AMD-RAID / AMD RAIDXpert2
Software Installation Guide
RC-8.1.0 Release
Version 1.2

Document Control

Document History

Revision	Issue Date	Changes
1.1	1/19/2016	Initial version. Added Summit. Updated OS list and instructions. Removed section 3, Pre-installation steps. The steps will be different between Bristol and Summit.
1.2	11/30/2016	Updated the Ubuntu installation steps (workaround for the Summit installation issue)

Contents

GENERAL INFORMATION

Purpose

This Installation Guide is designed to assist with system setup, by performing these general procedures:
Copy device drivers to removable storage media for the following operating systems:

- Microsoft® Windows 7 x32 and x64
- Microsoft® Windows Redstone x64
- Red Hat® Linux Enterprise Desktop (RHEL) 7.3 x64 (Summit only)
- Ubuntu Desktop Linux 16.04.01 x32 and x64
- Ubuntu Desktop Linux 16.10 x32 and x64

Install the device drivers and applications on a system at the same time that the Windows or Linux operating system is installed.

System requirements

Component	Requirements
Memory (RAM)	Minimum: 8 GB Recommended: 16 GB
Hard Disk	One to Twelve SATA HDD's or SSD's
Supported Controllers	AMD® Socket AM4-Compatible Processors AMD 300-Series Chipsets
System used for testing	Summit based Myrtle's Bristol based Myrtle's

System setup process

A generic system setup process is described below.

1. Copy the AMD-RAID drivers to a removable storage medium.
2. Power-on the system.
3. Access the platform BIOS window for the system. For supported AMD chipsets, set the SATA mode as RAID. (This enables the loading of the AMD-RAID Option-ROM).
4. Initialize the disks, using the BIOS Configuration Utility.
5. Create arrays, using the BIOS Configuration Utility.
6. Install the AMD-RAID drivers on the system.
7. Load the operating system.
8. Install the OS RAID Management Suite (AMD RAIDXpert2) on the system.

IMPORTANT: To protect your data; always perform a backup prior to installing any new, major hardware or software.

Before you begin...

Have the Windows or Linux operating system installation media available and ready to install.

BOOTABLE ARRAYS: COPY AMD-RAID DRIVERS TO A REMOVABLE STORAGE MEDIUM

Copy AMD-RAID drivers: Windows

A removable storage medium is needed when the OS is installed to an AMD-RAID bootable array.

1. Power-on the system.
2. Locate and use a system that is running a Windows operating system and has a CD DVD drive, floppy disk drive, or an I/O port for removable storage media (such as a USB flash drive).
3. Go to a browser and access the web site of your system supplier or motherboard vendor.
4. Insert the storage medium into the system:
   Windows 7, Windows 10 or Windows Redstone: Connect a USB flash drive to a USB I/O port, or insert a blank CD-DVD disk into the applicable drive.
5. Download the AMD-RAID drivers from the web site to the appropriate removable storage medium.
6. Proceed to Windows: Install AMD-RAID drivers during a Windows OS installation.

Copy AMD-RAID drivers: Linux

NOTE: Only a USB flash drive can be used to copy and load the AMD-RAID Linux drivers.

1. Power-on the system.
2. Locate and use a system that is running a Windows operating system and has a USB I/O port for the USB flash drive.
3. Go to a browser and access the web site of your system supplier or motherboard vendor.
4. Insert a USB flash drive into the USB I/O port of the system.
5. Download the AMD-RAID drivers for the correct distribution version of Linux. Copy the drivers onto the USB flash drive:

   For **Red Hat Linux**: Copy the .iso image file (which matches the distribution version of Linux) to the USB flash drive.

   Example:

   Copy dd-rcraid-RHEL7-3.10.0-514.el7-x86_64.iso for Red Hat Enterprise Linux (RHEL) 7.3 x64.

   For **Ubuntu Linux**: Copy the files contained inside the applicable dd-rcraid-Ubuntu116-4.4.0-31- folder into a dd directory located on a USB flash drive. The following files should be located in the **dd** directory located on the USB flash drive root, for an Ubuntu Linux Desktop installation.

   Example:

   dd

   load_amdraid
   post_install
   post_install2
   pre_install
   rcraid.ko
   rcraid_generic.ko
   readme

6. Proceed to Linux: Install AMD-RAID drivers during a Linux OS installation.

Install AMD-RAID Drivers

Windows: Install AMD-RAID BIOS drivers during a Windows OS installation

Install the AMD-RAID BIOS drivers during a Windows 7 and Redstone Installation

NOTE: The windows described in this guide are typical. Path names and text can vary, depending on user-designated selections and other parameters.

NOTE: When performing a installation, do not boot up with a USB flash key in the system, as the system will use that as the boot device.

1. Power-on the system.
2. Create a bootable array, see Section 3.

3. Insert the Microsoft Windows operating system CD-ROM or DVD into the system's CD or DVD drive.
4. Boot the system and allow it to access the Microsoft Windows operating system CD-ROM or DVD.
5. At the Windows setup window:
    - Select the Language, time and keyboard options
    - Click **Next**
    - Click **Install Now** or similar
    - If prompted, select the desired Operating System
    - Click **Next**
    - Insert the storage medium with the AMD-RAID drivers into the USB port or applicable system drive.
    - Click **Browse**
    - Navigate to the directory containing the saved AMD-RAID drivers
    - Click **OK**
    - Select the first **rcbottom.inf** driver in the list
    - Click **Next**

NOTE: If the installation has multiple controllers, there will be two or more rcbottom.inf's listed.

6. At the Load Driver Window
    - Click **OK**
    - Click **Browse**
    - Navigate to the directory containing the saved AMD-RAID drivers
    - Click **OK**
    - Select the first **rcraid.inf** driver in the list
    - Click **Next**
    - Select (Check Mark) **I Accept the License Terms**
    - Click **Next**
    - Select **Custom: Install Windows Only (advanced)** or similar
7. Once both drivers have been loaded, a valid Virtual Disk appears:
    - Click **Load Drivers**
    - Click **Browse**
    - Navigate to the directory containing the saved AMD-RAID drivers
    - Click **OK**
    - Select the **rccfg.inf** driver in the list
    - Click **Next**
8. At the Where do you want to install Windows
    - Click **Next**
9. Follow the on-screen instructions to complete the installation of the applicable Windows operating system.
10. After the OS is installed, Open Device Manager and verify the following:
    - Expand Storage Controllers: there will be an entry(ies) listed as **AMD-RAID Bottom Device**
    - Expand Storage Controllers: there will be an entry(ies) listed as **AMD-RAID Controller**
    - Expand System Devices: there will be an entry listed as **AMD-RAID Config Device**
11. Remove the storage medium and Microsoft Windows OS CD-ROM or DVD from the applicable drive(s) or port, proceed to the Windows: Install the AMD RAIDXpert2 Management Suite.

Linux: Install AMD-RAID BIOS drivers during a Linux OS Installation

NOTE: The Linux operating system modules must include the gcc+ compiler and the pthreads library, so that the rcadm program can be installed properly.
There are separate procedures in this section for:

Install the AMD-RAID BIOS drivers during a RHEL 7.x Linux Installation

NOTE: Prior to starting this procedure, obtain the AMD-RAID drivers from your system supplier or motherboard vendor. Copy the AMD-RAID drivers to a USB flash drive. See Copy AMD-RAID drivers: Linux.
NOTE: When installing Red Hat Linux, use the Linux dd installation mode instead of the Linux expert mode.
NOTE: Not all of the windows indicated in this procedure will appear during the installation.

1. Power-on the system.
2. Insert the Red Hat operating system CD-ROM or DVD into the system's CD or DVD drive.
3. Create a bootable array, see Section 3.
4. At the **Red Hat Enterprise Linux Welcome** window
   - Press the **Up Arrow**
   - Select **Install Red Hat Enterprise Linux 7.x** (should be listed White)
   - Press **Tab**
   - Press the down arrow to the vmlinux initrd.img entry
   - Press the **END** key
   - Add "**`modprobe.blacklist=ahci inst.dd nomodeset`**" to the end of the string
     Example – vmlinux initrd.img……..quiet modprobe.blacklist=ahci inst.dd nomodeset
   - Press **Enter**
5. Wait for the **Driver Disk Device Selection** to appear
   Insert the USB drive (which contains the AMD-RAID drivers) into the USB port.
   - Press the **r** key
   - Press **Enter**
6. At the **Driver Disk Device Selection**
   - Press **1** – number of the flash drive
   - Press **Enter**
7. At the **Choose Driver Disk ISO file**
   - Press **1** – number of the dd-rcraid-RHEL….el7.x86_64.iso entry
   - Press **Enter**
8. At the **Select Drivers to Install**
   - Press **1** – number of the /media/DD/…..x86_64.rpm entry
   - Press **Enter**
     The /media/DD/… is now selected and should look like [X] /media/DD/……x86_64.rpm
   - Press **C**
   - Press **Enter**
9. At the **Driver Disk Device Selection**
   - Press **C**
   - Press **Enter**
10. At the **Welcome to Red Hat Enterprise Linux** Screen
    - Choose the desired **Language**
    - Choose the desired **Country**
    - In the bottom right corner, Click **Continue**
11. At the **Installation Summary** Screen
    - Configure the following:
    - Under **Localization**
    - **Date and Time**
    - **Keyboard**
    - **Language Support**
    - Under **Software**
    - **Installation Source**
    - **Software Selection**

- Under **Base Environments**
- Select **Server with GUI**
- Under **Add-Ons for Selected Environments**
- Select **Compatibility Library**
- In the upper left corner, Click **Done**
- Under **System**
- **Installation Destination**
- Under **Local Standard Disks**
- Select **AMD-RAID Array**
- In the upper left corner, Click **Done**
- Configure **Kdump**
- **Network and Hostname**
- In the bottom left corner, enter a valid **Hostname**
- Select a **Ethernet Port**
- In the bottom right corner, Click **Configure**
- Enter valid entries
- Click **Save**
- In the upper left corner, Click **Done**

12. In the bottom right corner, Click **Begin Installation**
13. At the **Configuration** Window
    - Click **Root Password**
    - Enter an applicable root password
    - Re-enter the root password
    - In the upper right corner, Click **Done**
    - Click **User Creation**
    - Enter a **Full Name**
    - Enter a **Username**
    - Enter an applicable password
    - Re-enter the user password
    - In the upper right corner, Click **Done**
14. At the **Installation Complete**
    - In the bottom right corner, Click **Reboot**
    - Remove the USB flash drive
    - Once the installation media has been ejected, remove it
15. At the **Initial Setup** Window
    - Click **License Information**
    - Review and Select (Check Mark) **I accept the License Agreement**
    - If desired, Configure **Subscription Management Registration**
    - If not already configured, configure **Configure Network & Hostname**
    - In the upper left corner, Click **Done**
    - In the bottom right corner, Click **Finish Configuration**
16. If a pop-up appears stating that the system has to reboot
    - Click **OK**
17. Login to the system
    - Select a user
    - Enter a password
18. At the **Welcome** window
    - Select the desired **Language**
    - Click **Next**
19. At the **Typing – Select your Keyboard Layout or Input Sources** Window

- Select the desired **Input Source**
- Click **Next**

20. If desired, Configure **Online Accounts**
    - Click **Next**
21. Click **Start using Red Hat Enterprise Linux Server**
22. For RHEL 7.x x64 installs, manually load the following el7.686 rpms.
    - Allow the system to boot and login as **root** when prompted.
    - Insert the RHEL 7.x 64 installation CD/DVD into the system.
    - Install the following rpms:
        i. **libX11…el7.i686**
        ii. **libXau…el7.i686**
        iii. **libxcb…el7.i686**
        iv. **libXext…el7.i686**
        v. **libXi…el7.i686**
        vi. **libXtst…el7.i686**
        vii. **gtk2……el7.i686**
        viii. **libstdc++*.el7.i686**
        ix. **libSM-*.el7.i686**
        x. **libpng12*.el7.i686**
        xi. **adwaita-gtk2-theme-*.el7.i686**
        xii. **libcanberra-gtk2-*.el7.i686**
        xiii. **PackageKit-gtk3-module-*.el7.i686**
23. Open a Web Browser
    i. Go to **rpmfind.net**
    ii. Search for **compat-libstdc++-33**
    iii. Download and install the **compat-libstdc++-33-3.2.3-71.el7.i686.rpm**
    iv. Reboot system.

Install the AMD-RAID BIOS drivers during a Ubuntu Desktop Linux Installation

NOTE: Prior to starting this procedure, obtain the AMD-RAID drivers from your system supplier or motherboard vendor. Copy the AMD-RAID drivers to the **dd** directory on a USB flash drive. See Copy AMD-RAID drivers: Linux.

NOTE: The Ubuntu driver CD-ROM .iso image contains all Linux variations for a particular release.

NOTE: Not all of the windows indicated in this procedure will appear during the installation.

1. Power-on the system.
2. Remove the Ethernet cable from the system.
3. Insert the Ubuntu Desktop Linux operating system CD-ROM or DVD into the system's CD or DVD drive.
4. Create a bootable array, see Section 3.
5. As soon as Ubuntu Desktop Linux kernel starts loading
    - **Press F6.**
    - This will bring you into the Advanced Options.
6. Select the desired Language
    - Press **Enter**.
7. From the list, select **Try Ubuntu without Installing**
8. Press **F6 – Other Options**
9. Press **ESC**
    - At the end of the Boot Options string add the following:
    - **`break=mount modprobe.blacklist=ahci nomodeset`**

Note: The string should look like: **`splash --- break=mount modprobe.blacklist=ahci nomodeset`**

- Press **Enter**

10. When the BusyBox shell appears do the following:
    - Install the USB flash drive
    - Type: **`mount -t vfat /dev/sda1 /tmp`**
      Note: /dev/sda1 may need to be changed to /dev/sdb1 or /dev/sdc1…depending on the number of devices.
    - Type: **`cp -ap /tmp/dd /`**
    - Type: **`/dd/pre_install`**
    - Type: **`umount /tmp`**
    - Type: **exit**
    - Remove the USB flash drive
11. Wait patiently for the Ubuntu Desktop to appear
12. Double Click the **Install Ubuntu 16.04.1 LTS** Desktop ICON
13. From the **Welcome** window
    - Select the desired Language
    - Click **Continue**.
14. From the **Preparing to Install Ubuntu** window
    - Accept the defaults
    - Click **Continue**.
15. From the **Installation Type** window
    - Select **Erase Disk and install Ubuntu**
    - Click **Install Now**
16. From the **Write Changes to Disks?** window
    - Click **Continue**
17. Select the desired Time Zone
    - Click **Continue**
18. Select the desired Keyboard layout
    - Click **Continue**
19. Enter valid entries for the following:
    - Your name
    - Computer name
    - User name
    - Password
    - Confirm Password
    - Click **Continue**
20. When the **"Installation Complete"** window appears, do the following:
    - Install the USB flash drive
    - Press **CTRL+ALT+T**
    - Enter: **`sudo mount -t vfat /dev/sda1 /mnt`**
    - Enter: **`sudo cp -ap /mnt/dd /`**
    - Enter: **`sudo /dd/post_install`**
21. Wait for the **Setup is Complete**
    - Press **CTRL+D**
    - Click **Restart Now**, to finish the installation.
22. The installation will prompt the user to remove the installation media, remove the CD/DVD and USB flash drive from the system.
    - When installation media has been removed

- Press **Enter**
- Reconnect the Ethernet Cable

23. Proceed to the Management Suite installation procedure. See Linux: Install the AMD RAIDXpert2 Management Suite.

Windows: Install AMD-RAID UEFI drivers during a Windows OS installation

Install the AMD-RAID UEFI drivers during a Windows 7 and Redstone Installation

NOTE: The windows described in this guide are typical. Path names and text can vary, depending on user-designated selections and other parameters.

1. Power-on the system.
2. Create a bootable array, see Section 3.
3. Insert the Microsoft Windows operating system CD-ROM or DVD into the system's CD or DVD drive.
4. Boot the system and allow it to access the Microsoft Windows operating system CD-ROM or DVD.
5. At the Windows setup window:
    - Select the language, time and keyboard options
    - Click **Next**
    - Click **Install Now** or similar
    - If prompted, select the desired Operating System
    - Click **Next**
    - Insert the storage medium with the AMD-RAID drivers into the USB port or applicable system drive.
    - Click **Browse**
    - Navigate to the directory containing the saved AMD-RAID drivers
    - Click **OK**
    - Select the first **rcbottom.inf** driver in the list
    - Click **Next**

NOTE: If the installation has multiple controllers, there will be two or more rcbottom.inf's listed.

6. At the Load Driver Window
    - Click **OK**
    - Click **Browse**
    - Navigate to the directory containing the saved AMD-RAID drivers
    - Click **OK**
    - Select the first **rcraid.inf** driver in the list
    - Click **Next**
    - Select (Check Mark) **I Accept the License Terms**
    - Click **Next**
    - Select **Custom: Install Windows Only (advanced)** or similar
7. Once both drivers have been loaded, a valid Virtual Disk appears:
    - Click **Load Drivers**
    - Click **Browse**
    - Navigate to the directory containing the saved AMD-RAID drivers
    - Click **OK**
    - Select the **rccfg.inf** driver in the list
    - Click **Next**
8. At the Where do you want to install Windows
    - Click **Next**
9. Follow the on-screen instructions to complete the installation of the applicable Windows operating system.
10. After the OS is installed, Open Device Manager and verify the following:

- Expand Storage Controllers: there will be an entry(ies) listed as **AMD-RAID Bottom Device**
- Expand Storage Controllers: there will be an entry(ies) listed as **AMD-RAID Controller**
- Expand System Devices: there will be an entry(ies) listed as **AMD-RAID Config Device**

11. Remove the storage medium and Microsoft Windows OS CD-ROM or DVD from the applicable drive(s) or port, proceed to the Windows: Install the AMD RAIDXpert2 Management Suite.

Linux: Install AMD-RAID UEFI drivers during a Linux OS Installation

NOTE: The Linux operating system modules must include the gcc+ compiler and the pthreads library, so that the rcadm program can be installed properly.

Install the AMD-RAID UEFI drivers during a RHEL 7.x Linux Installation

NOTE: Prior to starting this procedure, obtain the AMD-RAID drivers from your system supplier or motherboard vendor. Copy the AMD-RAID drivers to a USB flash drive. See Copy AMD-RAID drivers: Linux.
NOTE: When installing Red Hat Linux, use the Linux dd installation mode instead of the Linux expert mode.
NOTE: Not all of the windows indicated in this procedure will appear during the installation.

1. Power-on the system.
2. Insert the Red Hat operating system CD-ROM or DVD into the system's CD or DVD drive.
3. Create a bootable array, see Section 3.
4. At the **Red Hat Enterprise Linux Welcome** window
   - Press the **Up Arrow**
   - Select **Install Red Hat Enterprise Linux 7.x** (should be listed White)
   - Press the **E** key
   - Press the down arrow to the linuxefi /images entry
   - Press the **END** key
   - Add "**`modprobe.blacklist=ahci inst.dd nomodeset`**" to the end of the string
     Example – linuxefi /images……..quiet modprobe.blacklist=ahci inst.dd nomodeset
   - Press **CTRL X**
5. Wait for the **Driver Disk Device Selection** to appear
   Insert the USB drive (which contains the AMD-RAID drivers) into the USB port.
   - Press the **r** key
   - Press **Enter**
6. At the **Driver Disk Device Selection**
   - Press **1** – number of the flash drive
   - Press **Enter**
7. At the **Choose Driver Disk ISO file**
   - Press **1** – number of the dd-rcraid-RHEL….el7.x86_64.iso entry
   - Press **Enter**
8. At the **Select Drivers to Install**
   - Press **1** – number of the /media/DD/…..x86_64.rpm entry
   - Press **Enter**
     The /media/DD/… is now selected and should look like [X] /media/DD/……x86_64.rpm
   - Press **C**
   - Press **Enter**
9. At the **Driver Disk Device Selection**
   - Press **C**
   - Press **Enter**
10. At the **Welcome to Red Hat Enterprise Linux** Screen
    - Choose the desired **Language**
    - Choose the desired **Country**
    - In the bottom right corner, Click **Continue**

11. At the **Installation Summary** Screen
    - Configure the following:
    - Under **Localization**
    - **Date and Time**
    - **Keyboard**
    - **Language Support**
    - Under **Software**
    - **Installation Source**
    - **Software Selection**
    - Under **Base Environments**
    - Select **Server with GUI**
    - Under **Add-Ons for Selected Environments**
    - Select **Compatibility Library**
    - In the upper left corner, Click **Done**
    - Under **System**
    - **Installation Destination**
    - Under **Local Standard Disks**
    - Select **AMD-RAID Array**
    - In the upper left corner, Click **Done**
    - Configure **Kdump**
    - **Network and Hostname**
    - In the bottom left corner, enter a valid **Hostname**
    - Select a **Ethernet Port**
    - In the bottom right corner, Click **Configure**
    - Enter valid entries
    - Click **Save**
    - In the upper left corner, Click **Done**
12. In the bottom right corner, Click **Begin Installation**
13. At the **Configuration** Window
    - Click **Root Password**
    - Enter an applicable root password
    - Re-enter the root password
    - In the upper right corner, Click **Done**
    - Click **User Creation**
    - Enter a **Full Name**
    - Enter a **Username**
    - Enter an applicable password
    - Re-enter the user password
    - In the upper right corner, Click **Done**
14. At the **Installation Complete**
    - In the bottom right corner, Click **Reboot**
    - Remove the USB flash drive
    - Once the installation media has been ejected, remove it
15. At the **Initial Setup** Window
    - Click **License Information**
    - Review and Select (Check Mark) **I accept the License Agreement**
    - If desired, Configure **Subscription Management Registration**
    - If not already configured, configure **Configure Network & Hostname**
    - In the upper left corner, Click **Done**
    - In the bottom right corner, Click **Finish Configuration**

16. If a pop-up appears stating that the system has to reboot
    - Click **OK**
17. Login to the system
    - Select a user
    - Enter a password
18. At the **Welcome** window
    - Select the desired **Language**
    - Click **Next**
19. At the **Typing – Select your Keyboard Layout or Input Sources** Window
    - Select the desired **Input Source**
    - Click **Next**
20. If desired, Configure **Online Accounts**
    - Click **Next**
21. Click **Start using Red Hat Enterprise Linux Server**
22. For RHEL 7.x x64 installs, manually load the following el7.686 rpms.
    - Allow the system to boot and login as **root** when prompted.
    - Insert the RHEL 7.x 64 installation CD/DVD into the system.
    - Install the following rpms:

xiv. **libX11…el7.i686**
xv. **libXau…el7.i686**
xvi. **libxcb…el7.i686**
xvii. **libXext…el7.i686**
xviii. **libXi…el7.i686**
xix. **libXtst…el7.i686**
xx. **gtk2……el7.i686**
xxi. **libstdc++*.el7.i686**
xxii. **libSM-*.el7.i686**
xxiii. **libpng12*.el7.i686**
xxiv. **adwaita-gtk2-theme-*.el7.i686**
xxv. **libcanberra-gtk2-*.el7.i686**
xxvi. **PackageKit-gtk3-module-*.el7.i686**

23. Open a Web Browser
    v. Go to **rpmfind.net**
    vi. Search for **compat-libstdc++-33**
    vii. Download and install the **compat-libstdc++-33-3.2.3-71.el7.i686.rpm**
    viii. Reboot system.

Install the AMD-RAID UEFI drivers during a Ubuntu Desktop x64 Linux Installation

NOTE: Prior to starting this procedure, obtain the AMD-RAID drivers from your system supplier or motherboard vendor. Copy the AMD-RAID drivers to the dd directory on a USB flash drive. See Copy AMD-RAID drivers: Linux.

NOTE: The Ubuntu driver CD-ROM .iso image contains all Linux variations for a particular release.

NOTE: Not all of the windows indicated in this procedure will appear during the installation.

1. Power-on the system.
2. Remove the Ethernet cable from the system.
3. Insert the Ubuntu Desktop Linux operating system CD-ROM or DVD into the system's CD or DVD drive.
4. Create a bootable array, see Section 3.
5. Boot to the Ubuntu Desktop Linux CD-ROM or DVD
    - This will bring you into GNU GRUB Window.

6. Select **Try Ubuntu without installing**
    - Press the **E** key to edit the commands before booting
7. Find the string that starts with `linux /casper/vmlinuz.efi file=/cdrom…..splash --`
    - Press the **END** key
    - At the end of the Boot Options string add the following: **`break=mount modprobe.blacklist=ahci nomodeset`**
      Note: The string should look like: **`splash --- break=mount modprobe.blacklist=ahci nomodeset`**
    - Press **F10**, to boot.
8. When the BusyBox shell appears perform the following:
      Note: If the BusyBox shell doesn't appear, reboot and try again.
    - Install the USB flash drive
    - Type: **`mount –t vfat /dev/sda1 /tmp`**
      Note: /dev/sda1 may need to be changed to /dev/sdb1 or /dev/sdc1…depending on the number of devices.
    - Type: **`cp –ap /tmp/dd /`**
    - Type: **`/dd/pre_install`**
    - Type: **`umount /tmp`**
    - Type: **exit**
    - Remove the USB flash drive
9. Wait patiently for the Ubuntu Desktop to appear.
10. Double click the **Install Ubuntu 16.04.1 LTS** desktop ICON
11. From the **Welcome** window
    - Select the desired Language
    - Click **Continue**
12. From the **Preparing to Install Ubuntu** window
    - Accept the defaults
    - Click **Continue**
13. From the **Installation Type** window
    - Select **Erase Disk and install Ubuntu**
    - Click **Install Now**
14. From the **Write Changes to Disks?** Window
    - Click **Continue**
15. Select the desired Time Zone
    - Click **Continue**
16. Select the desired Keyboard layout
    - Click **Continue**
17. Enter valid entries for the following:
    - Your name
    - Computer name
    - User name
    - Password
    - Confirm Password
    - Click **Continue**
18. When the **"Installation Complete"** window appears, do the following:
    - Install the USB flash drive
    - Press **CTRL+ALT+T**
    - Enter: **`sudo mount –t vfat /dev/sda1 /mnt`**
    - Enter: **`sudo cp –ap /mnt/dd /`**

- Enter: **`sudo /dd/post_install`**

19. Wait for the **Setup is Complete**
    - Press **CTRL+ALT+D**
    - Click **Restart Now**, to finish the installation.
20. The installation will prompt the user to remove the installation media, remove the CD/DVD and USB flash drive from the system.
    - When installation media has been removed
    - Press **Enter**
    - Reconnect the Ethernet Cable
21. Proceed to the Management Suite installation procedure. See Linux: Install the AMD RAIDXpert2 Management Suite.

Install the AMD-RAIDXpert2 Management Suite and Web GUI

Windows – AMD-RAIDXpert2 Management Suite

Obtain the latest Catalyst executable file from your system supplier or motherboard vendor. Download the file to the system's desktop and execute it. Follow the on-screen prompts.

Windows – AMD RAIDXpert2 Management Suite Installation (Manually)

1. Obtain the AMD RAIDXpert2 Management Suite executable file (Setup.exe) from your system supplier or motherboard vendor. Download Setup.exe to the system's desktop.

2. All supported Windows operating systems, install the Microsoft Visual C++ 2012 Redistributable Package(s)

    - For x32 bit Windows Installations

        i. Install **vcredist_x86.exe**.

    - For x64 bit Windows Installations

        ii. Install **vcredist_x86.exe**

        iii. Install **vcredist_x64.exe**

3. All supported Windows operating systems, install the Microsoft Visual C++ 2013 Redistributable Package(s)

    - For x32 bit Windows Installations

        i. Install **vcredist_x86.exe**.

    - For x64 bit Windows Installations

        ii. Install **vcredist_x86.exe**

        iii. Install **vcredist_x64.exe**

4. Install AMD RAIDXpert2 (setup.exe) by typing:

    - Open a command prompt, must be run as Administrator

    - cd C:\User\User_Name\Desktop

- **`Setup.exe -I silent`**
  NOTE: for the Web GUI to function correctly, rc_cgi and apache must be running.

5. Turn off Windows Firewall (or unblock during step 3).
6. In a DOS prompt type “ipconfig /all” to obtain system IP ADDRESS.
7. Click on the RAIDXpert2 Desktop Icon

   Default credentials are:

   - Username – **admin**
   - Password – **admin**

   Change the credentials:

   - Create new username
   - Create new password

8. Re-log into the system with the new credentials.

Linux – AMD RAIDXpert2 Management Suite Installation

RHEL Linux – AMD RAIDXpert2 Web GUI Installation

1. Obtain the AMD RAIDXpert2 Management Suite executable file (Setup.sh) from your system supplier or motherboard vendor. Download the Setup.sh file to the system’s desktop.
2. Perform the following, if not already installed:
   - Install these RHEL i686 rpms:
     i. libX11
     ii. libXau
     iii. libXcb
     iv. libXext
     v. libXi
     vi. libXtst
     vii. compat-libstdc++
     viii. gtk2
     ix. libSM
     x. libpng12
     xi. adwaita-gtk2-theme
     xii. libcanberra-gtk2
     xiii. PackageKit-gtk3-module
3. Install the AMD RAIDXpert2 (setup.sh).
   - Open a terminal / console window and cd to /root/Desktop. (or similar)
   - Enter: **`./setup.sh -i silent`**
4. Copy xampp-linux-1.8.1.tar.gz to the system’s Desktop.
   - Open a terminal / console window and cd to /root/Desktop. (or similar)
   - Enter into Super User mode: **`su`**
   - Enter: **`tar xvfz xampp-linux-1.8.1.tar.gz -C /opt`**
5. Enter:
   - **`cd /opt/raidxpert2/htdocs`**
   - Enter: **`cp -rv raidxpert2 /opt/lampp/htdocs`**
6. Starting lamp.

- Enter: **`/opt/lampp/lampp startapache`**

Apache doesn't start automatically, so after every reboot,

- Enter:**`/opt/lampp/lampp startapache`**

NOTE: for the Web GUI to function correctly, rc_cgi and lampp must be running.

7. Starting rcpopup
   - Enter:**`/opt/raidxpert2/bin/rcpopup &`**

   rcpopup doesn't start automatically, so after every reboot,
   - Enter:**`/opt/raidxpert2/bin/rcpopup &`**

8. Click on the **RAIDXpert2** Desktop Icon

   Default credentials are:

   - Username – **admin**
   - Password – **admin**

   Change the credentials:

   - Create new username
   - Create new password

9. Relog into the system with the new credentials.

Ubuntu Linux – AMD RAIDXpert2 Web GUI Installation

1. Obtain the AMD RAIDXpert2 Management Suite executable file (Setup.sh) from your system supplier or motherboard vendor. Download the Setup.sh file to the system's desktop.
2. Perform the following:
   - Ubuntu 15.xx 32 bit – enter the following:
     `sudo ln -s /lib/i386-linux-gnu/libc.so.6 /lib/libc.so.6`
   - Ubuntu 15.xx 64 bit – enter the following:
     `sudo ln -s /lib/x86_64-linux-gnu/libc.so.6`
   - Ubuntu 15.xx 64 bit – install the following:

```
sudo apt-get install lib32z1

sudo apt-get install lib32ncurses5

sudo apt-get install libxext6:i386

sudo apt-get install libxtst6:i386

sudo apt-get install libxi6:i386

sudo apt-get install libstdc++6:i386

sudo apt-get install libgtk2.0-0:i386

sudo apt-get install libxxf86vm1:i386

sudo apt-get install libsm6:i386

sudo apt-get install gtk2-engines-murrine:i386
```

sudo apt-get install libcanberra-gtk-module:i386

3. Install the AMD RAIDXpert2 (setup.sh)
   - Open a terminal / console window and cd to /root/Desktop. (or similar)
   - Enter: **sudo ./setup.sh –i silent**
4. Copy xampp-linux-1.8.1.tar.gz to the system's Desktop.
   - Open a terminal / console window and cd to /root/Desktop. (or similar)
   - Enter: **sudo tar xvfz xampp-linux-1.8.1.tar.gz –C /opt**
5. Enter:
   - **cd /opt/raidxpert2/htdocs**
   - **sudo cp –rv raidxpert2 /opt/lampp/htdocs**
6. Starting lampp
   - Enter: **sudo /opt/lampp/lampp startapache**

   Apache doesn't start automatically, so after every reboot,
   - Enter:**/opt/lampp/lampp startapache**

   NOTE: for the Web GUI to function correctly, rc_cgi and lampp must be running.

7. Starting rcpopup
   - Enter:**/opt/raidxpert2/bin/rcpopup &**

   rcpopup doesn't automatically, so after every reboot,
   - Enter:**/opt/raidxpert2/bin/rcpopup &**

8. Click on the RAIDXpert2 Desktop Icon

   Default credentials are:

   - Username – **admin**
   - Password – **admin**

   Change the credentials:

   - Create new username
   - Create new password

9. Relog into the system with the new credentials.

Appendix – rcadm.efi information

rcadm -?

-?, --help

Displays all primary rcadm commands, or if used after an option, displays help for that specific option.

-log, --log-file

Print output to a log file as well as standard output. Requires a log file name argument. Overwrites existing file. Only one occurrence of this option on the command line is allowed.

Example: rcadm -M -qa -v -log status.txt

-C, --create

Command for creating arrays. Array types include linear (JBOD), volume (JBOD), RAID0, RAID1, RAID1n, RAID10, RAID10n, RAID5, RAID50, RAID6, RAID60, and RAIDAble. Some of the major functions include assigning spare disks; setting array size; setting the number of disks in each submember of a RAID10n or RAID50 array; and setting cache attributes.

-D, --delete

Command for deleting arrays. This mode does not have any optional arguments.

-M, --manage

Commands for managing and querying controllers, arrays, and disks. Some of the major functions include querying for information, adding and removing dedicated and global spare disks, setting cache attributes for arrays and disks, performing consistency checks on redundant array types, initializing disks, prioritizing tasks for arrays, scanning arrays and disks for changes in status, and hiding or unhiding arrays.

rcadm -M

MANAGE

-a, --array

Used with certain options to specify arrays.

-as, --add-spare

Adds a dedicated spare disk to an array. No space is reserved on the disk selected.

-rs, --remove-spare

Removes a dedicated spare disk from an array.

-ras, --remove-all-spares

Removes any spares from an array.

-ags, --add-global-spare

Adds a disk as a global spare. No space is reserved on the disk selected.

-rgs, --remove-global-spare

Removes a global spare disk.

-ca, --cache-array

Sets the cache attributes for an array. Cache attributes include read cache (r), read and write-back cache (rw), write-back cache (w), and no cache (nc).

-cd, --cache-disk

Sets the cache attributes for a disk. Cache attributes include read cache (r), read and write-back cache (rw), write-back cache(w), and no cache (nc).

-d, --disk

A required qualifier used with certain options to specify disks.

-h, --hide

Hides an array from the operating system.

-uh, --unhide

Unhides an array, making it visible to the operating system.

-id, --initialize-disk

Initializes a disk. If the disk is new and has not been used, you must initialize it before you can create arrays.

-n, --name

Identifies an array with a user-supplied name. The name can be up to 30 characters, but only 17 of those characters display in the BIOS.

-p, --priority

Sets an array's task priority from 1-10, with 10 being the highest priority.

-q, --query

Lists information about specific controllers, arrays, and disks.

-qa, --query-all

Lists information about controllers, arrays, and disks.

-v, --verbose

Modifier of the --query and --query-all option. Specifies more detail for arrays and disks.

-rsc, --rescan

Rescans the serial ATA (SATA) channels for new or removed disks.

-sa, --scan-array <on|off>

Specifies if background array scan scanning is on or off.

-sp, --smart-poll

Turns SMART polling on or off for the specified drive(s).

-t, --task

Used to pause, resume, and remove tasks.

-ul, --unlink

Unlinks two arrays linked through a create copy operation.

SYNTAX and EXAMPLES

ADD SPARE

--add-spare --array <list> --disk <list>

-as -a <list> -d <list>

Examples: rcadm --manage --add-spare --array * --disk 1

rcadm -M -as -a 1 2 -d 5 6

REMOVE SPARE

--remove-spare --array <list> --disk <list>

-rs -a <list> -d <list>

Examples: rcadm --manage --remove-spare --array 5 --disk *

rcadm -M -rs -a * -d 5

REMOVE ALL SPARES

--remove-all-spares --array <list>

-ras -a <list>

Examples: rcadm --manage --remove-all-spares --array 5

rcadm -M -ras -a *

ADD GLOBAL SPARE

--add-global-spare --disk <list>

-ags -d <list>

Examples: rcadm --manage --add-global-spare --disk 1 2 3

rcadm -M -ags -d *

REMOVE GLOBAL SPARE

--remove-global-spare --disk <list>

-rgs -d <list>

Examples: rcadm --manage --remove-global-spare --disk *

rcadm -M -rgs -d 5

CACHE SETTINGS FOR ARRAYS

--cache-array <cache_attribute> --array <list>

-ca <cache_attribute> -a <list>

Cache attributes: <r> for read cache

<rw> for read and write-back cache

<w> for write-back cache

<nc> for no cache

Examples: rcadm --manage --cache-array rw --array *

rcadm -M -ca nc -a 1

DISK SETTINGS (Advanced)

Disk cache:

--cache-disk <cache_attribute> --disk <list>

-cd <cache_attribute> -d <list>

Cache attributes: <r> for read cache

<rw> for read and write-back cache

<w> for write-back cache

<nc> for no cache

Examples: rcadm --manage --cache-disk r --disk 1 2 3

rcadm -M -cd w -d *

HIDE ARRAY

--hide --array <list>

-h -a <list>

Examples: rcadm --manage --hide --array 5 6

rcadm -M -h -a 4

UNHIDE ARRAY

--unhide --array <list>

-uh -a <list>

Examples: rcadm --manage --unhide --array *

rcadm -M -uh -a 5

INITIALIZE DISK

--initialize-disk --disk <list>

-id -d <list>

Examples: rcadm --manage --initialize-disk --disk *

rcadm -M -id -d 1 2 3

NAME ARRAY

--name "name" --array <list>

-n "name" -a <list>

Examples: rcadm --manage --name "System Disk" --array 5

rcadm -M -n "Backup Disk" -a 4

QUERY

--query [--array <list>] [--disk <list>]

[--verbose]

-q [-a <list>] [-ct <list>] [-d <list>] [-v]

Examples: rcadm --manage --query --array 1 --disk --verbose

rcadm -M -q -a 1 2 3 -d -v

QUERY ALL

--query-all

-qa

Example: rcadm --manage --query-all

RESCAN DISKS

--rescan

-rsc

Example: rcadm --manage --rescan

SCAN ARRAY

--scan-array <on|off> --array <array_number>

-sa <on|off> -a <array_number>

Example: rcadm -M --array 1 --scan-array on

rcadm -M -a 1 -sa off

SMART POLL

--smart-poll <on|off> --disk <list>

-sp <on|off> -d <list>

Example: rcadm --manage --smart-poll on --disk

rcadm -M -sp off -d 1 2 3

TASK CONTROL

--task <task_operation> --array <array_number>

-t <task_operation> -a <array_number>

Task Operation

<pause> to temporarily pause a task

<resume> to continue running a task

<remove> to permanently remove a task

Examples: rcadm --manage --task pause --array 5

rcadm -M -t remove -a 4

TASK PRIORITY

--priority <1..10> --array <list>

-p <1..10> -a <list>

Examples: rcadm --manage --priority 5 --array 6

rcadm -M -p 1 -a

UNLINK ARRAY

--unlink --array <array_number>

-ul -a <array_number>

Examples: rcadm --manage --unlink --array 2

rcadm -M -ul -a 5

rcadm -C

CREATE

Long form:

rcadm --create <raid_type> --disk <list> [--size <size_mb>]

[--sub-member <num>] [--spare-disk <list>]

[--no-sync] [--d-spare] [--cache <r,rw,w,nc>]

[--max-size] [--name "name"] [--priority <1..10>]

[--zero][--scan-array]

Short form:

rcadm -C <raid_type> -d <list> [-s <size_mb>] [-sub <num>]

[-sp <list>] [-ns] [-ds] [-ca <r, rw, w, nc>] [-ms]

[-n "name"] [-p <1..10>] [-z] [-sa] }

RAID Types:

--volume, -v Single disk or concatenation of disks (JBOD)

--raidable, -ra Single disk, RAIDAble

--raid0, -r0 Stripe of two or more disks

--raid1, -r1 Mirror of two disks

--raid10, -r10 Stripe set of mirror sets

--raid5, -r5 Stripe set with parity, three to sixteen disks

OPTIONS

-sp, --spare-disk

Specifies the dedicated spare disk or disks to assign, with a maximum of four. No space is reserved on the selected disks.

-s, --size

Specifies the size of the array in MBs. If you do not use this option, the largest possible size is used by default.

-ns, --no-sync

Disables background synchronization of redundant types when creating the array.

-ca, --cache

Specifies a cache setting for the array(s): read cache <r>, read and write-back cache <rw>, write-back cache <w>, or no cache <nc>. The default is read and write-back cache <rw>.

-ms, --max-size

Prints the maximum possible size for an array without actually creating an array.

-n, --name

Identifies an array with a user-supplied name. The name can be up to 30 characters, but only 17 of those characters display in the BIOS.

-p, --priority

Sets the background initialization task priority from 1 to 10, with 10 being the highest priority. For redundant array types only.

-led, --leave-existing-data

Leaves the existing data on the disks untouched after the array is created. This option can be used to try to recover user data when an array has been accidentally deleted or the configuration information is lost but the data is still intact. Unless you immediately recreate the array after deleting it and no other tasks have been performed, the likelihood of recovering data with this method is very low.

-d, --disk

A required qualifier used with the --create option to specify the disk or disks to be included in the array.

-sa, --scan-array

Specifies that a background array scan should be continuously run whenever the array is idle (Default is off).

-z, --zero

Zero the array in the foreground. This method is faster than doing a background consistency verifies if the array is a redundant type. For non redundant types the zero option can be used to verify all blocks in the array can be accessed.

EXAMPLES

Example: Create a RAID5 set of the maximum possible size using all disks.

```
rcadm -C --raid5 --disk *
```

Example: Create a RAID1 set of the maximum possible size, with a spare disk and without a background initialization task.

```
rcadm -C --raid1 --spare-disk 3 --disk 1 2 --no-sync
```

Example: Print the maximum size a RAID5 array could be using all disks without actually creating the array.

rcadm -C --raid5 --disk * --max-size

rcadm -D

DELETE

Long form:

--delete --array <list> [--no-ask]

Short form:

-D -a <list> [-na] [-cg <group number>]

OPTIONS

-na, --no-ask

If the no ask option is specified the array is deleted without confirmation.

EXAMPLES

Example: Delete arrays 1 and 2.

rcadm -D --array 1 2

Example: Delete all arrays.

rcadm -D --array

rcadm.efi –M –qa

```
<VERSIONS>

RAIDXpert2:  8.1.0-00026

<CONTROLLER LIST>

                                                                PCI    PCI      PCI       PCI
                          Serial          License              Port  Vendor Device SubVendor SubDevice     SAS Address    BIOS
Number     Type           Number            Key                Count  Id     Id       Id        Id           (WWID)       Version
------ ---------------- ------------ ---------------------- ----- ------ ------ --------- --------- ------------------ ----------
  0    AMD-RAID     40004b001022 HS4WH-7H2CS-K115W-17921   8   0x1022 0x43bd   0x1b21    0x1062    0x0000102243bd0000 NONE
  1    AMD-RAID     40004b001022 HS4WH-7H2CS-K115W-17921   2   0x1022 0x7905   0x1022    0x1022    0x0000102279050000 NONE

<DISK LIST>                                                 Largest
               Disk          Port          Port             Free   G    SMART Ctrl              Model       Firmware      Serial
Disk  State    Type          Type          Speed   Size     Space  S Ca Poll  Chan Vendor       Number      Version       Number
---- -------- -------- -------------------- ------- ------- ------- - -- ----- ---- -------- --------------- -------- ---------------
0    Online   Disk     SATA                 6Gb/sec   2.0TB   2.0TB - RW  on    0:0   NONE     ST2000DM001-9YN CC4H____              Z1E0SD4A
1    Online   Disk     SATA                 6Gb/sec   3.0TB   3.0TB - RW  on    0:1   Hitachi  HUA723030ALA640 MKAOA3B0       MK0330YHG0TXZA
2    Online   Disk     SATA                 6Gb/sec   3.0TB   3.0TB - RW  on    0:2   Hitachi  HUA723030ALA640 MKAOA3B0       MK0330YHG0S06A
3    Online   Disk     SATA                 6Gb/sec   3.0TB   3.0TB - RW  on    0:3   Hitachi  HUS724030ALA640 MF8OA805       PN123VP8G0AK6P
4    Online   Disk     SATA                 6Gb/sec   1.0TB 999.7GB - RW  on    0:4   NONE     ST1000DX001-1NS HP75____ Z4Y5MPCZ____________
5    Online   Disk     SATA                 6Gb/sec   1.0TB 999.7GB - RW  on    0:5   NONE     ST1000DM003-1SB HPH3____ W9A1Y5T6____________
6    Online   Disk     SATA                 6Gb/sec   1.0TB 999.7GB - RW  on    0:6   WDC      WD10EZRX-00L4HB 01.01A01      WD-WCC4J0112276
7    Online   Disk     SATA                 3Gb/sec 500.1GB 499.6GB - RW  on    0:7   WDC      WD5000AACS-61M6 01.00A01      WD-WCAV9W677585
9    Online   Disk     SATA                 3Gb/sec 750.1GB 749.6GB - RW  on    1:9   Hitachi  HDS721075KLA330 GK8OA51D       GTG200P8G0AWAC

<ARRAY LIST>
A    Type    OS Name   Sys  State     Size   Hide        Id             Task       Task State     %   CA Scan                Name
-- -------- ---------- --- --------- ------- ---- ------------------ ---------- ------------- ----- -- ---- --------------------------------
1    RAID0       none No  NORMAL     96.0GB NO   0x7b34fe07e2134902 NOT_ACTIVE        ...       ...  RW No                ...
```