Configuring a RAID Set (AMD X670/B650 Series)

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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 RAID driver and operating system

Before you begin

- SATA hard drives or SSDs. (Note 2) To ensure optimal performance, it is recommended that you use two hard
 drives with identical model and capacity. (Note 3)
- A Windows setup disc.
- An Internet connected computer.
- 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) An M.2 PCIe SSD cannot be used to set up a RAID set either with an M.2 SATA SSD or a SATA hard drive.
- (Note 3) Refer to the "Internal Connectors" section of the user's manual 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:

Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Under Settings\IO Ports, set SATA Configuration\SATA Mode to RAID (Figure 1). Then save the settings and restart your computer. (If you want to use NVMe PCIe SSDs to configure RAID, make sure to set NVMe RAID mode to Enabled.)

Favorites (F11)	∆3 Tweaker	Settings	 System Info. 	1) Boot	🕞 Save & Exit
SATA Mode NVMe RAID mode Chipset SATA Port Enable		RAID Disabled Enabled		CPU Frequency 4533.16MHz Temperature 29.0 °C	BCLK 100.80MH Voltage 0.987 V
				Memory Frequency 4838.83MT/s	522e 16384MB
				Voltage PM VCC18 1.826 V +12V 12.150 V	*5V 5.010 V
elect SATA Type				an 6 [F6] 🔲 Q-Flash [F8]	

Figure 1

C. UEFI RAID Configuration

Step 1:

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

CAORUS					12/26/2023 Tuesday 09:54
• Favorites (F11)	🕰 Tweaker	Settings	System Info.	🖞 Boot	🕞 Save & Evit
Real Cyclose Prioretion Bencher (proc. 5 State Securary Option Fall Science (J.Co. 9 Store Fall Science (J.Co. 9 Store Fall Science (J.Co. 9 Store Co. 9 State Science) Securation (J. 1998) Defense of Contenting Mode		On System Ensited Doubled # Doubled		CPU Presume 4537 62MHz Teproteke 5337 62MHz Teproteke 4836 64MH7s 4836 64MH7s 4836 64MH7s 4836 64MH7s 1838 V totage 12.150 V	еск 100.75МНг VVаке 0.987 V 16384МВ -су 5.010 V
Enable/Disable CSM Support.				😤 Smart Fan 6 (F4) 🔳 ()-Flash (F	8) (@ Неф (F1) С





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.

Step 2:

After the system reboot, enter BIOS Setup again. Then enter the **Settings\IO Ports\RAIDXpert2 Configuration Utility** sub-menu (Figure 3).

Favorites (F11)	🕰 Tweaker	Settings	System Info.	() Boot	🕞 Save & Exit
Initial Display Dutput Integrated Capitus HD Audo Controller HD Audo Controller HD Audo Controller HD Autor Capital Alows 4 do Decoding Alows 4 do Decoding Alows 4 do Decoding Alows 4 do Decoding Alows 4 do Decoding He Alows 4 do Alows 4 do Salt & Contigrantion Nation Contigrantion	réguration	PCIe 1 Slot Auto Enabled Auto Enabled Enabled Enabled Enabled		CPU Preparing 4534.38MHz Timperature 30.0 *C Memory Preparing 4635.55MH7/s Votage ret vr.Clin 1826 V	BCLM 100.74MH Voltage 0.990 V Size 16384ME
BADXpert2 Configuration Unity Select to configure BADXpert2 con	itroler			12/1 12.168 V	50100

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).Options include RAIDABLE (Note), 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.

If any physical disks are in Create Array	Legacy state, please delete those logic	I Legacy arrays to be able to create RAID arrays.		
Select RAID Level:		Volume	Frequency	
Select Physical Disks		Select RAID Level	4537.66MHz Temperature 30.0 °C	100.78MI
Configure Array Parameter		Volume		
		- Column	Memory	
Select CacheTagSize:		RAIDABLE	4837.44MT/s	16384ME
Read Cache Policy: Write Cache Policy:	Read Cache Write Back Cache	RAID 0	Voltage PM VCC18	
		RAID 1	1.826 V +12V 12.150 V	4.995 V
		ume, RAIDAble, RAID 0, RAID 1, and RAID 5 and RAID 10.		

Figure 4

(Note) If you want to install the operating system onto a single drive/SSD first, select RAIDABLE mode.

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.

CADRUS		EASY MODE	ADVANCED MODE	12/26/2023 Tuesday 10:21
Favorites (F11)	Settings	System Info.	() Boot	Save & Ext
Select Media Type:	вотн			
Physical Disk 0:1:0, SATA, 1.0 TB, Ready	Enabled		CPU Frequency	
Physical Disk 0.1:1, SATA, 1.0 TB, Ready	Enabled		4537.44MHz	100.72MHz
Uncheck All			30.0 °C	0.987 V
Apply Changes			Memory Frequency 4834,80MT/s	Size 16384MB
			Voltage PM VC18 1.826 V *127 12.150 V	*597 5.002 V
C BC BC			🛠 Smart Fan 6 [F6] 🔳 Q-Flash (F	8) (Э нер (F1) (С

Figure 5

Step 5:

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

ADRUS					12/26/2023 Tuesday 10:22
Favorites (F11)	🕰 Tweaker	Settings	System Info.	🖒 Boot	🕒 Save & Exit
Create Array Select RAID Level: Select Physical Disks		hose logical Legacy arrays to be able to creat	e RAID arrays.	CPU Presumcy 4533.48MHz Temperature 30.0 °C	BCLK 100.72MHz Voltage 0.990 V
Configure Array Parame Array Size: Array Size Unit: Select Cache TagSize:		1999287 MB (MegaBytes) 64KB		Memory Frequency 4834.80MT/s	Size 16384MB
Read Cache Policy: Write Cache Policy:	Read Cache Write Back Cache	Read Cache Write Back Cache		Voltage PM VCC18 1.826 V +12V	+5V 5.002 V
				12.150 V	
Creates the Array				🛠 Smart Fan 6 [74] 🔳 QFlash [78]	() нер (F1)

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)

€ ADRUS				ADVANCED MODE	12/26/2023 Tuesday 10:22
Favorites (F11)	Ca Tweaker	Settings	O System Info.	() Boot	Save & Ext
Select Array Array Properties: Array ID: RAD Level: Array Status: Array Status: Array Status: Array Status: Hidden:	t RAIDO Normal 1918 64KB No	Array 1, RAOQ 1 9 TB.	Normal	CPU Presancy 4537.53MHz Temperature 30.0 °C Memory Presancy	BICLE 100.72MHz Vetage 0.993 V
Array Policies Read Cache Policy: Write Cache Policy:	Read Cache Write Back Cache			4834.80MT/s	16384MB
 View Associated Physic Manage Dedicated Hot 				Voltage PM / UCC18 1.826 V -120 12.168 V	*5// 5.002 V
Selects an Array.				🗱 Smart Fan 6 (14) 🔳 Q-Flash (FB	8) (() Нер (F1)

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(s) to enter the Delete screen. Then set Confirm to Enabled and press <Enter> on Yes (Figure 8).

AORUS				ADVA		12/26/2023 Tuesday 10:23
 Favorites (F11) 	4 Tweaker	Settings	(i) System Info.	\neg \bigcirc	boot	🕒 Save & Exit
Deleting an Array will delete all of	the data available on it.					
Are you sure you want to delete t	he selected Array(s)?				CPU Frequency	
Confirm		Enabled			4533.52MHz Temperature	100.81MHz Voltage
VES Deleting an Array may take up				-	30.0 °C	0.990 V
Yes, please wait for the operat					Memory	
NO						
					4839.07MT/s	16384MB
					Voltage	
					1.826 V	5.010 V
					+12V 12.168 V	
					12.106 V	
				39	in 6 [F6] 🔲 Q-Flash [F8]	@
				20 state	anetrati 💭 (1-Hash (Ha)	C meptern C
SC Back						

Figure 8

1-2 Installing the RAID Driver and Operating System

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

A. Installing the Operating System

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

Step 1:

Go to GIGABYTE's website, browse to the motherboard model's web page, download the AMD RAID Preinstall Driver file on the Support\Download\SATA RAID/AHCI page, unzip the file and copy the files to your USB thumb drive.

Step 2:

Boot from the Windows setup disc 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 drivers. Follow the on-screen instructions to install the following three drivers in order.

- ① AMD-RAID Bottom Device
- ② AMD-RAID Controller
- 3 AMD-RAID Config Device

Finally, continue the OS installation.

AMD-RAID	Controller [storport]	fw11/RAID/x64/SATA_ (D:Hw11/RAID/x64/SA	TA_RAID/reraid inf)	
AMD-RAID	Coung Device (D.1	w11&AID=64SATA_	ouDecetgint)	

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.





In the Disk Devices section, left-click your mouse

twice on the newly-added hard drive.

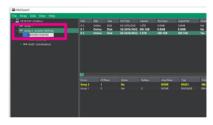
Step 1:

Right-click on the RAIDXpert2 icon on the desktop and then select Run as administrator to launch the AMD RAIDXpert2 utility.



Step 3:

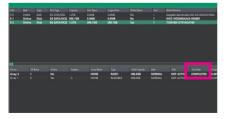
On the next screen, select **Assign as Global Spare** and click **OK**.



Step 4:

Step 2:

You can check the current progress in the Active Volumes section on the bottom or left of the screen.



Step 5:

Then rebuild is complete when the Task State column shows "COMPLETED."