# Configuring a RAID Set (Intel<sup>®</sup> 800 Series)

RAID Levels	2
Preparing the Hard Drives and BIOS Settings A. Installing hard drives	
B. Configuring the BIOS settings C. Configuring a RAID Array	3
Installing the RAID Driver and Operating System	7
Rebuilding an Array	8

## **RAID Levels**

	RAID 0	RAID 1	RAID 5	RAID 10
Minimum Number of Hard Drives	≥2	2	≥3	4
Array Capacity	Number of hard drives * Size of the smallest drive	Size of the smallest drive	(Number of hard drives -1) * Size of the smallest drive	(Number of hard drives/2) * Size of the smallest drive
Fault Tolerance	No	Yes	Yes	Yes

#### To create a RAID set, follow the steps below:

- A. Install SATA hard drive(s) or SSDs in your computer.
- B. Configure the system BIOS.
- C. Create RAID configurations.
- D. Install the RAID driver and operating system.

#### Before you begin, please prepare the following items:

- At least two SATA hard drives or SSDs (Note 1) (to ensure optimal performance, it is recommended that you
  use two hard drives with identical model and capacity). (Note 2)
- A Windows setup disc.
- An Internet connected computer.
- A USB thumb drive.

## Preparing the Hard Drives and BIOS Settings

#### A. Installing hard drives

Install the hard drives/SSDs in the Intel<sup>®</sup> Chipset controlled connectors on the motherboard. Then connect the power connectors from your power supply to the hard drives.



The Intel® B860 Chipset doesn't include RAID 0, RAID 1, RAID 5, and RAID 10 support for NVMe SSD storage devices.

- (Note 1) 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 2) Refer to the "Internal Connectors" section of the user's manuals for the installation notices for the M.2 and SATA connectors.

### B. Configuring the BIOS settings

Step:

Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Go to Settings\IO Ports\SATA Configuration, make sure SATA Controller(s) is enabled. To create RAID configurations, go to Settings\IO Ports\VMD setup menu, set Enable VMD controller to Enabled and set Enable VMD Global Mapping to Disabled. Then depending on the SATA/M.2 connector you use, set the corresponding Map this Root Port under VMD item to Enabled.

<ul> <li>Favorites (F11)</li> <li>All Tweaker</li> </ul>	Settings	System Info.	t Boot	→ Save & Exit
Enable VMD controller	Enabled		CPU Frequency	
Enable VMD Global Mapping	Disabled		4513.38MHz 3001.21 Temperature	100.00MHz 100.
Map RP BDF 0/6/1 Under VMD	Enabled		38.0 °C	1.176 V
Map RP BDF 128/27/4 Under VMD	Enabled			
Map PCH SATA Controller Under VMD	Enabled		Frequency 4800.24MT/s	Size 8192MB
RAIDO	Enabled		Module MFG ID Kingston	DRAM MEG ID Samsung
RAD1 RAD5	Enabled		Kingston	Samsung
WD10	Enabled Enabled			
PODD	Disabled			
0.0	Cisedayo		PCH 0.82V 0.836 V	5.032 V
			+12V	VCCSA 1.086 V
			12.258 V	1.086 V
			CPU Biscuits	
			100.000 CP	

Figure 1

## C. Configuring a RAID Array

Step 1:

After the system reboot, enter BIOS Setup again. Then enter the Settings\IO Ports\Intel(R) Rapid Storage Technology sub-menu (Figure 2).

Favorites (F11)	🖾 Tweaker	Settings	System Info.	() Boot	Save & Exit
Initial Display Dutput Internal Graphics PCIE Bifurcation Support OnBoard LAN Controller OnBoard LAN Controller Audio Controller Above 406 MMID BIOS assign	rment	PCIe 1 Slot Enubled Auto Enubled Enubled Enubled Enubled		CPU Presuncy 450141MHz 300168 Temptrative 39.0 °C	BCLK 100.00MHz 100 Voltage 1.197 V
Re-Size BAR Support IOAPIC 24-119 Entries Compliance Test Mode IOTG PLL SSCEN (FDU Side SS Intel Graphics Pei Display Pei PCIE Link Speed Configuration Gigabyte Utilities Downloader	i() n 1	Enabled Disabled Enabled Enabled Disabled Disabled		Memory Frequency 4800.38MT/s Madade MFG 10 Kingston	Size 16384MB DRAM MFG ID Micron
USB Configuration NVMc Configuration NVMc Configuration SATA Configuration SATA Configuration SATA Configuration Thrunderbot(TM) Configuratio Platform Erase IntelliPl Rasid Storage Technol				Voltage PCH 082V 0825 V *12V 12.258 V CPU @scuts CPU @scuts	+5V 5.025 V VCCSA 1.089 V

Figure 2



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:

On the Intel(R) Rapid Storage Technology menu, press <Enter> on Create RAID Volume to enter the Create RAID Volume screen. Enter a volume name with 1~16 letters (letters cannot be special characters) under the Name item and press <Enter>. Then, select a RAID level (Figure 3). RAID levels supported include RAID 0, RAID 1, RAID 10, and RAID 5 (the selections available depend on the number of the hard drives being installed). Next, use the down arrow key to move to Select Disks.

Favorites (F11)     Ala Tweaker	Settings ① System Info.	() Boot	Save & Exit
Create RRD Volume Name Mol Level Serect Dales Nee to a location-technic fail Stat John Processon, 1997 Nee to a location technic fail Stat John Processon, 1997 Nee t	Volume1 Notice target	CPU Produitory 4501.41MHz 2001.68 Temperature 38.0 °C Memory Preduitory 4500.38MT/s Modele MT/ 0	ECLK 100.00MHz Voltage 1.197 V Size 16384MB DRAM MEG ID
	Ru() ( perce)	Kingston     Kingston     Voltage     PCI 0825 V     0825 V     12.258 V     CPU Biscuts     100.0000 CP	+5V 5.025 V VCCSA 1.089 V

Figure 3

Step 3:

Under **Select Disks** item, select the hard drives to be included in the RAID array. Press the <Space> key on the hard drives to be selected (selected hard drives are marked with "X"). Then set the stripe block size (Figure 4). The stripe block size can be set from 4 KB to 128 KB. Once you have selected the stripe block size, set the volume capacity.

ADRUS				Inesday 01:30
Favorites (F11)     Ca Tweaker	Settings	<ol> <li>System Info.</li> </ol>	🖞 Boot	Save & Ent
Case Bible Studies           Rando           Marcia           Select Data           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC2000, 1.01%           Piler da R. Donab-PCCRIA (PULS G) SSD B/DVPXCC	Volume 1 RAUDO (Sorge) X Strip Size 4KB 3 1KRB 32KB	×	CPU presentery 450141MHZ 200168 38.0 °C Memory Memory 480038MMT/s 480038MT/s	BCLX 100.00MHz 1000 Voltage 1.197 V Stre 16384MB DRAM MEGID
Create Volume	3748 6448 12848		Module MYG ID Kingston Voltage PCH 0.82V 0.825 V +12V 1.2.258 V	*5V 5.025 V VCCSA 1.086 V
			CPU Bacults 100.000 CP	) нер (F1)
( esc Back				

Figure 4

#### Step 4:

After setting the capacity, move to Create Volume and press <Enter> to begin. (Figure 5)

LAORUS			ADVANCED MODE	7/10/2024 Aednesday 01:30
Favorites (F11)	Settings	System Info.	() Boot	🕒 Save & Exit
Crade BMC tybure Name BMD Level Serve Tables Free Tables Prota 2a post-brottena Proj Sid 2 Hochosoccia, 1971 Proj 2a post-brottena Proj Sid 2 Hochosoccia, 1971 Sep Ser- Causert PMB	Volume1 RAUDO (Stripe) X X GAX18 3815453		CPU Presincy 4501.41MHz 30016 Temperature 38.0 °C Memory Frequency 6800.38MT/s	1.197 V Size 16384MB
-Sig Create Volume			Module MFG ID Kingston	DRAM MEG ID Micron
			Voltage PCH 0.82V 0.825 V *12V 12.258 V CPU Bisruits 100.000 CP	*5V 5.025 V VCCSA 1.089 V
Strip size help			🗱 Smart Fan 6 (16) 🔳 Q-Flash (F8)	() Help (F1) Q



After completing, you'll be brought back to the **Intel(R) Rapid Storage Technology** screen. Under **RAID Volumes** you can see the new RAID volume. To see more detailed information, press <Enter> on the volume to check for information on RAID level, stripe block size, array name, and array capacity, etc. (Figure 6)

AORUS					NCED MODE 07/	10/2024 dnesday 01:30
Favorites (F11)	🕰 Twesker	Settings	() System Info.		b Boot	🖨 Save & Exit
Volume Actions					CPU Frequency	
Cin Delete					4501.41MHz 3501.68 Temperature	100.00MHz 100 Voltage
Name:		Volume1			38.0 °C	1.197 V
RAD Level		RAIDO (Stripe)				
Strip Size:		64KB			Memory	
Size:		3.6TB			Frequency	
Status:		Normal			4800.38MT/s	16384MB
Bootable:					Module MFG ID	DRAM MEG ID
<ul> <li>PCIe 0.0, KIOXIA-EXCERIA PLUS G PCIe 2.0, KIOXIA-EXCERIA PRO SSI</li> </ul>					Kingston	Micron
PCI 20, NUMPOZENA PROSS	/ ICH2030RC94, 1.8115				Voltage PCH 082V 0825 V +12V 12.258 V CPU Biscuts 100.000 CP	+3V 5,025 V VCCSA 1.086 V
SC Back				😤 Smart R	n 6 [F6] 🔲 Q-Flash [F8] 🤇	🧿 Неф (F1) 🛛 🔍

Figure 6

#### Delete RAID Volume

To delete a RAID array, press <Enter> on the volume to be deleted on the Intel(R) Rapid Storage Technology screen. After entering the RAID VOLUME INFO screen, press <Enter> on Delete to enter the Delete screen. Press <Enter> on Yes (Figure 7).

	Tweaker	Settings	() System Info.	🖒 Boot	🕞 Save & Exit
Delete the RAID volume? ALL DATA ON VOLUME WILL BE LOST: Yes				CPU Frequency 4501.41MHz ; Temperature 38.0 °C	80.K 100.00MHz 1000 Voltage 1.194 V
				Memory Frequency 4800.38MT/s Modele MFG ID Kingston	Size 16384MB DRAM MFG ID Micron
				Voltage PCH 082V 0.825 V *12V 12.258 V CPU Bissubs 100.000 CP	+3V 5.025 V VCCSA 1.089 V
eting a volume will reset the disks to non-RAI				🛠 Smart Fan 6 [F6] 🔳 Q-Filjsh [F	8] 🛞 Help (F1) 🔍

Figure 7

# Installing the RAID Driver and Operating System

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

If you want to install an operating system on an M.2 PCIe SSD or a RAID volume, you need to install the Intel® RST VMD Controller driver first during the OS installation process. Refer to the steps below:

#### Step 1:

Go to GIGABYTE's website, browse to the motherboard model's web page, download the Intel SATA 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 driver. When a screen as shown below appears, select **Intel RST VMD Controller** and click **Next** to load the driver and continue the OS installation.

Intel RST VI	VID Controller 467F (I	D:\IRST\VMD\f6vn	ndflpy-x64\iaStor	vD.inf)	

# **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, RAID 5 or RAID 10 arrays. The procedures below assume a new drive is added to replace a failed drive to rebuild a RAID 1 array. (Note: The new drive must have equal or greater capacity than the old one.)

Turn off your computer and replace the failed hard drive with a new one. Restart your computer.

While in the operating system, launch the Intel<sup>®</sup> Optane<sup>™</sup> Memory and Storage Management utility from the Start menu.





Step 1: Go to the Manage menu and click Rebuild to another disk in Manage Volume.

	Intel® Optane <sup>™</sup> Memory and Storage Management		
📕 Marage	Status		
Create RAID Volume	A Your system is reporting one or more events, and data maybe at max. Refer to the details below for more information.		
Memory	Storage System View Clock on any component below to manage its properties.		
Performance	M74_hray_0000		
O Settings	Unknown hard-dok (2 Pyter) Volume (0000 Zom (2012)	volume 0000	
About	109 DB	Status Rehaliding 9% System volume: No Initialized Yes	
	🔮 SATA-hart disk (202 000	Type RAID 1	
	SATA Nert Olik (\$12 GE) Dysters	Silve 149-68 Write-cache buffer flushing	
	RCie Intel <sup>®</sup> Optione <sup>®</sup> Memory (55 GB)	Crubled	
	💬 internal empty port 8	Cache mode: Read only Data stripe size: 64 KB	
	🕞 internal empty part 4	Physical sector size: 4 XB Logical sector size: 512 Bytes	
	💬 internal empty port 5		

The Status item on the right of the screen displays the rebuild progress. After the RAID 1 volume rebuilding. the Status will display as Normal.

Step 2:

Select a new drive to rebuild the RAID and click Rebuild.