

AMD
RAID Setup Explained
and Tested



AMD RAID Setup Explained and Tested Installation Guide

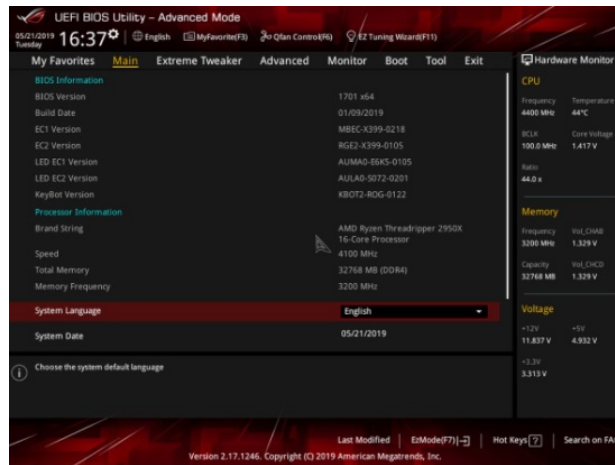
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AMD RAID Setup Explained and Tested



Specifications

- **Product Name:** AMD RAID Installation Guide
- **Functionality:** Configuring RAID functions using the onboard FastBuild BIOS utility
- **Supported RAID Levels:** RAID 0, RAID 1, RAID 10
- **Compatibility:** Depends on the motherboard model

Product Usage Instructions

• AMD BIOS RAID Installation Guide

The AMD BIOS RAID Installation Guide provides instructions to configure RAID functions using the onboard FastBuild BIOS utility under the BIOS environment.

• Introduction to RAID

RAID stands for Redundant Array of Independent Disks, combining two or more hard disk drives into one logical unit. For optimal performance, use identical drives of the same model and capacity when creating a RAID set.

• RAID 0 (Data Striping)

RAID 0 optimizes two identical hard disk drives to read and write data in parallel, improving data access and storage with increased data transfer rates.

• WARNING:

RAID 0 does not provide fault tolerance. Hot-plugging any HDDs in a RAID 0 configuration can cause data damage or loss.

• RAID 1 (Data Mirroring)

RAID 1 copies and maintains an identical image of data from one drive to a second drive, providing data protection and fault tolerance.

• RAID 10 (Stripe Mirroring)

RAID 10 combines the performance of data striping (RAID 0) and the fault tolerance of disk mirroring (RAID 1) for improved performance and resiliency.

• RAID Configurations Precautions

When creating a RAID 0 array for performance, use two new drives of the same size. Using drives of different sizes will limit the total storage capacity to the size of the smaller drive.

• AMD Windows RAID Installation Guide

Detailed instructions on creating and deleting RAID volumes under Windows.

- **Create a RAID Volume under Windows**

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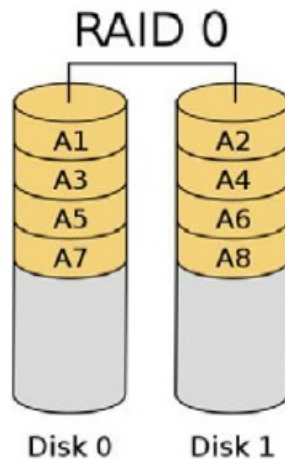
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Introduction to RAID

The term “RAID” stands for “Redundant Array of Independent Disks”, which is a method combining two or more hard disk drives into one logical unit. For optimal performance, please install identical drives of the same model and capacity when creating a RAID set.

RAID 0 (Data Striping)

RAID 0 is called data striping optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. It will improve data access and storage since it will double the data transfer rate of a single disk alone while the two hard disks perform the same work as a single drive but at a sustained data transfer rate.

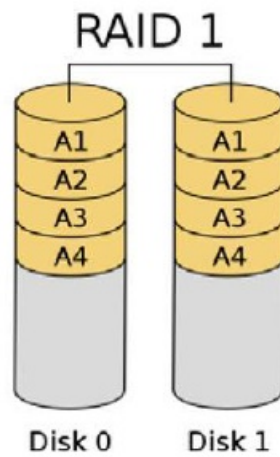


WARNING!!

Although the RAID 0 function can improve the access performance, it does not provide any fault tolerance. Hot-plug any HDDs of the RAID 0 Disk will cause data damage or data loss.

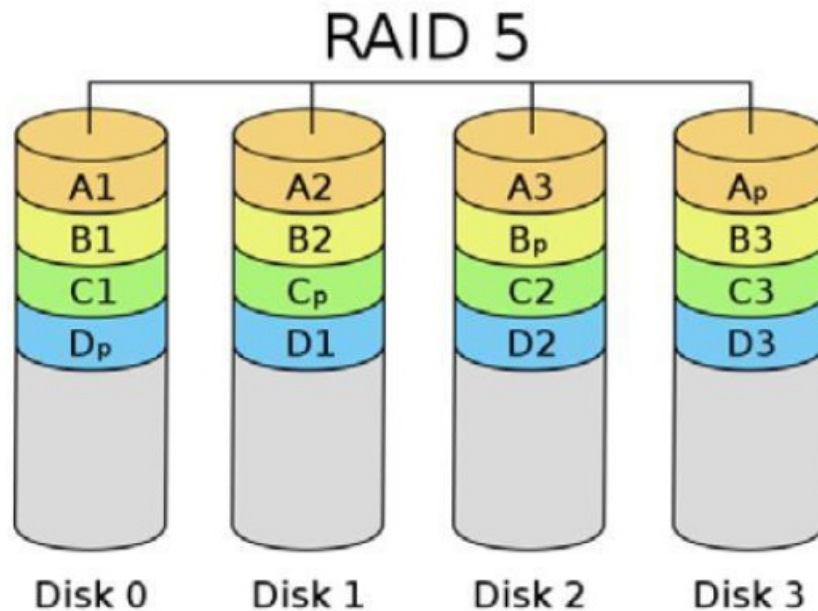
RAID 1 (Data Mirroring)

RAID 1 is called data mirroring which copies and maintains an identical image of data from one drive to a second drive. It provides data protection and increases fault tolerance to the entire system since the disk array management software will direct all applications to the surviving drive as it contains a complete copy of the data in the other drive if one drive fails.³



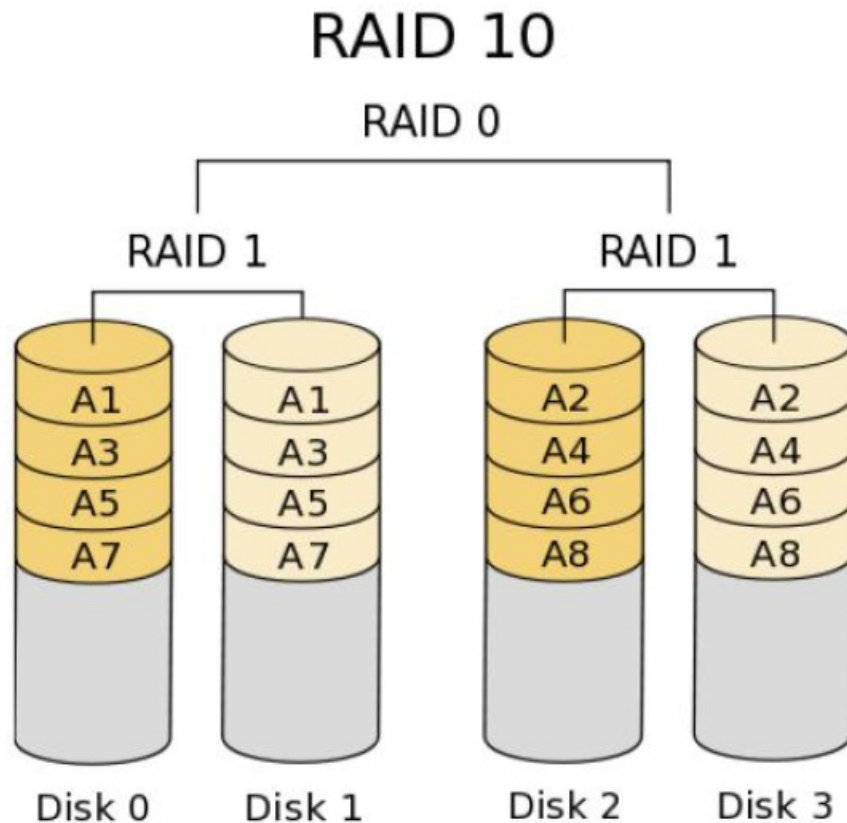
RAID 5 (Block Striping with Distributed Parity)

RAID 5 stripes data and distributes parity information across the physical drives along with the data blocks. This organization increases performance by accessing multiple physical drives simultaneously for each operation, as well as fault tolerance by providing parity data. In the event of a physical drive failure, data can be re-calculated by the RAID system based on the remaining data and the parity information. RAID 5 makes efficient use of hard drives and is the most versatile RAID Level. It works well for files, databases, applications, and web servers.



RAID 10 (Stripe Mirroring)

RAID 0 drives can be mirrored using RAID 1 techniques, resulting in a RAID 10 solution for improved performance plus resiliency. The controller combines the performance of data striping (RAID 0) and the fault tolerance of disk mirroring (RAID 1). Data is striped across multiple drives and duplicated on another set of drives.⁴



RAID Configurations Precautions

1. Please use two new drives if you are creating a RAID 0 (striping) array for performance. It is recommended to use two SATA drives of the same size. If you use two drives of different sizes, the smaller-capacity hard disk will be the base storage size for each drive. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the 80GB drive becomes 60GB, and the total storage capacity for this RAID 0 set is 120 GB.
2. You may use two new drives or an existing drive and a new drive to create a RAID 1 (mirroring) array for data protection (the new drive must be the same size or larger than the existing drive). If you use two drives of different sizes, the smaller-capacity hard disk will be the base storage size. For example, if one hard disk has an 80GB storage capacity and the other has 60GB, the maximum storage capacity for the RAID 1 set is 60 GB.
3. Please verify the status of your hard disks before you set up your new RAID array.

WARNING!!

Please back up your data or you create RAID functions. When creating RAID, the system will ask if you want to "Clear Disk Data" or "is recommended to that you Yes", a," then your future data building will operate under a lean environment.

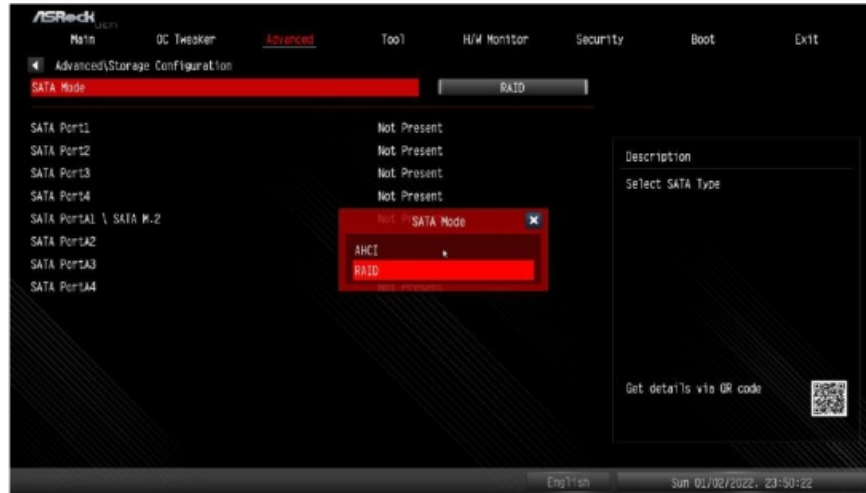
UEFI RAID Configuration

Setting up a RAID array using UEFI Setup Utility and installing Windows

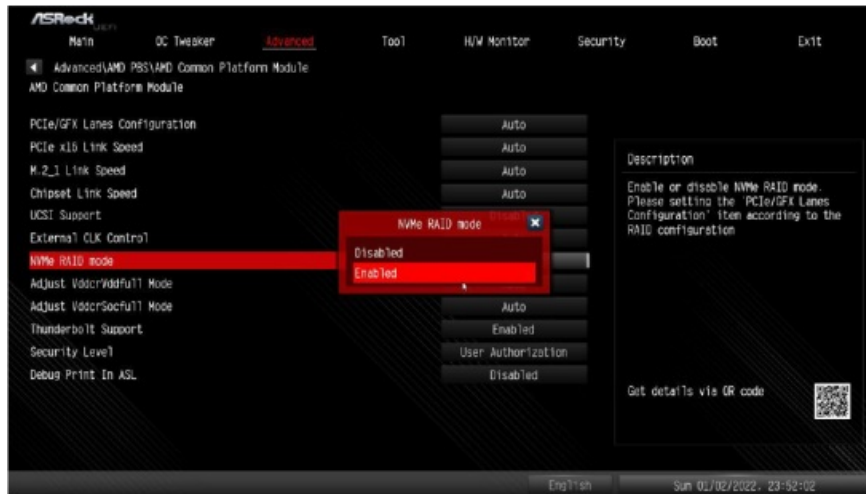
STEP 1: Set up UEFI and create a RAID array

1. While the system is booting, press [F2] or [Del] key to enter UEFI setup utility.
2. Go to Advanced\Storage Configuration.

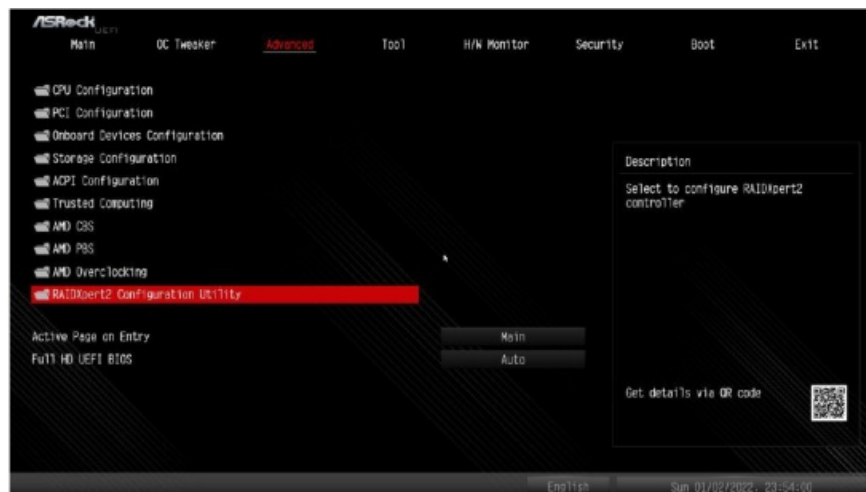
3. Set “SATA Mode” to <RAID>.



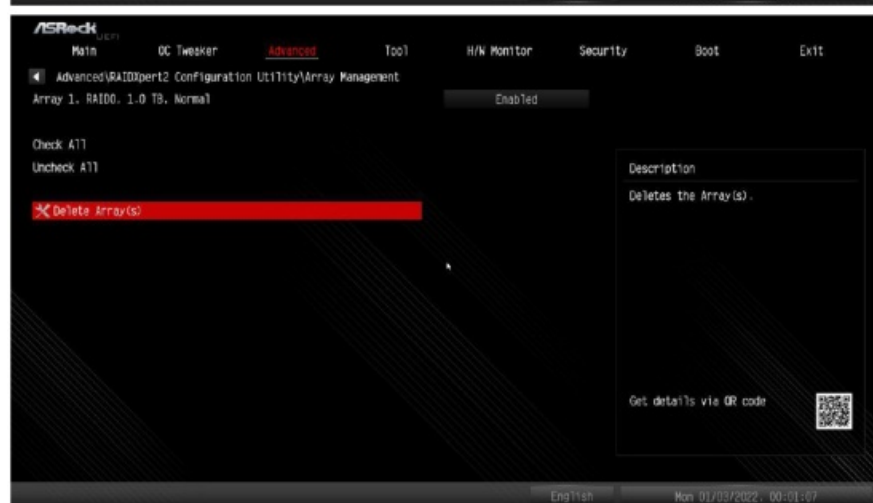
4. Go to Advanced\AMD PBS\AMD Common Platform Module and set “NVMe RAID mode” to <Enabled>.



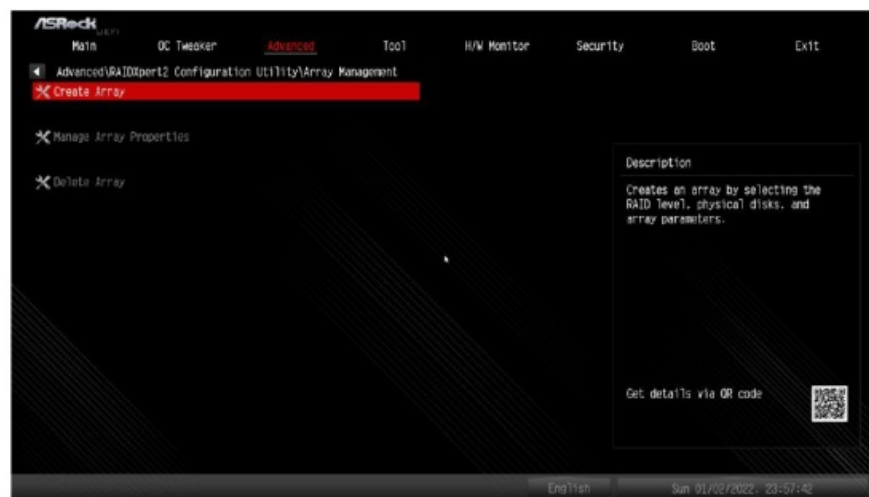
5. Press [F10] to save your changes and exit, and then enter the UEFI Setup again.
6. After saving the previously changed settings via [F10] and rebooting the system, the “RAIDXpert2 Configuration Utility” submenu becomes available. 7.



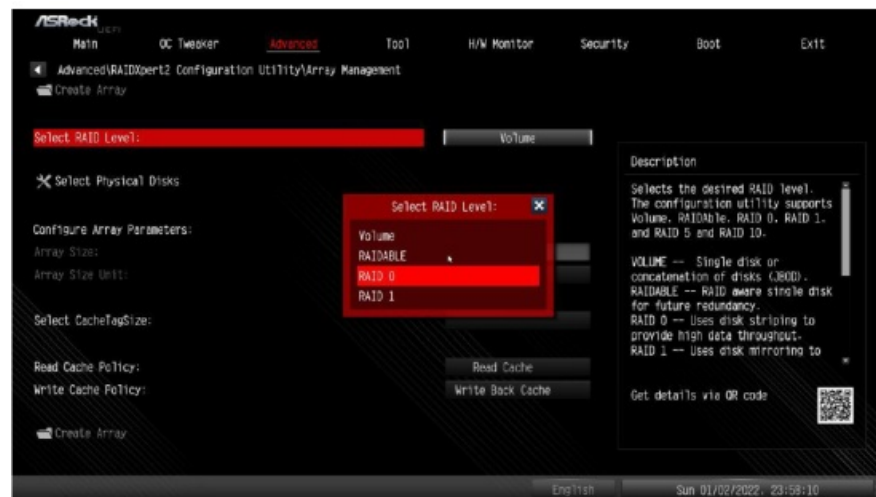
7. Go to Advanced\RAIDXpert2 Configuration Utility\Array Management, and then delete the existing disk arrays before creating a new array. Even if you have not configured any RAID array yet, you might have to use “Delete Array” first.



8. Go to Advanced\RAIDXpert2 Configuration Utility\Array Management\Create Array



9. Select "RAID Level"



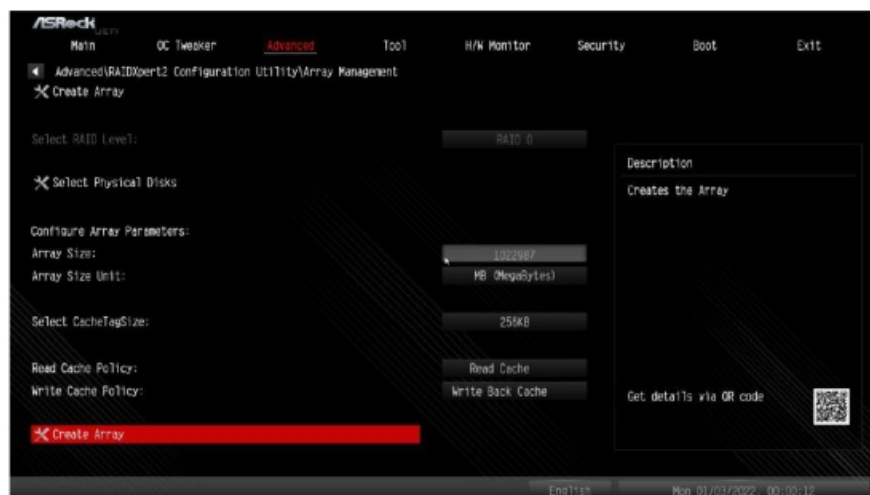
- Select "Select Physical Disks".



- Change "Select Media Type" to "SSD" or leave at "BOTH"



Select "Create Array".

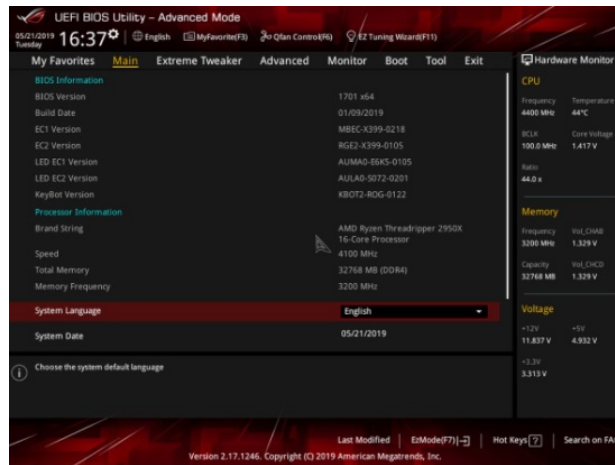


10. Press [F10] to save to exit.

- *Please note that the UEFI screenshots shown in this installation guide are for reference only. Please refer to ASRock's website for details about each model. <https://www.asrock.com/index.asp>



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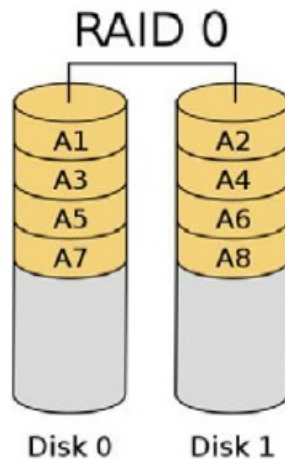
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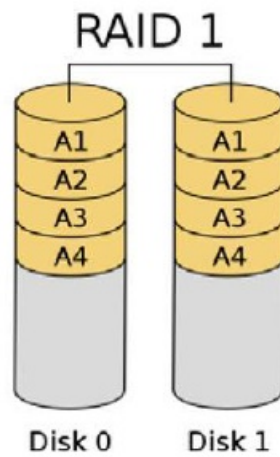


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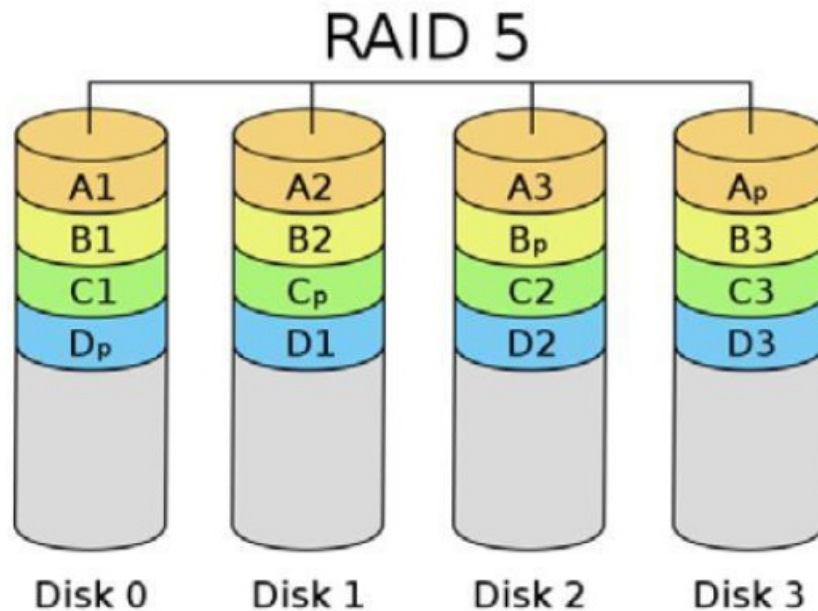
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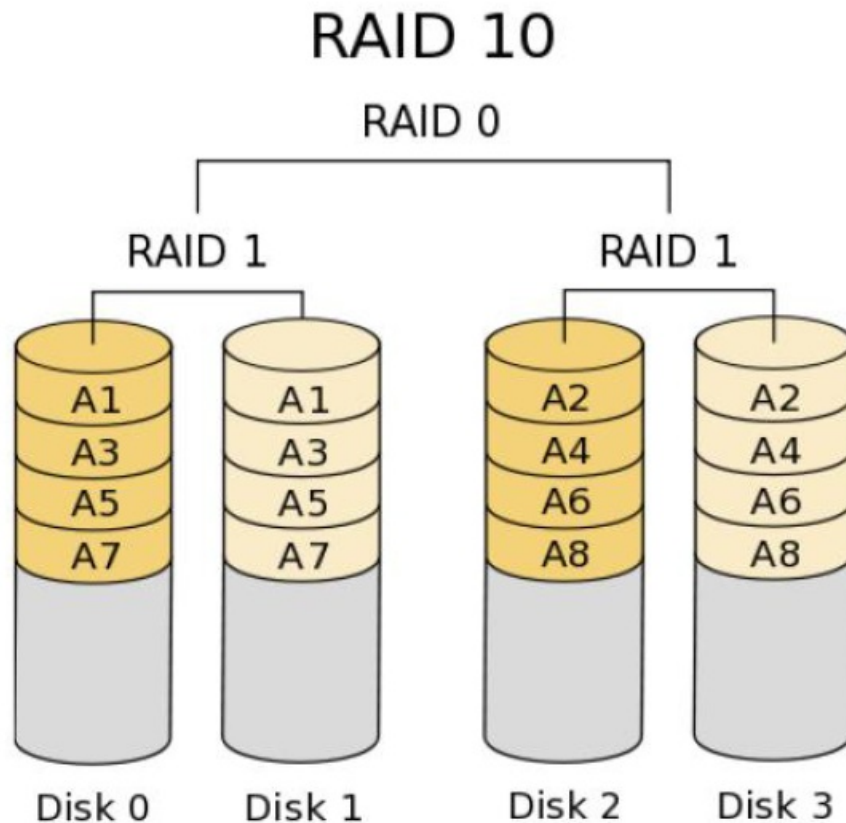
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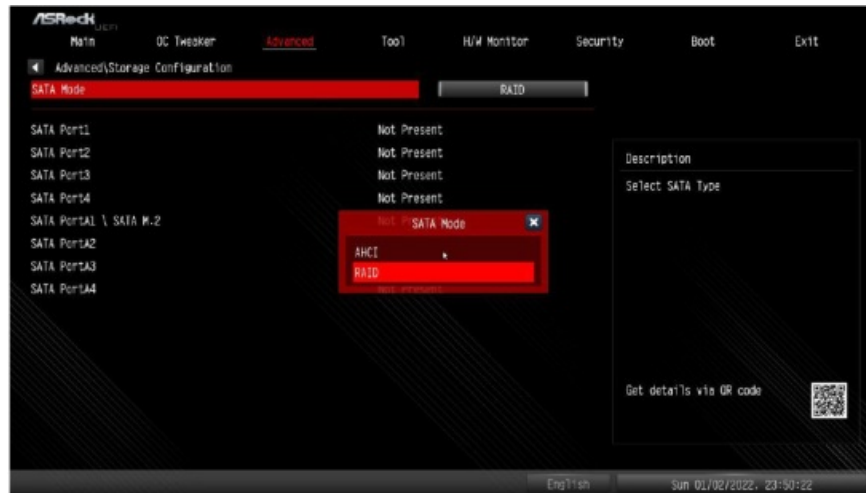
UEFI RAID Configuration

Setting up a RAID array using UEFI Setup Utility and installing Windows

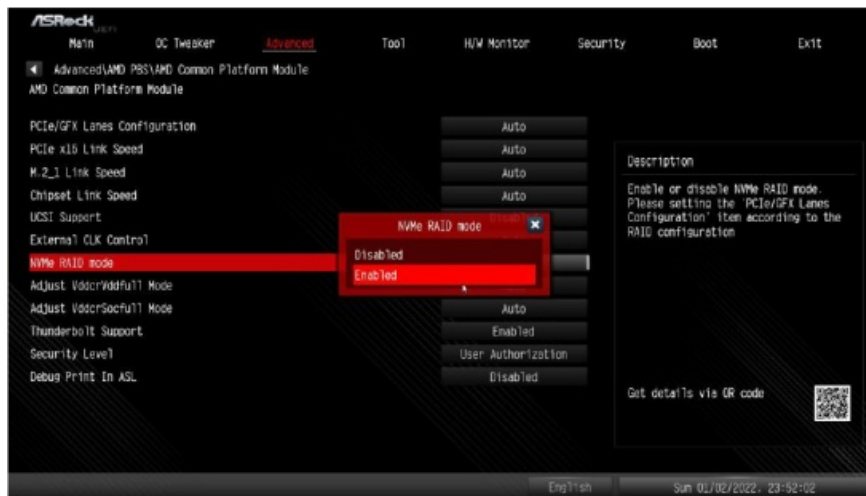
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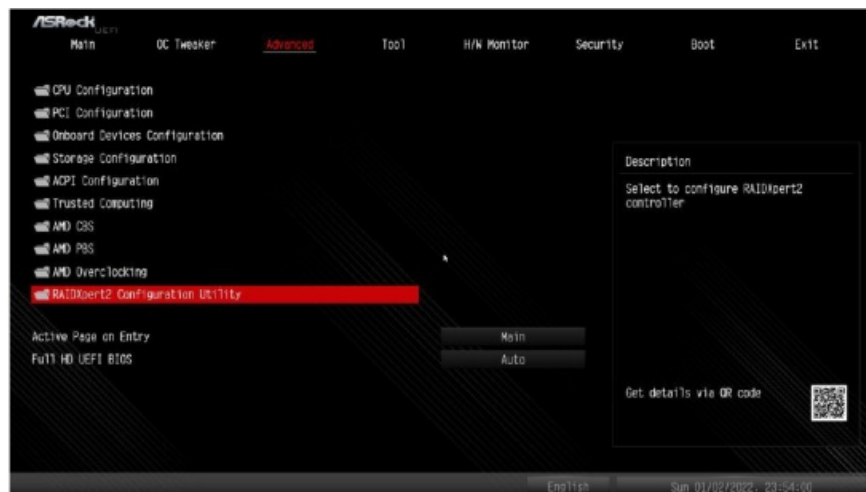
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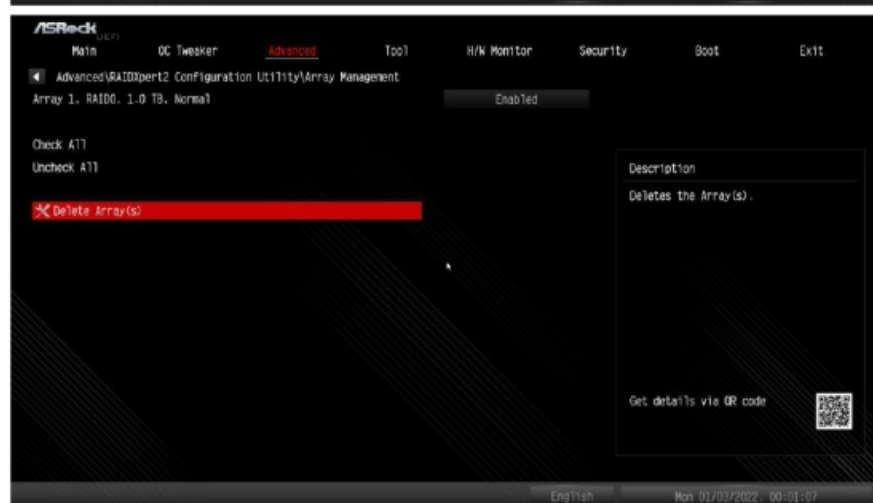
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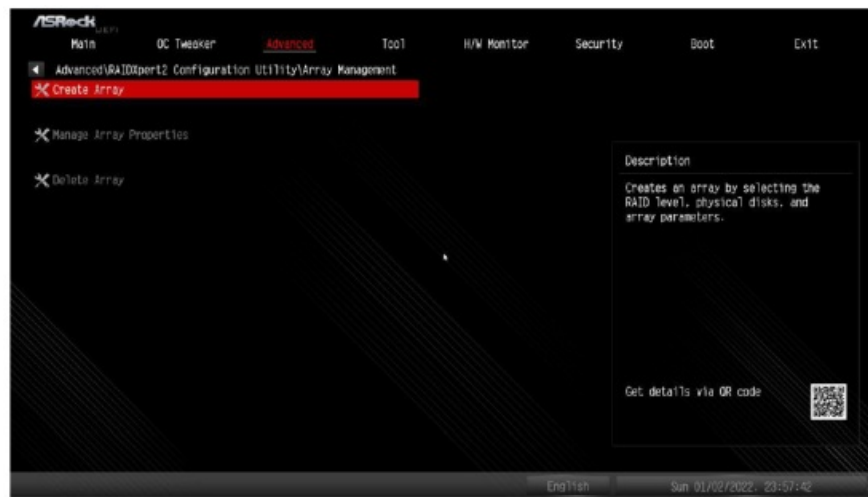
5. Press [F10] to save your changes and exit, and then enter the UEFI Setup again.
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7. Go to Advanced\RAIDXpert2 Configuration Utility\Array Management, and then delete the existing disk arrays before creating a new array. Even if you have not configured any RAID array yet, you might have to use “Delete Array” first.



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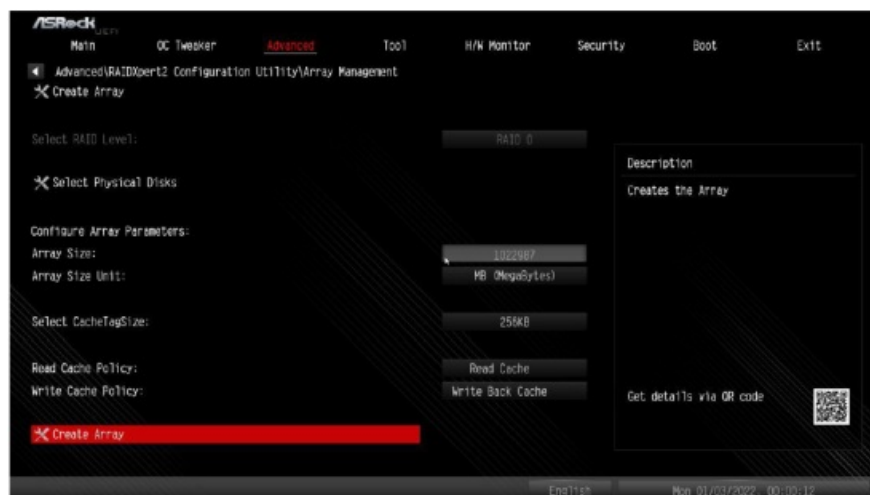
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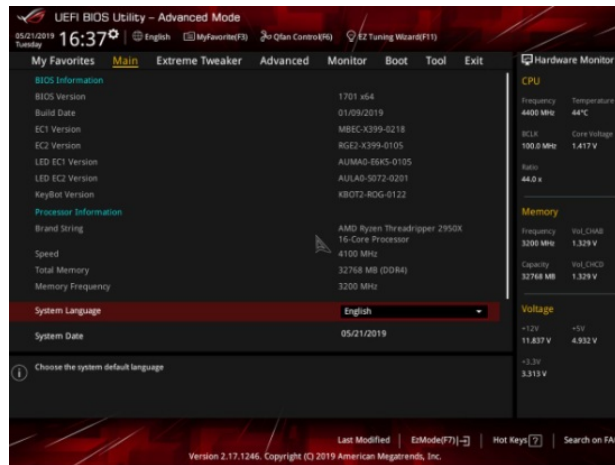


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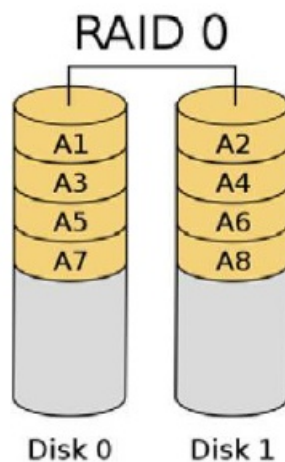
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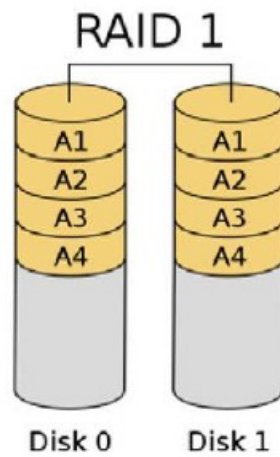


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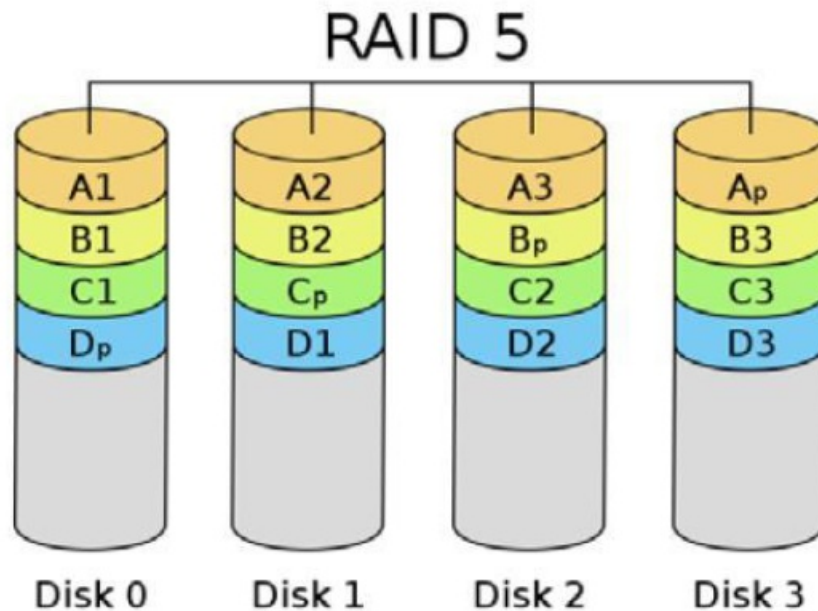
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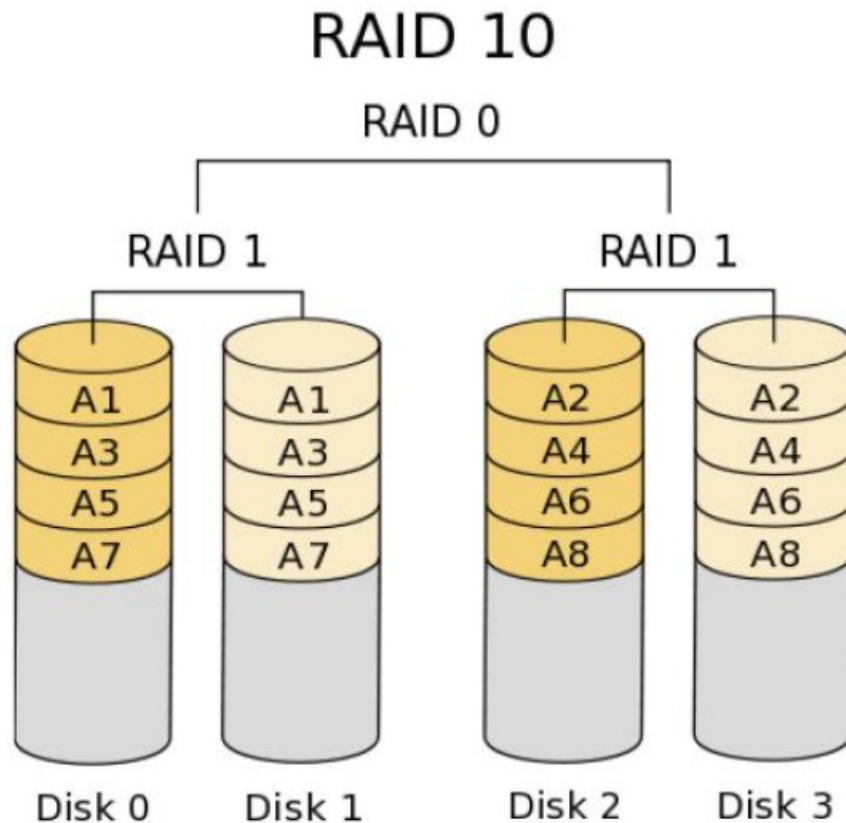
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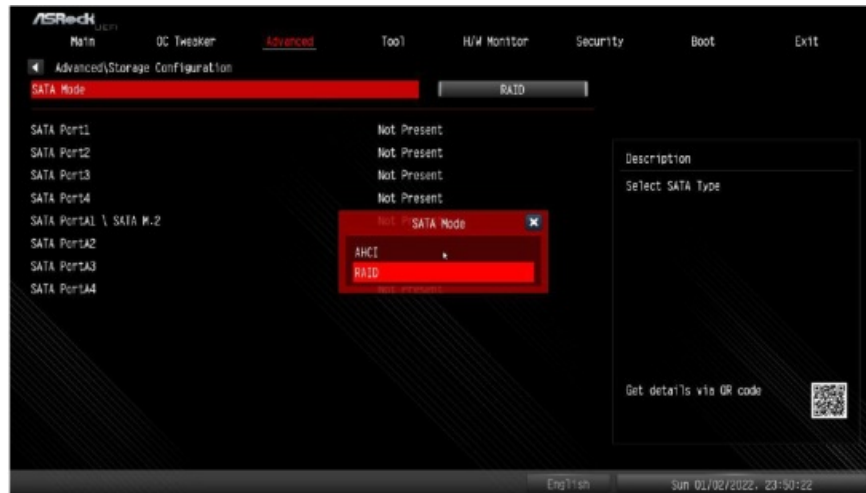
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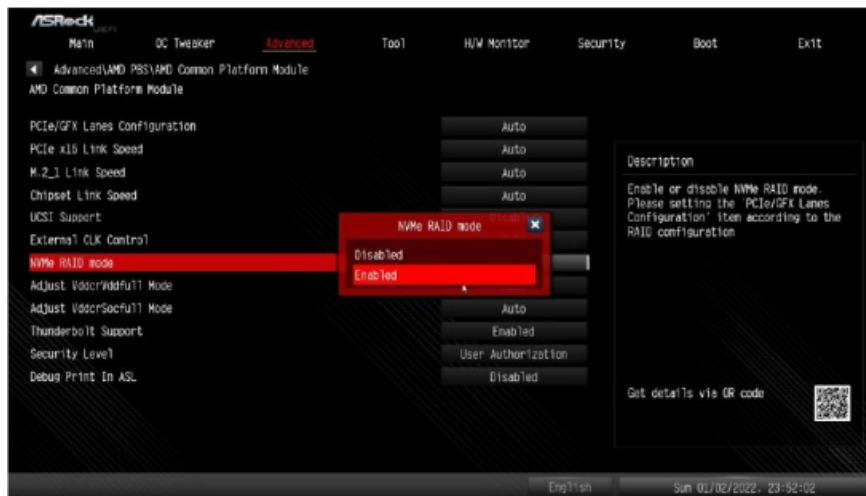
STEP 1: Set up UEFI and create a RAID array

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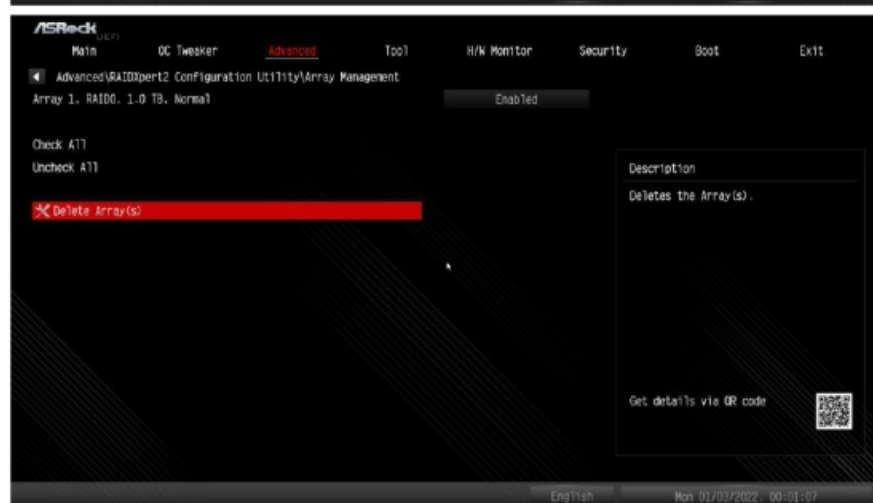
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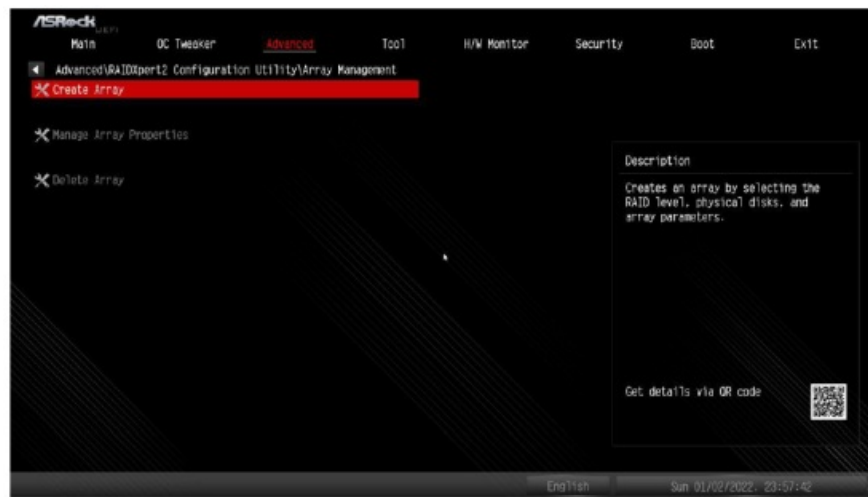
5. Press [F10] to save your changes and exit, and then enter the UEFI Setup again.
6. After saving the previously changed settings via [F10] and rebooting the system, the “RAIDXpert2 Configuration Utility” submenu becomes available. 7.



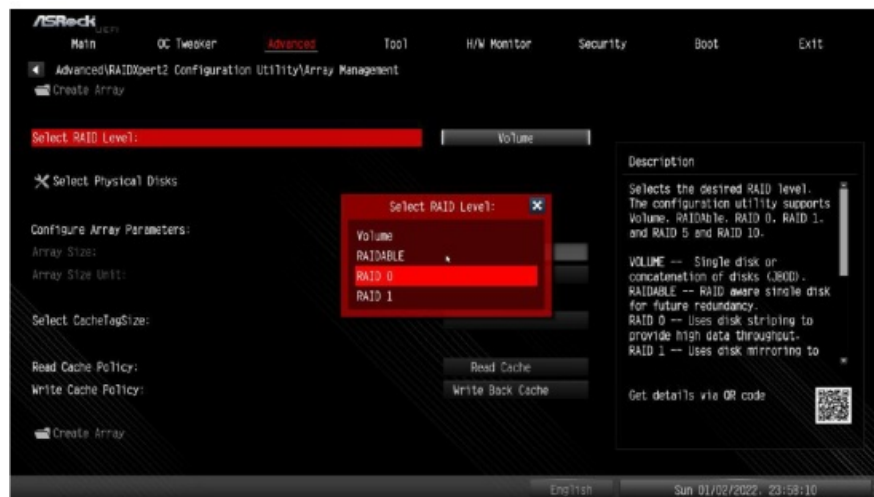
7. Go to Advanced\RAIDXpert2 Configuration Utility\Array Management, and then delete the existing disk arrays before creating a new array. Even if you have not configured any RAID array yet, you might have to use “Delete Array” first.



8. Go to Advanced\RAIDXpert2 Configuration Utility\Array Management\Create Array



9. Select "RAID Level"



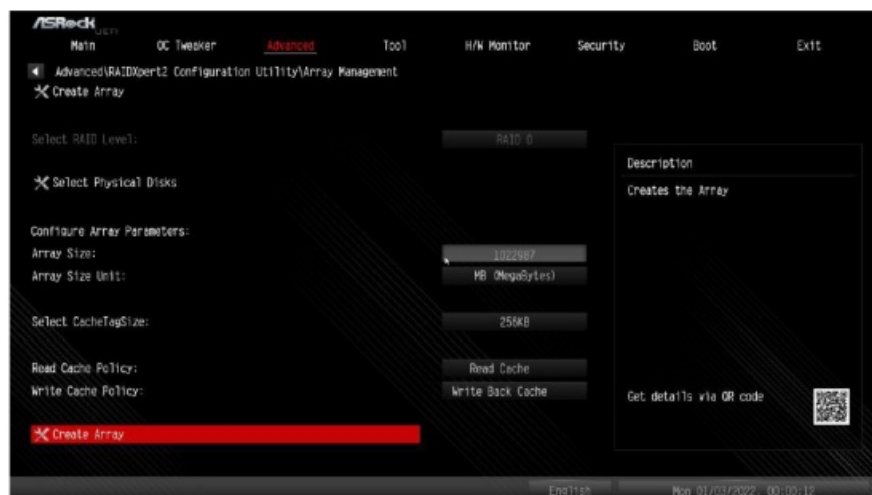
- Select "Select Physical Disks".



- Change "Select Media Type" to "SSD" or leave at "BOTH"



Select "Create Array".

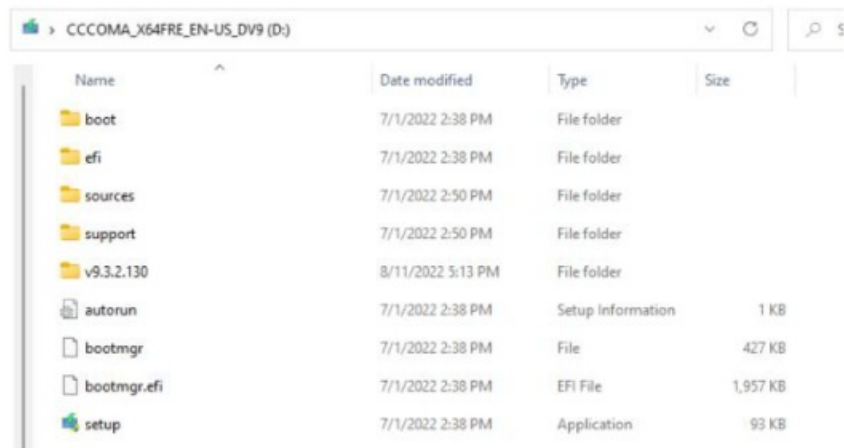


10. Press [F10] to save to exit.

- *Please note that the UEFI screenshots shown in this installation guide are for reference only. Please refer to ASRock's website for details about each model. <https://www.asrock.com/index.asp>

STEP 2: Download driver from ASRock's website

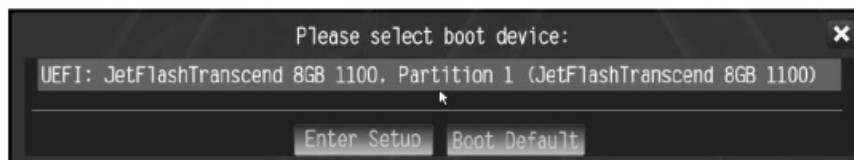
Please download the "SATA Floppy Image" driver from ASRock's website (<https://www.asrock.com/index.asp>) and unzip the file to your USB flash drive. Normally you can also use the RAID driver offered via the AMD website.



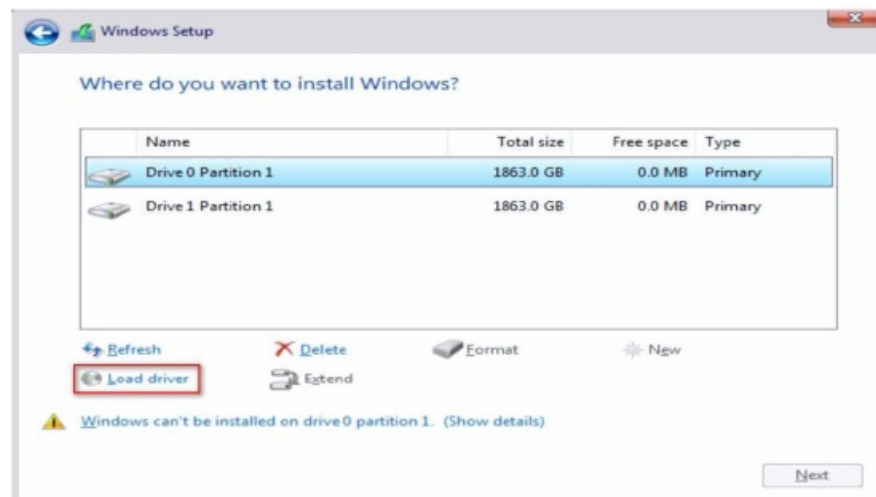
Name	Date modified	Type	Size
boot	7/1/2022 2:38 PM	File folder	
efi	7/1/2022 2:38 PM	File folder	
sources	7/1/2022 2:50 PM	File folder	
support	7/1/2022 2:50 PM	File folder	
v9.3.2.130	8/11/2022 5:13 PM	File folder	
autorun	7/1/2022 2:38 PM	Setup Information	1 KB
bootmgr	7/1/2022 2:38 PM	File	427 KB
bootmgr.efi	7/1/2022 2:38 PM	EFI File	1,957 KB
setup	7/1/2022 2:38 PM	Application	93 KB

STEP 3: Windows installation

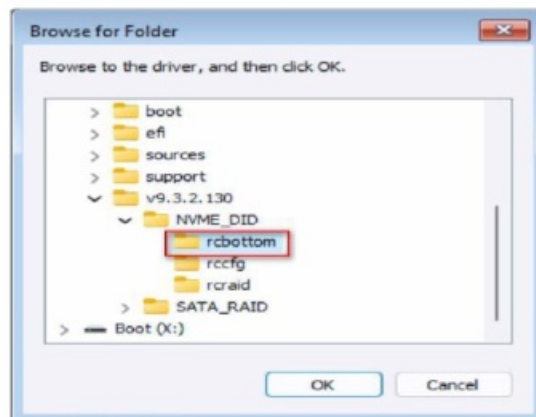
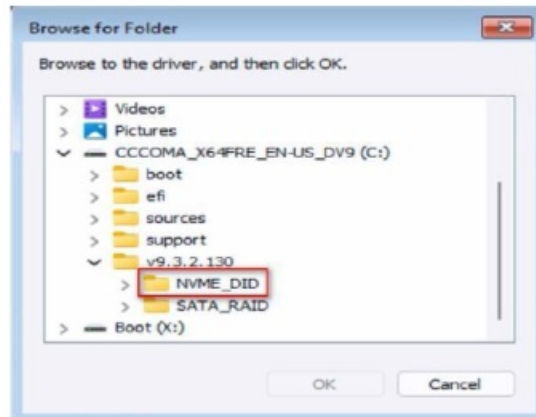
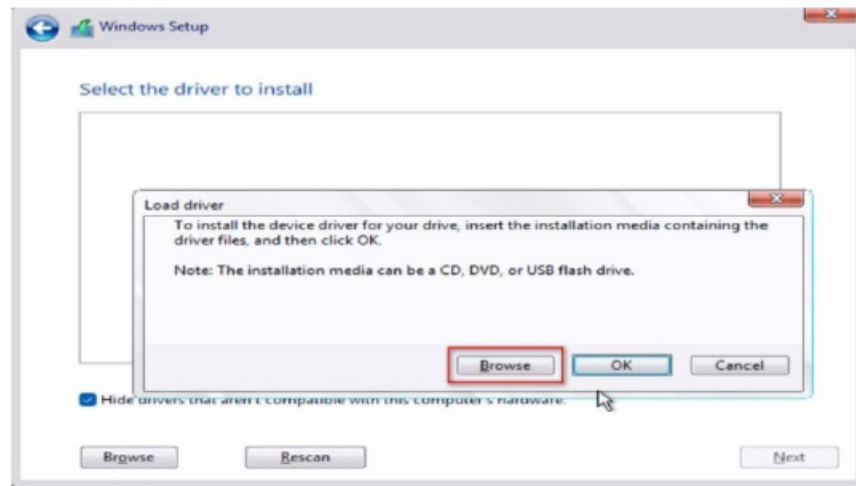
Insert the USB drive with Windows 11 installation files. Then restart the system. While the system is booting, please press [F11] to open the boot menu that is shown in this picture. It should list the USB drive as a UEFI device. Please select this to boot from. If the system restarts at this point, then please open the [F11] boot menu again.



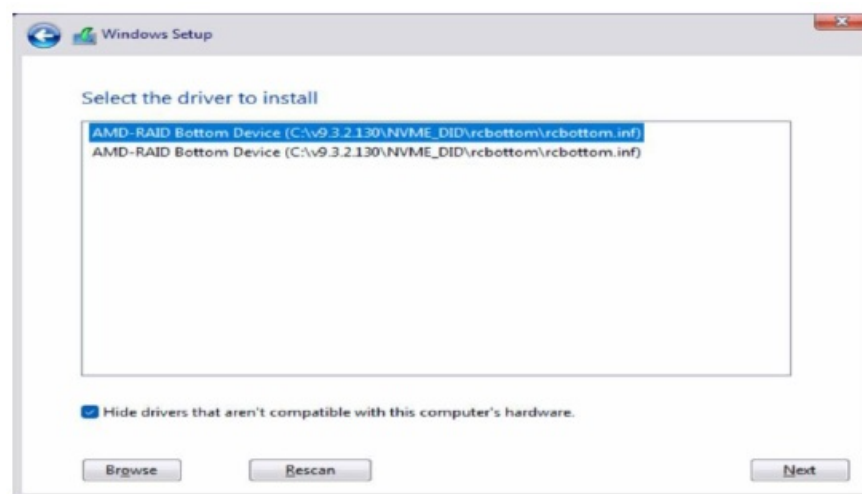
1. When the disk selection page shows up during the Windows installation process, please click <Load Driver>. Do not try to delete or create any partition at this point.



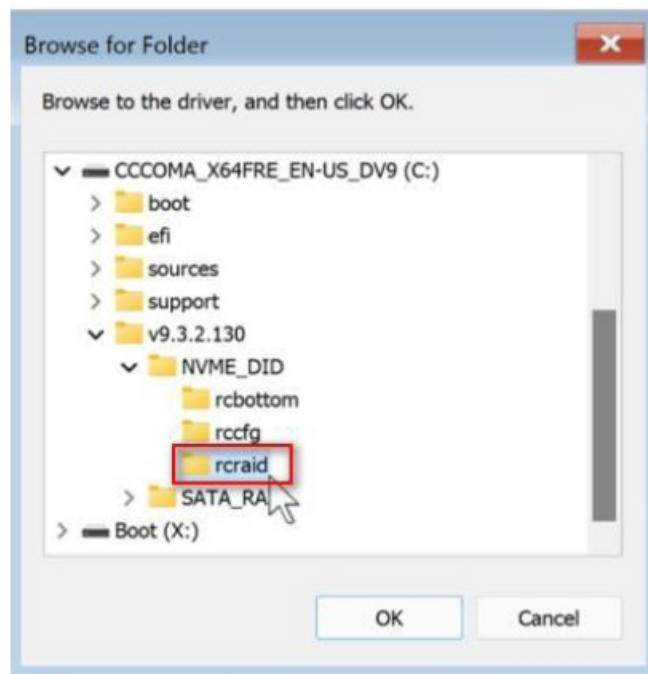
2. Click <Browse> to find the driver on your USB flash drive. Three drivers must be loaded. This is the first. The folder names might look different depending on the driver package that you are using.



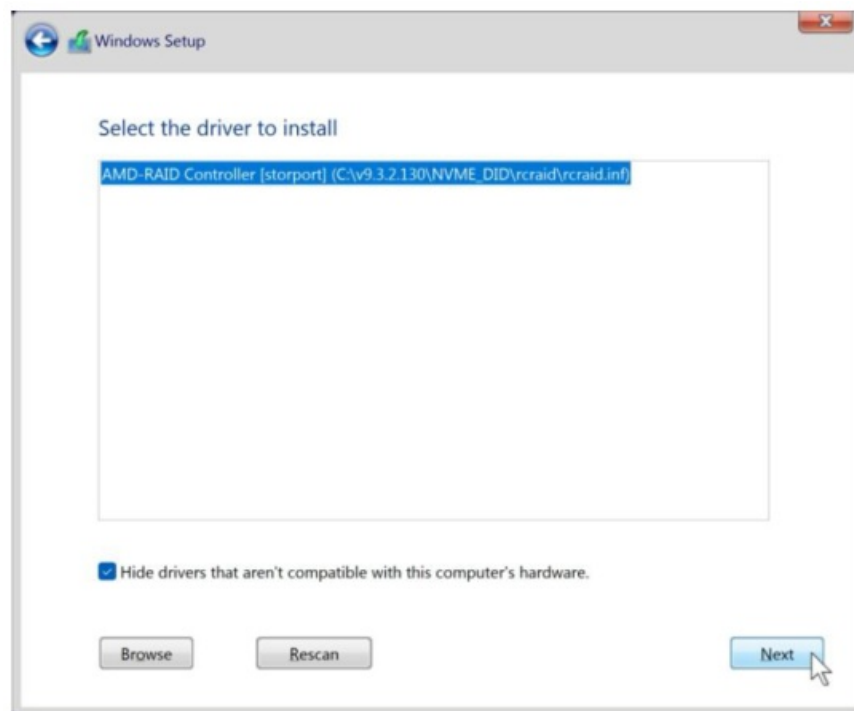
3. Select "AMD-RAID Bottom Device" and then click <Next>.



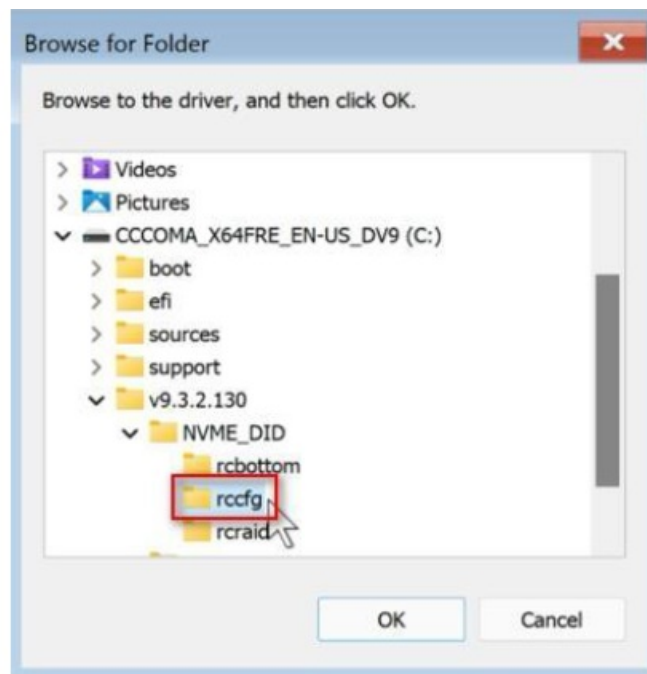
4. Load the second driver.



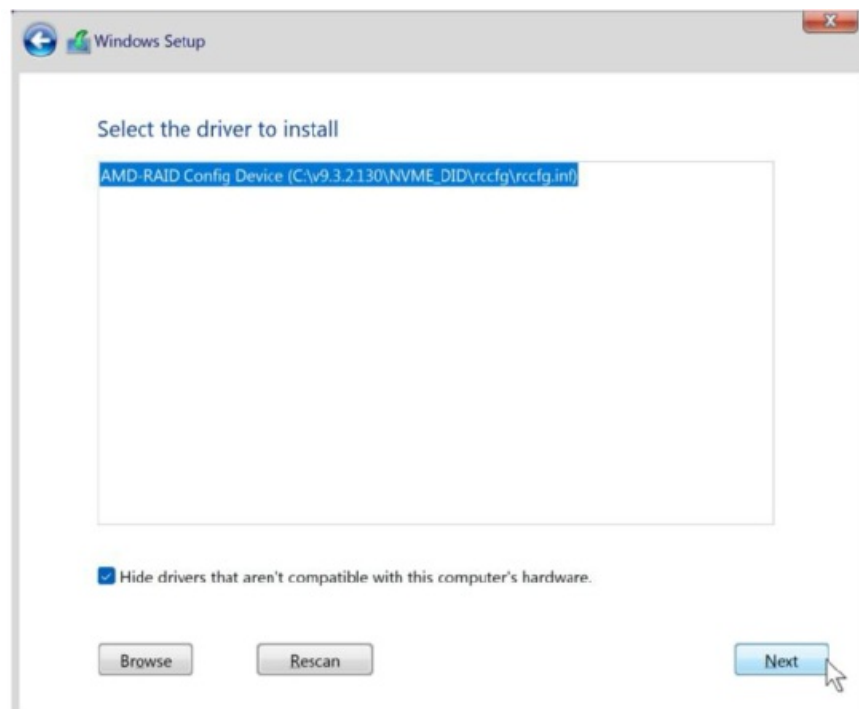
5. Select "AMD-RAID Controller" and then click <Next>.



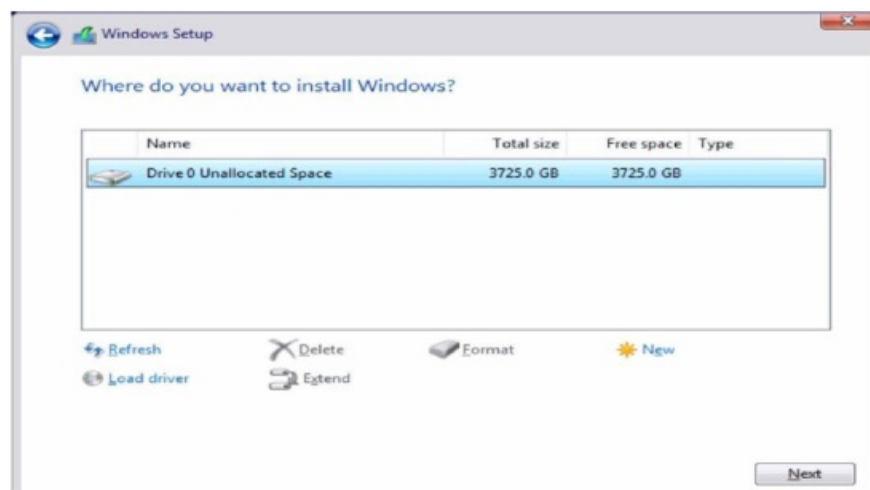
6. Load the third driver.



7. Select “AMD-RAID Config Device” and then click <Next>.



8. Once the third driver is loaded, a RAID disk appears. Select unallocated space and then click <Next>.

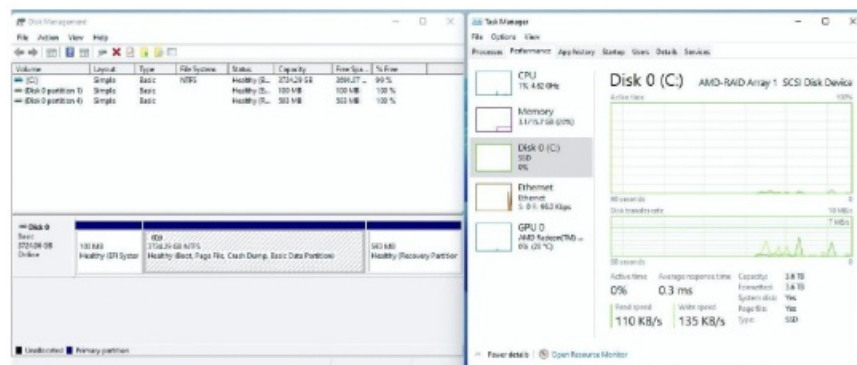


9. Please follow the Windows installation instructions to finish the process.

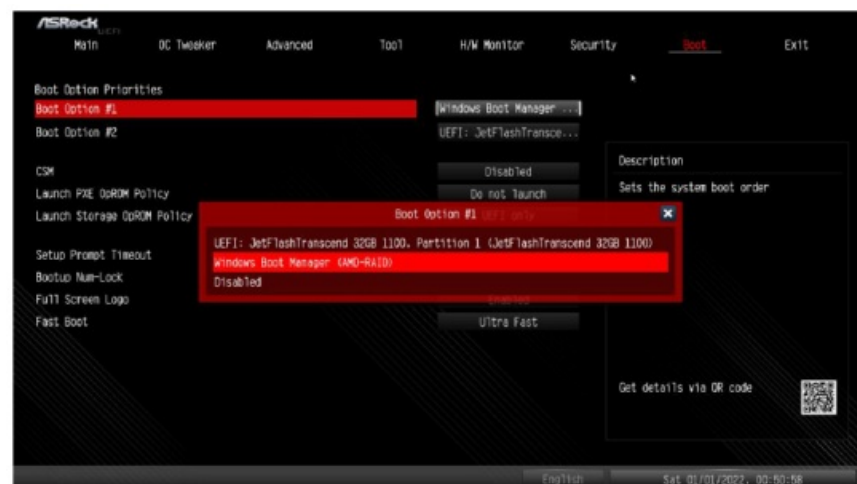


10. After the Windows installation is finished, please install the drivers from ASRock's website.

<https://www.asrock.com/index.asp>



11. Go to Boot menu and set "Boot Option #1" to <Windows Boot Manager (AMD-RAID)>.



AMD Windows RAID Installation Guide

Caution:

This chapter describes how to configure a RAID volume under Windows. You can use for the following scenarios:

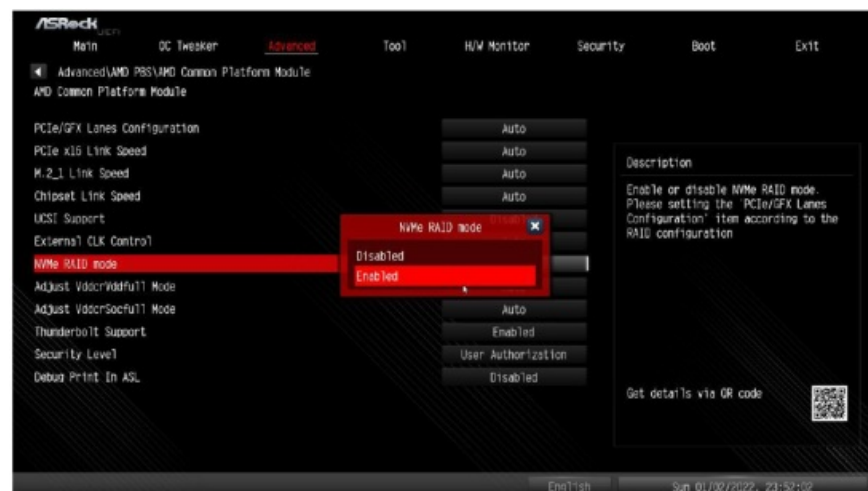
1. Windows is installed on a 2.5" or 3.5" SATA SSD or HDD. You want to configure a RAID volume with NVMe M.2 SSDs.
2. Windows is installed on an NVMe M.2 SSD. You want to configure a RAID volume with 2.5" or 3.5" SATA SSDs or HDDs.

Create a RAID volume under Windows

1. Enter the UEFI Setup Utility by pressing <F2> or right after you power on the computer.
2. Set the “SATA Mode” option to <RAID>. (If you are using NVMe SSDs for RAID configuration, please skip this step)



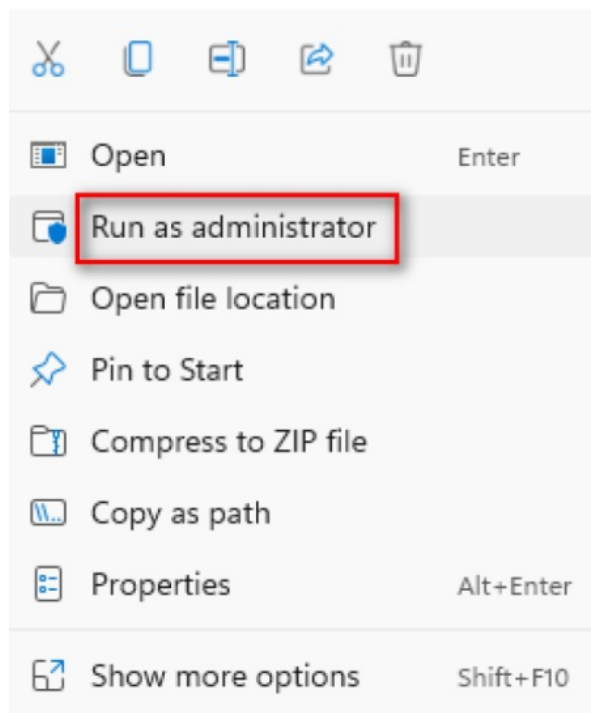
3. Go to Advanced\AMD PBS\AMD Common Platform Module and set “NVMe RAID mode” to <Enabled>. (If you are using 2.5” or 3.5” SATA drives for RAID configuration, please skip this step)



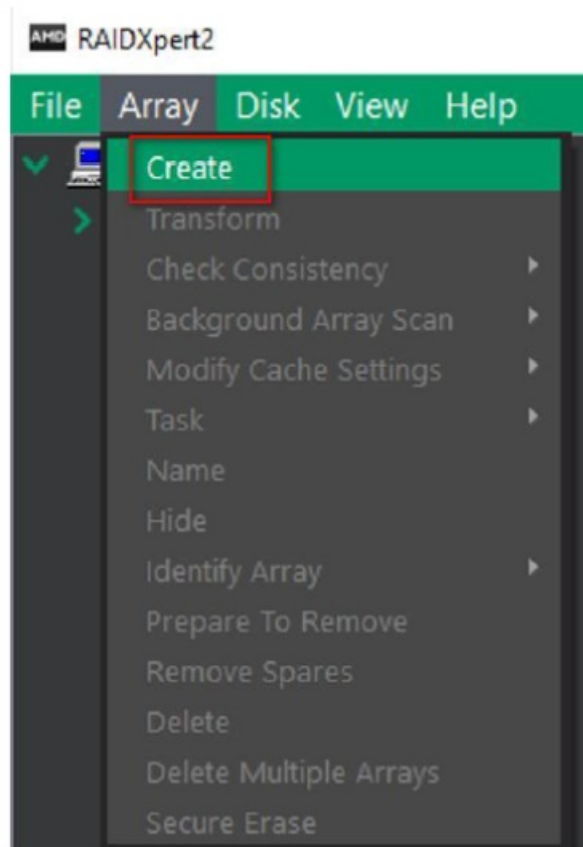
4. Press “F10” to save the setting and reboot to Windows.
5. Install the “AMD RAID Installer” from the AMD website:
 - <https://www.amd.com/en/support> Select “Chipsets”,
 - select your socket and chipset, and click “Submit”.
 - Please find “AMD RAID Installer”.



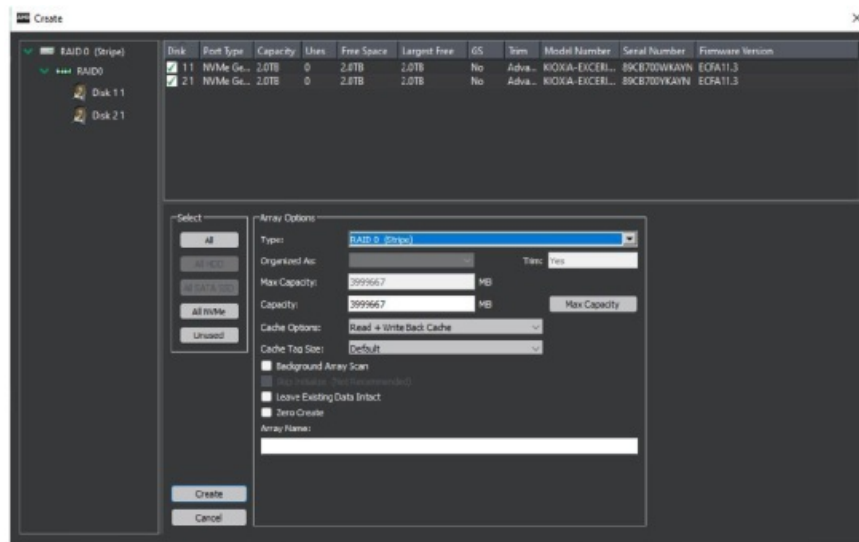
6. After installing the “AMD RAID Installer”, please launch “RAIDXpert2” as administrator.



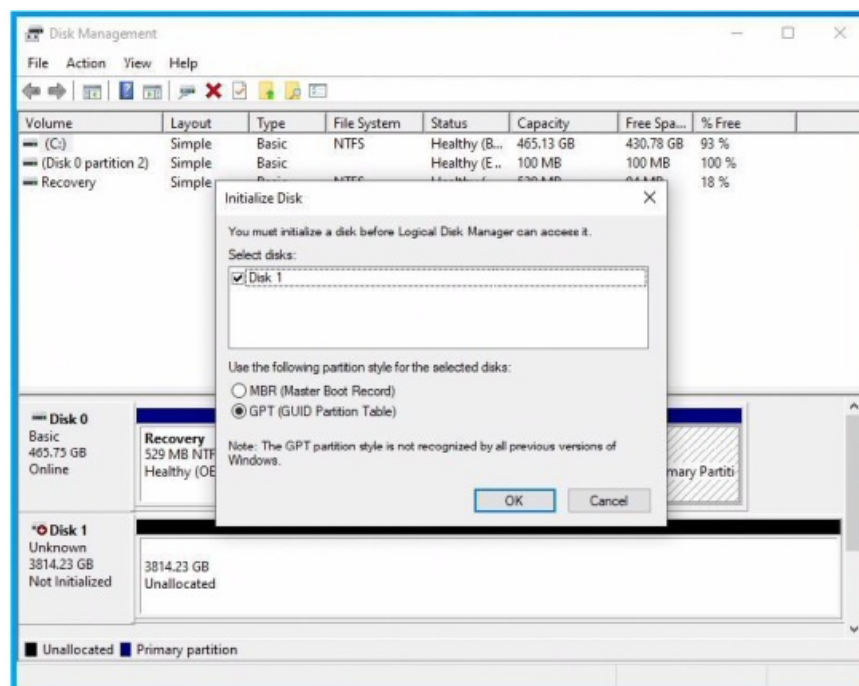
7. Find “Array” in the menu and click on “Create”.



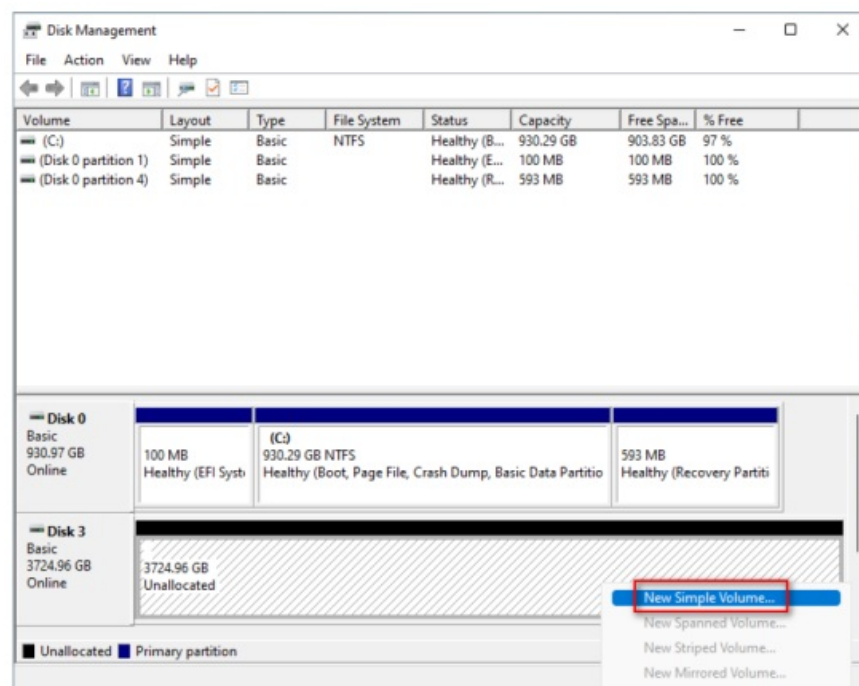
8. Select the RAID type, the disks which would like to use for RAID, volume capacity and then create the RAID array.



9. In Windows open "Disk Management". You will be prompted to initialize the disk. Please select "GPT" and click "OK".



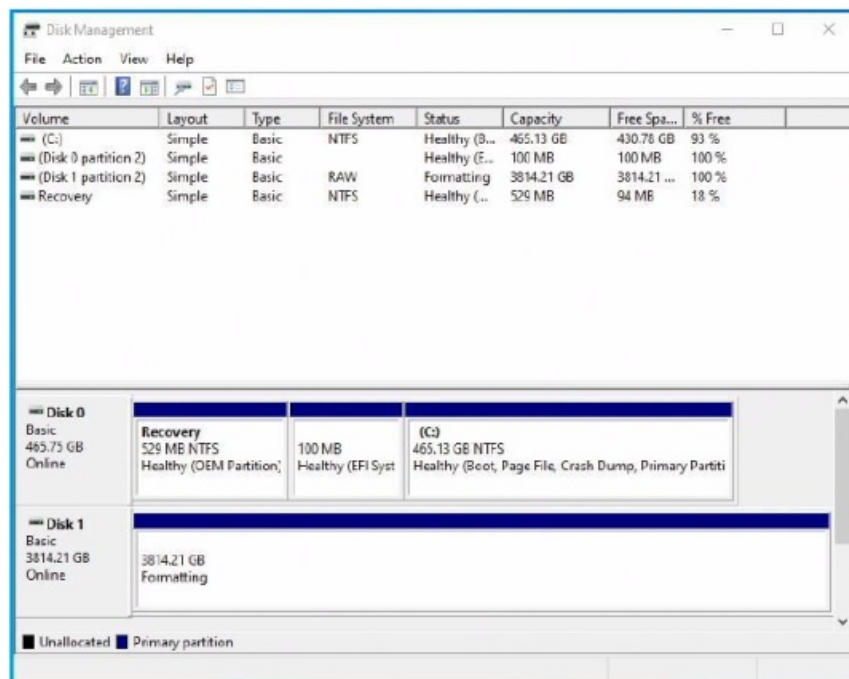
10. Right click at the "Unallocated" section of the disk and create a new simple volume.



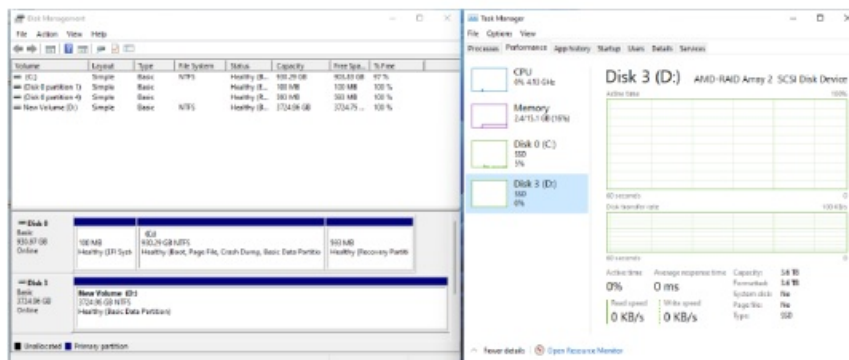
11. Follow the “New Simple Volume Wizard” to create a new volume.



12. Wait a bit for the system to create the volume.

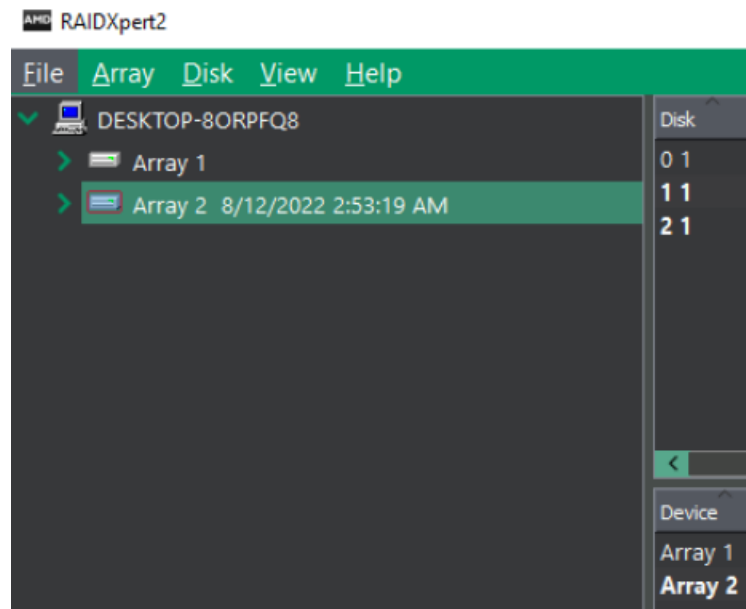


13. After creating the volume, the RAID is available to use.

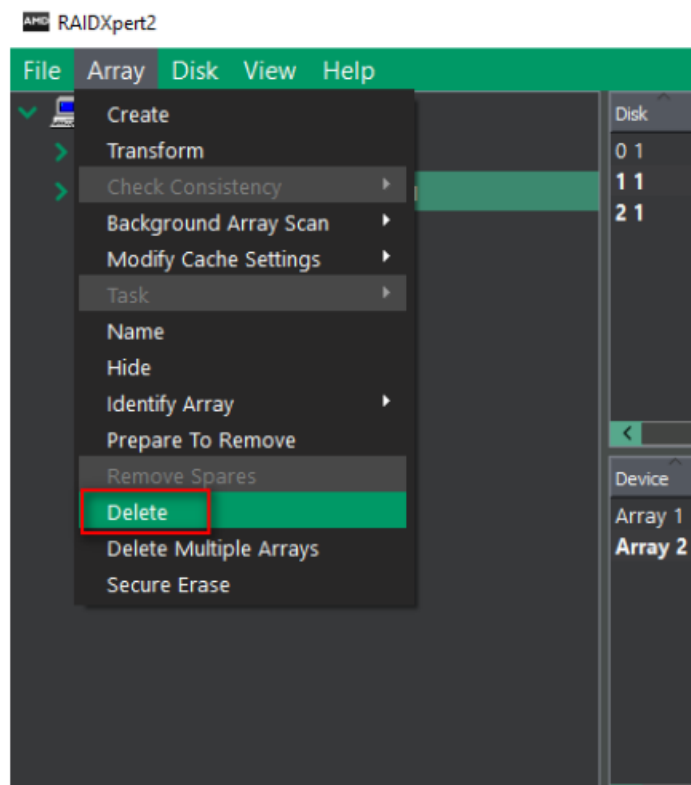


Delete a RAID array under Windows.

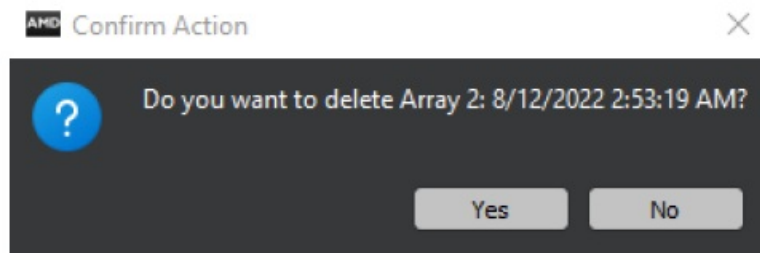
1. Select the array which you would like to delete.



2. Find “Array” in the menu and click on “Delete”.



3. Click “Yes” to confirm.



FAQS

- **Q: What is the purpose of RAID configurations?**

A: RAID configurations combine multiple hard drives for improved performance, data protection, and fault

tolerance.


- **Q: Can I mix hard drives of different sizes in a RAID setup?**

A: It is recommended to use identical drives of the same size in a RAID setup. Using different-sized drives may limit storage capacity.

Documents / Resources

<div>AMD RAID Installation Guide</div> <div><div>1. Introduction</div><div>2. RAID Setup Explained and Tested</div><div>3. RAID Setup Explained and Tested</div><div>4. RAID Setup Explained and Tested</div><div>5. RAID Setup Explained and Tested</div><div>6. RAID Setup Explained and Tested</div><div>7. RAID Setup Explained and Tested</div><div>8. RAID Setup Explained and Tested</div><div>9. RAID Setup Explained and Tested</div><div>10. RAID Setup Explained and Tested</div></div>	<div>AMD RAID Setup Explained and Tested [pdf] Installation Guide</div> <div>RAID Setup Explained and Tested, RAID, Setup Explained and Tested, and Tested</div>
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References

-  [ASRock](#)
- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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