBSD 4.11-RELEASE
  ok load disk1:hptmv6-4.11.ko

for FreeBSD 5.0-RELEASE
  ok load disk0:hptmv6-5.0.ko

for FreeBSD 5.1-RELEASE
  ok load disk0:hptmv6-5.1.ko

for FreeBSD 5.2.1-RELEASE
```

```
        ok load disk0:hptmv6-5.2.1.ko

    for FreeBSD 5.3-RELEASE
        ok load disk0:hptmv6-5.3.ko

    for FreeBSD 5.4-RELEASE
        ok load disk0:hptmv6-5.4.ko

    for FreeBSD 5.3-AMD64-RELEASE
        ok load disk0:hptmv6-5.3-amd64.ko

    for FreeBSD 5.4-AMD64-RELEASE
        ok load disk0:hptmv6-5.4-amd64.ko

    for FreeBSD 6.0-RELEASE
        ok load disk0:hptmv6-6.0.ko

    for FreeBSD 6.0-AMD64-RELEASE
        ok load disk0:hptmv6-6.0-amd64.ko
```

5) After the driver has been loaded, remove the floppy diskette from the floppy drive.

6) Type in "boot" and continue the installation as normal. You can refer to FreeBSD installation guide.

```
    ok 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.

7) Before exit install, an additional step must be taken to copy RR2240 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:

```
# mount -o ro /dev/fd0 /mnt
# sh /mnt/postinstall
# umount /mnt
```

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

3 Installing RR2240 Driver on an Existing System

If you are currently running FreeBSD and would like to access drives or arrays attached to the RR2240 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 4.x:
        # mount -o ro /dev/fd0 /mnt
        # cp /mnt/hptmv6-xxx.ko /modules/hptmv6.ko
```

```
        # umount /mnt

for FreeBSD 5.x/6.x:
  # mount –o ro /dev/fd0 /mnt
  # cp /mnt/hptmv6-xxx.ko /boot/kernel/hptmv6.ko
  # umount /mnt
```

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

```
  For FreeBSD 4.x:
  # vnconfig vn0c freebsd_xxx.img
  # mount /dev/vn0c /mnt
  # cp /mnt/hptmv6-xxx.ko /modules/hptmv6.ko
  # vnconfig –du vn0c myfilesystem mount=/mnt

For FreeBSD 5.x/6.x:
  # mdconfig –a –t vnode –f freebsd_5.x.img –u 0
  # mount /dev/md0 /mnt
  # cp /mnt/hptmv-xxx.ko /boot/kernel/hptmv6.ko
  # umount /mnt
  # mdconfig –d –u md0
```

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 RR2240 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.).

Example

```
F1    FreeBSD
Default: F1

>> FreeBSD/i386 BOOT
Default: 0:ad(0,a)/boot/loader
boot:

BTX loader 1.00  BTX version is 1.01
Console: internal video/keyboard
BIOS driver A: is disk0
BIOS driver C: is disk2
BIOS 636kB/74512kB available memory

FreeBSD/i386 bootstrap loader, Revision 0.8
(mailto:jkh@narf.osd.bsdi.com, Sat Apr 21 08:46:19 GMT 2001)
Loading /boot/defaults/loader.conf
/kernel text=0x24f1db data=0x3007ec+0x2062c -
<- For FreeBSD 5.1 and later: select "6" on "Welcome to FreeBSD" screen.

Hit [Enter] to boot immediately, or any other key for command prompt.
Booting [kernel] in 9 seconds…

 <-press SPACE key
Type '?' for a list of commands, 'help' for more detailed help.
ok load hptmv6
/modules/hptmv6.ko text=0xf571 data=0x2c8+0x254
ok autoboot
```

If you have configured a RAID 1/0 using 4 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 hptmv6" 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 'hptmv6_load="YES"' >> /boot/defaults/loader.conf
```

This tells the loader to try loading the RR2240 module together with the kernel.

Now, reboot the system. RR2240 module should be automatically loaded each time system start up.

Note

If FreeBSD you installed is 4.x version, you should type the following command to configure your system:

 # mknod   /dev/hptmv6   c   200   0

Then, please check whether node" **/dev/hptmv6**″ exists in /dev directory.

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 RR2240 controller. Installation of the management software is optional but recommended.

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

6 Uninstalling

You can only uninstall the driver when your system is not booting from devices attached to RR2240 controller. Just remove the line

hptmv6_load="YES"

in /boot/defaults/loader.conf, and then delete the driver module **/modules/hptmv6.ko** or **/boot/kernel/hptmv6.ko** .