Configuring a RAID Set (X470 Series)

RAID Levels....2
1-1 Configuring SATA Controllers....2
A. Installing SATA hard drive(s) in your computer....2
B. Configuring SATA controller mode in BIOS Setup....3
C-1. UEFI RAID Configuration....4
C-2. Configuring Legacy RAID ROM....8

1-2 Installing the SATA RAID/AHCI Driver and Operating System....12
A. Installing Windows....12
B. Rebuilding an Array....13

RAID Levels

	RAID 0	RAID 1	RAID 10
Minimum Number of Hard Drives	≥2	2	4
Array Capacity	Number of hard drives * Size of the smallest drive	Size of the smallest drive	(Number of hard drives/2) * Size of the smallest drive
Fault Tolerance	No	Yes	Yes

To configure SATA hard drive(s), follow the steps below:

A. Install hard drive(s) in your computer.
B. Configure SATA controller mode in BIOS Setup.
C. Configure a RAID array in RAID BIOS (Note 1)
D. Install the SATA RAID/AHCI driver and operating system

Before you begin

- At least two SATA hard drives or M.2 SATA SSDs (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). (Note 2)
- A Windows setup disk.
- Motherboard driver disk.
- A USB thumb drive.

1-1 Configuring SATA Controllers

A. Installing SATA hard drive(s) in your computer

Install the hard drives/SSDs in the SATA/M.2 connectors on the motherboard. Then connect the power connectors from your power supply to the hard drives.

(Note 1) Skip this step if you do not want to create RAID array on the SATA controller.
(Note 2) Refer to "Internal Connectors," for the installation notices for the M.2, and SATA connectors.

B. Configuring SATA controller mode in BIOS Setup

Make sure to configure the SATA controller mode correctly in system BIOS Setup.

Step 1:

Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Under **Chipset,** ensure **Chipset SATA Port Enable** is enabled. Set **SATA Mode** to **RAID** (Figure 1).

Figure 1

Step 2:

If you want to configure UEFI RAID, follow the steps in "C-1." To enter the legacy RAID ROM, save the settings and exit BIOS Setup. Refer to "C-2" for more information.

The BIOS Setup menus described in this section may differ from the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version.

C-1. UEFI RAID Configuration

Only Windows 10 64-bit supports UEFI RAID configuration.

Step 1:
In BIOS Setup, go to **BIOS** and set **CSM Support** to **Disabled** (Figure 2). Save the changes and exit BIOS Setup.

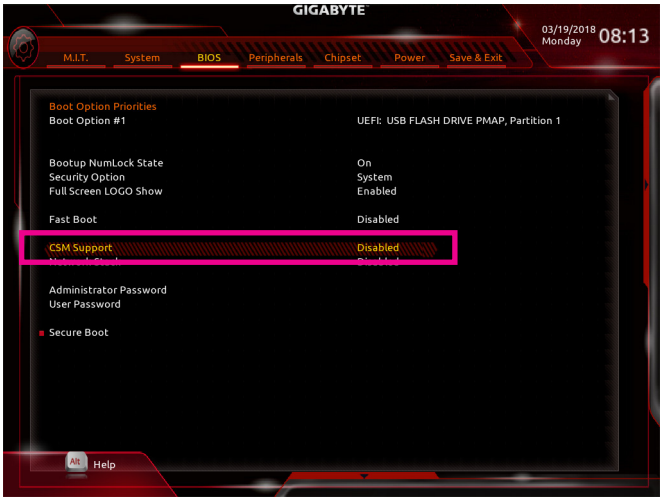


Figure 2

Step 2:
After the system reboot, enter BIOS Setup again. Then enter the **Peripherals\RAIDXpert2 Configuration Utility** sub-menu (Figure 3).

Figure 3

Step 3:
On the RAIDXpert2 Configuration Utility screen, press <Enter> on **Array Management** to enter the **Create Array** screen. Then, select a RAID level (Figure 4). RAID levels supported include RAID 0, RAID 1, and RAID 10 (the selections available depend on the number of the hard drives being installed). Next, press <Enter> on **Select Physical Disks** to enter the **Select Physical Disks** screen.

Figure 4

Step 4:
On the **Select Physical Disks** screen, select the hard drives to be included in the RAID array and set them to **Enabled**. Next, use the down arrow key to move to **Apply Changes** and press <Enter> (Figure 5).Then return to the previous screen and set the **Array Size**, **Array Size Unit**, **Read Cache Policy** and **Write Cache Policy**.

Figure 5

Step 5:
After setting the capacity, move to **Create Array** and press <Enter> to begin. (Figure 6)

Figure 6

After completing, you'll be brought back to the **Array Management** screen. Under **Manage Array Properties** you can see the new RAID volume and information on RAID level, array name, array capacity, etc. (Figure 7)

Figure 7

Delete RAID Volume

To delete a RAID array, select the array to be deleted on the **RAIDXpert2 Configuration Utility\Array Management\Delete Array** screen. Press <Enter> on **Delete Array** to enter the **Delete** screen. Then set **Confirm** to **Enabled** and press <Enter> on **Yes** (Figure 8).

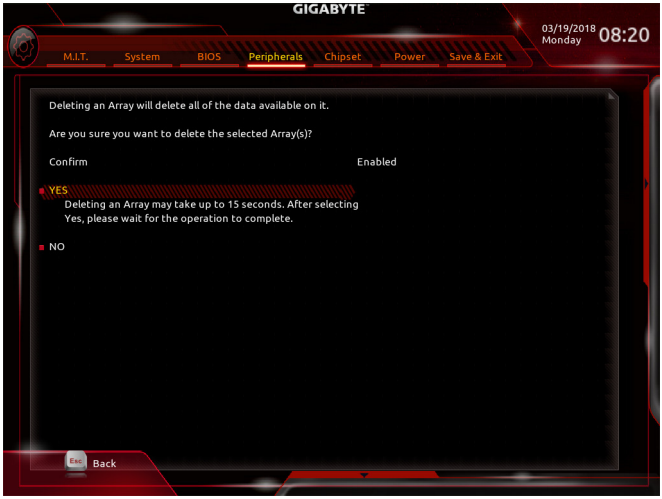


Figure 8

C-2. Configuring Legacy RAID ROM

Enter the legacy RAID BIOS setup utility to configure a RAID array. Skip this step and proceed with the installation of Windows operating system for a non-RAID configuration.

Steps:

In BIOS Setup, go to **BIOS** and set **CSM Support** to **Enabled**. Save the changes and exit BIOS Setup. After the POST memory test begins and before the operating system boot begins, look for a message which says "Press <Ctrl-R> to Configure" (Figure 9). Press <Ctrl> + <R> to enter the RAID BIOS setup utility.

Figure 9

Creating a RAID Array

To create a new array, press <Enter> on the **Create Array** option. (Figure 10)

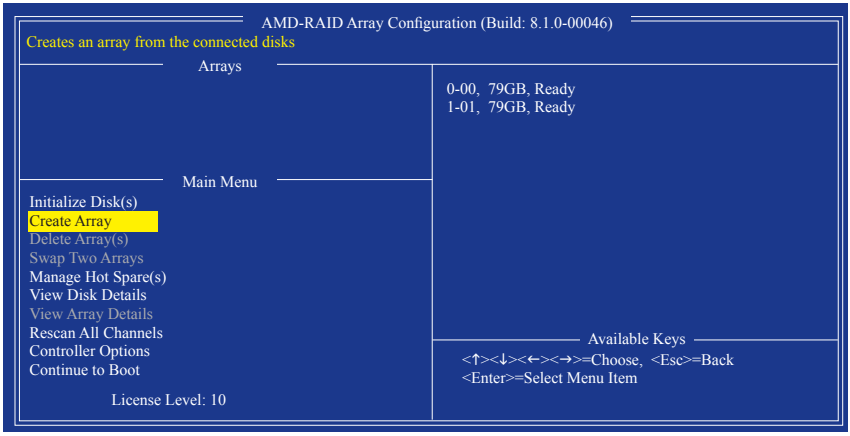


Figure 10

The selection bar will move to the **Disks** section on the right of the screen. Select the hard drives to be included in the RAID array. Use the up or down arrow key to select a hard drive and press <Insert>. The selected hard drive will be shown in green. To use all of the hard drives, simply press <A> to select all. Then press <Enter> and the selection bar will move to the **User Input** section on the left bottom of the screen. (Figure 11)

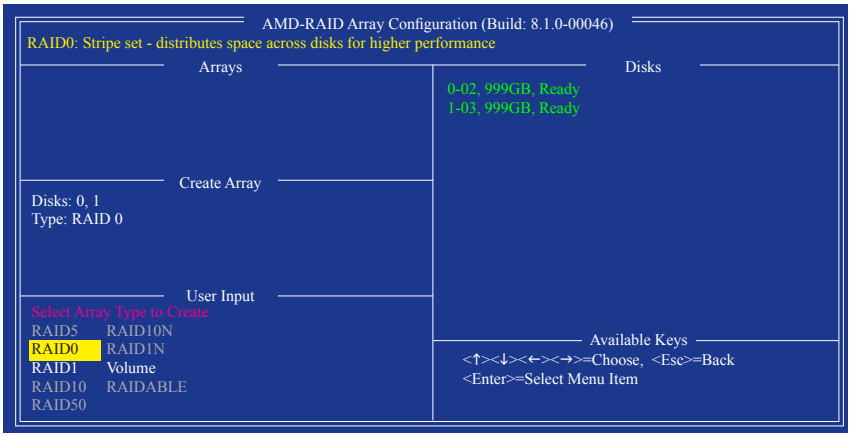


Figure 11

First, select a RAID mode and press <Enter>. The selections available depend on the number of the hard drives being installed. Then follow the on-screen instructions to specify the array size. You can select **All available space** to use the maximum size allowed or use the up or down arrow key to adjust the size (Figure 12) and press <Enter>.

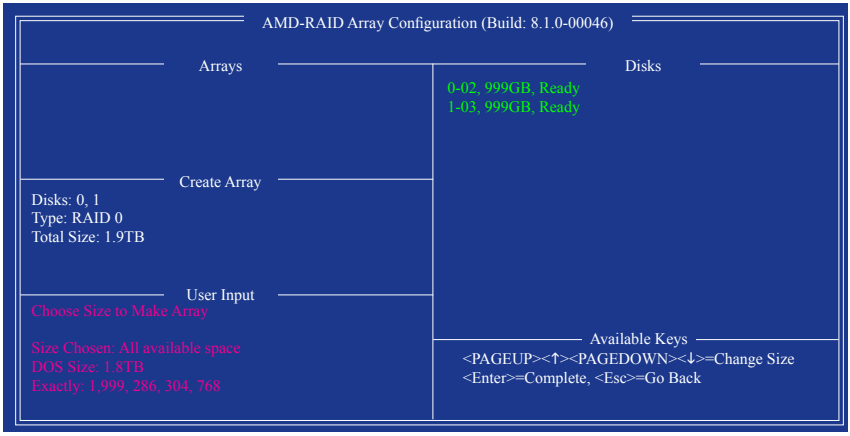


Figure 12

Select a caching mode. Options include Read/Write, Read Only, and None. Then press <Enter> to proceed.

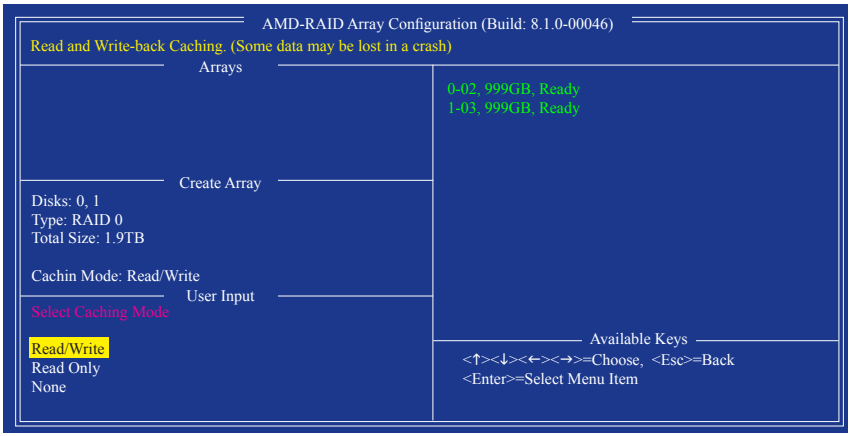


Figure 13

Finally, a message which says "Confirm Creation of Array" will appear. Press <C> to confirm or <Esc> to return to the previous screen.
When completed, you will see the new array on the main screen (Figure 14). To exit the RAID BIOS utility, press <Esc> and then press <C> to confirm.

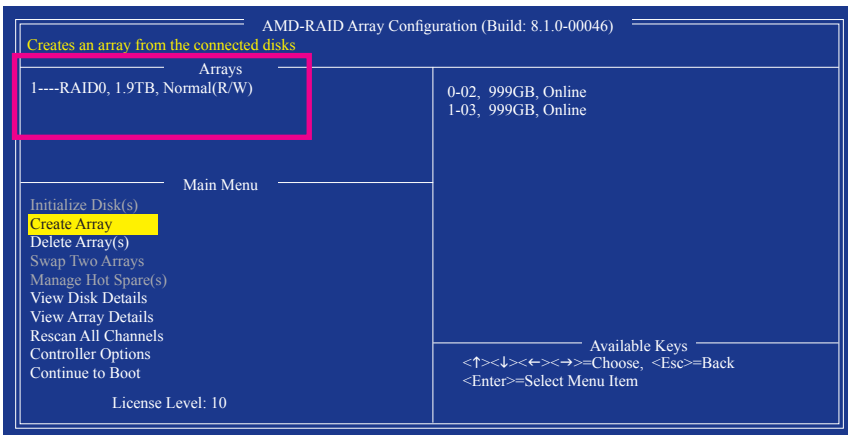


Figure 14

Deleting an Array

The **Delete Array(s)** menu option allows for deletion of disk array assignments.

Deleting an existing disk array could result in loss of data. Record all array information including the array type, the disk members, and stripe block size in case you wish to undo a deletion.

1. Select **Delete Array(s)** in the **Main Menu** and press <Enter>.
2. In the **Arrays** section, press the <Insert> key on the array you want to delete and then press <Enter> to proceed.
3. When prompted to confirm (Figure 15), press <C> to continue the deletion or <Esc> to cancel.

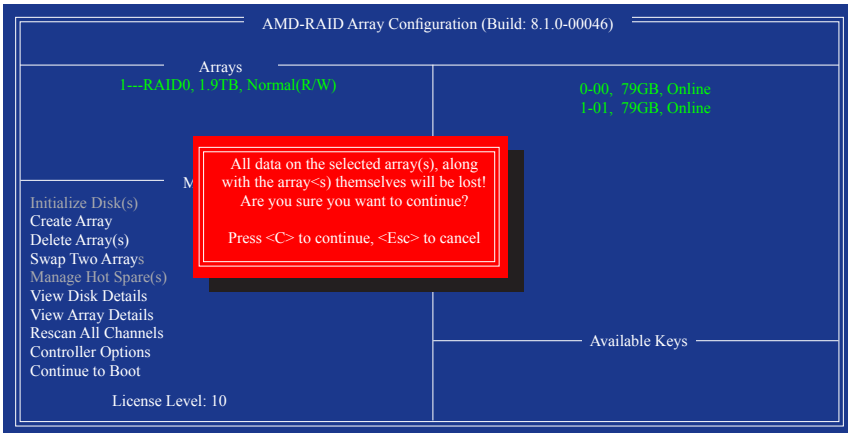


Figure 15

1-2 Installing the SATA RAID/AHCI Driver and Operating System

With the correct BIOS settings, you are ready to install the operating system.

A. Installing Windows

As some operating systems already include SATA RAID/AHCI driver, you do not need to install separate RAID/AHCI driver during the Windows installation process. After the operating system is installed, we recommend that you install all required drivers from the motherboard driver disk using "Xpress Install" to ensure system performance and compatibility. If the operating system to be installed requires that you provide additional SATA RAID/AHCI driver during the OS installation process, please refer to the steps below:

Step 1:
Copy the **Hw10** folder under the **\BootDrv** folder in the driver disk to your USB thumb drive.

Step 2:
Boot from the Windows setup disk and perform standard OS installation steps. When the screen requesting you to load the driver appears, select **Browse**.

Step 3:
Insert the USB thumb drive and then browse to the location of the driver. The location of the driver is as follows:
Windows 64-bit: \Hw10\RAID\x64

Step 4:
When a screen as shown in Figure 1 appears, select **AMD-RAID Bottom Device** first and click **Next** to load the driver. Then select **AMD-RAID Controller** and click **Next** to load the driver. Finally, continue the OS installation.

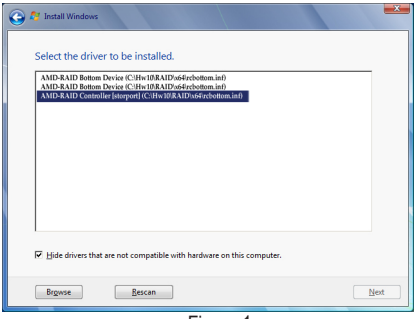
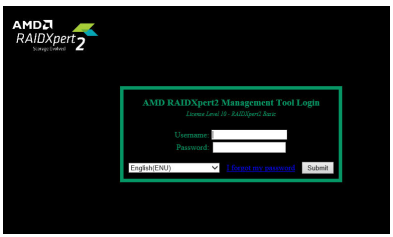


Figure 1

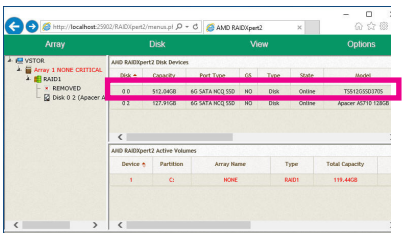
B. Rebuilding an Array

Rebuilding is the process of restoring data to a hard drive from other drives in the array. Rebuilding applies only to fault-tolerant arrays such as RAID 1 and RAID 10 arrays. To replace the old drive, make sure to use a new drive of equal or greater capacity. The procedures below assume a new drive is added to replace a failed drive to rebuild a RAID 1 array.

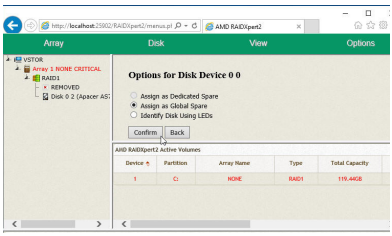
While in the operating system, make sure the Chipset and RAID drivers have been installed from the motherboard driver disk. Then double-click the **RAIDXpert2** icon on the desktop to launch the RAID utility.



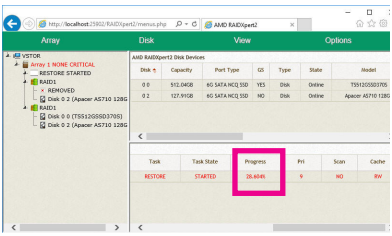
Step 1:
Enter the login ID and password (default: "admin"), and then click **Submit** to launch **AMD RAIDXpert2**.



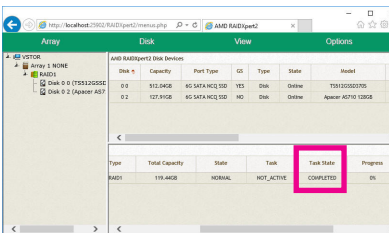
Step 2:
In the **Disk Devices** section, left-click your mouse twice on the newly-added hard drive.



Step 3:
On the next screen, select **Assign as Global Spare** and click **Confirm**.



Step 4:
During the rebuild process, you can select the array that is being built (displayed in red) in the **Active Volumes** section to check the current progress.



Step 5:
Then rebuild is complete when the **Task State** column shows "COMPLETED."