RR3700/2800/800/R700 Controller

Linux Debian

Installation Guide

Last updated on March 17, 2023

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1 Overview

The purpose of this document is to provide clear instructions on how to install Linux Debian on the RR Series RAID controller.

✧ Supported system: Debian10.1/10.2/10.3/10.4/10.5/10.6/10.7/10.8/10.9/11.3/11.4/11.5/11.6

✧ Supported controller: RR3740/3720/2840/840/3742/R710/R720

2 Installing Linux Debian on RR Series RAID controller

If you would like to install Linux Debian onto drives attached to RR Series RAID controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

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

Before installation, you must remove all the Hard disks, which are not physically attached to RAID controller, from your system.

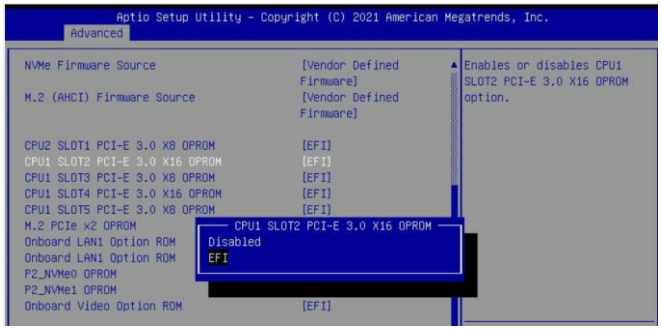
Note

RAID Controller support EFI boot. If you have other SCSI adapters installed, you must make sure the RR Series controller EFI will be loaded firstly. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

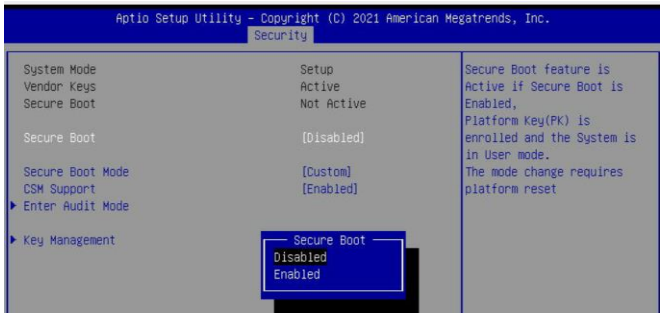
Step 2 Check System EFI Settings

In your system EFI SETUP menu, change **Boot Sequence** in such a way that the system will first boot from **EFI** CDROM or **EFI** a Bootable USB drive, after you finish installation, set RR Series RAID as the first boot device to boot up the system. Refer to your motherboard EFI manual to see how to set boot sequence.

1. Set UEFI setting with SuperMicro X11DPi-NT motherboard as an example.
   a. "**Advanced->PCIe/PCI/PnP Configuration->CPUSlot PCI-E OPROM**" to "**EFI**". Suppose Controller is connected to motherboard CPU1 Slot 2 PCI-E X16, then you should set "CPU1 Slot 2 PCI-E X16 OPROM" to "EFI";

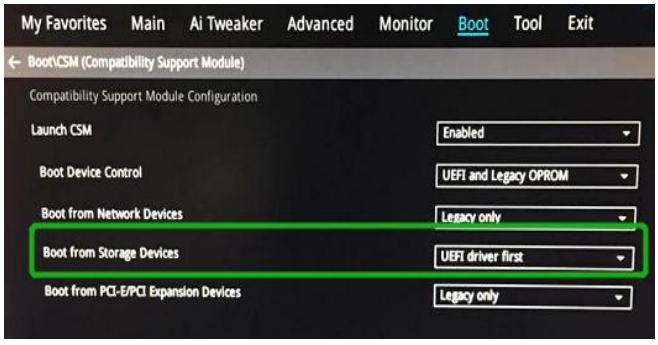


b. Disable "Secure Boot", set "Attempt Secure Boot" to "Disabled".

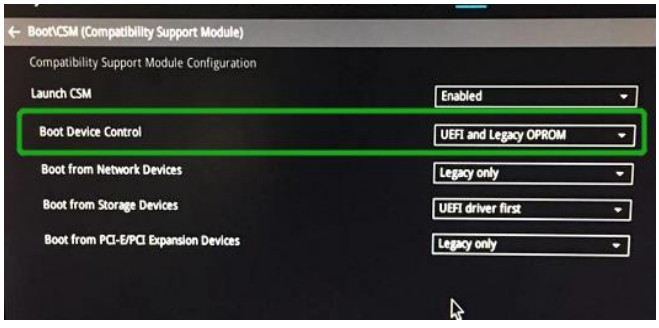


2. Set UEFI setting with ASUS PRIME X299 -DELUXE motherboard as an example:

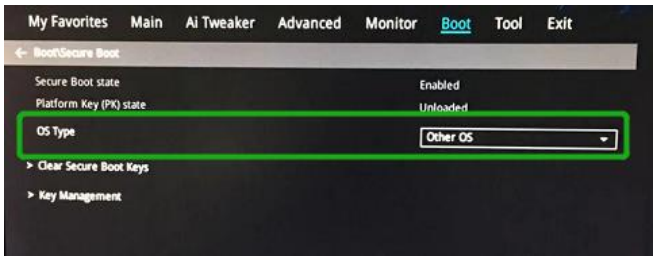
a. Set "Boot from Storage Devices" to "UEFI driver first";



b. And "Boot Device Control" to "UEFI Only" or "UEFI and Legacy OPROM";



c. Set "OS Type" to "Other OS".



Step 3 Flash UEFI Rom to RR Series RAID Controller

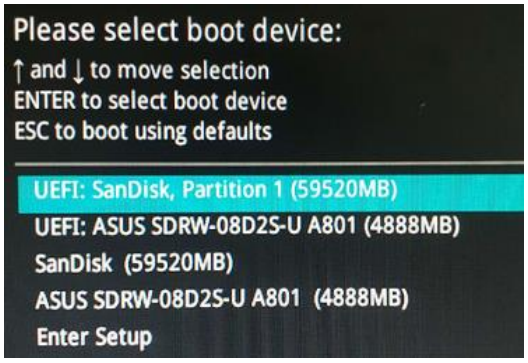
For Example RR3720C：

For other products, please refer to: Update BIOS_ UEFI ROM

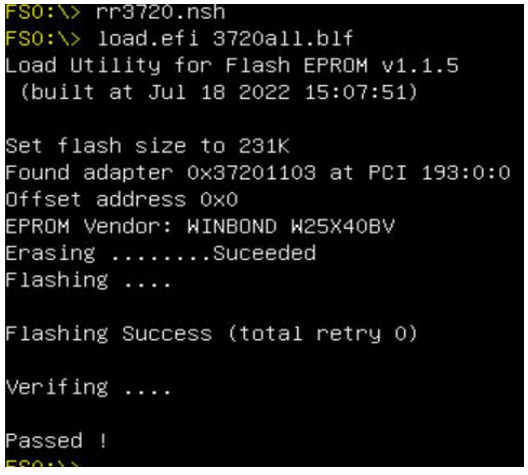
Note：Make sure your USB flash partition format is FAT32.

a. Unzip RR3720C UEFI package to root dir(/) of a USB flash drive, and insert the USB flash drive to the motherboard;

b. Booting from the UEFI USB flash and enter the UEFI environment;



c. Command with “rr3720.nsh”, flash UEFI rom to RR3720C Controller and reboot;

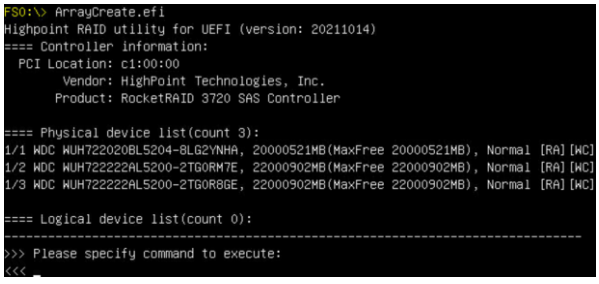


Step 4 Create Array

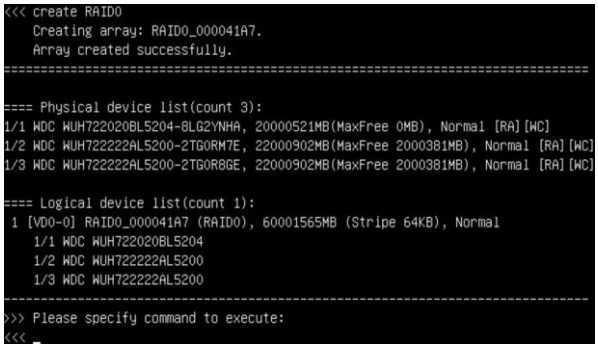
a. Attach three hard disks to RR3720C Controller;

b. Boot, enter the motherboard's Boot List and select start from UEFI USB flash:

c. Command "ArrayCreate.efi" to enter the Utility:



d. Command "create RAID0".
Create RAID0 array with all disks and with maximum capacity.



e. Command "exit";

f. For more command usages, refer to Appendix A.

RR3740/3720/710/720 also supports the creation method of BIOS/UEFI HII. Please refer to UM-Chapter 4

Step 5 Prepare the Driver Diskette

Extract **RR3740a_debian_11.6.0_x86_64_vx.x.x_xx_xx_xx.tar.gz** to top (/) directory of an USB flash drive. It will look like:

```
root@debian:/home/test/Documents# tar zxvf RR37xx_8xx_28xx_Debian11.6_x86_64_v1.23.13_23_02_27.tar.gz
hptdd/
hptdd/postinst.sh
hptdd/postinst2.sh
hptdd/boot/
hptdd/boot/rr3740a5.10.0-20-amd64x86_64.ko.gz
hptdd/hptdrv
hptdd/hptblock
hptdd/60-persistent-storage-hptblock.rules
hptdd/preisnt.sh
hptdd/readme.txt
```

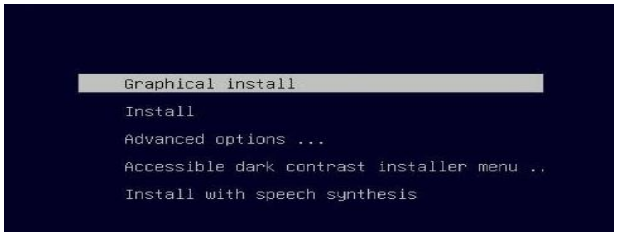
Step 6 Install Linux Debian

a. **Before you do the following, verify the status of your network environment. To ensure a proper installation, it is recommended to disconnect the network and install the system in a network less environment.**

b. Insert the Bootable USB drive to the target system.

c. Booting from Bootable USB drive (EFI mode).

d. When the Installation screen appears, press '**Graphical Install**' to start.



e. When the following window appears during the installation process,

Press "**Ctrl+ALT+F2**" to switch to the shell on console 2, and the then execute following commands to copy the driver contents:

 # mkdir /hptdd ← Create mount point for USB flash drive

 # mount /dev/sda1 /hptdd/ ← Mount the USB flash drive to /hptdd

 # cp -a /hptdd/hptdd /tmp/ ← Copy driver installation file to system temporary directory

 # umount /hptdd ← Unmount the USB flash drive

```
:~# mkdir /hptdd
:~# mount /dev/sda1 /hptdd/
:~# cp -a /hptdd/hptdd/ /tmp/
:~# umount /hptdd/
:~#
```

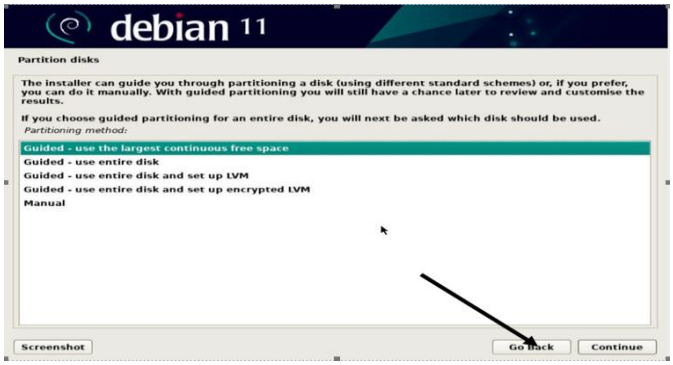
When the USB flash drive is unmounted, please unplug the USB flash drive from the mainboard. And then execute following command to install driver to install the Linux Debian.

 # sh /tmp/hptdd/preinst.sh ← Load driver.

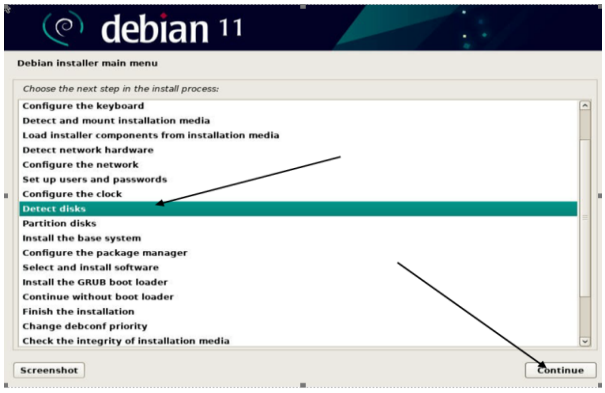
```
:~# sh /tmp/hptdd/preinst.sh
This step succeeded!
```

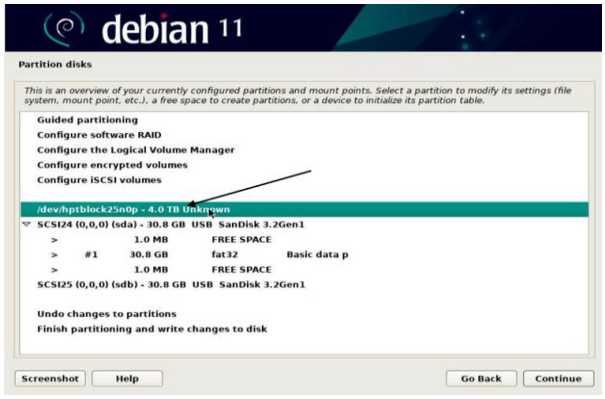
f. Then press **"Ctrl+ALT+F5"** to switch back to installation screen and continue the installation as usual**.**

g. Now click the "**Go Back**" button to detect the disk.

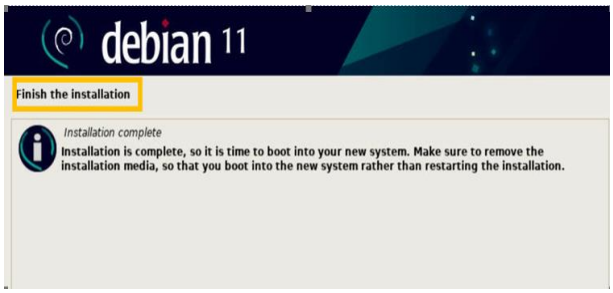


h. Now click the "**Detect disks**" button and "**Continue**" to detect the disk.





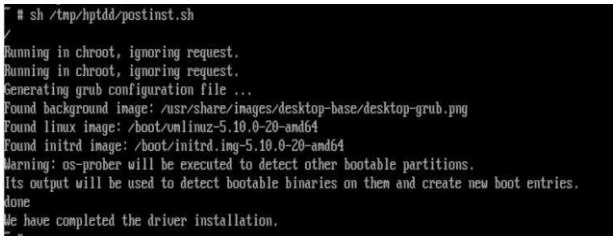
i. When the screen shows that "**Finish the installation**".



press "**Ctrl+ALT+F2**" to the shell and type the following commands:

#sudo sh /tmp/hptdd/postinst.sh ← Install driver.

A message will be displayed that the driver has been installed successfully.



j. Press **"Ctrl+ALT+F5"** to switch back to installation screen and **finish the installation**.

k. If you want to boot from another kernel, please install the RR3700 Series opensource driver after entering the system.

l. Restart to enter the system**, please connect to the internet:**

01. Linux opensource driver link, open the following link to enter the "Software Download" page to download:

    RR3700 Series: https://www.highpoint-tech.com/rr3700-overview

    RR2800 Series: https://www.highpoint-tech.com/rr2800-overview

    RR800 Series: https://www.highpoint-tech.com/rr800-overview

    Rocket 700 Series: https://www.highpoint-tech.com/rocket700-series

02. Please execute the following command before installing the driver

    # umount /dev/sda1
    # mount /dev/sda1 /media/cdrom
    Note: *sda1 is Bootable USB drive, the default repository path is cdrom, so we need to adjust the ISO image mount path to /mnt/cdrom*

    # apt install gcc

    # apt install make

    # apt install linux-headers-$(uname -r)

03. Extract driver package:

    tar zxvf RR37xx_8xx_28xx_Linux_X86_64_Src_vx.xx.xx_xx_xx_xx.tar.gz

04. Run the **.bin** file to install the driver package.

    sh rr37xx_8xx_28xx_linux_x86_64_src_vxx.x.x_xx_xx_xx.bin or

    ./ rr37xx_8xx_28xx_linux_x86_64_src_vxx.x.x_xx_xx_xx.bin

```
root@debian:/home# ./rr37xx_8xx_28xx_linux_x86_64_src_v1.23.13_23_01_16.bin
Verifying archive integrity... All good.
Uncompressing RR3740A/840A Linux Open Source package installer.....................
.....................................
Checking and installing required toolchain and utility ...
Found program make (/usr/bin/make)
Found program gcc (/usr/bin/gcc)
Found program perl (/usr/bin/perl)
Found program wget (/usr/bin/wget)
```

m. Follow the prompts to complete the driver installation.

```
Executing: /lib/systemd/systemd-sysv-install enable hptdrv-monitor
update-rc.d: warning: enable action will have no effect on runlevel 1
Created symlink /etc/systemd/system/default.target.wants/hptdrv-monitor.service
→ /lib/systemd/system/hptdrv-monitor.service.

SUCCESS: Driver rr3740a is installed successfully for kernel 5.10.0-20-amd64.
Please restart the system for the driver to take effect.
If you want to uninstall the driver from the computer, please run hptuninrr3740a
 to uninstall the driver files.
root@debian:/home#
```

n. After the installation is complete, you can perform system update operations.

3 Installing RAID Management Software

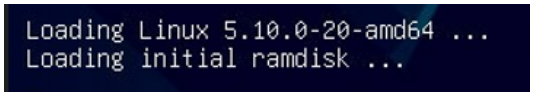
HighPoint RAID Management Software is used to configure and keep track of your hard disks and RAID arrays attached to RR Series RAID controller. Installation of the management software is optional but recommended.

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

4 Troubleshooting

If you do not install the system or update the kernel according to the installation manual, the system will crash and you will not be able to enter. Please follow the steps below.

a. Select the default (kernel: 5.10.0-20-amd64) and enter the system.



b. Install Linux Opensource driver.

c. Linux Opensource driver link, open the following link to enter the "Software Download" page to download:

RR3700 Series: https://www.highpoint-tech.com/rr3700-overview

RR2800 Series: https://www.highpoint-tech.com/rr2800-overview

RR800 Series: https://www.highpoint-tech.com/rr800-overview

Rocket 700 Series: https://www.highpoint-tech.com/rocket700-series

Run the **.bin** file to install the driver package.

sh rr37xx_8xx_28xx_linux_x86_64_src_vxx.x.x_xx_xx_xx.bin or

./ rr37xx_8xx_28xx_linux_x86_64_src_vxx.x.x_xx_xx_xx.bin

```
root@debian:/home# ./rr37xx_8xx_28xx_linux_x86_64_src_v1.23.13_23_01_16.bin
Verifying archive integrity... All good.
Uncompressing RR3740A/840A Linux Open Source package installer.....................
....................................
Checking and installing required toolchain and utility ...
Found program make (/usr/bin/make)
Found program gcc (/usr/bin/gcc)
Found program perl (/usr/bin/perl)
Found program wget (/usr/bin/wget)
```

d. Follow the prompts to complete the driver installation.

```
Executing: /lib/systemd/systemd-sysv-install enable hptdrv-monitor
update-rc.d: warning: enable action will have no effect on runlevel 1
Created symlink /etc/systemd/system/default.target.wants/hptdrv-monitor.service
→ /lib/systemd/system/hptdrv-monitor.service.

SUCCESS: Driver rr3740a is installed successfully for kernel 5.10.0-20-amd64.
Please restart the system for the driver to take effect.
If you want to uninstall the driver from the computer, please run hptuninrr3740a
 to uninstall the driver files.
root@debian:/home#
```

e. After the installation is complete, you can perform system update operations.

5 Rebuilding Driver Module for System Update

When the system updates the kernel packages, the driver module rr3740a.ko should be built and installed manually before reboot.

Please refer to the README file distributed with RR Series RAID Controller opensource package on how to build and install the driver module.

6 Appendix A

Support command: help/info/quit/exit/create/delete

- **Create Command**
  Syntax

  Create Array Type (RAID0/1/10/5/50) Member Disk list (1/1, 1/2|*) Capacity (100|*)

  Note:

  The RR840/RR2840/RR3720/RR3740/RR3742 controllers can support RAID0/1/10/5/50

  The R710/R720 controllers can support RAID0/RAID1/RAID10

  Examples

  <<< create RAID0

  <<< create RAID0 *

  <<< create RAID0 * *

  Create RAID0 array with all disks and with maximum capacity.

  <<< create RAID1 1/1, 1/3 10

  Create RAID1 array with disk 1/1 and 1/3 and with 10GB capacity.

  <<< create RAID10 *

  Create RAID10 array with all disks and with maximum capacity.

  <<< create RAID5 *

  Create RAID5 array with all disks and with maximum capacity.

  <<< create RAID50,3 1/1, 1/2, 1/3, 1/4, 1/5, 1/6

  Create RAID50 array with disk 1/1, 1/2, 1/3, 1/4, 1/5, 1/6 and with sub member count 3 and with maximum capacity.

- **Delete Command**
  Syntax

  delete {array ID}

  Examples

<<< delete 1

Delete the first array from Logical device list.

<<< delete 2

Delete the second array from Logical device list.

- **Info Command**
  Syntax

  info

  Display physical device list and logical list

- **Exit Command**
  Syntax

  Q/q/quit/exit

  Quit the application

- **Help Command**
  Syntax

  H/h/help

  This is help message.