

# MPC-3000 Series Computers Windows 11 Pro 22H2 Manual

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[www.moxa.com/products](http://www.moxa.com/products)

**MOXA**<sup>®</sup>

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# MPC-3000 Series Computers Windows 11 Pro 22H2 Manual

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# 1. Introduction

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This Windows 11 Professional 2022 (22H2) user manual is applicable to Moxa's x86-based computers listed below and covers the complete set of instructions for these series. Detailed instructions on configuring advanced settings are covered in the following chapters of the manual. Before referring to sections in these chapters, confirm that the hardware specification of your computer model supports the functions/settings covered therein.

## Applicable Series

- **MPC-3070W Series**
- **MPC-3100 Series**
- **MPC-3120 Series**
- **MPC-3120W Series**
- **MPC-3150 Series**
- **MPC-3150W Series**

## Moxa Computers and Windows

Moxa computers are integrated with Windows drivers and I/O controller utilities based on the Microsoft Windows up-to-date version so that you can use the most compatible hardware-software combinations in your application field.

## 2. System Initialization

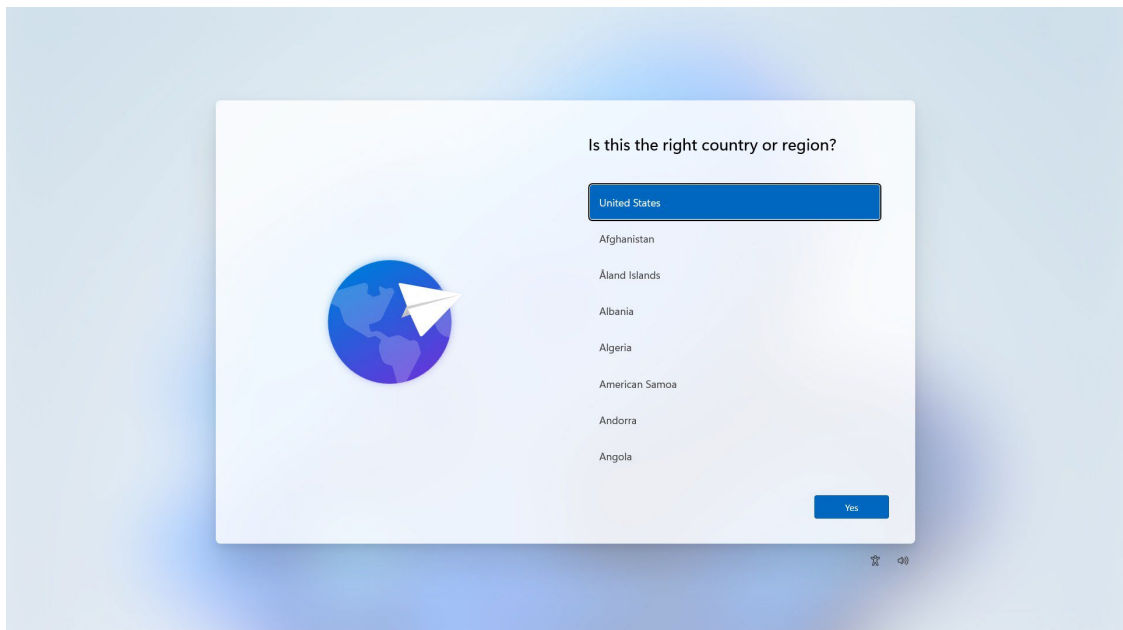
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In this chapter, we describe how to initialize the system settings when you boot up the computer for the first time. When you turn on the computer, you will see the Windows Out of Box Experience (OOBE) wizard. OOBE consists of a series of screens that require customers to accept the license agreement, connect to the internet, log in with or sign up for a Microsoft Account, and share information with the OEM.

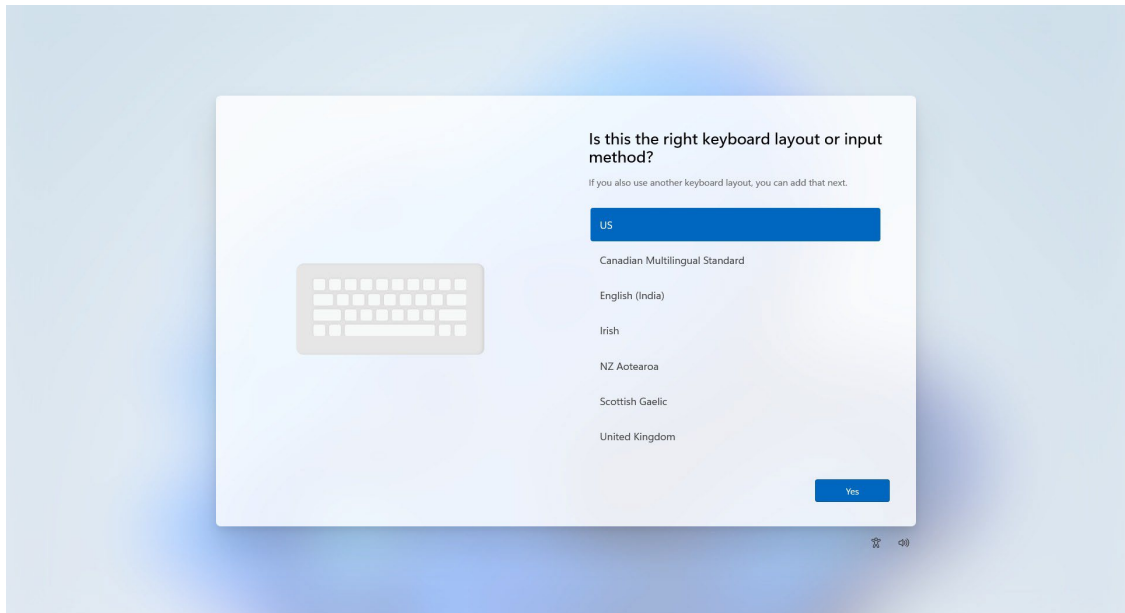
### Initializing User Settings

The following is a non-exhaustive list of OOBE screens that you will see in the order that they are listed here:

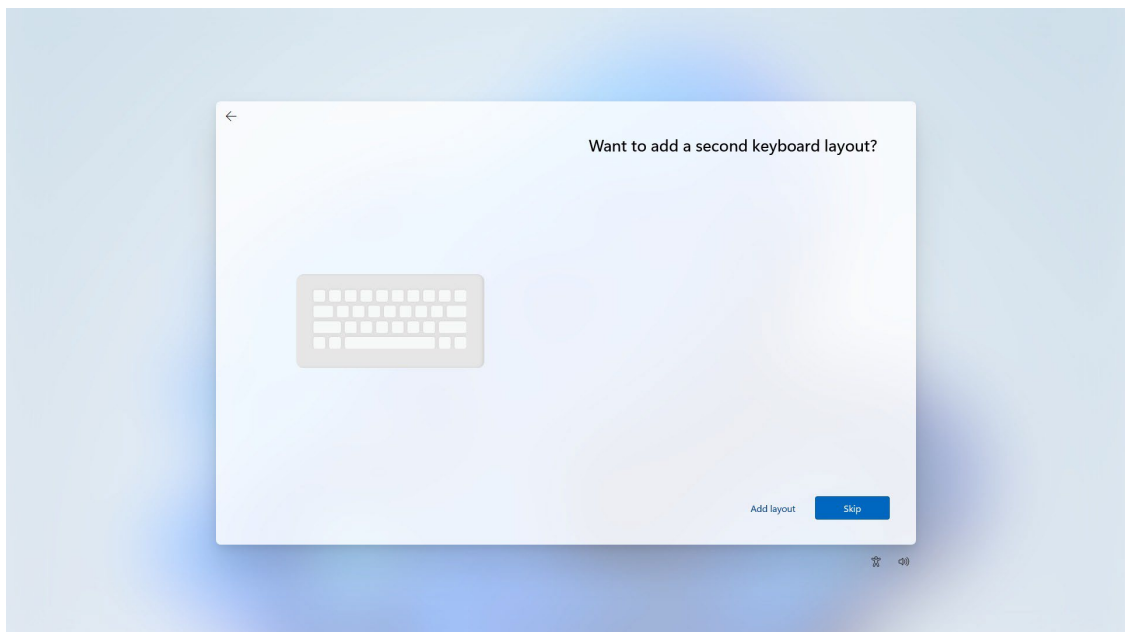
1. Select a region.



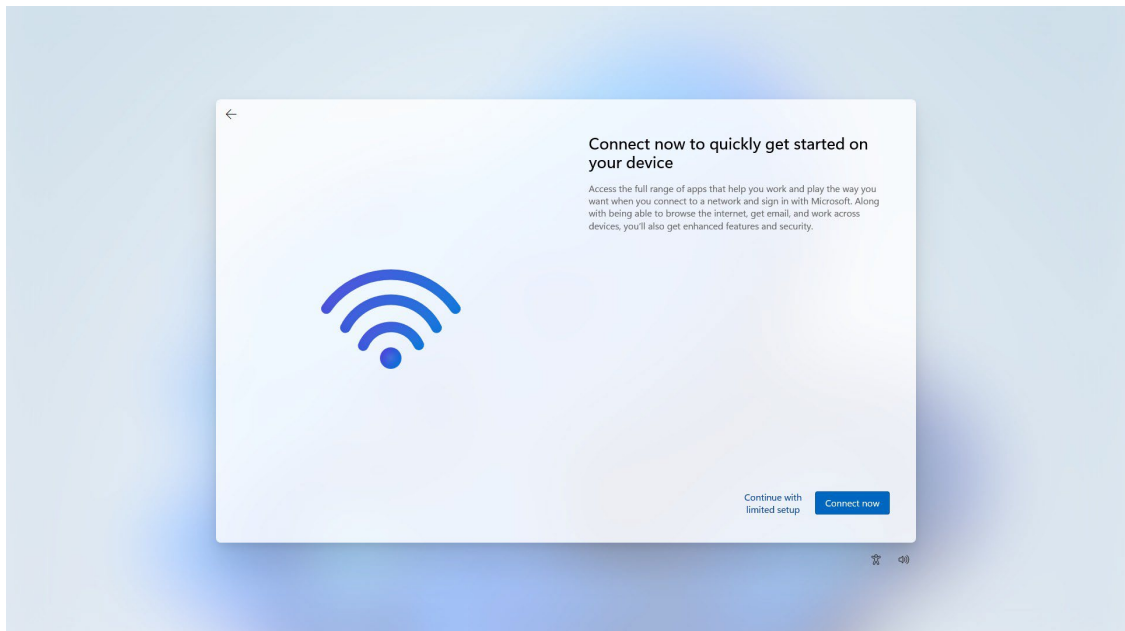
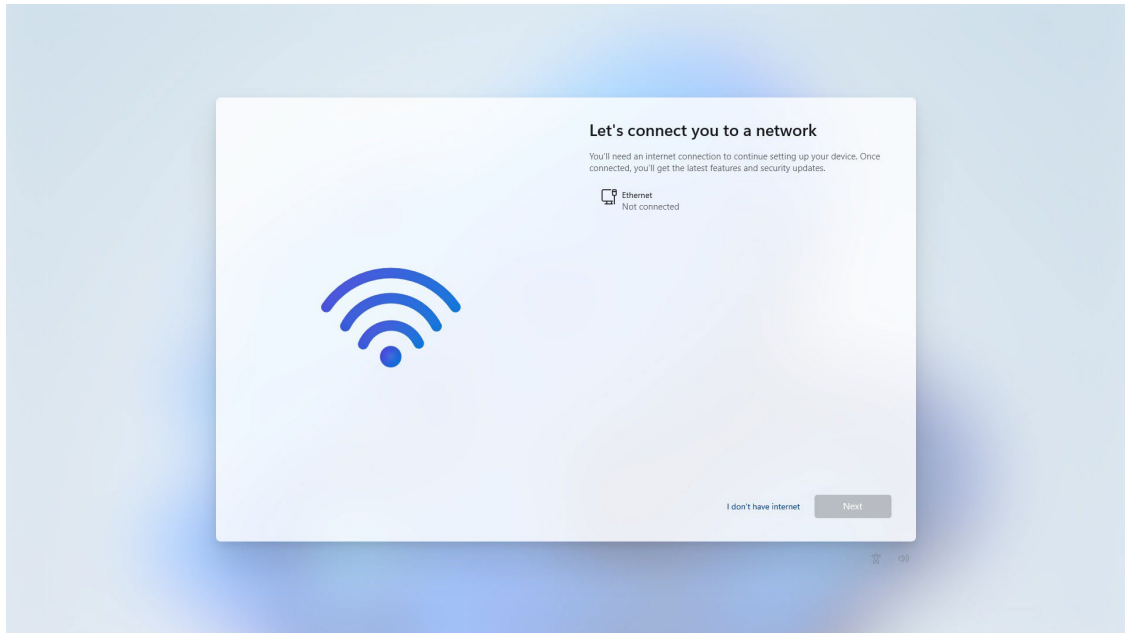
2. Select a keyboard.



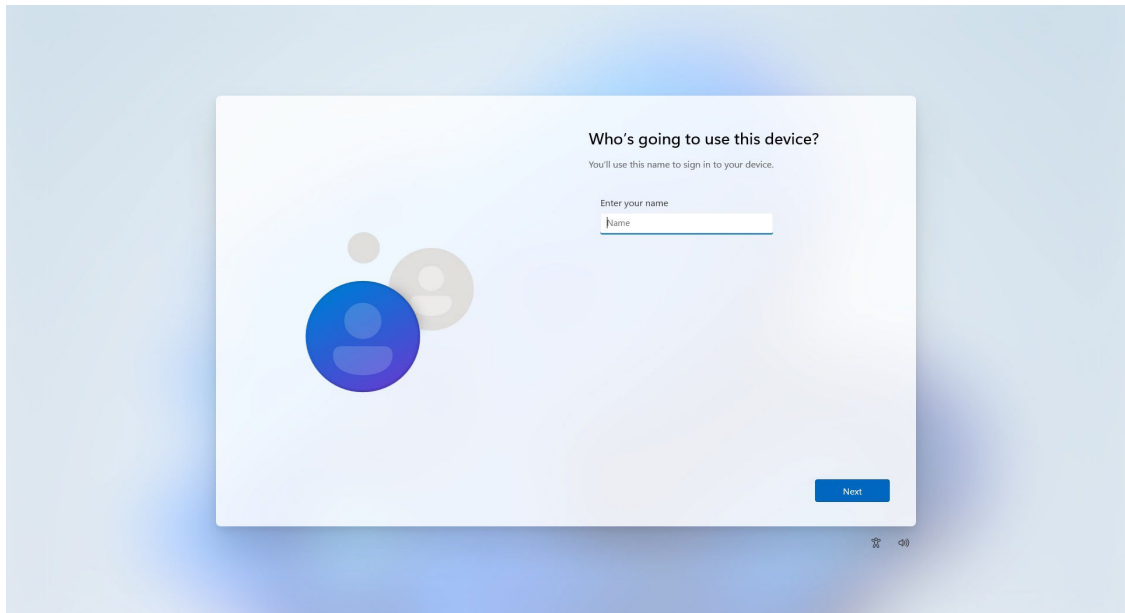
3. Select a second keyboard.



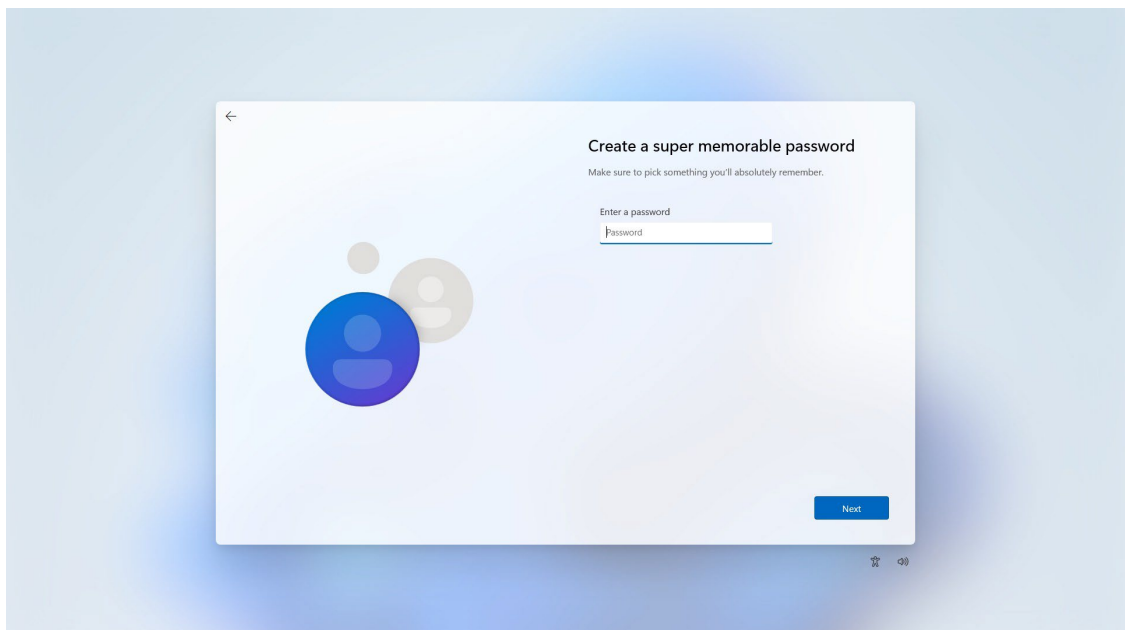
4. Connect to a network or continue with limited setup.



5. Sign in to or create a local account or a Microsoft account (MSA).

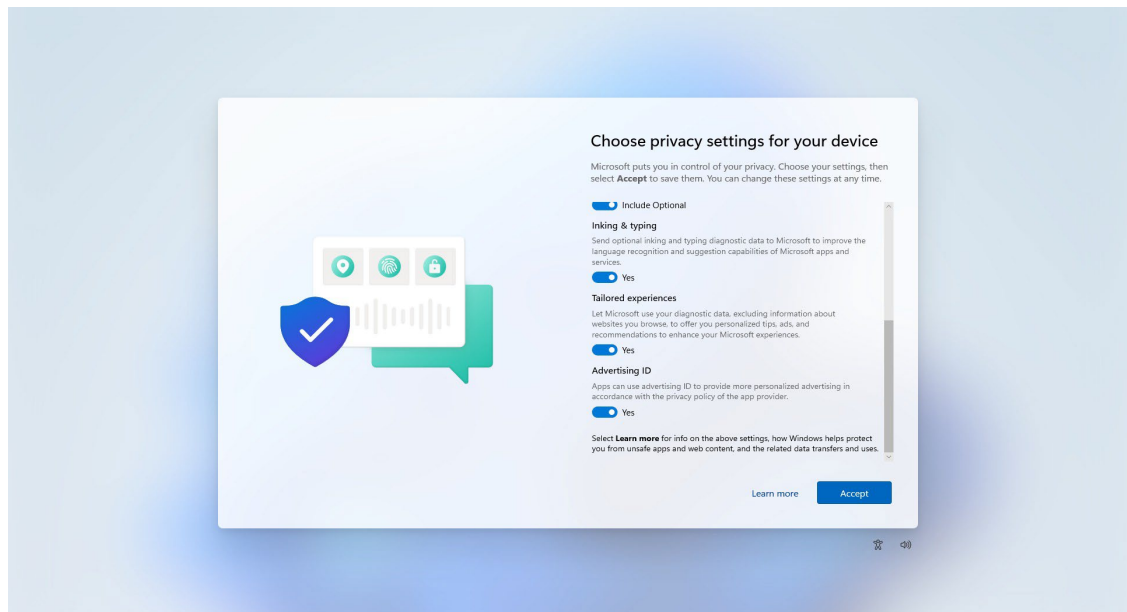


6. Set a password.





7. Choose your privacy settings.



## Initializing System

- After the OOB settings, you will be redirected to the device desktop. Wait until the process is complete.

```
C:\windows\System32\cmd.exe
C:\Windows\System32>start /wait c:\windows\system32\SetOEMModel.exe
C:\Windows\System32>start /wait C:\windows\system32\SortNetName.exe
C:\Windows\System32>reg delete "HKLM\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate" /v ExcludeWUDriversInQualityUpdate /f
The operation completed successfully.
C:\Windows\System32>reg add "HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\DriverSearching" /v SearchOrderConfig /t REG_DWORD /d 1 /f
The operation completed successfully.
```

- The device will now reboot, and the new settings will take effect after the system restarts.

# 3. BitLocker

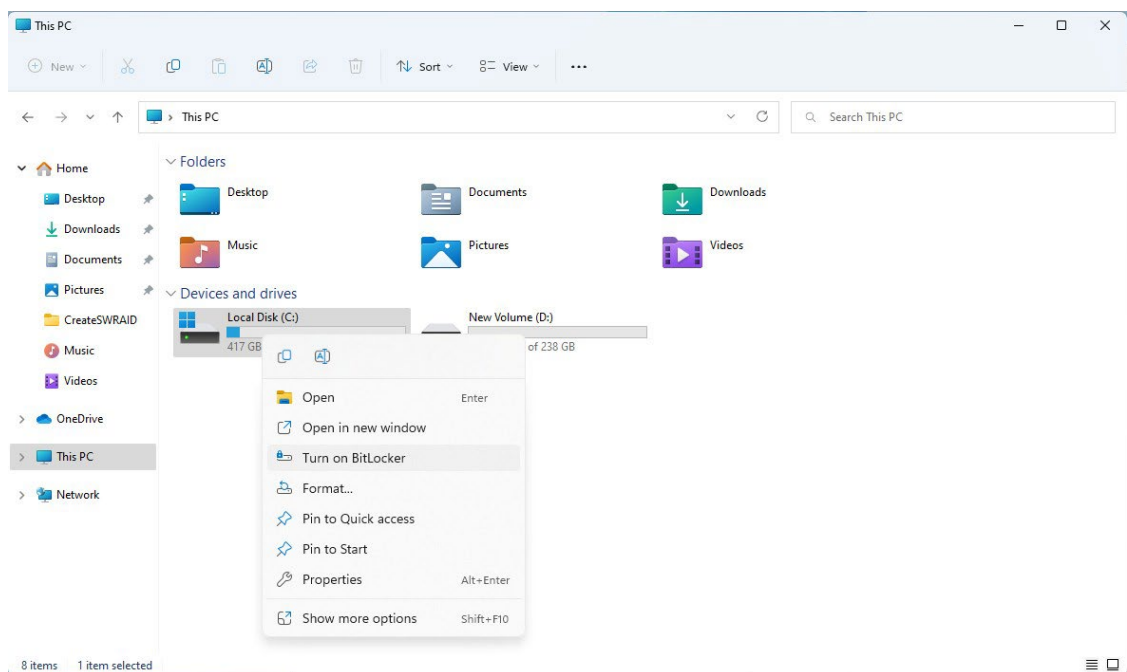
BitLocker is a Windows disk encryption feature, designed to protect data by providing encryption for entire volumes. BitLocker addresses the threats of data theft or exposure from lost, stolen, or inappropriately decommissioned devices.

For more information about BitLocker : <https://learn.microsoft.com/en-us/windows/security/operating-system-security/data-protection/bitlocker/>

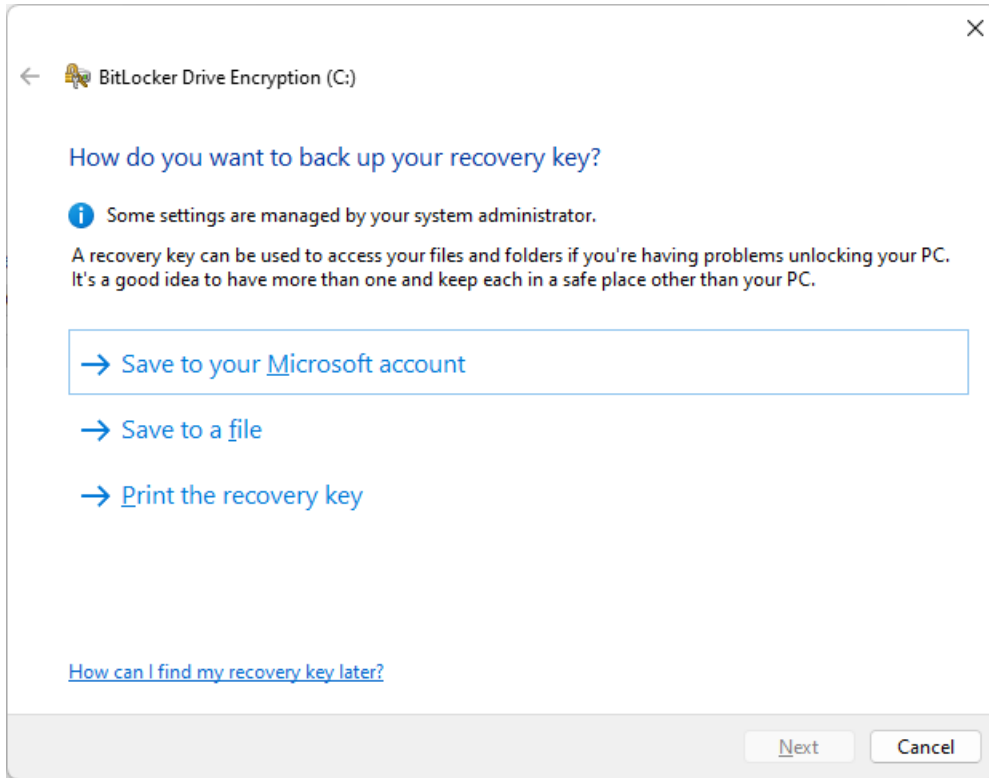
This chapter describes the BitLocker setup process.

## Enabling the BitLocker

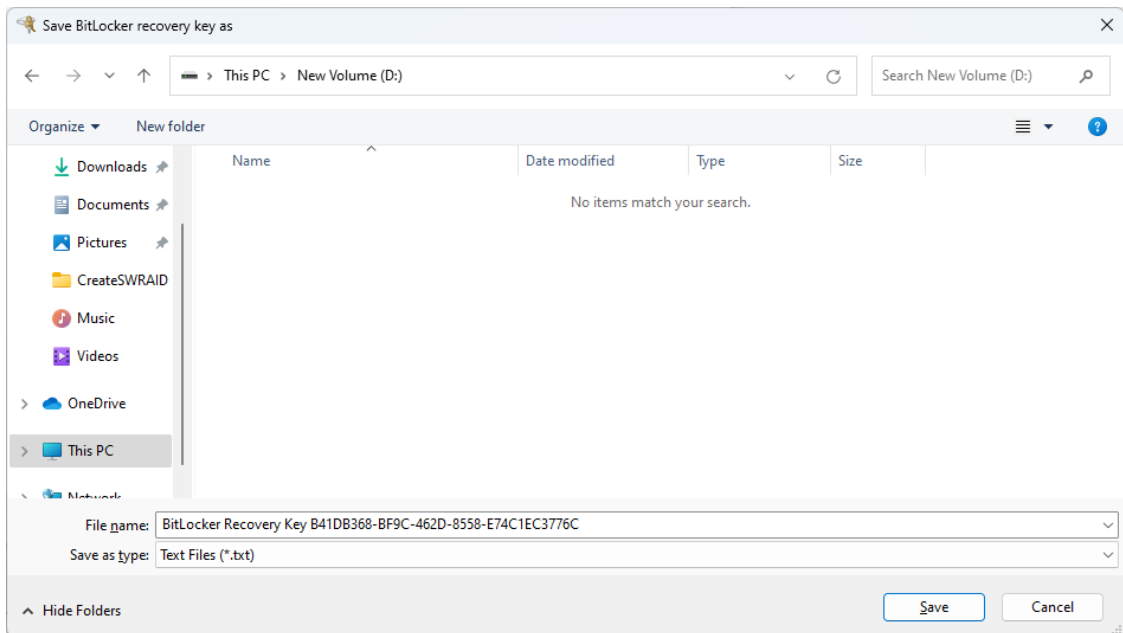
1. In the **Windows Devices and drives**, right-click on the drive and select **Turn on BitLocker**.



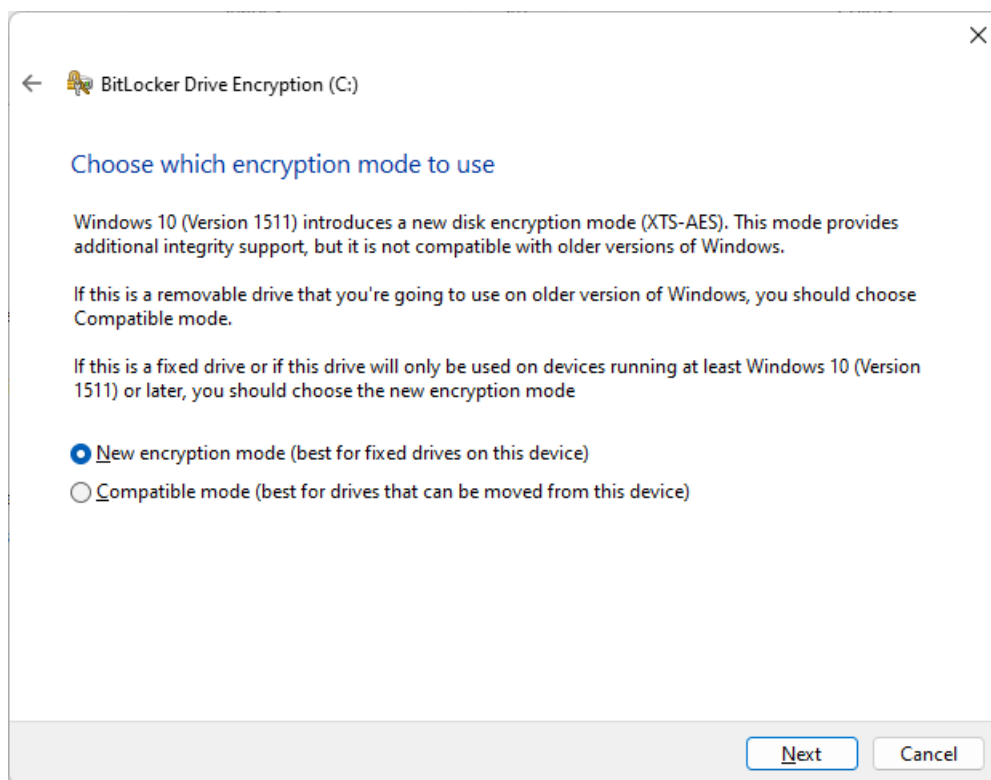
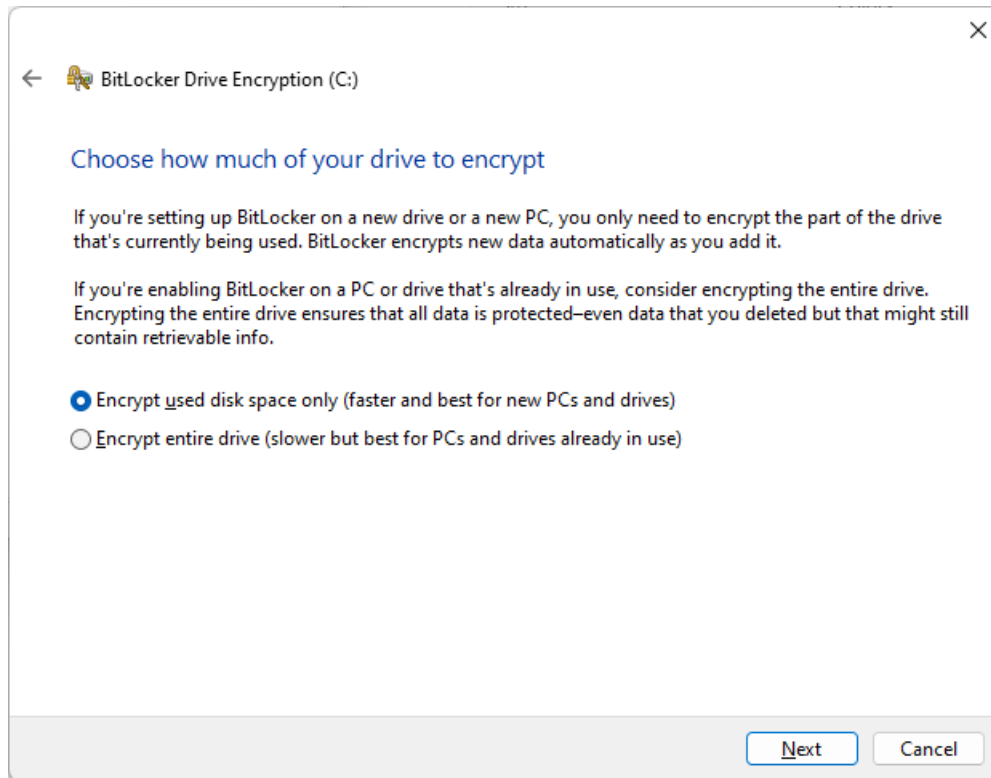
2. Select an option to back up the recovery key. For example, select **Save to a file**.



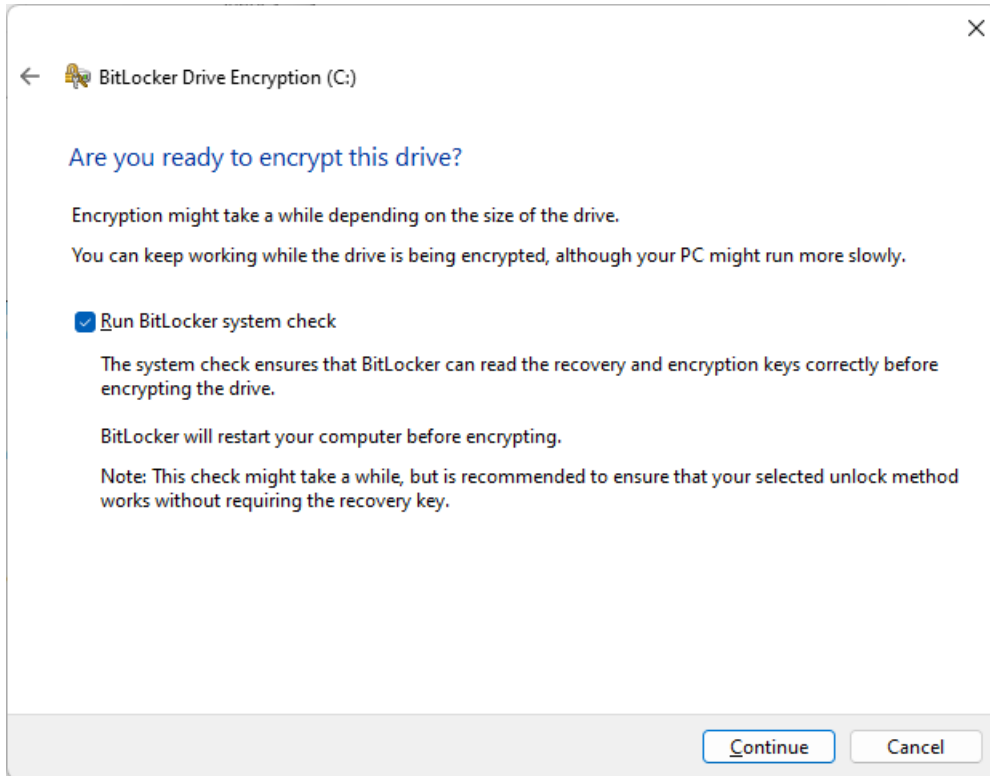
3. Select the path to store the file in.



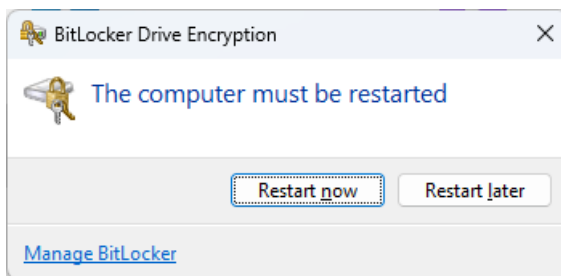
4. Follow the onscreen instructions to specify the drive encryption options.



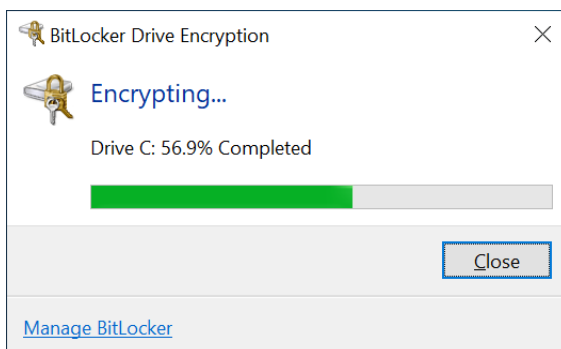
5. Click **Continue**.



6. Restart the computer.

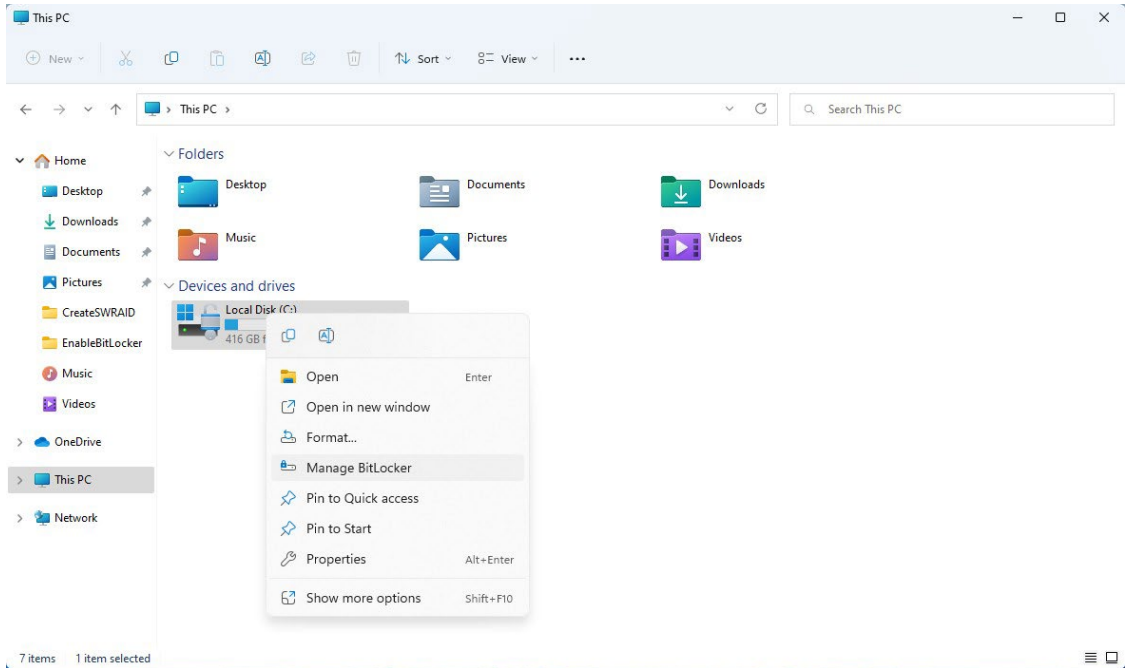


7. Wait for the encryption process to complete and then click **Close**.

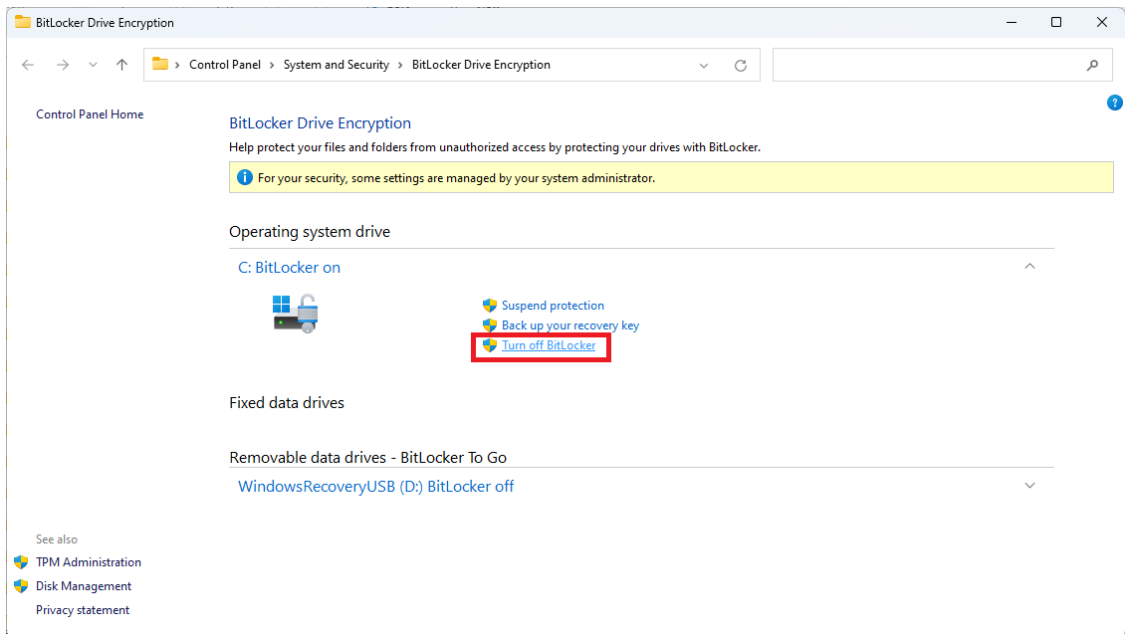


# Disabling the BitLocker

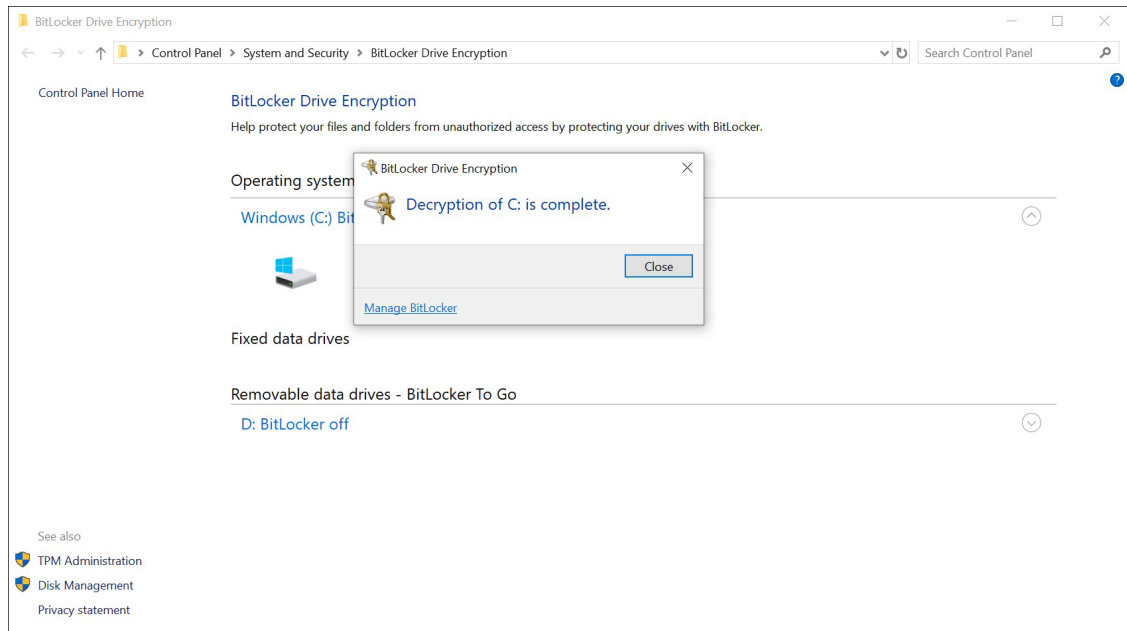
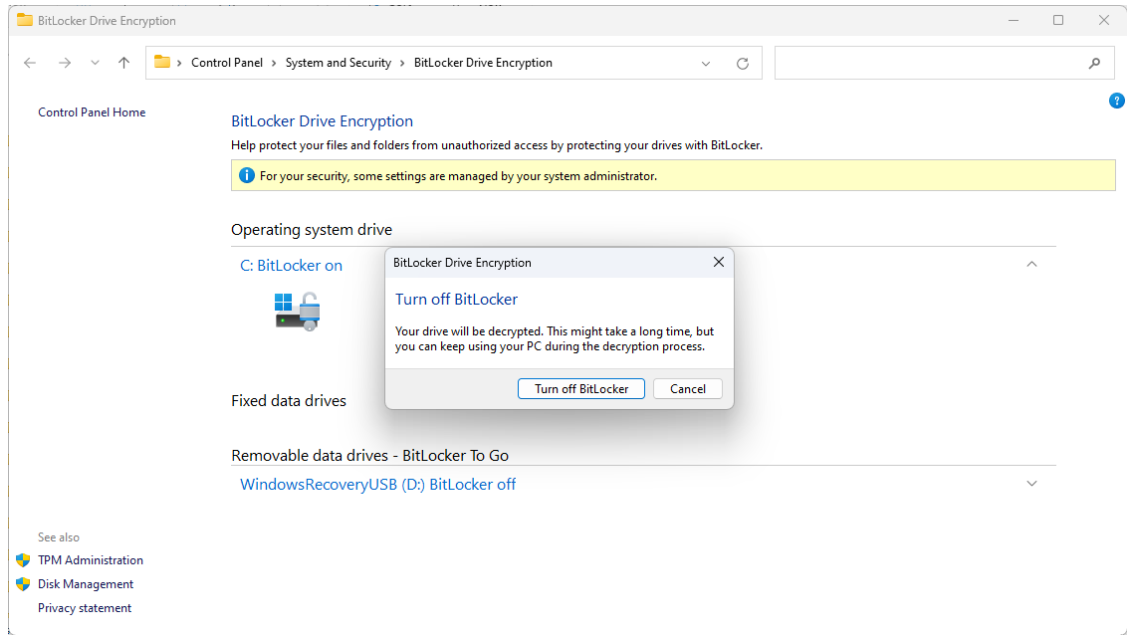
1. In the **Windows Devices and drives**, right-click on the drive and select **Manage BitLocker**.



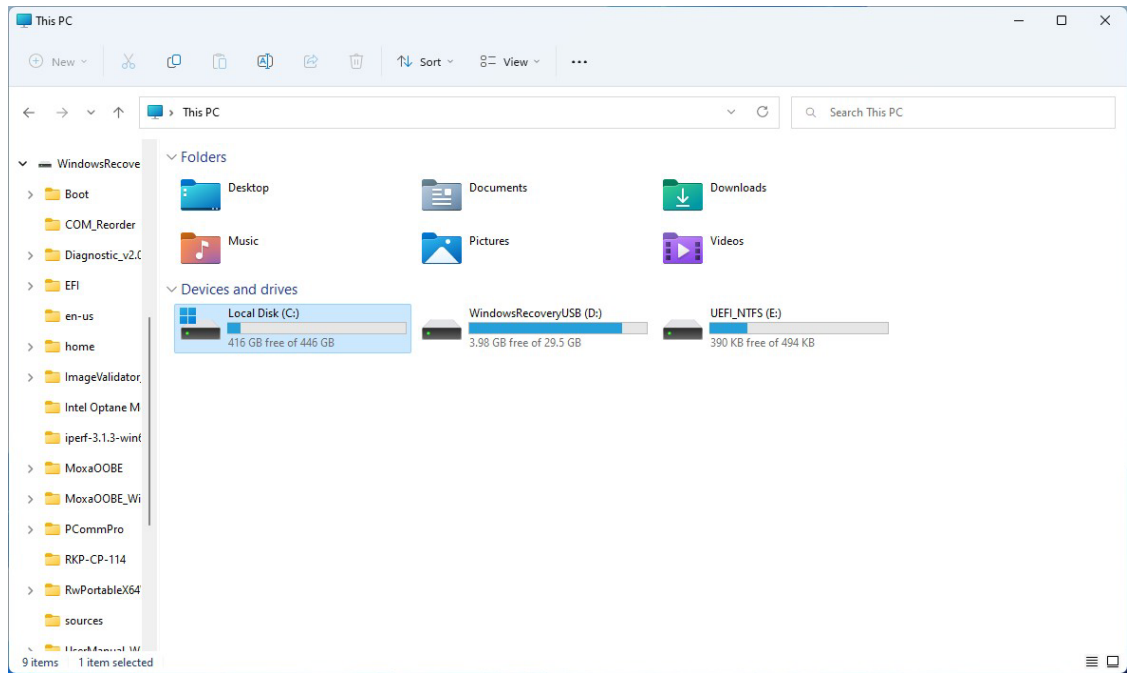
2. Click on **Turn off BitLocker**.



3. Wait for the decryption process to complete and click **Close** to exit the program.



4. Check the disk status after the decryption process is completed.





## 4. RAID

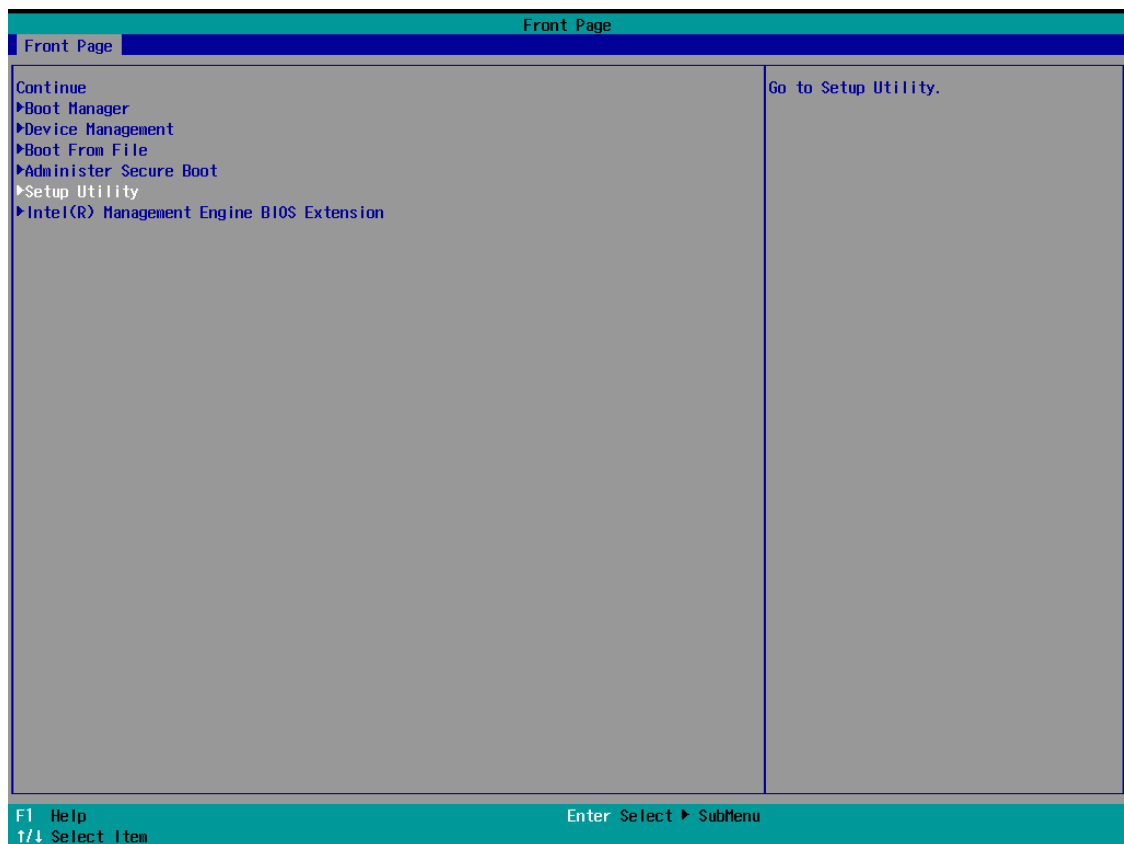
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RAID is the acronym for **Redundant Array of Independent Disk** which indicates the use of combining multiple disks into one or more logical units for data redundancy, performance improvement, or both.

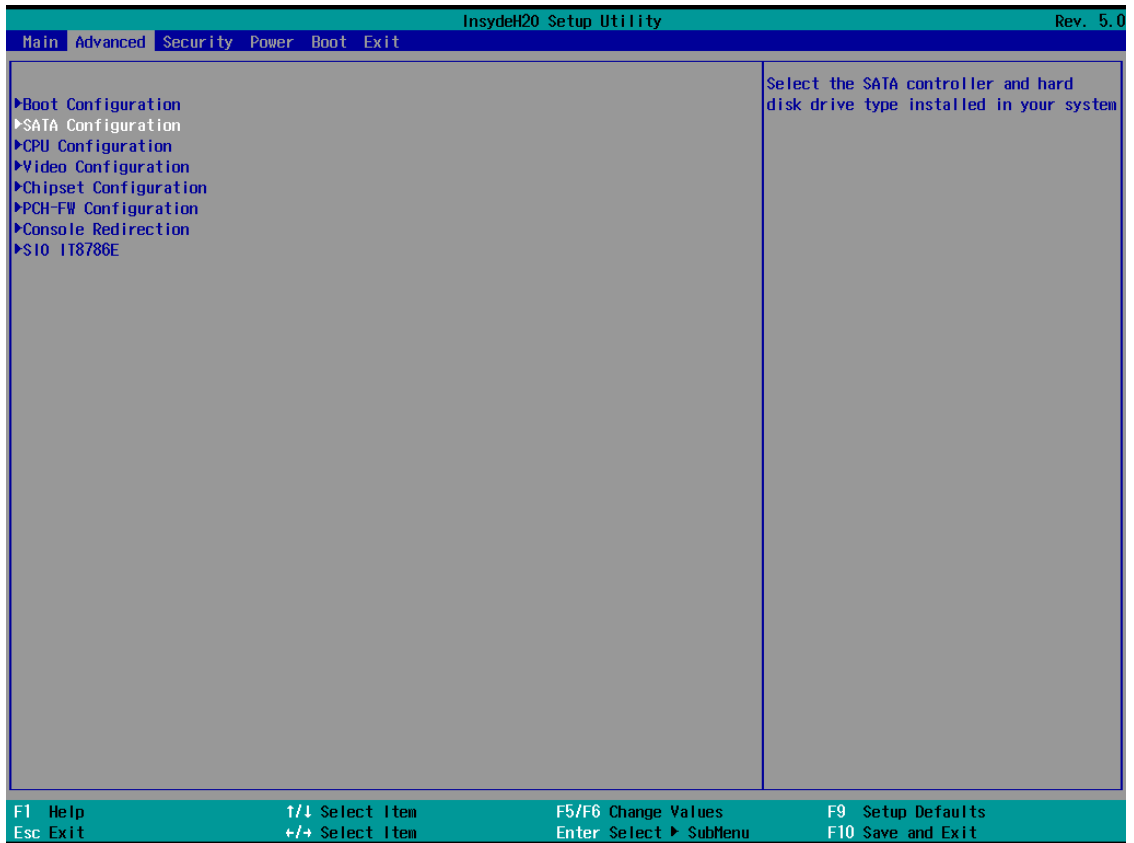
This chapter describes the setup process for FW RAID (Intel® RST or Intel® RAID) and SW RAID.

### Intel® RAID: Changing the RAID Mode

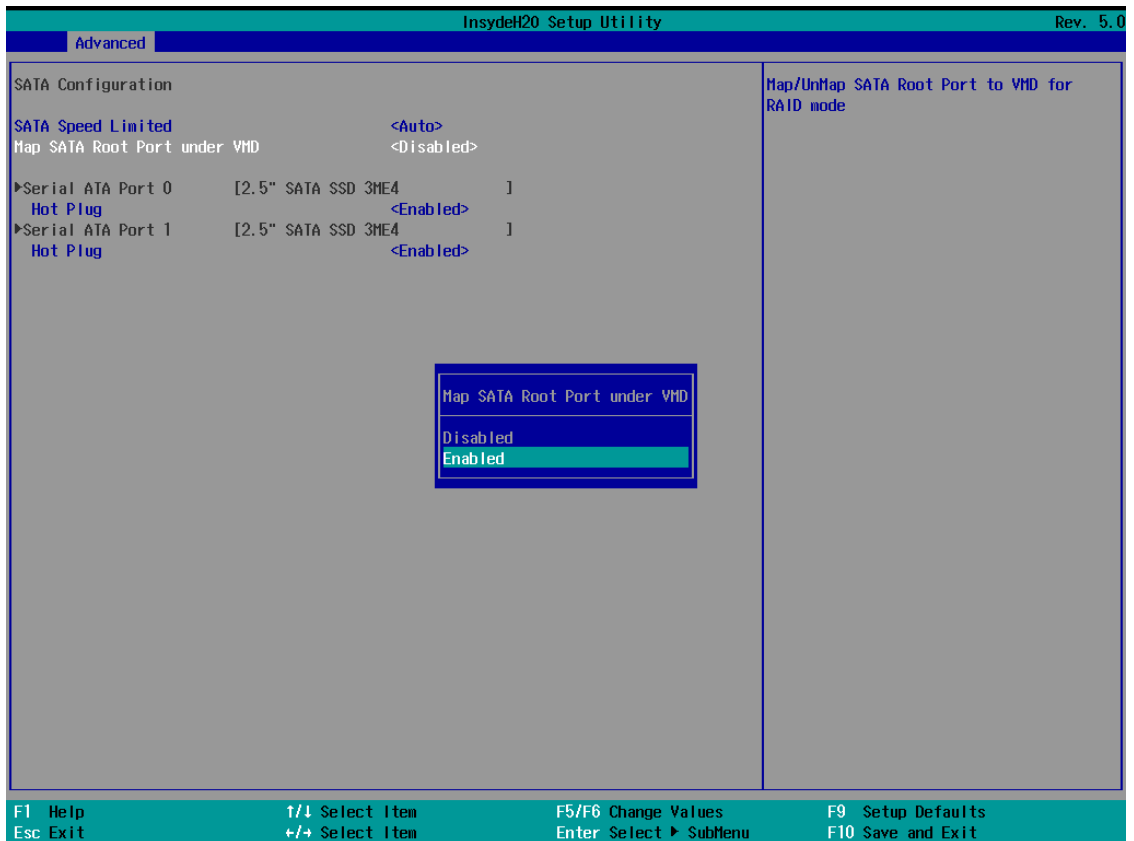
1. Power on the computer and press **F2** to enter the BIOS menu.
2. Select the **Setup Utility** option.

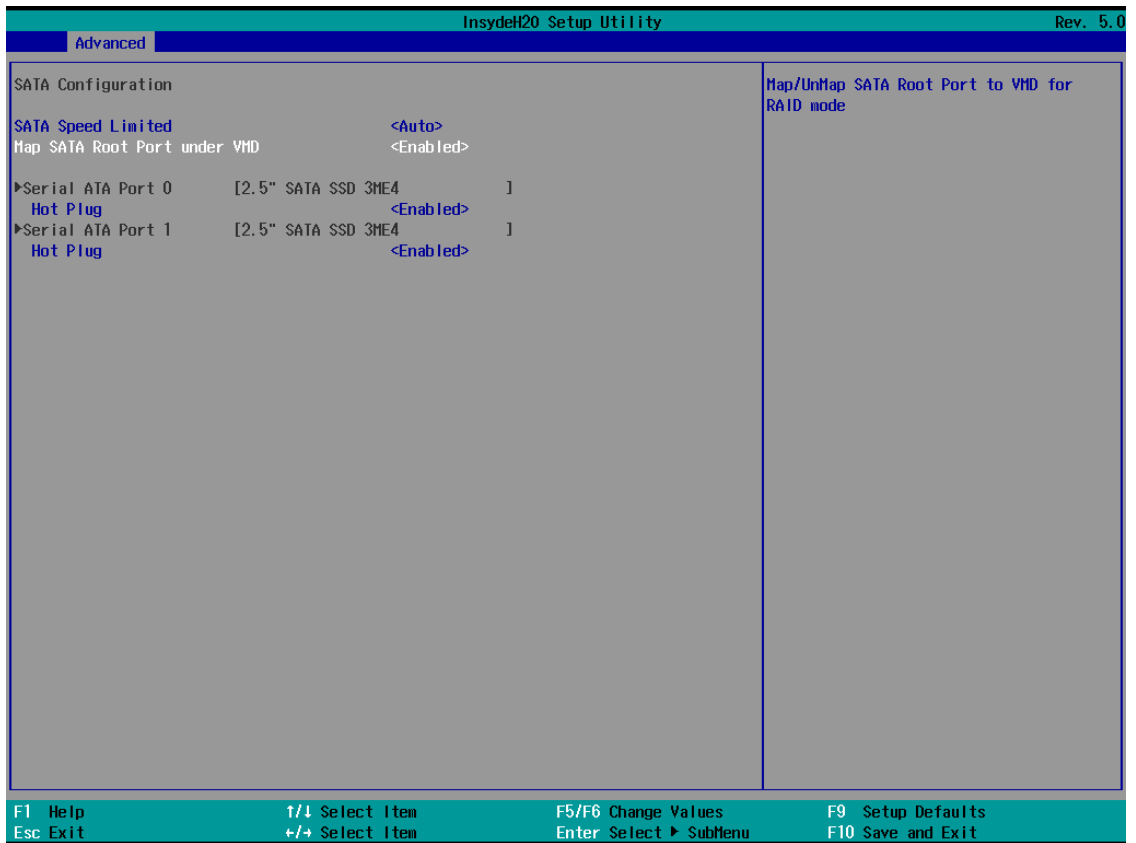


3. Select the **SATA Configuration** option.

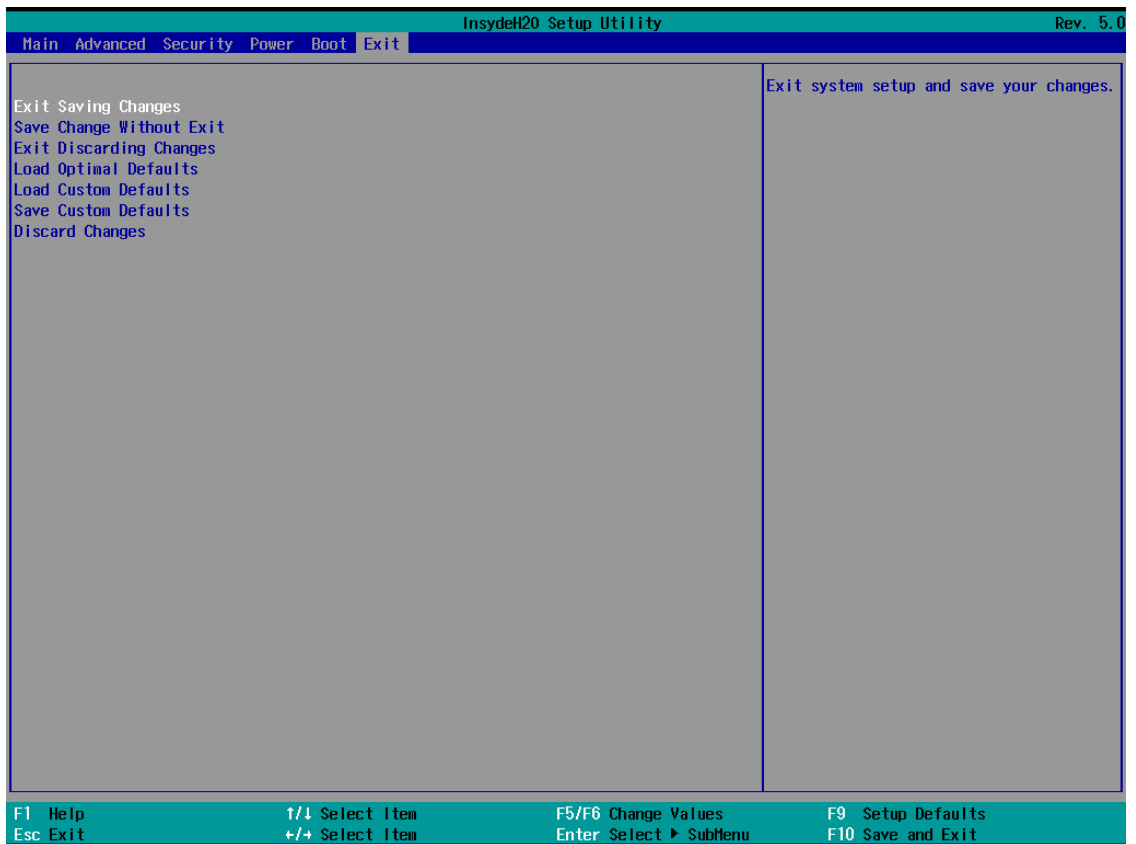


4. Select the **Map SATA Root Port under VMD** and **Enable** this option. Enable the **Hot Plug** function on all ports.

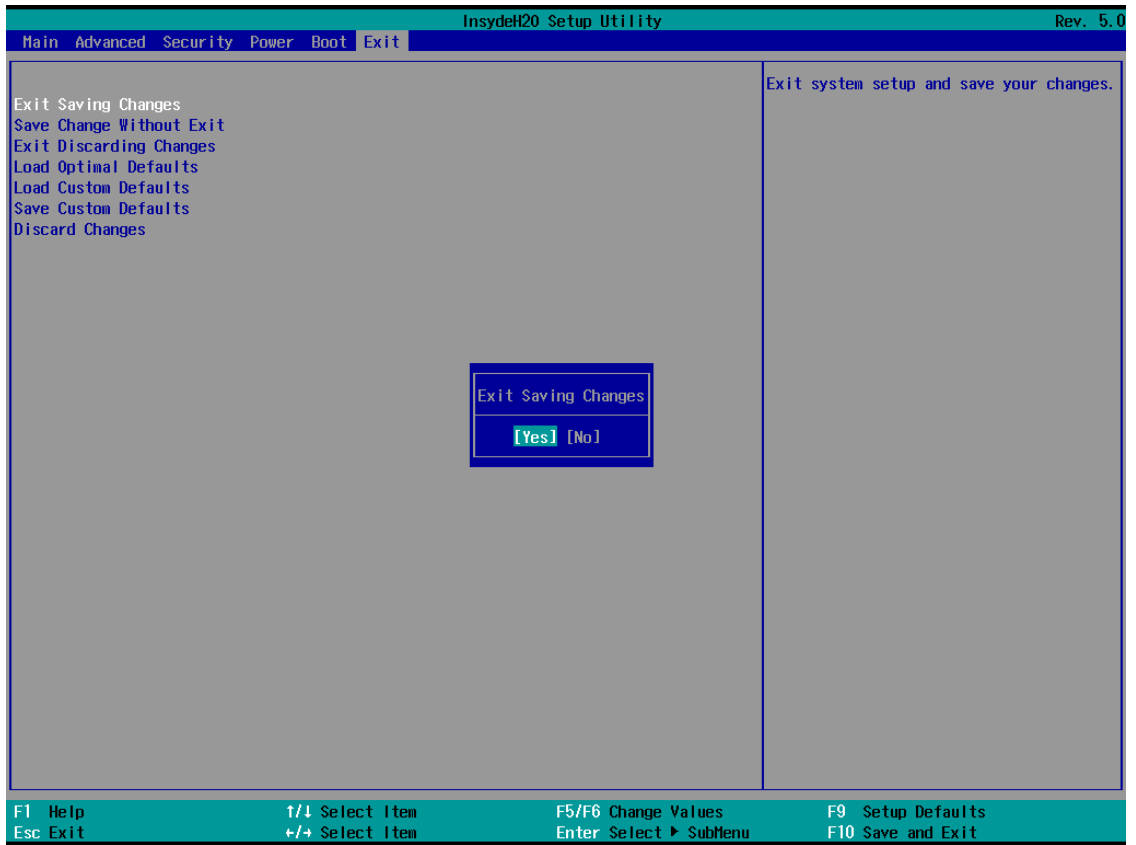




- Press **F10** to save the settings and then press **ESC** to return to the main page.



6. Select **Exit Saving Changes**, and then select **Yes** to save the settings.



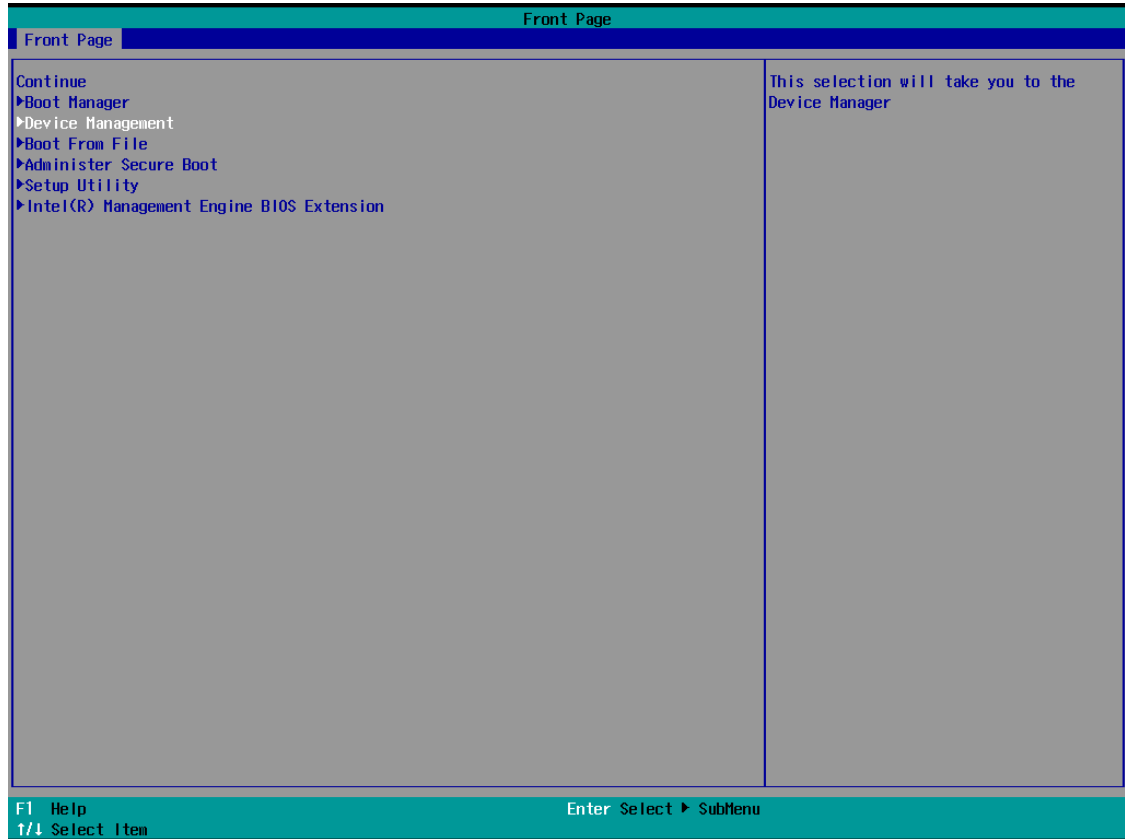
# Intel® RAID: Creating a RAID Disk in BIOS



## NOTE

Using hard disks of the same brand, same model, and same capacity to create FW RAID for best performance.

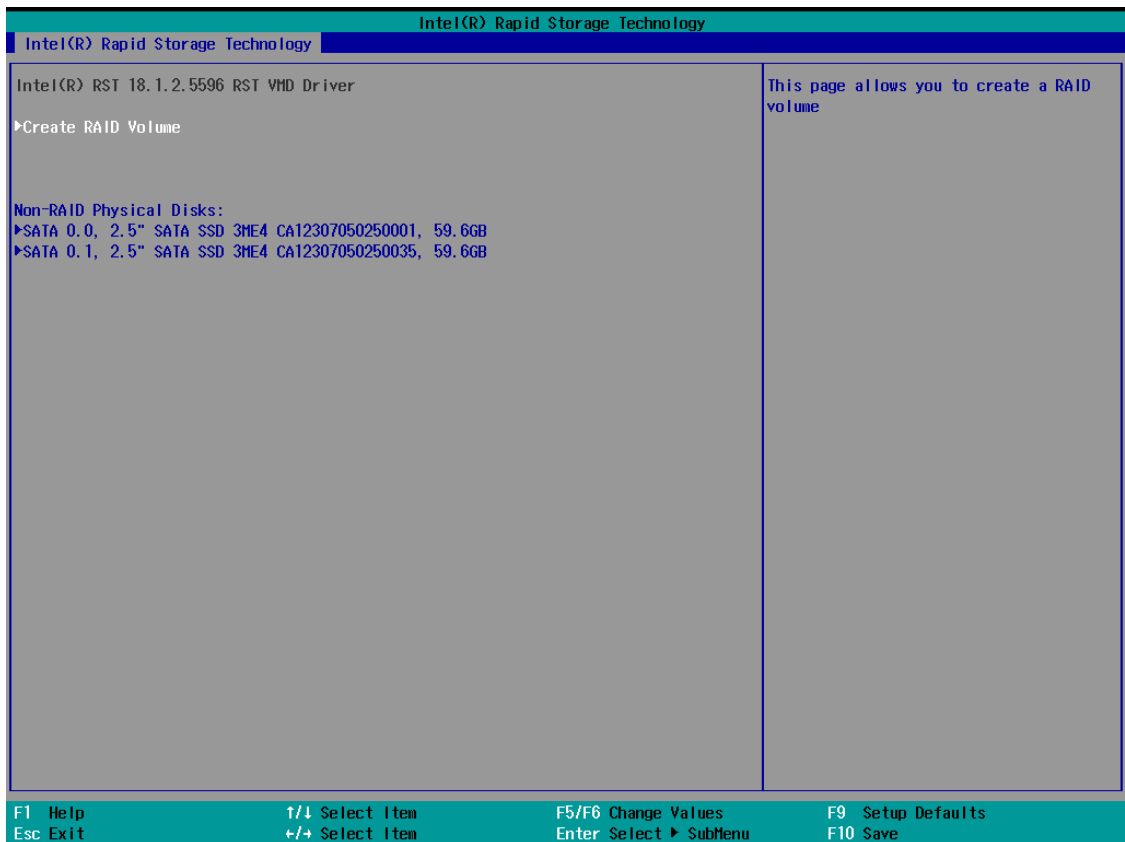
1. Power on the computer and press **F2** to enter the BIOS menu.
2. Select the **Device Management** option.



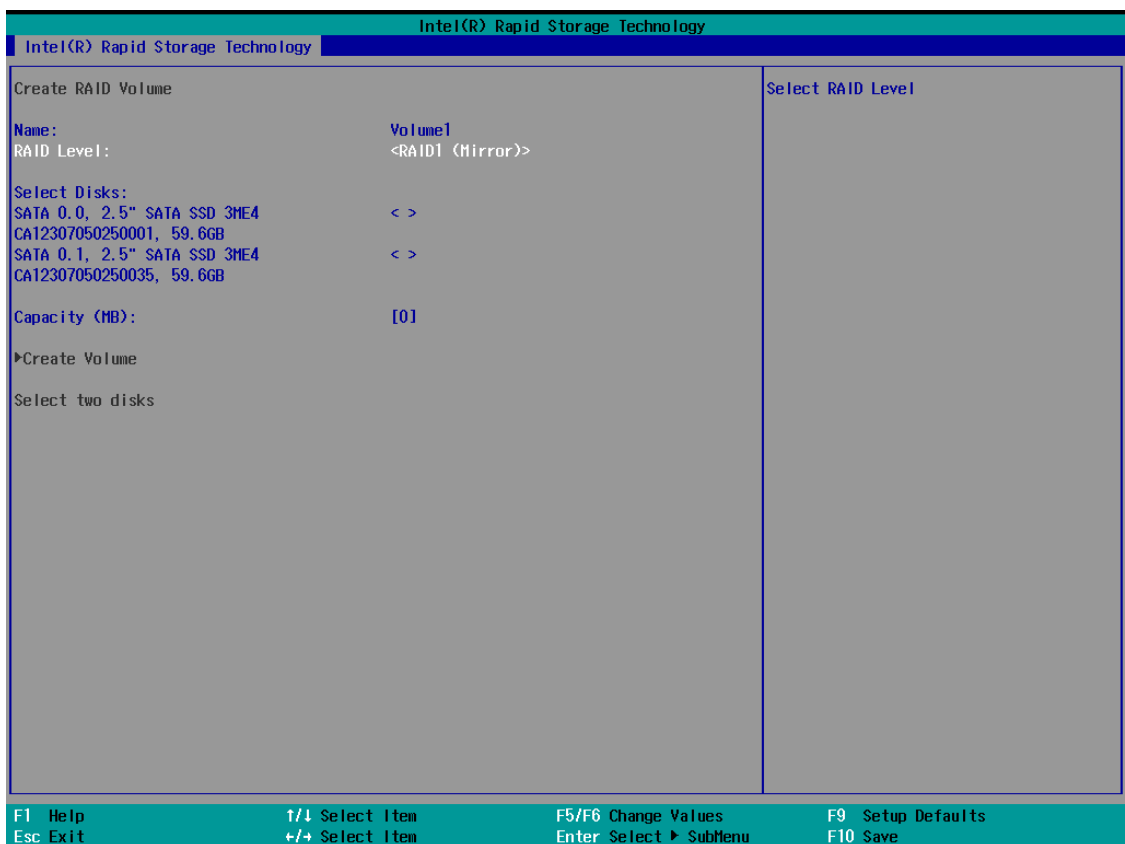
3. Select **Intel® Rapid Storage Technology**.



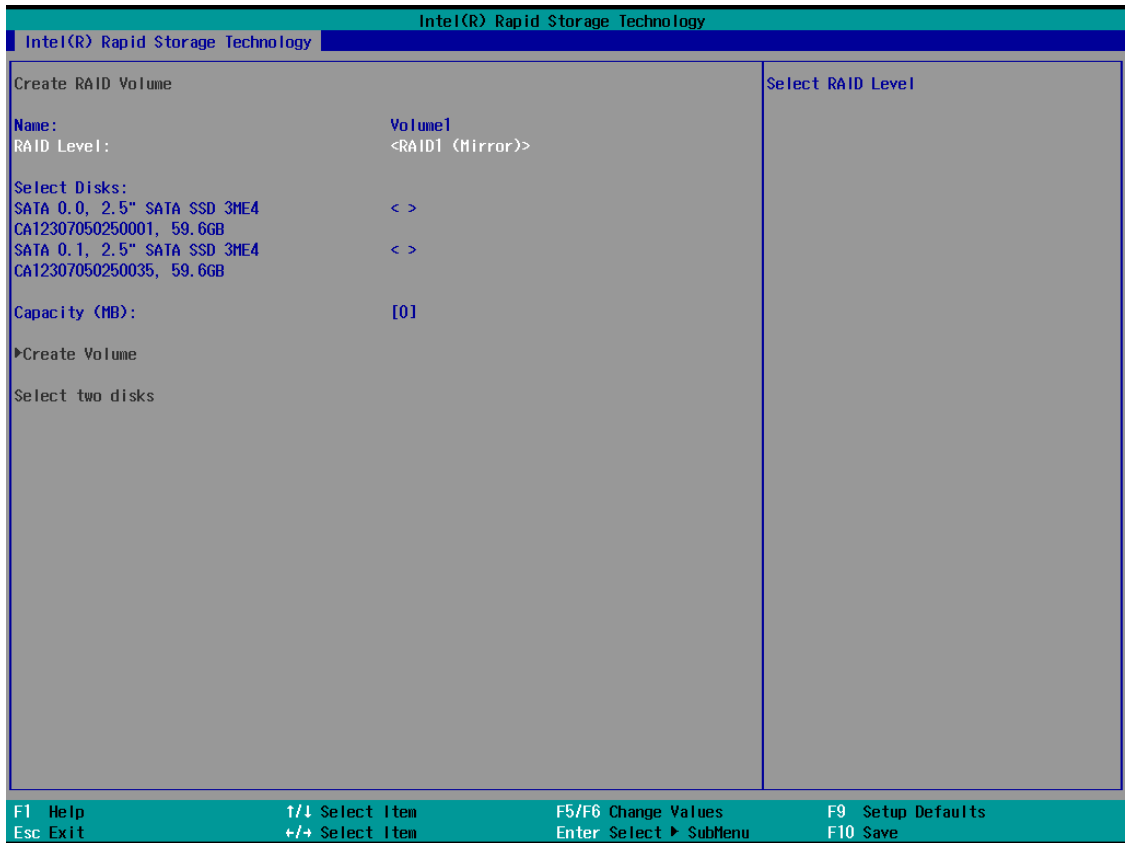
4. Select **Create RAID Volume**.



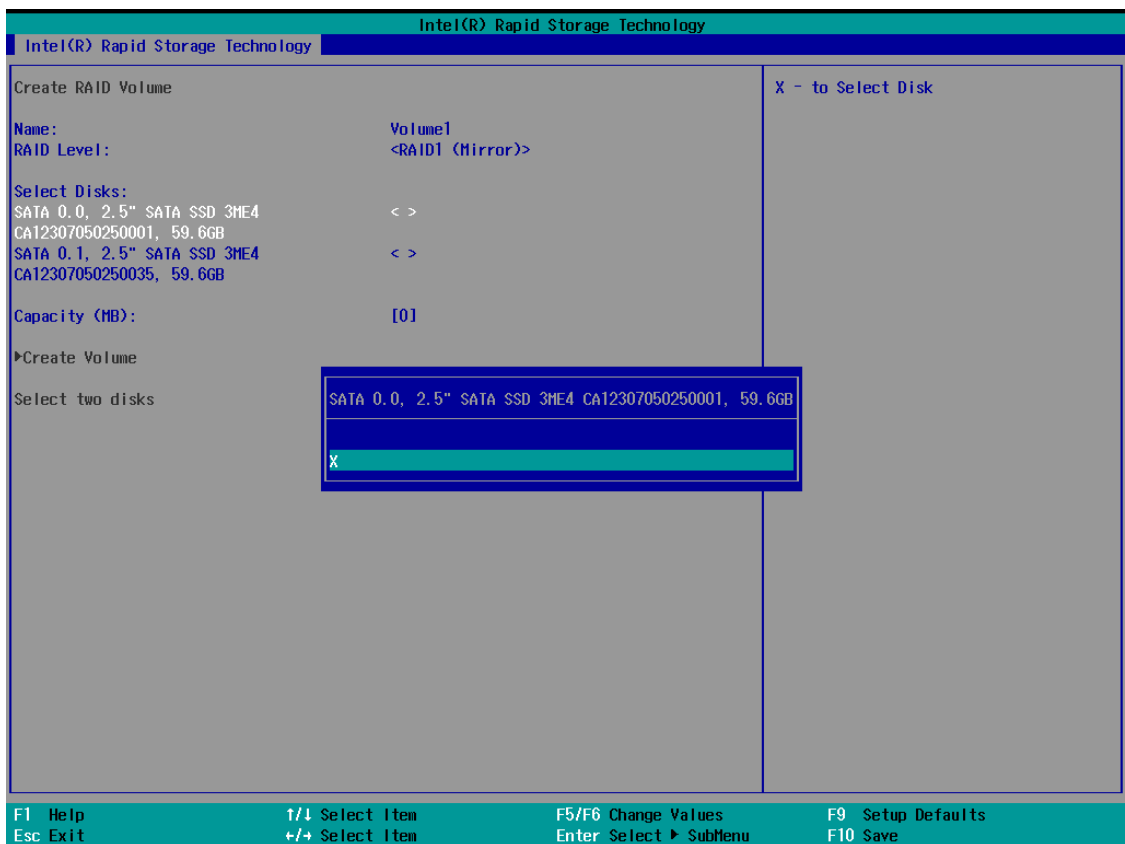
- Select the **RAID Level** option and then press **Enter** to select the raid level; for example, **RAID1 (Mirror)**.



6. Select the target disk.

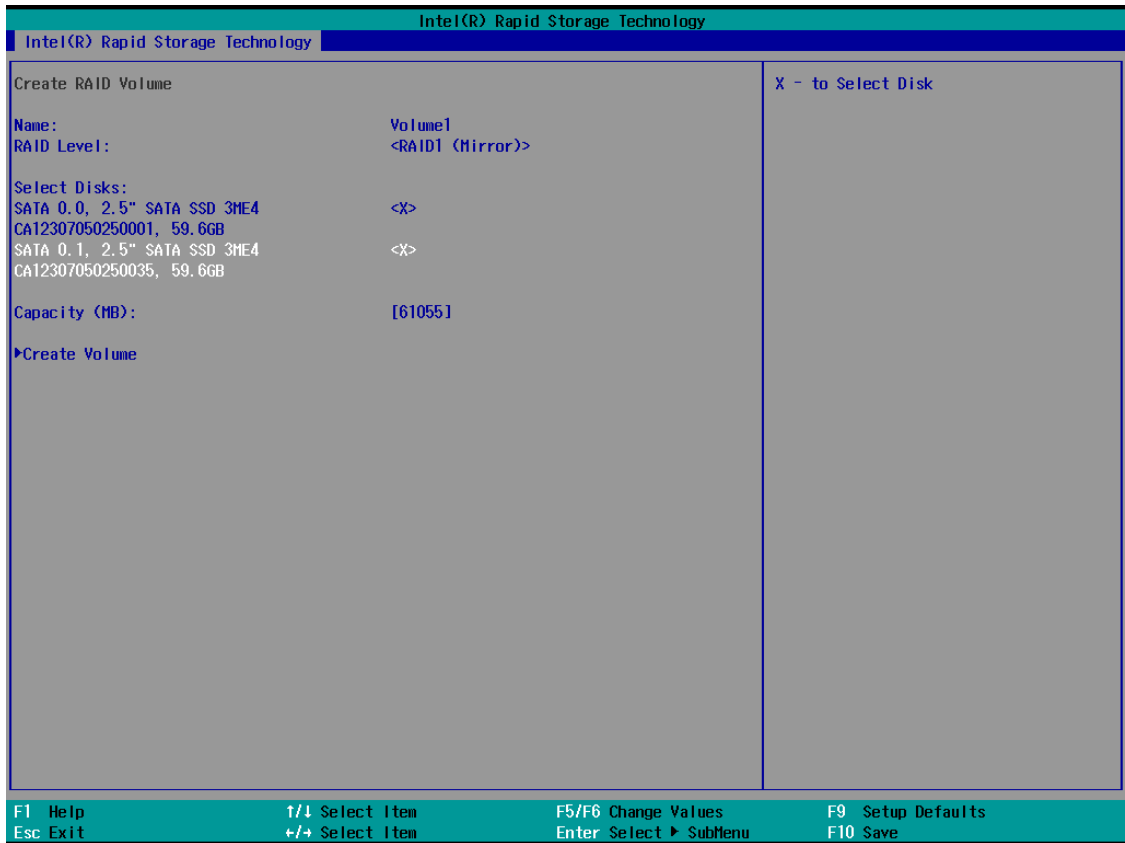


7. Enter **X** and then press **Enter**.

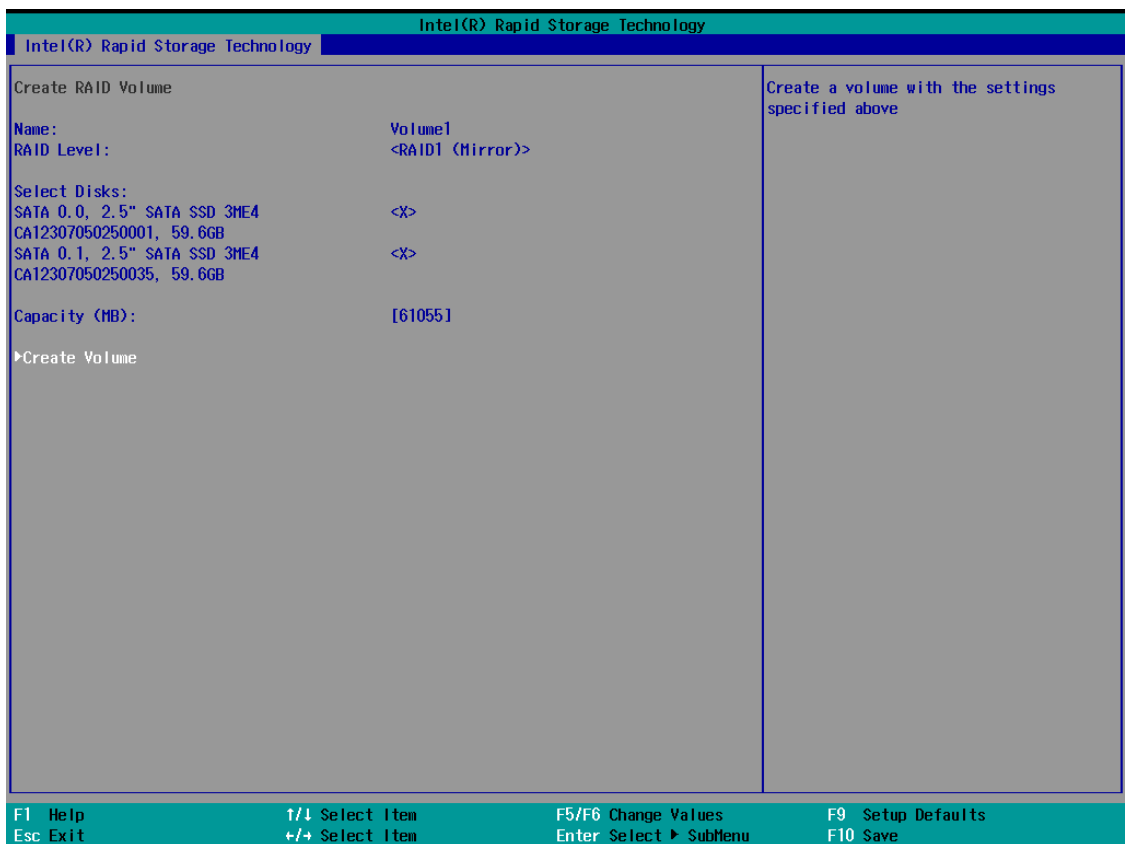




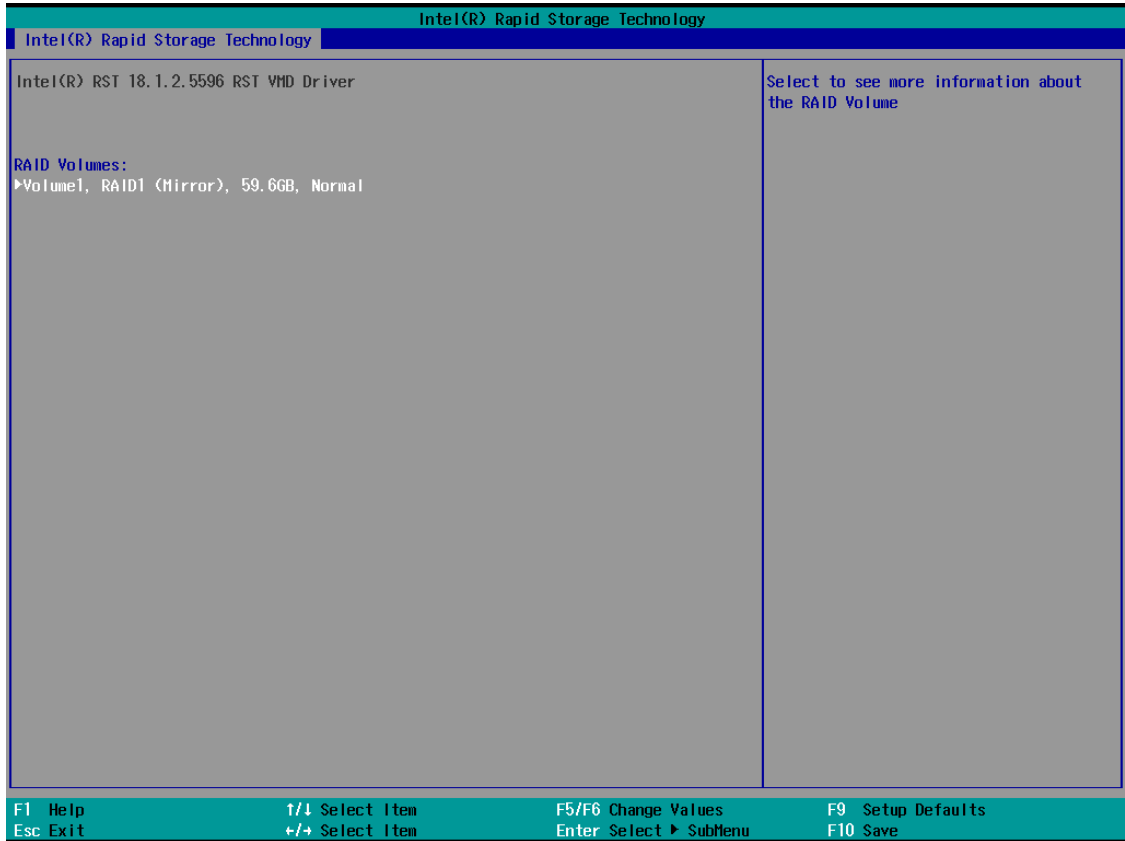
- The disk is now marked with an **X** next to it to indicate the selection.



- Select the **Create Volume** option.



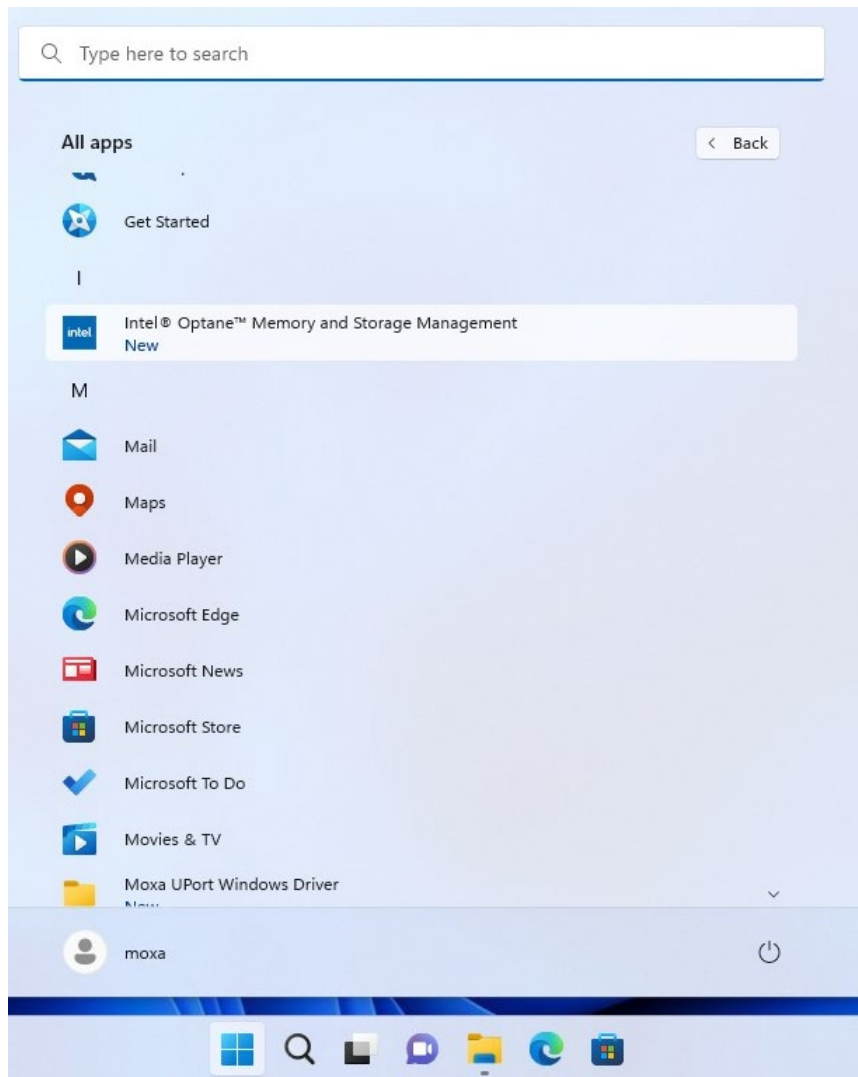
10. A RAID volume is created based on the settings specified.



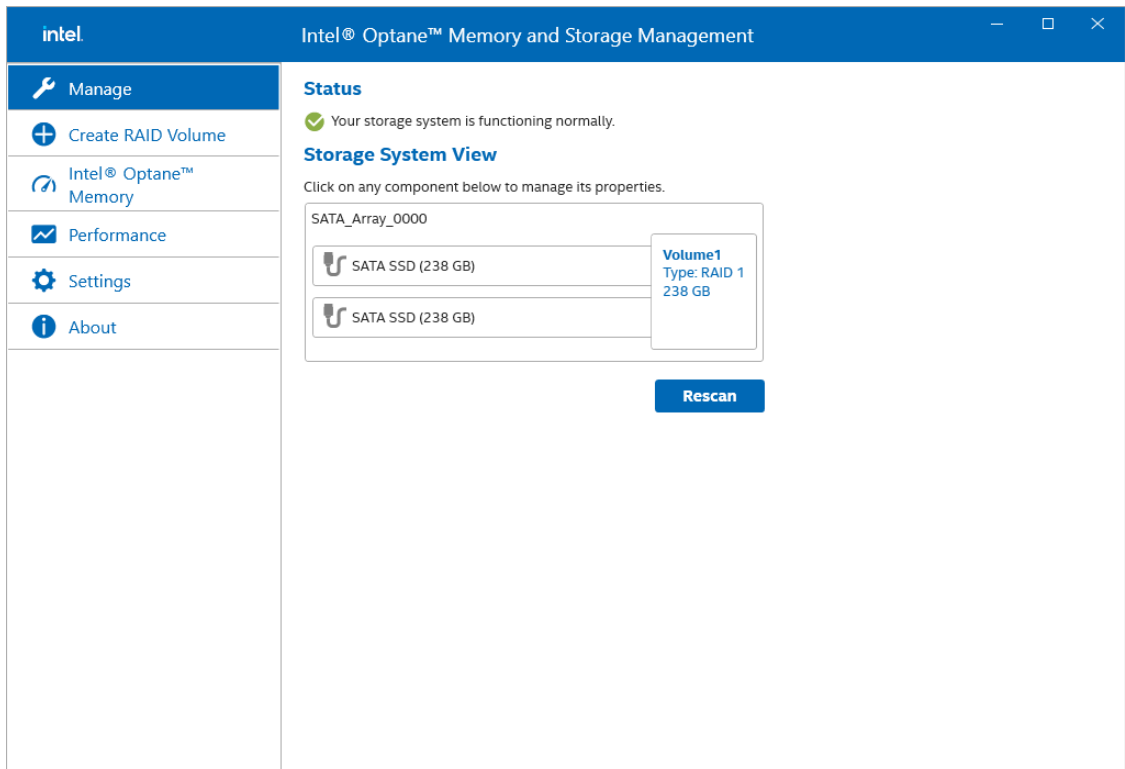
11. Press F10 to save the settings.

# Intel® RAID: Replacing a Disk

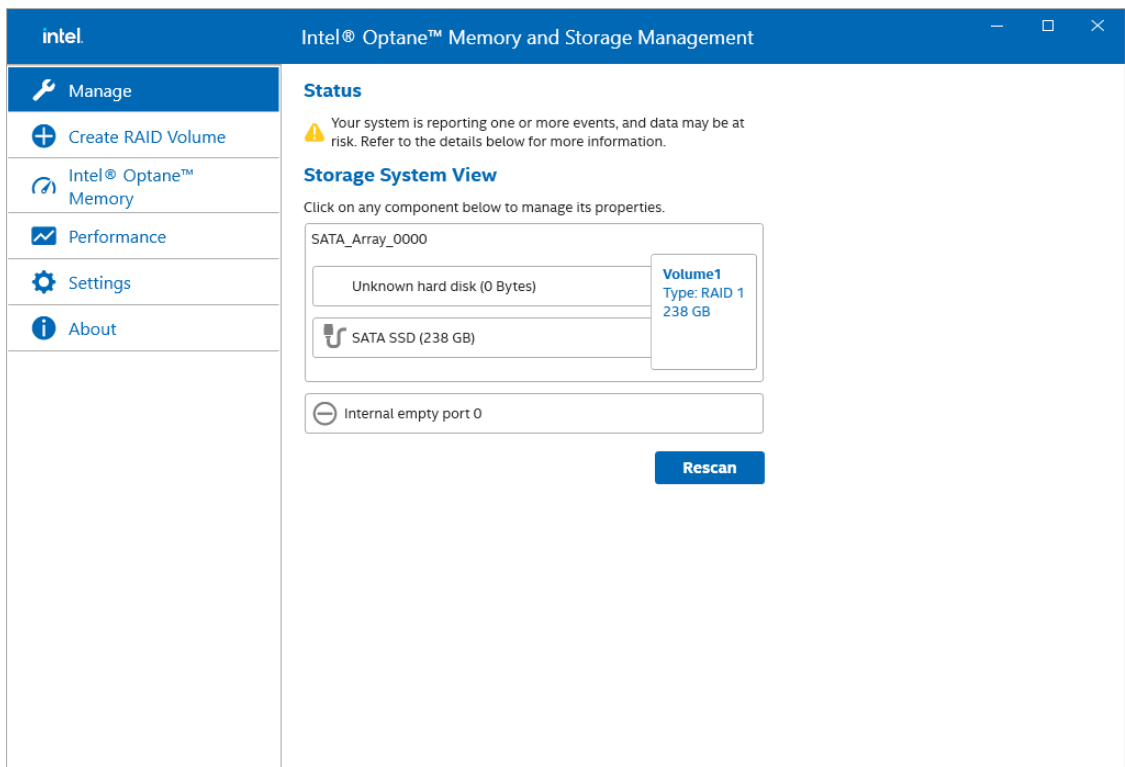
1. Run **Intel® Optane™ Memory and Storage Management** from the Windows Start menu.



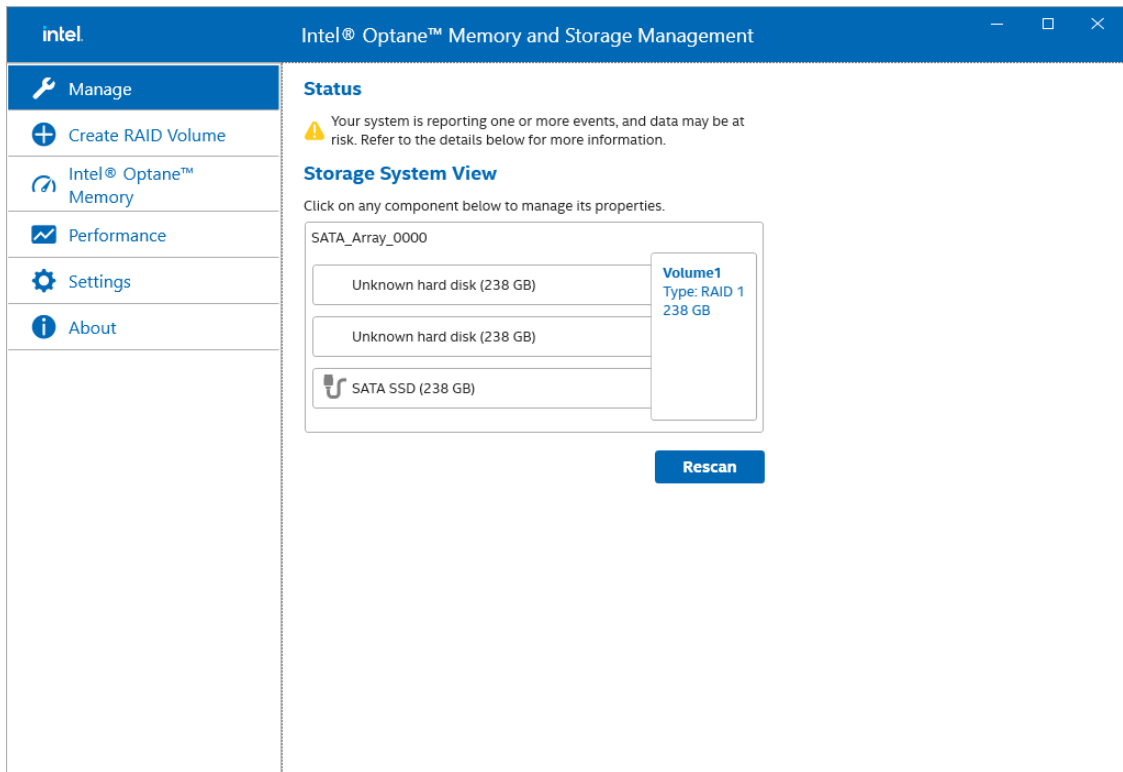
2. Physically unplug the target SSD.



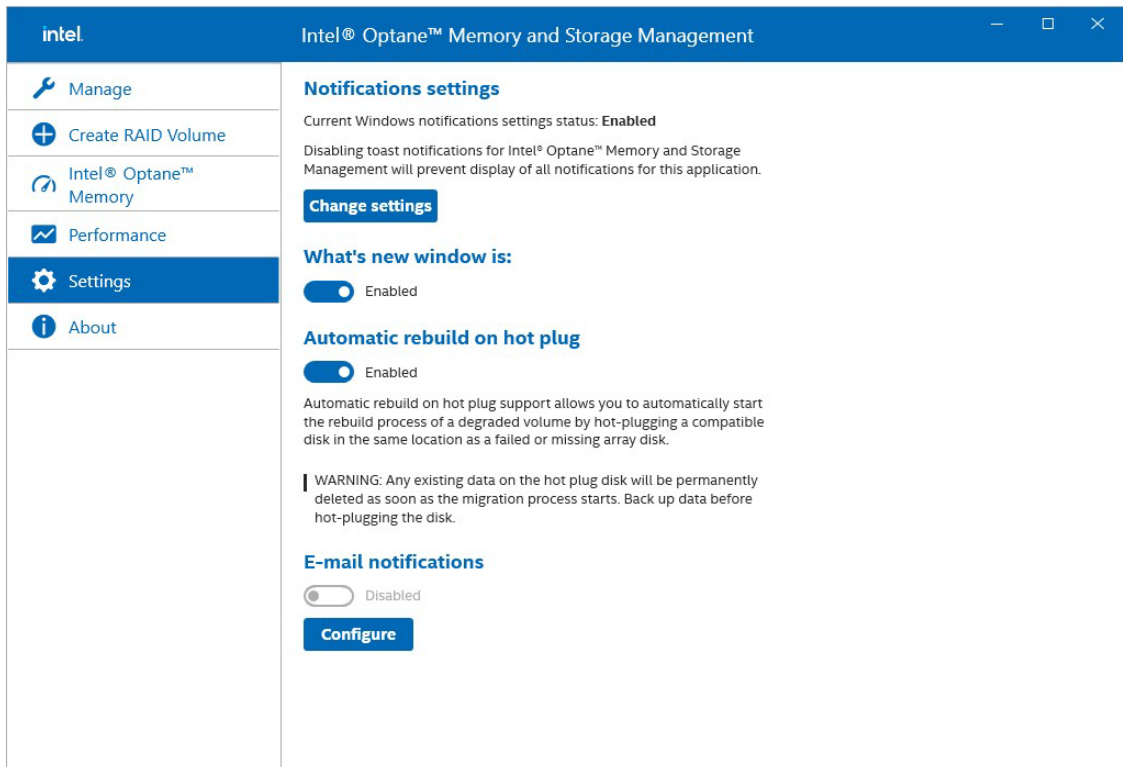
The status of the SSD that is unplugged will change to **Unknown hard disk (0 Bytes)** as shown below:



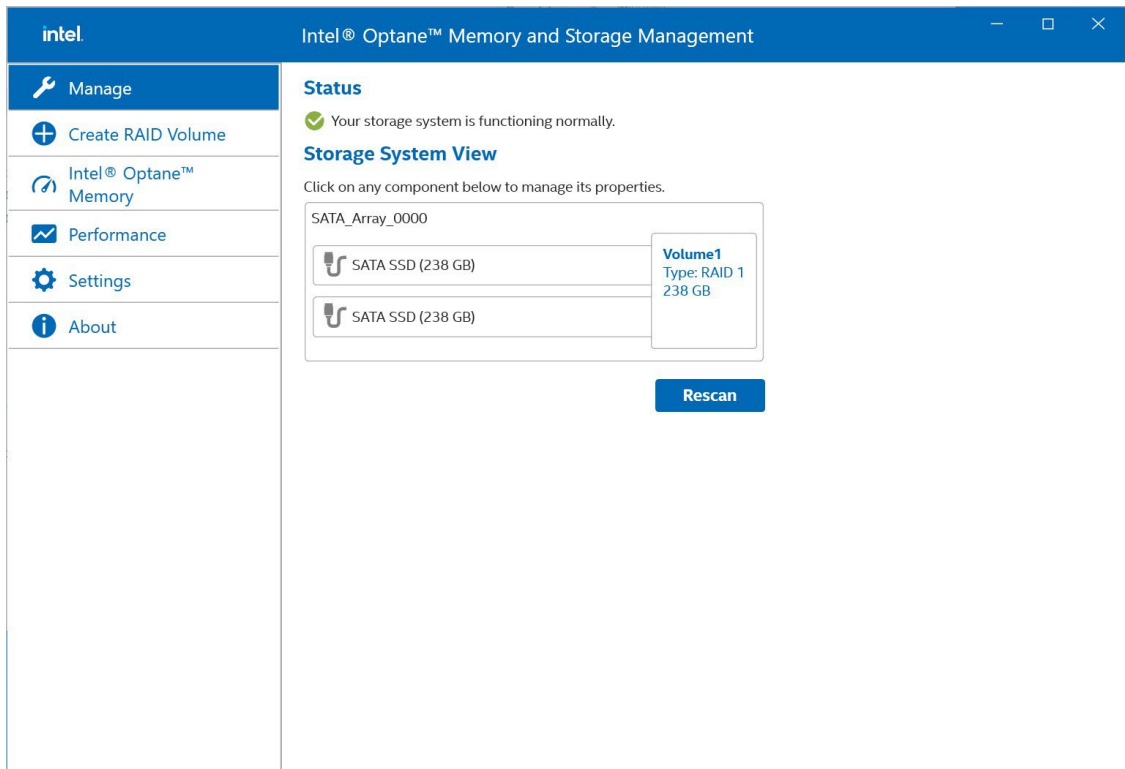
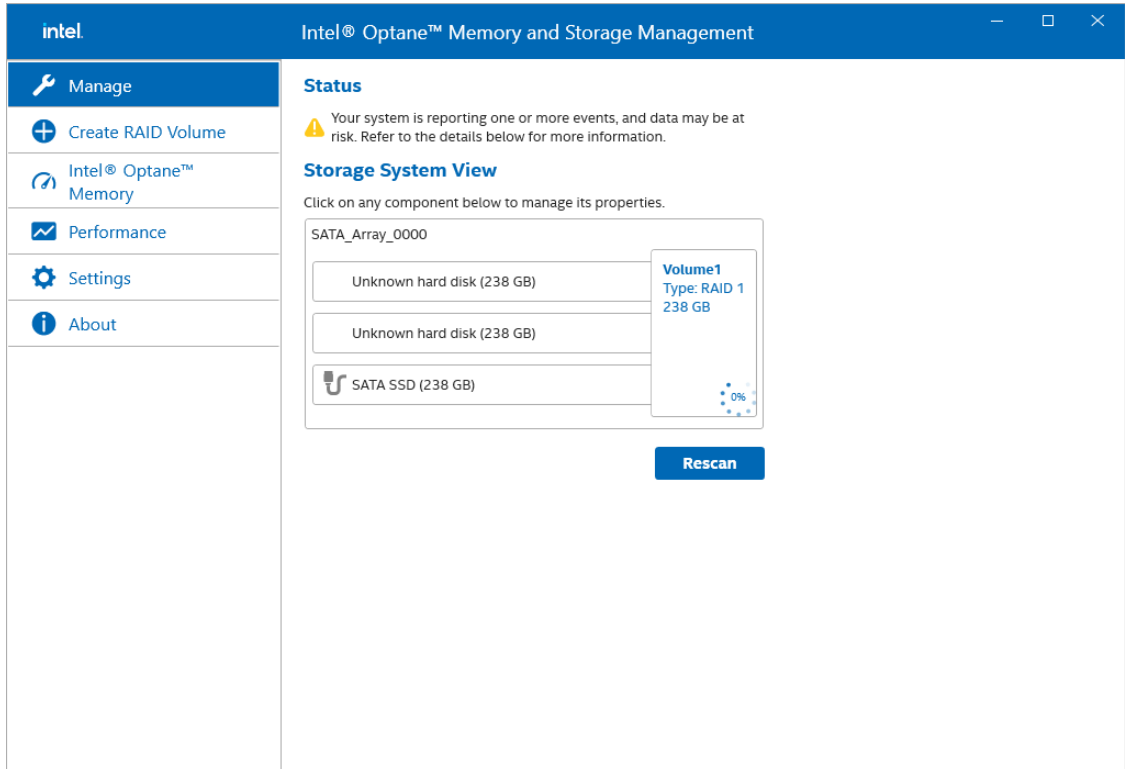
3. Install the new SSD in the same location.



4. Click on the **Settings** tab. Enable **Automatic rebuild on hot plug**.



5. It will start rebuilding automatically. Wait for the rebuild process to complete.



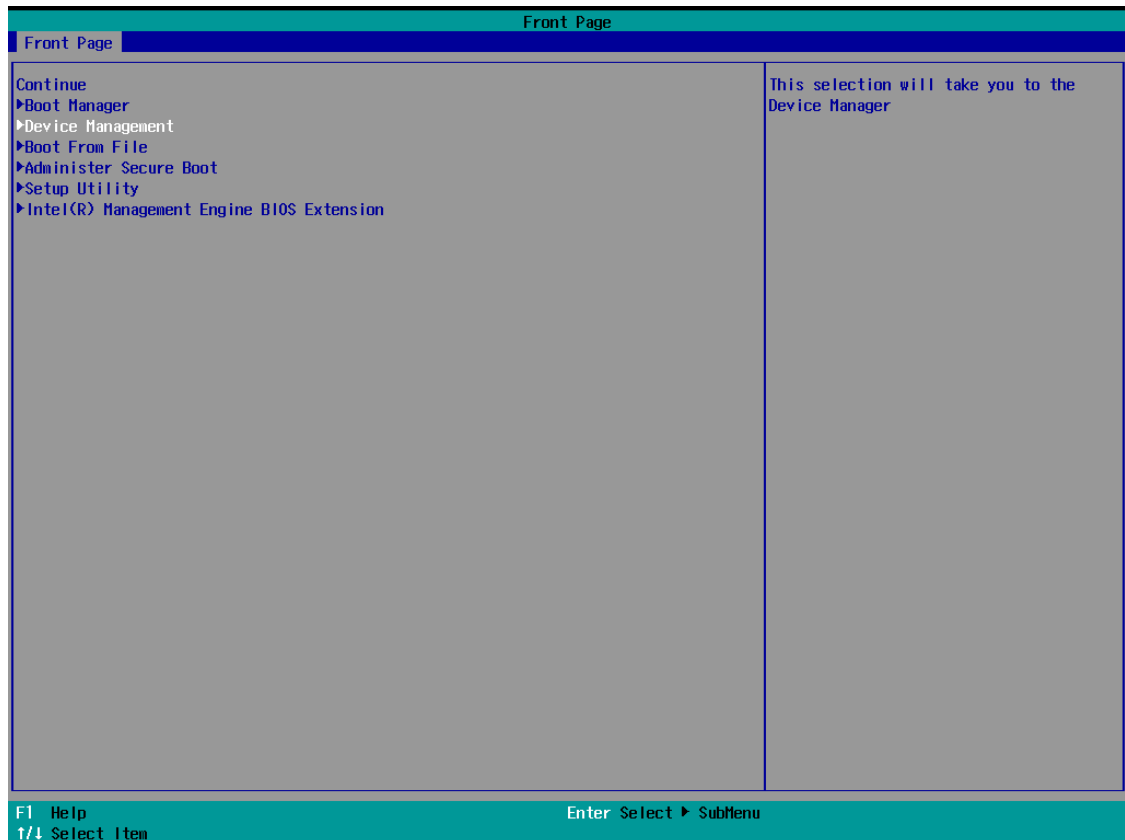
# Intel® RAID: Removing a RAID Volume From the BIOS

1. Power on the computer and press **F2** to enter the BIOS menu.
2. Select **Device Management**.



## NOTE

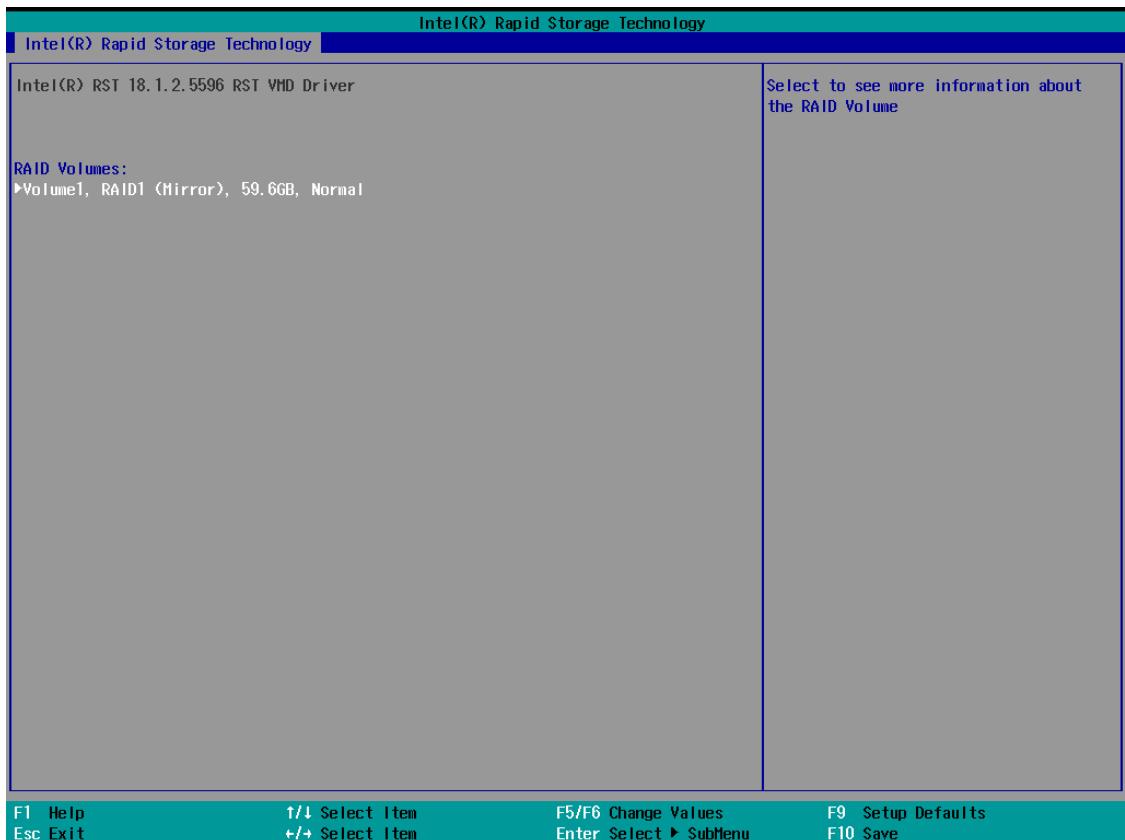
FW RAID only supports RKP-A110 series.



3. Select the **Intel® Rapid Storage Technology** option.

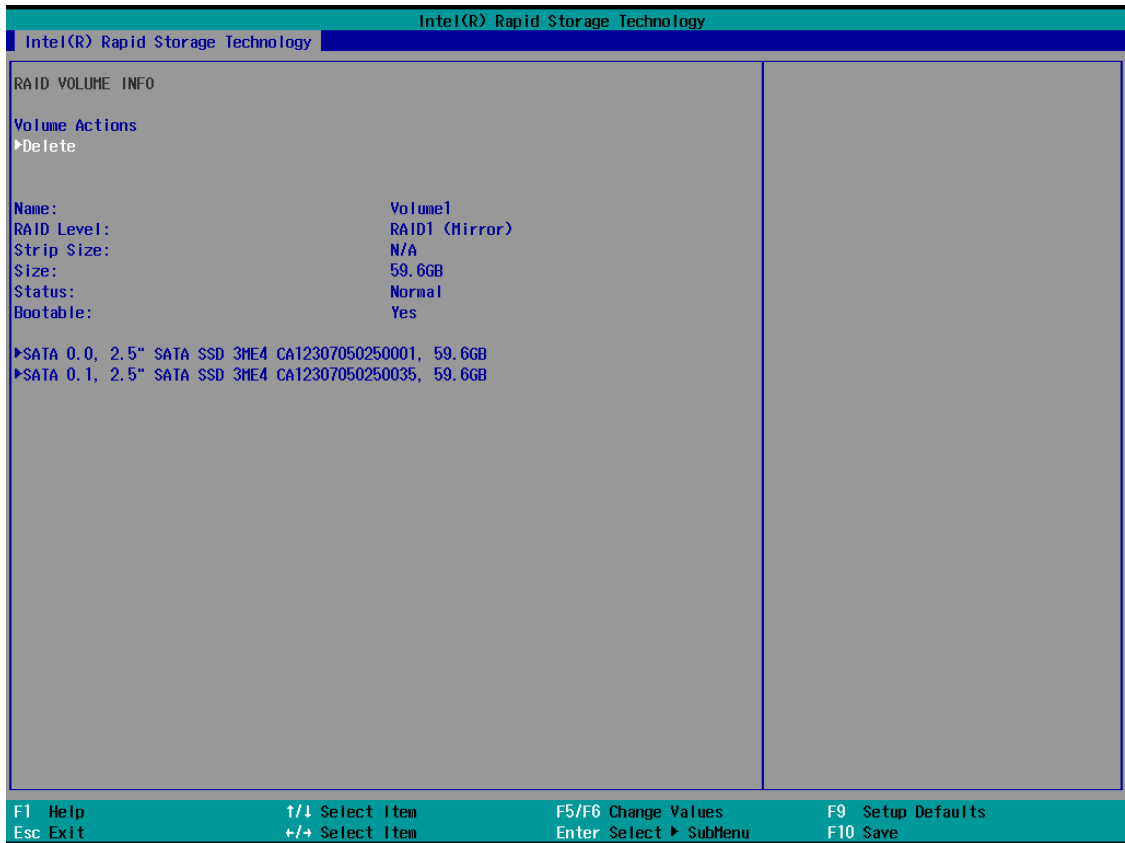


4. Select the RAID volume that you want to remove.

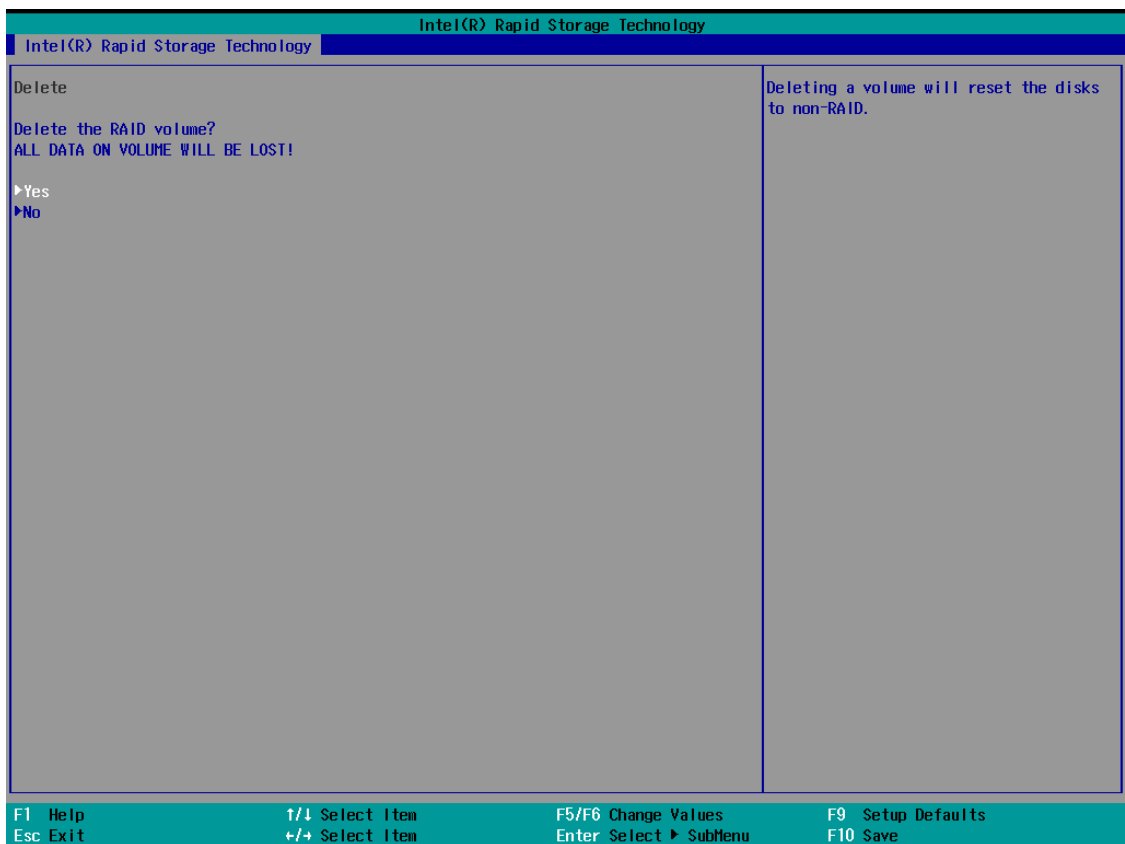




5. Select **Delete** and then press **Enter**.



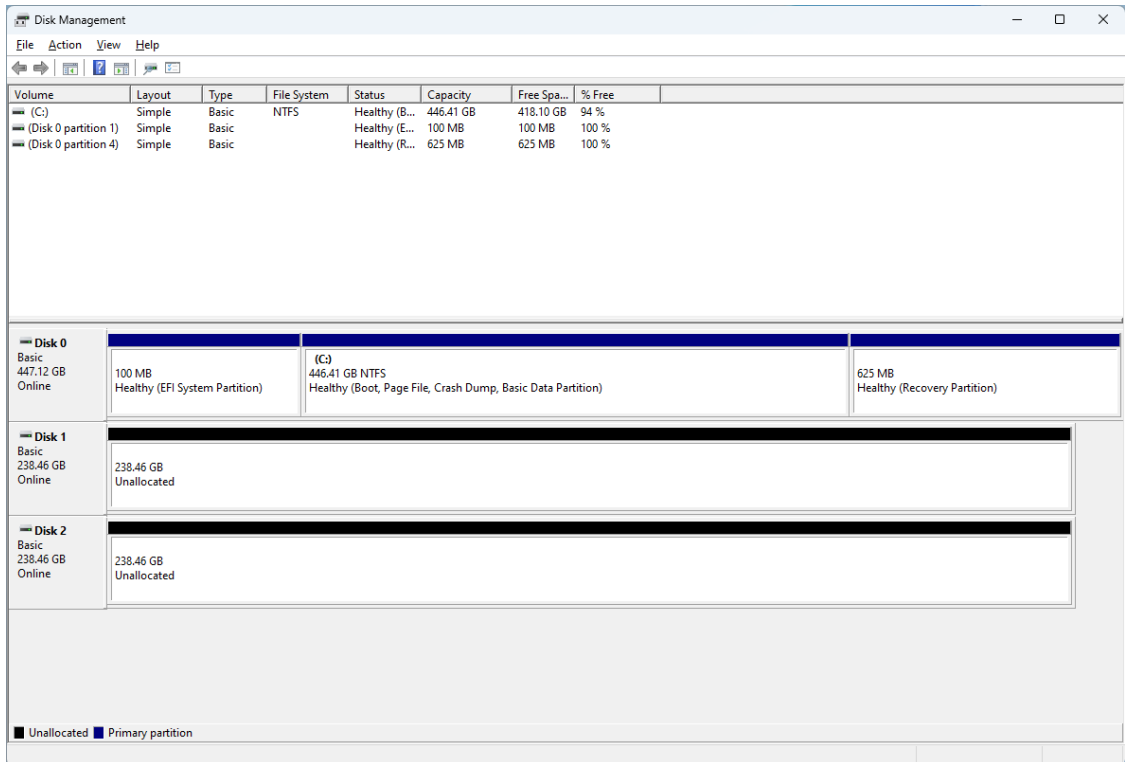
6. Select **Yes** to confirm and then press **Enter**.



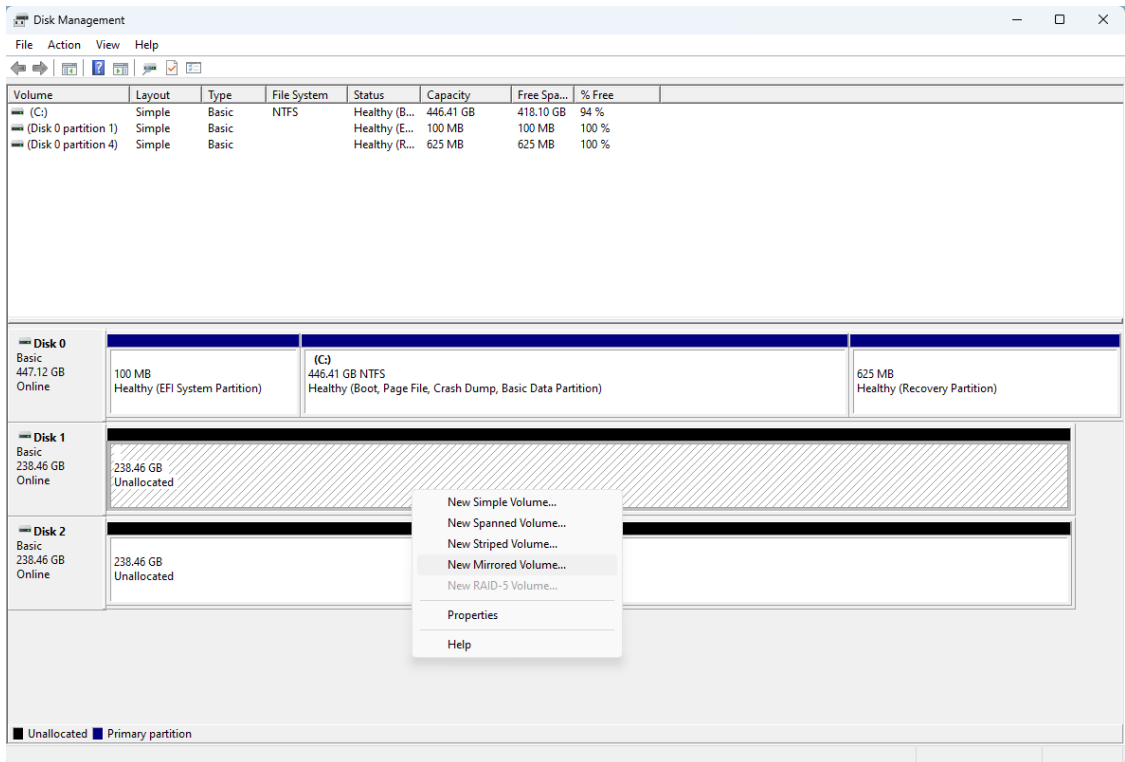
7. Press **F10** to save the settings.

# SW RAID: Creating the RAID 0 or RAID 1 From Disk Management

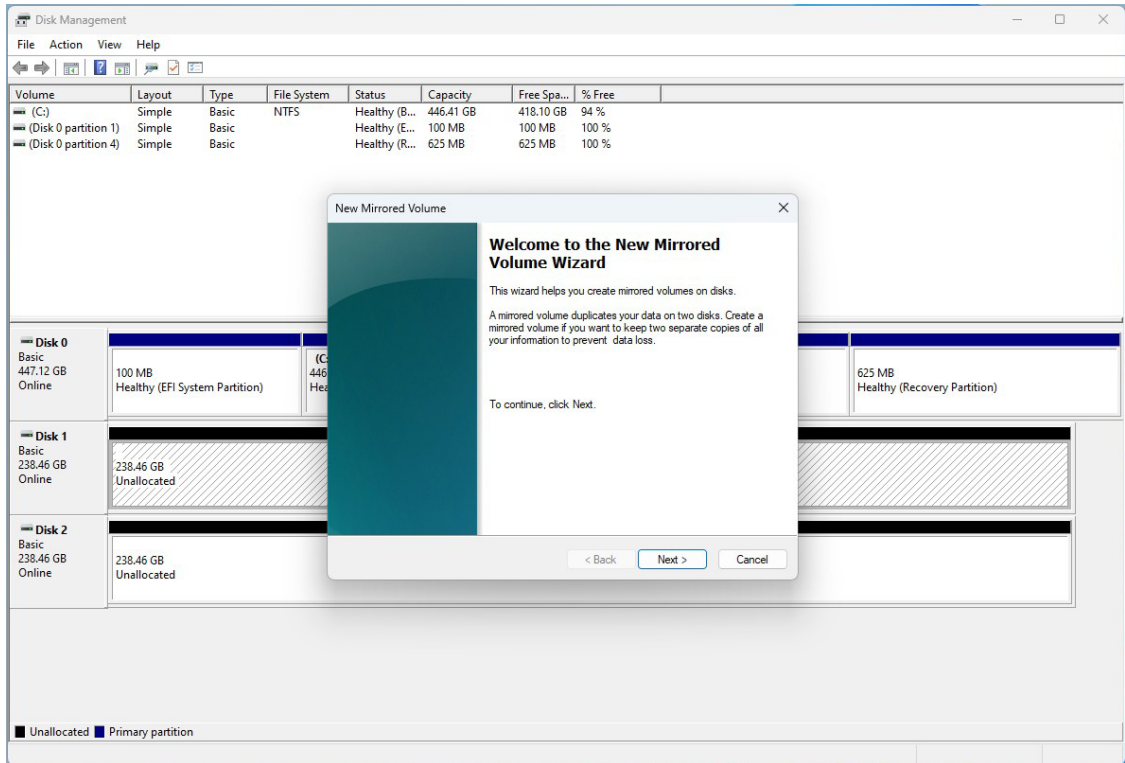
1. Run **Disk Management**. Connecting the new disks and checking all the disk status are **Unallocated**. If the disk status is not **Unallocated**, you can right-click the target disk and select **Delete Volume**.



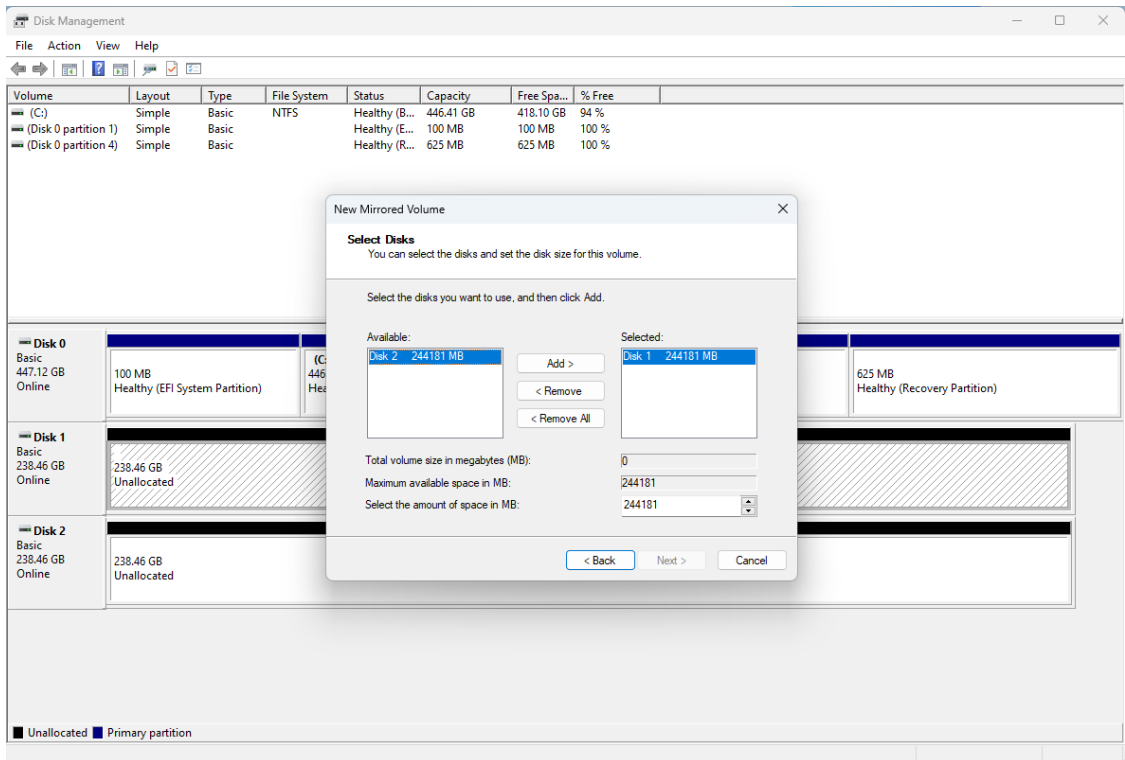
2. Right-click the target disk. Select the target volume type. For example: **RAID1(Mirror)**.



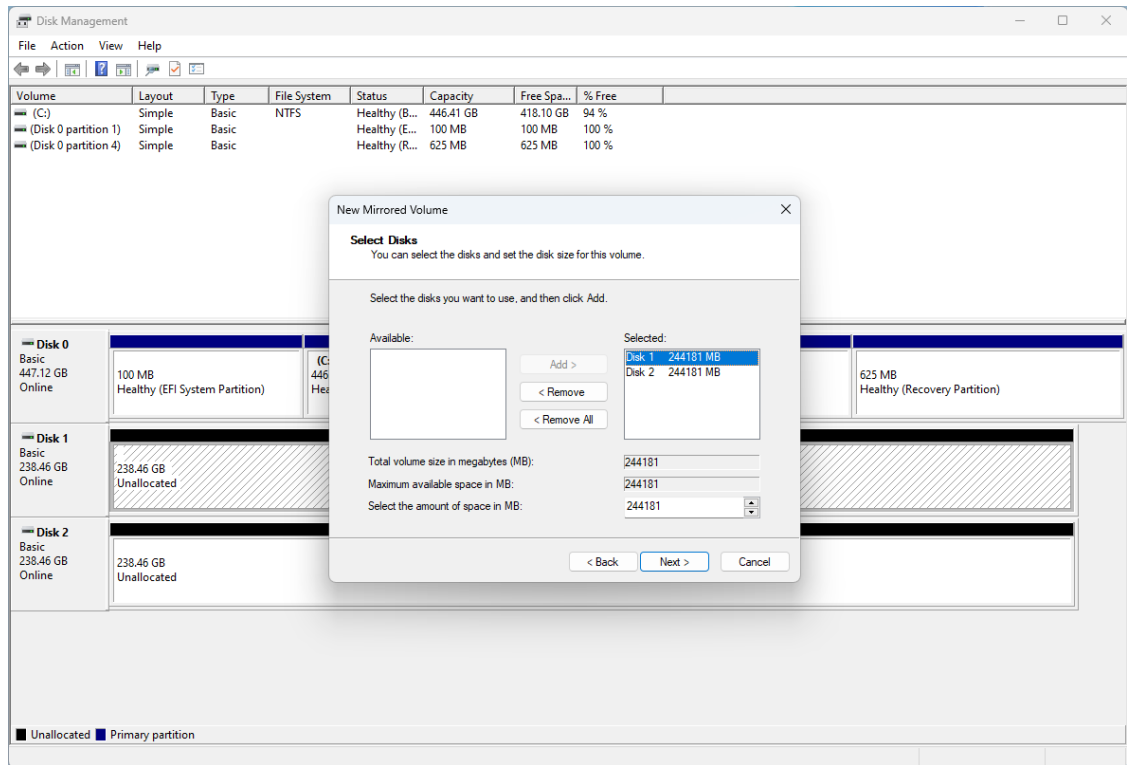
3. To continue, click **Next**.



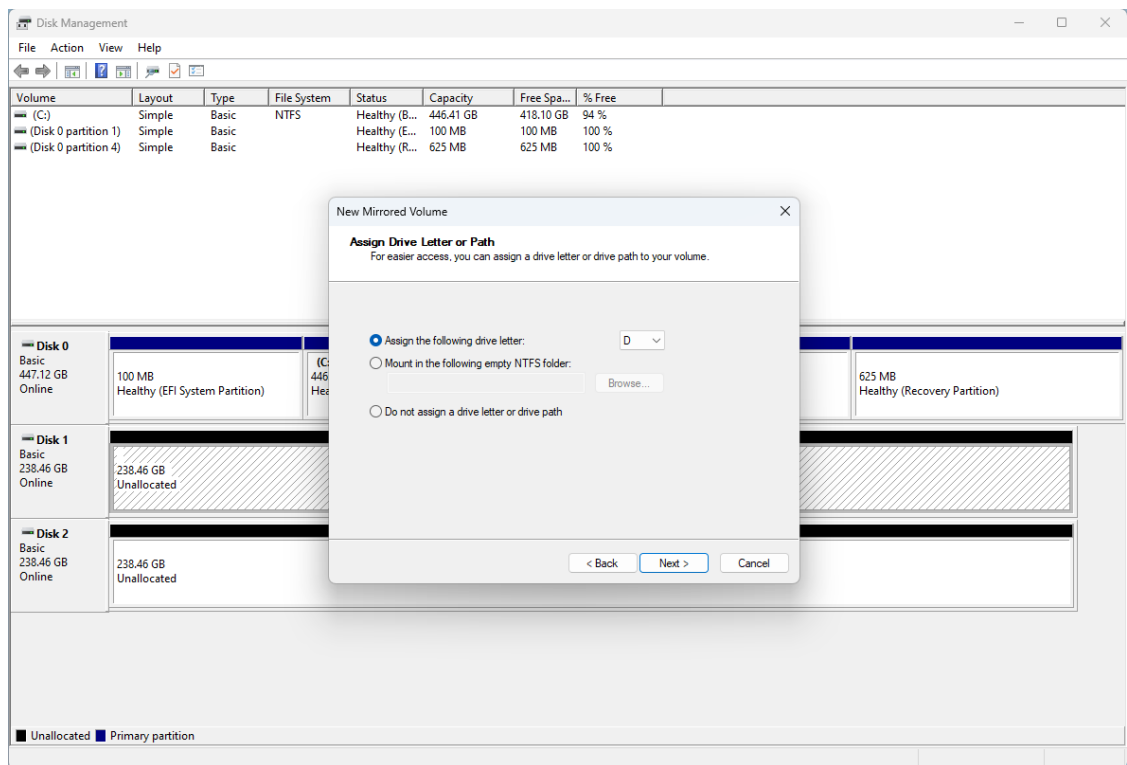
4. Select the disks you want to use, and then click **Add**.



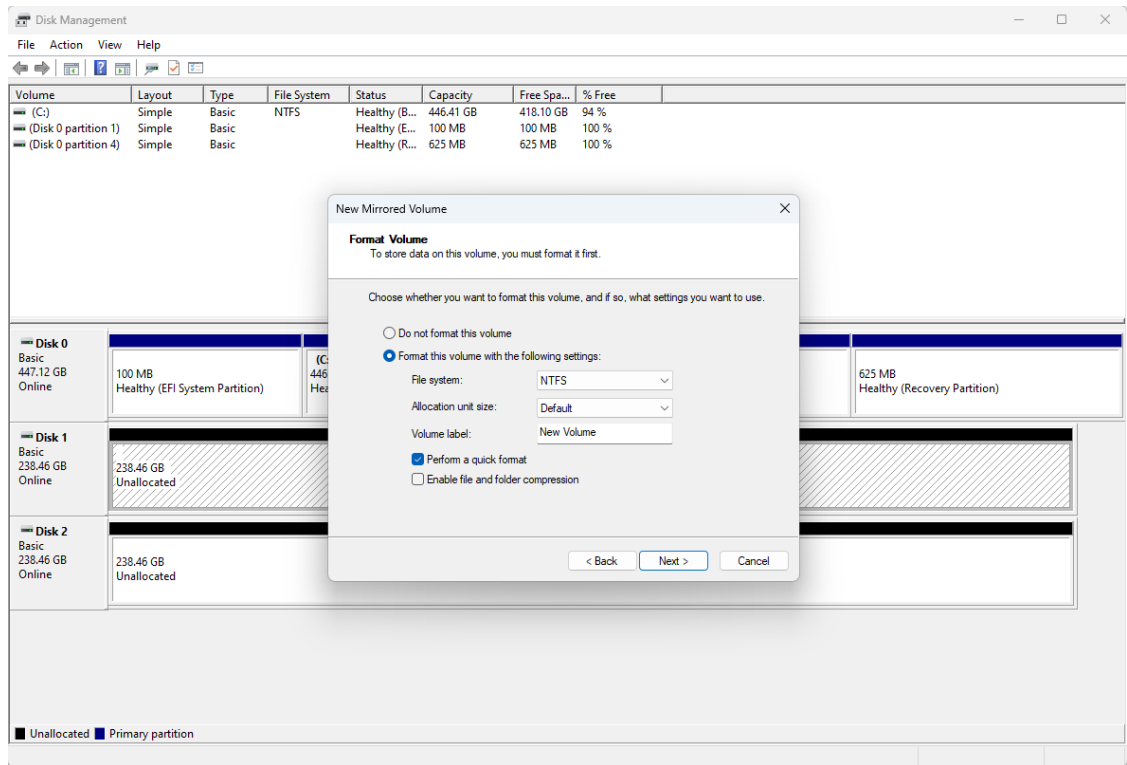
5. Click **Next**.



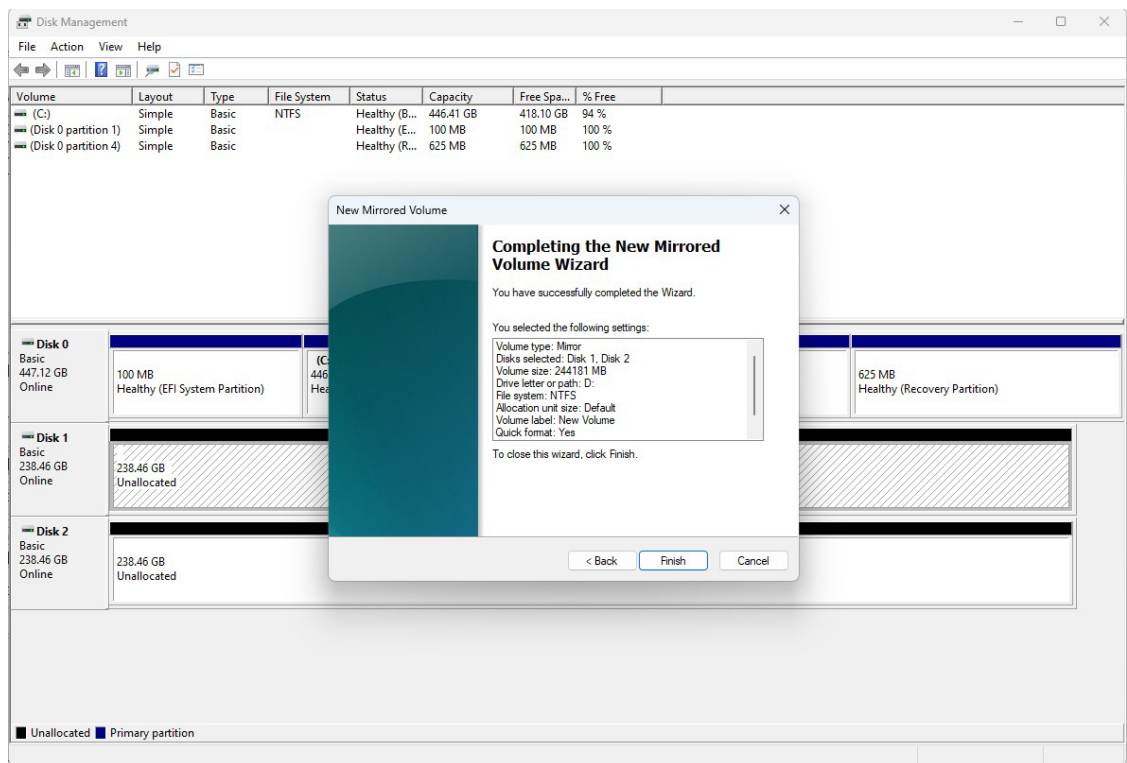
6. Assign the drive letter, click **Next**.



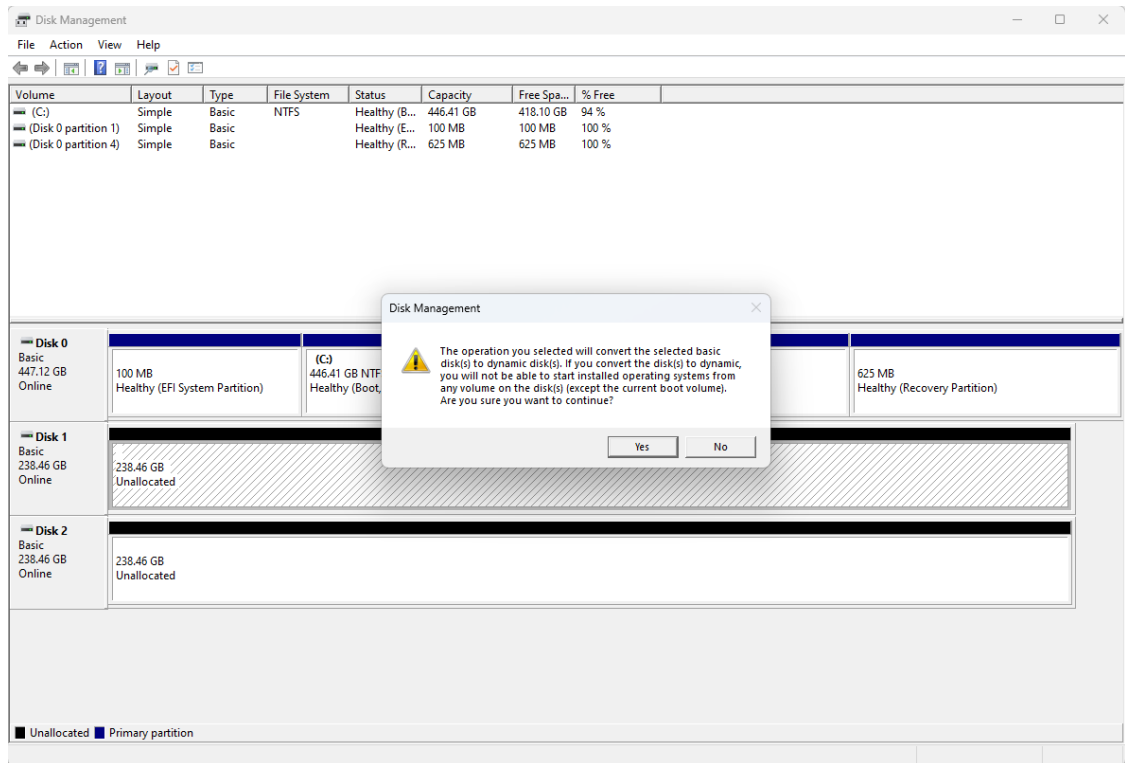
7. Format the volume using **Quick Format**, click **Next**.



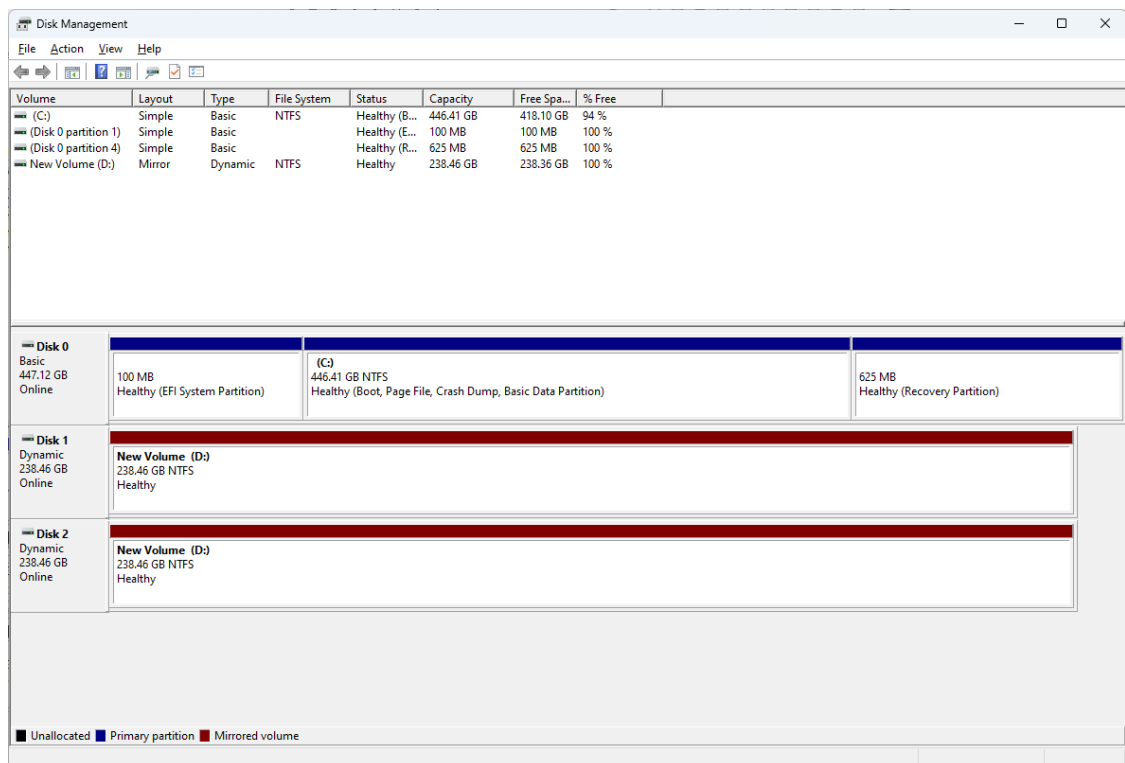
8. Checking the RAID1(Mirror) information. Click **Finish** to create the RAID1 volume.



9. System will show the warning message about SW RAID volume, click **Yes** to continue.

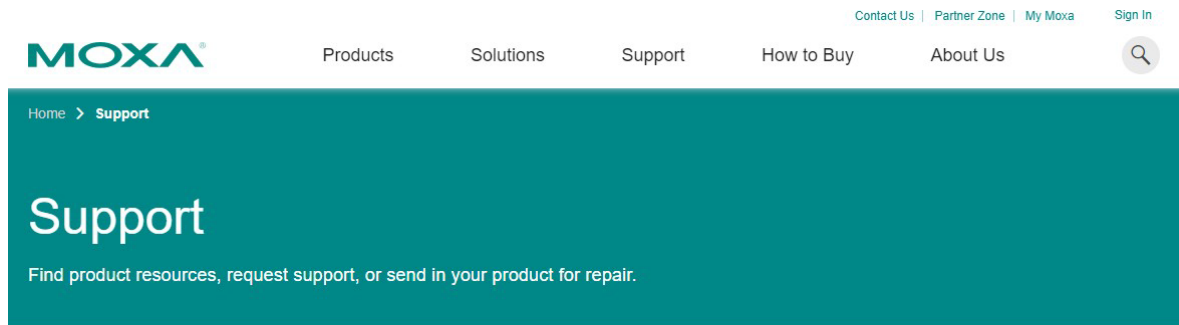


10. Checking the RAID1(Mirror) information from disk management.



# 5. Driver

Moxa provides verified drivers for each device on our official website. Please access the Moxa support page (<https://www.moxa.com/en/support>) and search for the device from the searching window (For Example: MC-3201).



## Select a Product Series

--Select--  
MC-3201  
MC-3201 Series

### Software & Documentation

Easily find drivers, software, and documentation for a specific product.



### Product Repair Service/RMA

Moxa's product repair service centers provide quick, quality service with complete traceability of your product.



### Resources

#### Literature Library

Moxa offers a wealth of resources to help you find in-depth information on our products and solutions as well as the technologies that drive them.



From the **Software & Documentation** page, filter by **Driver** and download the driver package. The driver packages are categorized by OS version, with separate sections for **Peripheral** and **Expansion modules**.

Software & Documentation Product FAQs Security Advisories

### Related Software, Firmware, and Drivers

FILTER  All **Driver(4)** Software Package(3) Utility(2)

NAME	TYPE	CHECKSUM	VERSION	OPERATING SYSTEM	RELEASE DATE
Driver for MC-3201 Series (wireless for Windows 10 IoT Enterprise LTSC 2021) 143.6 MB	Driver	SHA-512	v1.0	- Windows 10 IoT Enterprise LTSC 2021	May 11, 2023 <a href="#">Release notes</a>
Driver for MC-3201 Series (Peripherals for Windows 10 Enterprise LTSC 21H2) -1.0 bytes	Driver	SHA-512	v1.0	- Windows 10 IoT Enterprise LTSC 2019	May 11, 2023 <a href="#">Release notes</a>
Driver for MC-3201 Series (Peripherals for Windows 10 IoT Enterprise LTSC 2019) 1.2 GB	Driver	SHA-512	v1.0	- Windows 10 IoT Enterprise LTSC 2019	May 11, 2023 <a href="#">Release notes</a>
Driver for MC-3201 Series (Expansion modules for Windows 10 IoT Enterprise LTSC 2019) 157.9 MB	Driver	SHA-512	v1.0	- Windows 10 IoT Enterprise LTSC 2019	May 11, 2023 <a href="#">Release notes</a>



# 6. Utility

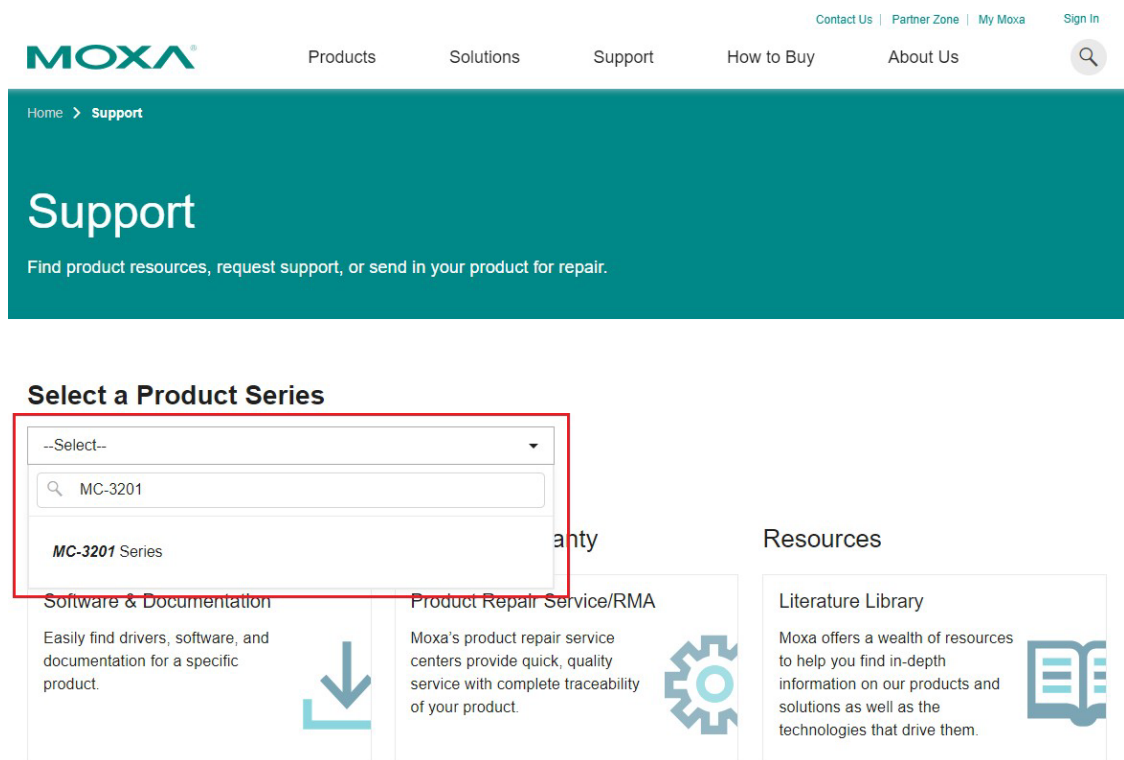
This chapter describes the usage of the following utilities:

- **Moxa IO Controller Utility**
- **Moxa Serial Interface Utility**
- **Moxa Sort Net Name Utility**

## Where to Find the Windows Utility

The utilities are preinstalled on your device if the Windows 11 OS is provided by Moxa. If you install Windows 11 on your own, go to the Moxa support page (<https://www.moxa.com/en/support>) to download the utility.

1. Search for the device from the searching window (example: MC-3201).



- Go to the **Software & Documentation** page, filter by **Utility** and download the required file. The installation file for the device is in a \*.zip file.



### MC-3201 Series

Compact computers with 11th Gen Intel® Core™ processor, designed for IIoT, AI, and marine applications, -20 to 55°C operating temperature

[GO TO PRODUCT PAGE](#)

[Save](#)

[Software & Documentation](#) [Product FAQs](#) [Security Advisories](#)

#### Related Software, Firmware, and Drivers

FILTER Operating System

All

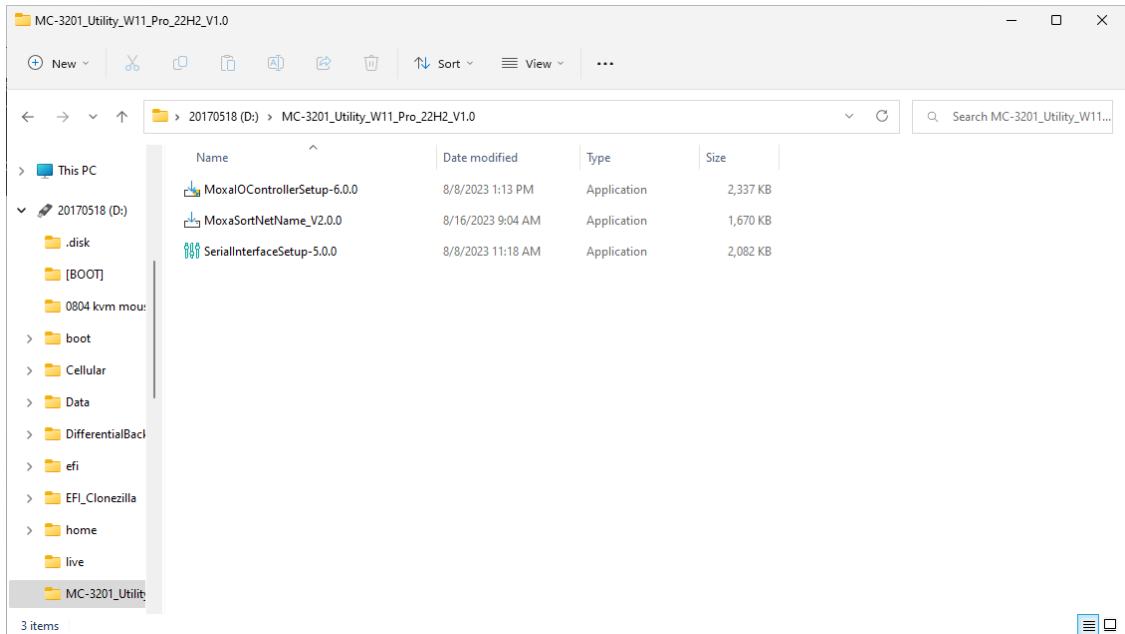
Driver(4)

Software Package(3)

**Utility(2)**

NAME	TYPE	CHECKSUM	VERSION	OPERATING SYSTEM	RELEASE DATE
Utility for MC-3201 Series (Windows 10 IoT Enterprise LTSC 2021) 5.9 MB	Utility	SHA-512	v1.0	- Windows 10 IoT Enterprise LTSC 2021	May 11, 2023 <a href="#">Release notes</a>
Utility for MC-3201 Series (Windows 10 IoT Enterprise LTSC 2019) 5.1 MB	Utility	SHA-512	v1.0	- Windows 10 IoT Enterprise LTSC 2019	May 11, 2023 <a href="#">Release notes</a>

- After extracting the files, you will obtain the following setup files.



# Dependent Packages

- After the installation of Windows 11 pro and drivers are completed, you will need to install **dependent packages** to ensure the smooth operation of the utility. Please attach the following link to download and install the packages.
- Microsoft Visual C++ Redistributable: <https://learn.microsoft.com/en-us/cpp/windows/latest-supported-vc-redist?view=msvc-170>
- Microsoft .NET Framework 4.8: <https://support.microsoft.com/en-us/topic/microsoft-net-framework-4-8-offline-installer-for-windows-9d23f658-3b97-68ab-d013-aa3c3e7495e0>

# Moxa IO Controller Utility

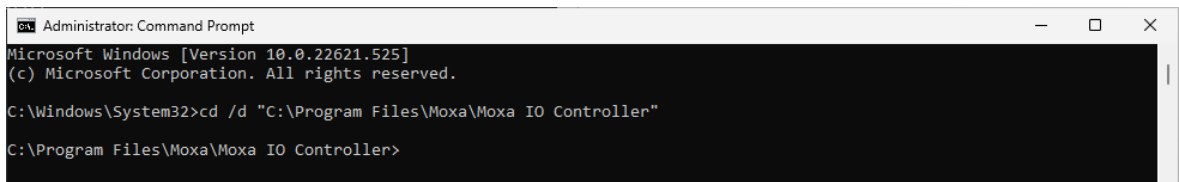
Moxa IO Controller Utility is developed to control the peripherals' IO as well as expansion modules interface of the device.

This section describes how to use the Moxa IO Controller utility and the following content will be included.

- **Setting the DIO Status**
- **Setting the UART Mode**

Use the pre-installed utility or install the **MoxaIOControllerSetup utility** from the Moxa support page.

To use the Moxa IO Controller utility, first install the utility and enable the utility to configure the DIO and UART mode. After the installation process is complete, run the Windows command prompt as an Administrator and change the path to C:\Program Files\Moxa\Moxa IO Controller.



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.22621.525]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>cd /d "C:\Program Files\Moxa\Moxa IO Controller"

C:\Program Files\Moxa\Moxa IO Controller>
```

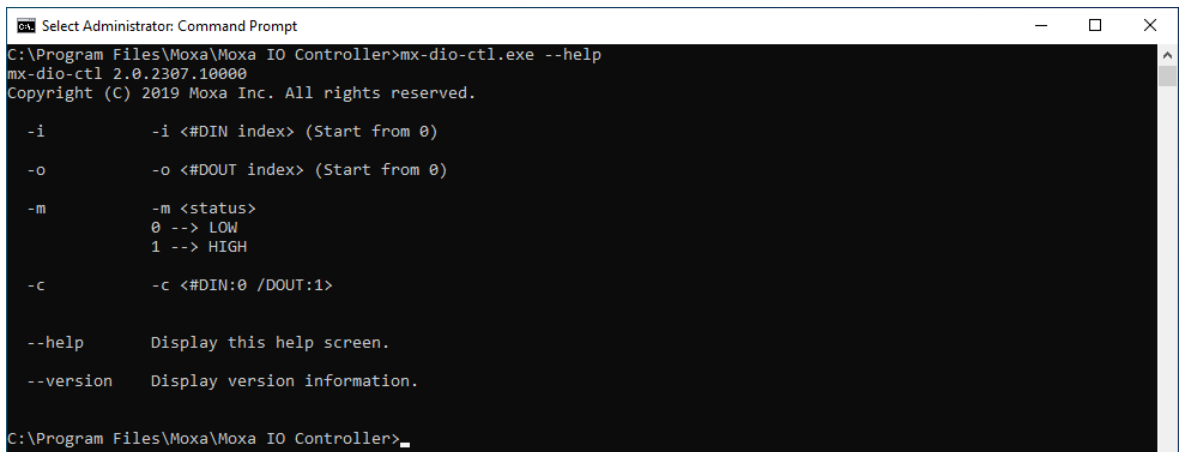
## Setting the DIO Status

Type the **mx-dio-ctl --help** command to see the instructions on using this utility and follow them to get or set the DIO status.



### IMPORTANT!

The DIN and DOUT indices start at 0. Even though the console output starts at 1, the indices still start at 0.



```
Select Administrator: Command Prompt
C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe --help
mx-dio-ctl 2.0.2307.10000
Copyright (C) 2019 Moxa Inc. All rights reserved.

-i      -i <#DIN index> (Start from 0)
-o      -o <#DOUT index> (Start from 0)
-m      -m <status>
        0 --> LOW
        1 --> HIGH
-c      -c <#DIN:0 /DOUT:1>

--help  Display this help screen.
--version  Display version information.

C:\Program Files\Moxa\Moxa IO Controller>
```

## Example:

```
Administrator: Command Prompt
C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe -c 0
DIN port count: 4

C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe -c 1
DOUT port count: 2

C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe -i 0
DIN port 0 status: 1

C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe -o 0
DOUT port 0 status: 1

C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe -o 0 -m 0
DOUT port 0 status: 0

C:\Program Files\Moxa\Moxa IO Controller>mx-dio-ctl.exe -i 0
DIN port 0 status: 1

C:\Program Files\Moxa\Moxa IO Controller>
```

## Setting the UART Mode

Type the **mx-uart-ctl --help** command to see instructions on using this utility and follow the onscreen instructions to get or set the UART mode.



### IMPORTANT!

The UART index starts from 0. Even though the console output starts at 1, the index still starts at 0.

```
Administrator: Command Prompt
C:\Program Files\Moxa\Moxa IO Controller>mx-uart-ctl.exe --help
mx-uart-ctl 2.0.2307.10000
Copyright (C) 2019 Moxa Inc. All rights reserved.

-p          -p <#port index> (Start from 0)

-m          -m <#uart mode>
            0 --> set to RS232 mode
            1 --> set to RS485-2W mode
            2 --> set to RS485-4W mode
            3 --> set to RS422 mode

-c          -c

--help      Display this help screen.
--version   Display version information.

C:\Program Files\Moxa\Moxa IO Controller>
```

## Example:

```
Administrator: Command Prompt
C:\Program Files\Moxa\Moxa IO Controller>mx-uart-ctl.exe -c
COM port count: 2

C:\Program Files\Moxa\Moxa IO Controller>mx-uart-ctl.exe -p 0
Current uart mode is RS232 interface.

C:\Program Files\Moxa\Moxa IO Controller>mx-uart-ctl.exe -p 0 -m 1
Set OK.

Current uart mode is RS485-2W interface.

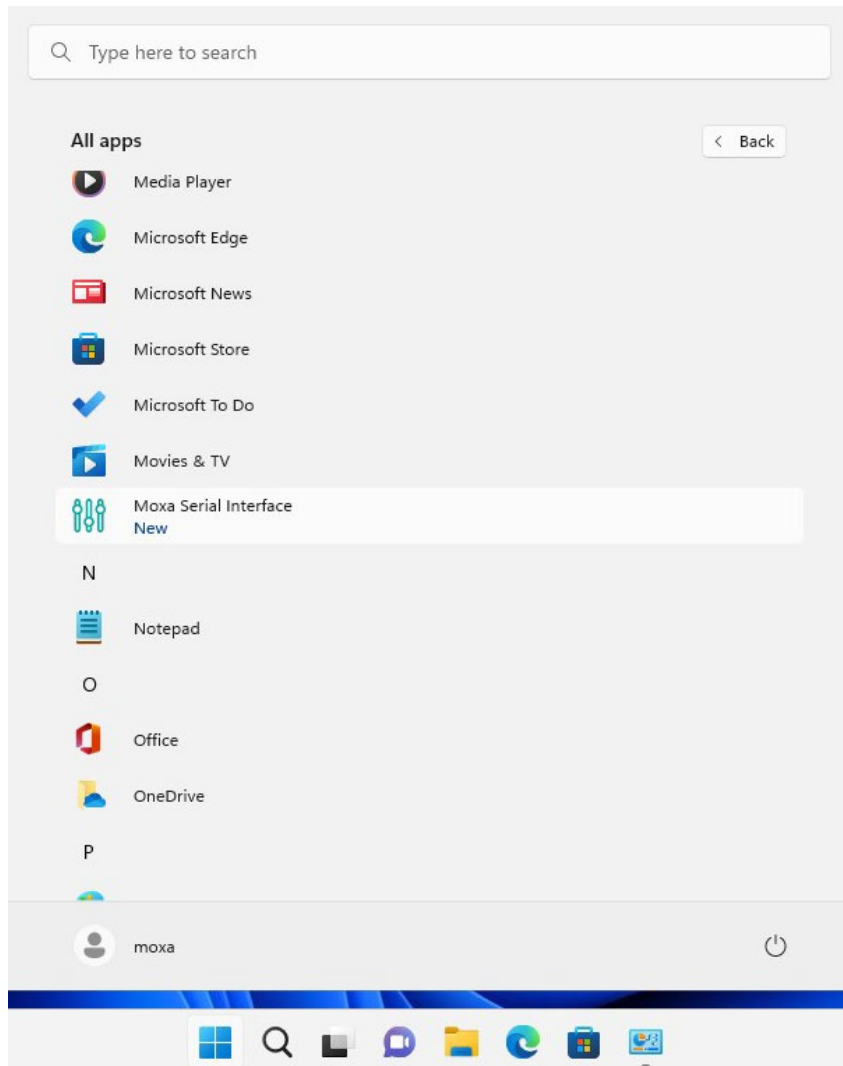
C:\Program Files\Moxa\Moxa IO Controller>
```

# Moxa Serial Interface Utility

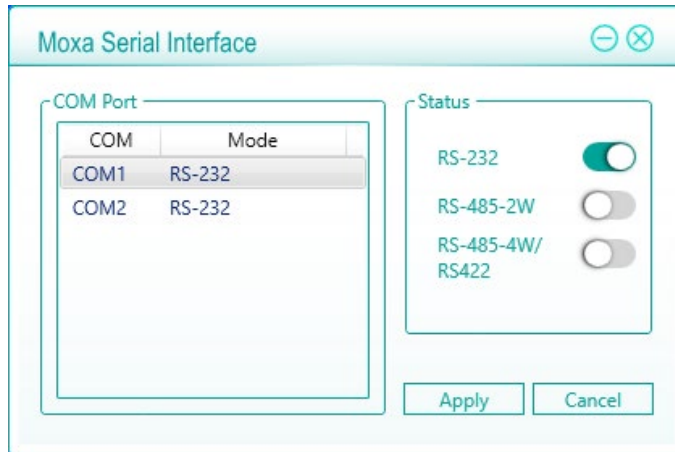
In this section, we describe how to use the Moxa Serial Interface utility to set the UART mode in your computer's serial interface.

## Setting the Serial Port Mode

1. Use the preinstalled **SerialInterfaceSetup** utility or install it from the Moxa support page.
2. From the Windows Start menu, run the **Moxa Serial Interface utility**.



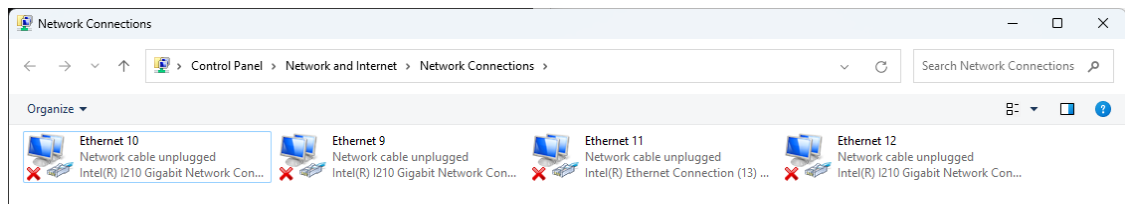
3. Select the target COM port and UART mode and click **Apply** to save the settings.



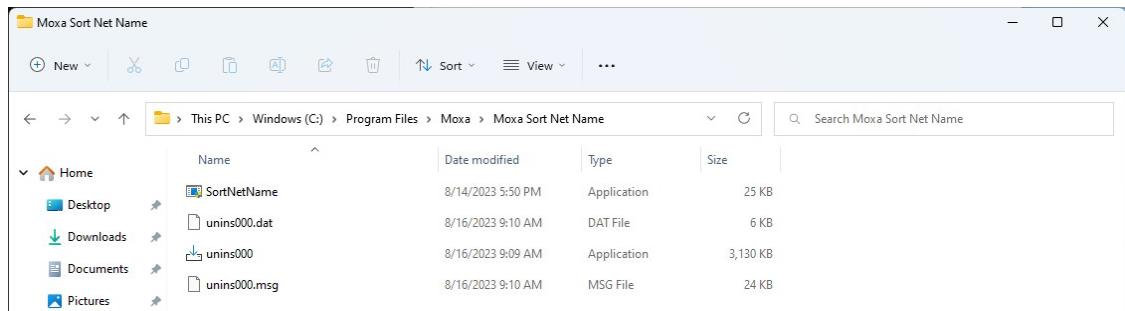
## Moxa Sort Net Name Utility

In this section, we describe how to use the Moxa Sort Net Name utility to rename Ethernet adapter for mapping physical LAN port order on chassis.

1. Use the pre-installed utility or install the **MoxaSortNetName** utility from the Moxa support page.
2. The initial order of network names may be random.



3. Run the SortNetName.exe from C:\Program Files\Moxa\Moxa Sort Net Name\SortNetName.exe as an Administrator.



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.22621.525]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>cd /d C:\Program Files\Moxa\Moxa Sort Net Name
C:\Program Files\Moxa\Moxa Sort Net Name>SortNetName.exe
Network interface sorting ...
Set network interface "Ethernet 11" to "tempNet 1"
Success!

Set network interface "Ethernet 9" to "tempNet 4"
Success!

Set network interface "Ethernet 10" to "tempNet 3"
Success!

Set network interface "Ethernet 12" to "tempNet 2"
Success!

Set network interface "tempNet 2" to "Ethernet 2"
Success!

Set network interface "tempNet 1" to "Ethernet"
Success!

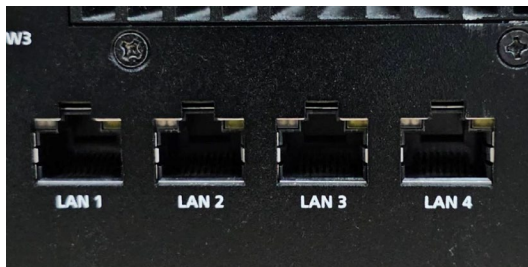
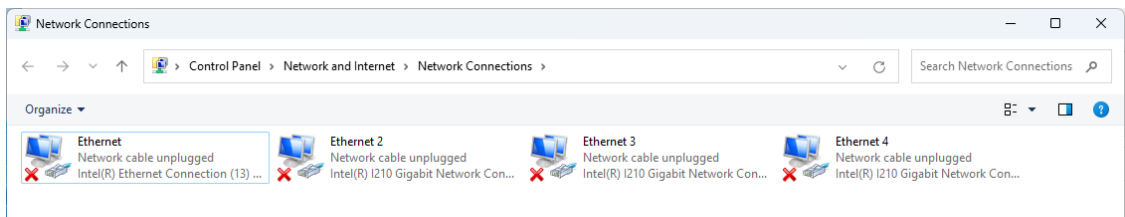
Set network interface "tempNet 3" to "Ethernet 3"
Success!

Set network interface "tempNet 4" to "Ethernet 4"
Success!

Done

C:\Program Files\Moxa\Moxa Sort Net Name>
```

4. Wait for the process to complete to rename Ethernet adapter. The order of the Ethernet adapter will correspond to the order of label (e.g., **LAN 2** on chassis is mapping to **Ethernet 2** in Windows).

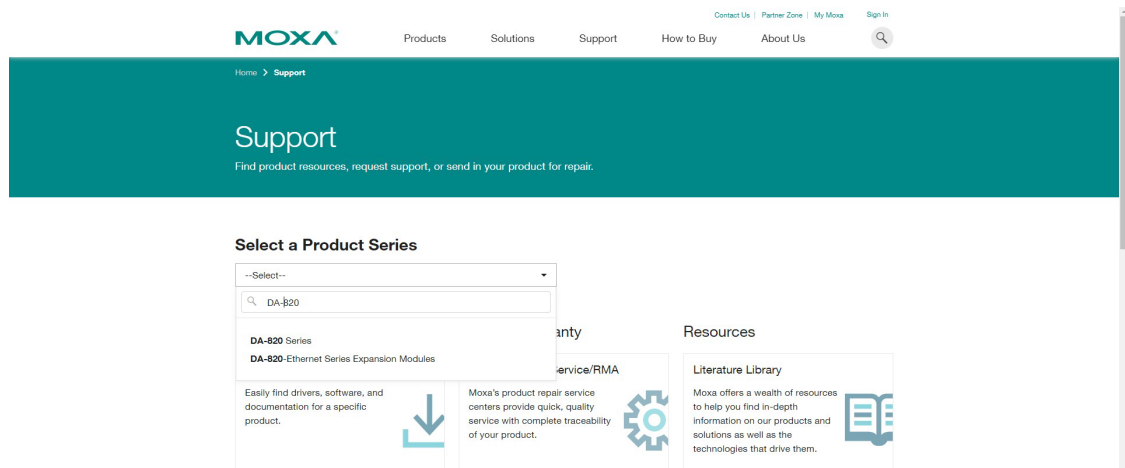


# 7. IO Control APIs

This chapter describes how to use the IO Control API.

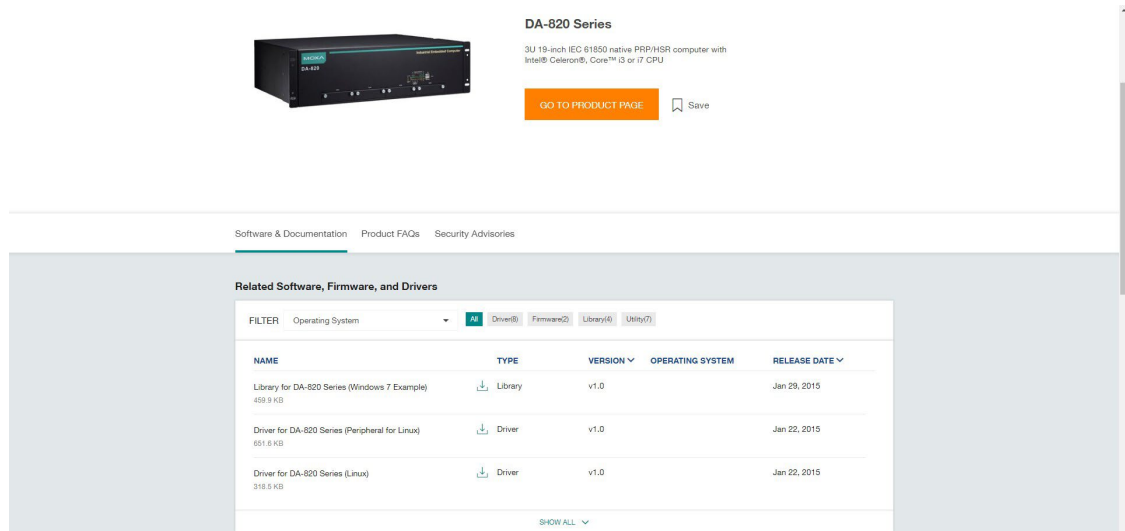
## Downloading the APIs

1. Access the Moxa support page: <https://www.moxa.com/en/support>
2. Select the product series (example: DA-820).



The screenshot shows the Moxa Support page. At the top, there is a navigation bar with links for 'Products', 'Solutions', 'Support', 'How to Buy', and 'About Us'. Below this is a teal header with the word 'Support' and a sub-header 'Find product resources, request support, or send in your product for repair.' The main content area features a 'Select a Product Series' dropdown menu with 'DA-820' selected. Below the dropdown, there are three columns of content: 'Service/RMA' with a gear icon, 'Literature Library' with a book icon, and a central section with a download icon.

3. Download the related files.



The screenshot shows the Moxa product page for the DA-820 Series. It features a product image of a 3U 19-inch IEC 61850 native PRP/HSR computer. Below the image is a description: '3U 19-inch IEC 61850 native PRP/HSR computer with Intel® Celeron®, Core™ i3 or i7 CPU'. There is a 'GO TO PRODUCT PAGE' button and a 'Save' icon. Below this is a section for 'Related Software, Firmware, and Drivers' with a table of files.

NAME	TYPE	VERSION	OPERATING SYSTEM	RELEASE DATE
Library for DA-820 Series (Windows 7 Example) 459.9 KB	Library	v1.0		Jan 29, 2015
Driver for DA-820 Series (Peripheral for Linux) 651.6 KB	Driver	v1.0		Jan 22, 2015
Driver for DA-820 Series (Linux) 318.5 KB	Driver	v1.0		Jan 22, 2015



# mxdgio

The **mxdgio** library operates on the digital I/Os and consists of the following:

- **GetDinCount**
- **GetOutCount**
- **GetDinStatus**
- **GetDoutStatus**
- **SetDoutStatus**

## GetDinCount

### **Syntax**

```
int GetDinCount();
```

### **Description**

Get the numbers of a digital input port.

### **Parameters**

N/A.

### **Return Value**

The numbers of the digital input port.

### **Error codes**

The following error codes can be retrieved by the **DIO\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxdgio library initialization failed. Cannot open json profile.

### **Requirements**

Name	Items
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll
Profile	MxdgioProfile[ <i>ModelName</i> ].json

# GetDoutCount

## **Syntax**

```
int GetDoutCount();
```

## **Description**

Get the numbers of a digital output port.

## **Parameters**

N/A.

## **Return Value**

The numbers of the digital output port.

## **Error codes**

The following error codes can be retrieved by the **DIO\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxdgio library initialization failed. Cannot open json profile.

## **Requirements**

Name	Items
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll
Profile	MxdgioProfile[ModelName].json

# GetDinStatus

## **Syntax**

```
int GetDinStatus(int port);
```

## **Description**

Gets the status of a digital input port.

## **Parameters**

*port*: The index of the digital input port; starts at 0.

## **Return Value**

The status of the digital input port; 0 for low and 1 for high.

## **Error codes**

The following error codes can be retrieved by the **DIO\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxdgio library initialization failed. Cannot open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.

## **Requirements**

Name	Items
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll
Profile	MxdgioProfile[ModelName].json

# GetDoutStatus

## **Syntax**

```
int GetDoutStatus(int port);
```

## **Description**

Gets the status of a digital output port.

## **Parameters**

*port*: The index of the digital output port; starts at 0.

## **Return Value**

The status of the digital output port; 0 for low and 1 for high.

## **Error codes**

The following error codes can be retrieved by the **DIO\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxdgio library initialization failed. Cannot open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.

## **Requirements**

Name	Items
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll
Profile	MxdgioProfile[ <i>ModelName</i> ].json

# SetDoutStatus

## **Syntax**

```
int SetDoutStatus(int port, int status);
```

## **Description**

Sets the status of a digital output port.

## **Parameters**

*port*: The index of the digital output port; starts at 0.

*status*: The status of the digital output port; 0 for low and 1 for high.

## **Return Value**

Returns the value 0 if the digital output status is successfully set.

## **Error codes**

The following error codes can be retrieved by the **DIO\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxdgio library initialization failed. Cannot open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.
SET_STATUS_ERR	-3	Status setting failed or is defined with a bad format.

## **Requirements**

Name	Items
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll
Profile	MxdgioProfile[ <i>ModelName</i> ].json

# mxsp

The mxsp library operates on the serial port and consists of the following:

- **GetUartCount**
- **GetUartMode**
- **SetUartMode**

## GetUartCount

### **Syntax**

```
int GetUartCount();
```

### **Description**

Gets the numbers of the UART port.

### **Parameters**

N/A

### **Return Value**

The numbers of the UART port.

### **Error codes**

The following error codes can be retrieved by the **UART\_STATUS** function.

<b>Name</b>	<b>Value</b>	<b>Meaning</b>
LIB_INITIALIZE_FAIL	-1	The mxsp library initialization failed. Cannot open json profile.

### **Requirements**

<b>Name</b>	<b>Items</b>
Header	mxsp.h
Library	mxsp.lib
DLL	mxsp.dll
Profile	MxspProfile[ <i>ModelName</i> ].json

# GetUartMode

## **Syntax**

```
int GetUartMode(int port);
```

## **Description**

Gets the status of the UART port.

## **Parameters**

*port*: The index of the UART port; starts at 0.

## **Return Value**

The mode of a UART interface; 0 for RS-232, 1 for RS-485-2W, and 2 for RS-422/RS-485-4W.

## **Error codes**

The following error codes can be retrieved by the **UART\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxsp library initialization failed. Cannot open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.

## **Requirements**

Name	Items
Header	mxsp.h
Library	mxsp.lib
DLL	mxsp.dll
Profile	MxspProfile[ModelName].json

# SetUartMode

## **Syntax**

```
int SetUartMode(int port, int mode);
```

## **Description**

Sets the status of the UART port.

## **Parameters**

*port*: The index of the UART port; starts at 0.

*mode*: The mode of a UART interface; 0 for RS-232, 1 for RS-485-2W, and 2 for RS-422/RS-485-4W.

## **Return Value**

Returns 0 if the UART mode is successfully set.

## **Error codes**

The following error codes can be retrieved by the **UART\_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxsp library initialization failed. Cannot open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.
SET_STATUS_ERR	-3	Status setting failed or is defined with a bad format.
NOT_SUPPORT_MODE	-4	Target mode is not supported for this port.

## **Requirements**

Name	Items
Header	mxsp.h
Library	mxsp.lib
DLL	mxsp.dll
Profile	MxspProfile[ModelName].json

# mxwdg

The **mxwdg** library operates on the relay output and consists of the following:

- **mxwdg\_open**
- **mxwdg\_refresh**
- **mxwdg\_close**

## mxwdg\_open

### **Syntax**

```
PVOID mxwdg_open(unsigned long time);
```

### **Description**

Initializes the watchdog timer.

### **Parameters**

*time*: The interval at which the watchdog timer is refreshed; the unit is seconds.

### **Return Value**

Returns the pointer to the watchdog handle; returns -1 on failure to initialize the watchdog timer.

### **Requirements**

Name	Items
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

## mxwdg\_refresh

### **Syntax**

```
int mxwdg_refresh(PVOID fd);
```

### **Description**

Refreshes the watchdog timer.

### **Parameters**

*fd*: The handle of the watchdog timer.

### **Return Value**

Returns 0 for success; otherwise, the function has failed.

### **Requirements**

Name	Items
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

# mxwdg\_close

## **Syntax**

```
void mxwdg_close(PVOID fd);
```

## **Description**

Disables the watchdog timer.

## **Parameters**

*fd*: The handle of the watchdog timer.

## **Return Value**

This function does not return a value.

## **Requirements**

Name	Items
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

# 8. System Backup and Restore

This chapter describes the usage of the following tools for system backup and restoration.

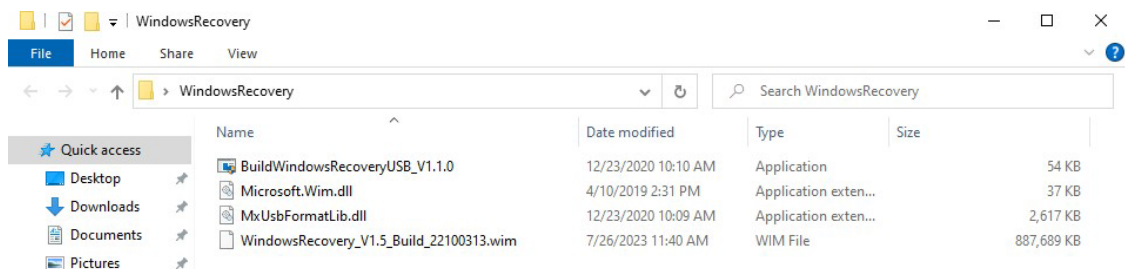
- **WindowsRecovery**

## WindowsRecovery

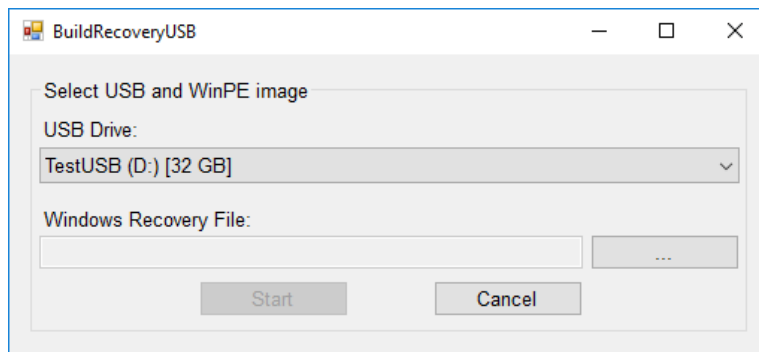
WindowsRecovery is a disk imaging backup/restore program for system deployment, backup, and recovery. You will need to create a WindowsRecovery USB to perform these actions. WindowsRecovery can only be booted on a **UEFI BIOS** machine. This chapter describes the Windows Recovery setup process.

## Preparing the USB device

1. Contact a Moxa technical staff and get the required file.

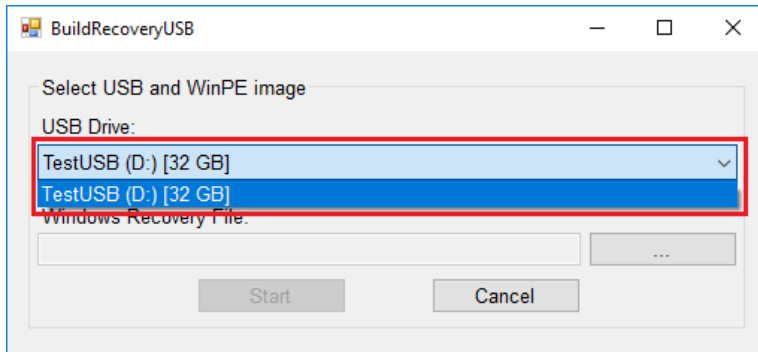


2. Run the **BuildWindowsRecoveryUSB\_V1.1.0.exe**.

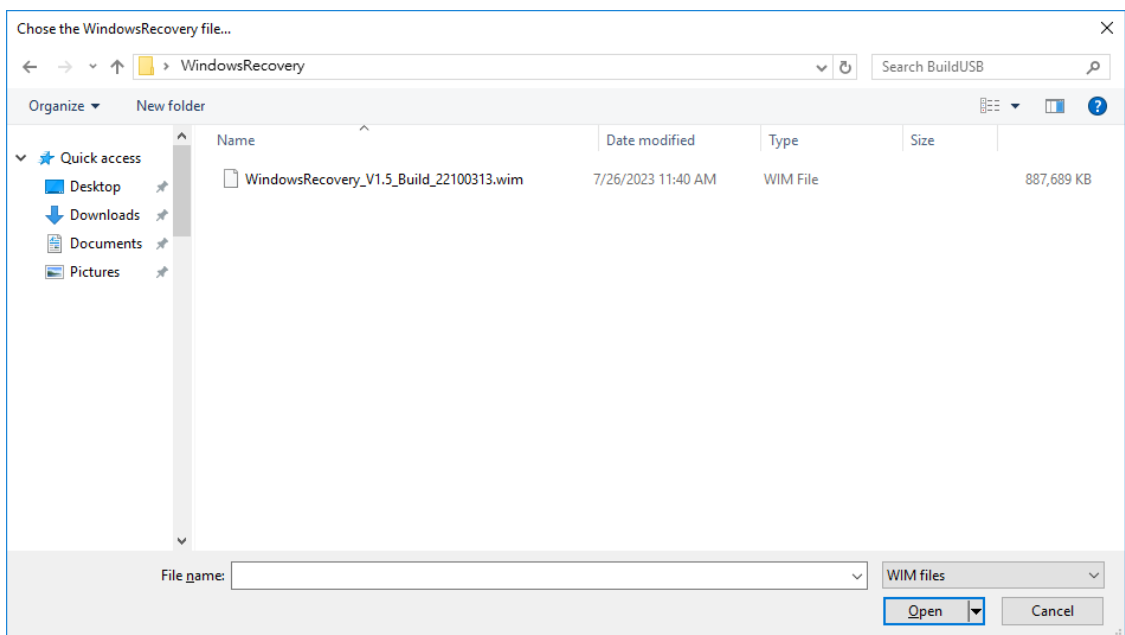
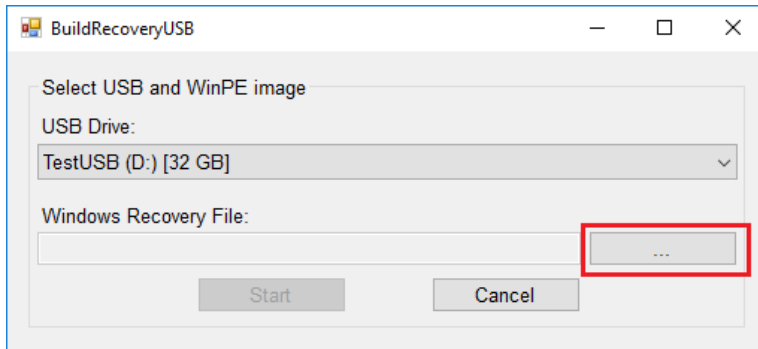




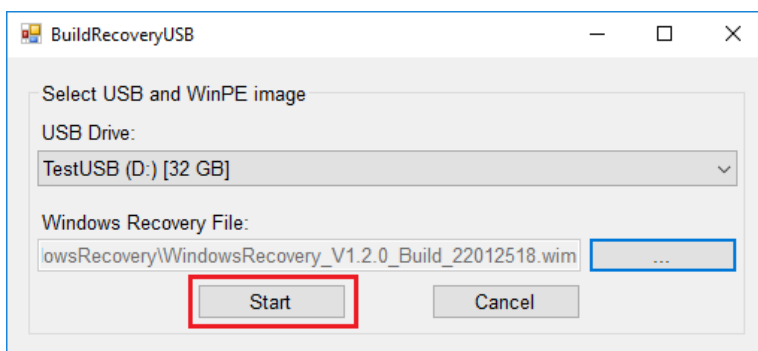
3. Select the USB drive to format.



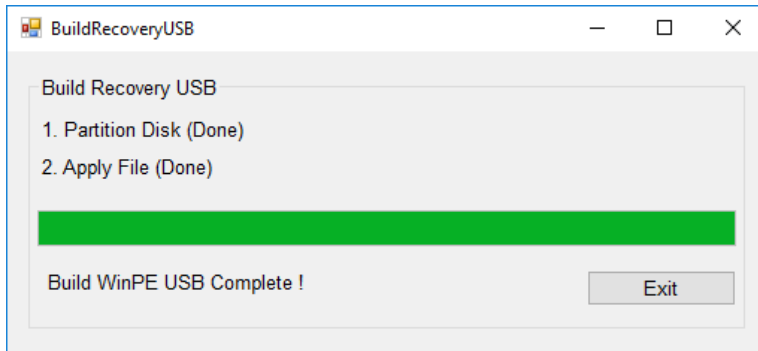
4. Click ... to select .wim file from the folder.



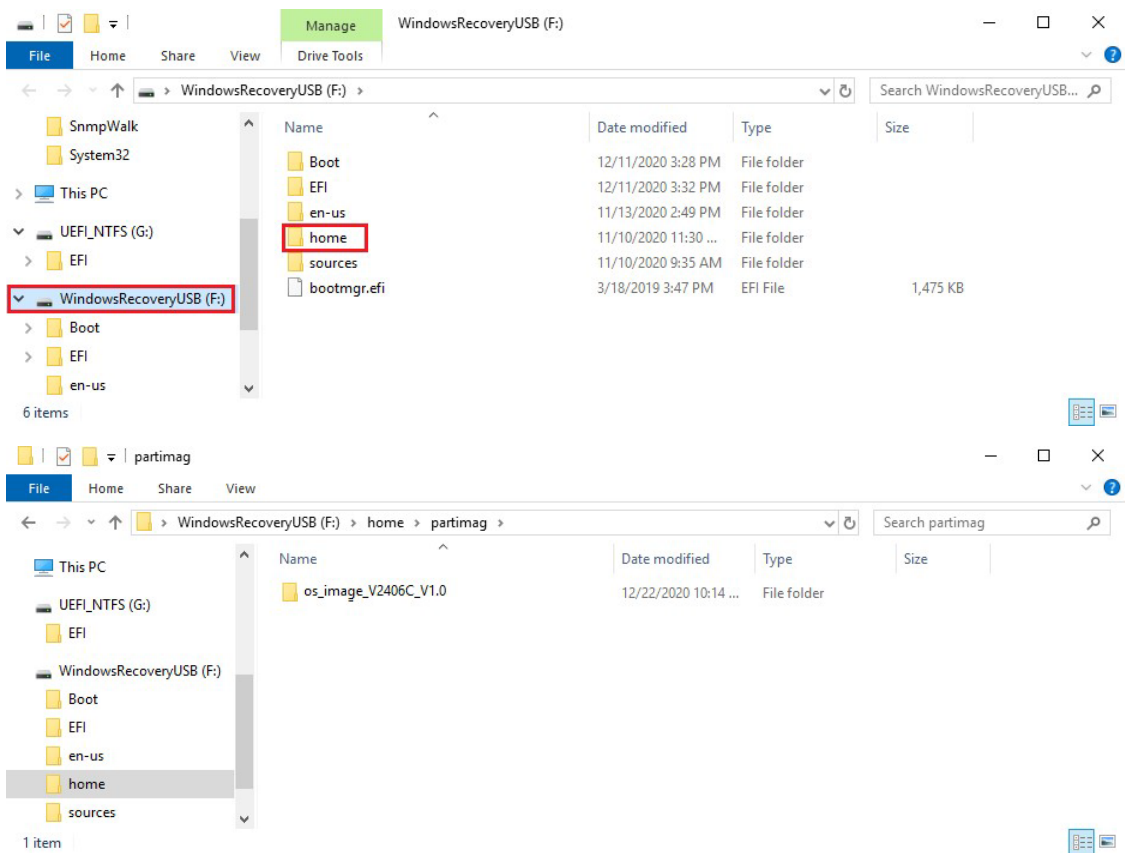
5. Click **Start** and make sure the selected USB can be formatted. Click **Yes** to start creating the recovery USB.



- Wait for the process to complete.  
The program will format the USB device and create a UEFI bootable volume and a WinPE volume. You may see additional windows for folder information; do not close these. You can close the windows after the process finishes.

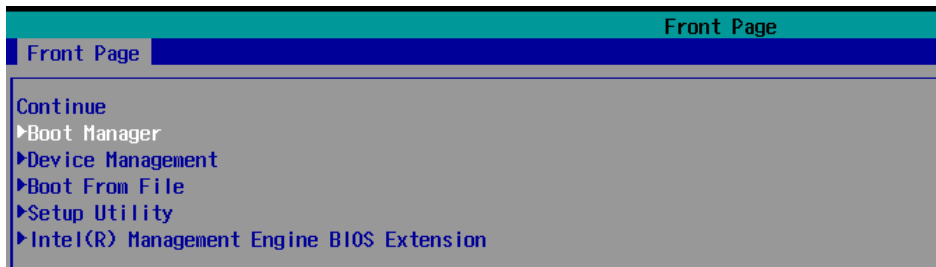


- To create a recovery USB disk with the Windows 11 image, copy the **os\_image\_ModelName** directory to the **\home\partimag** folder in the USB drive.

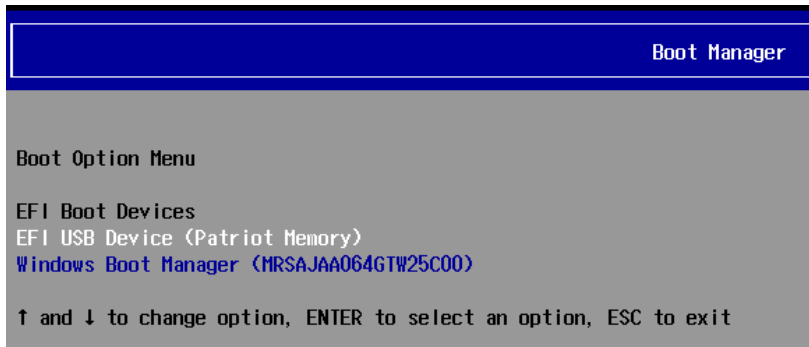


# Booting From the USB Disk

1. Turn on the computer and press **F2** when you hear the beep sound to enter the BIOS setup menu, select **Boot Manager** and press **Enter** to continue.



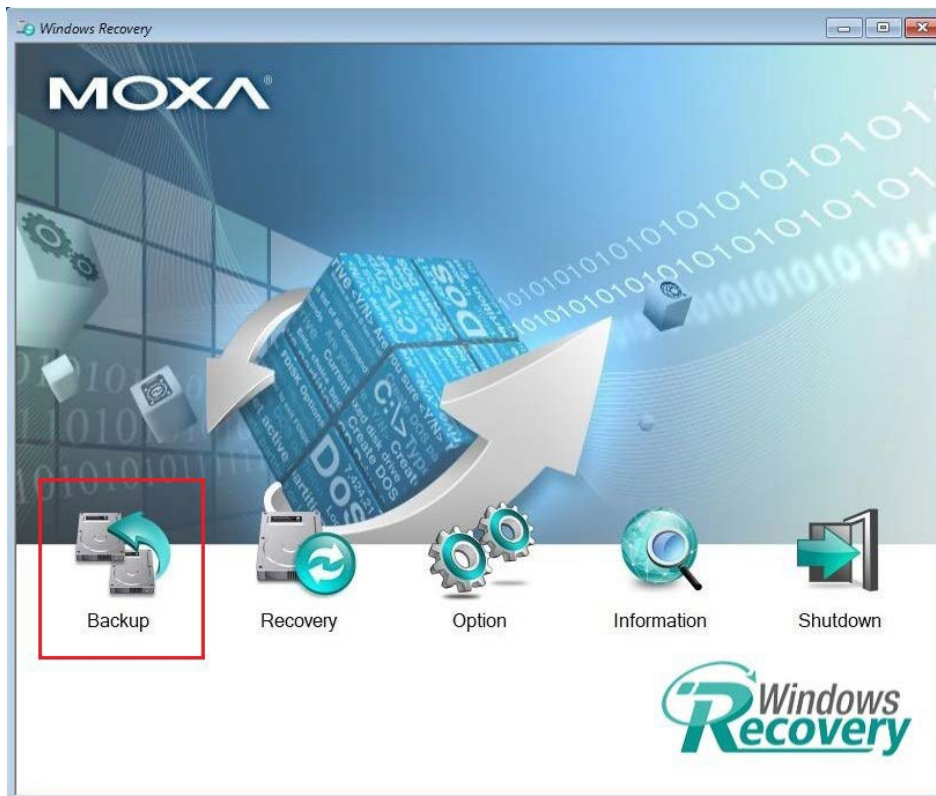
2. Select the **EFI USB Device** on the computer and press **Enter** to continue to boot from the USB device.



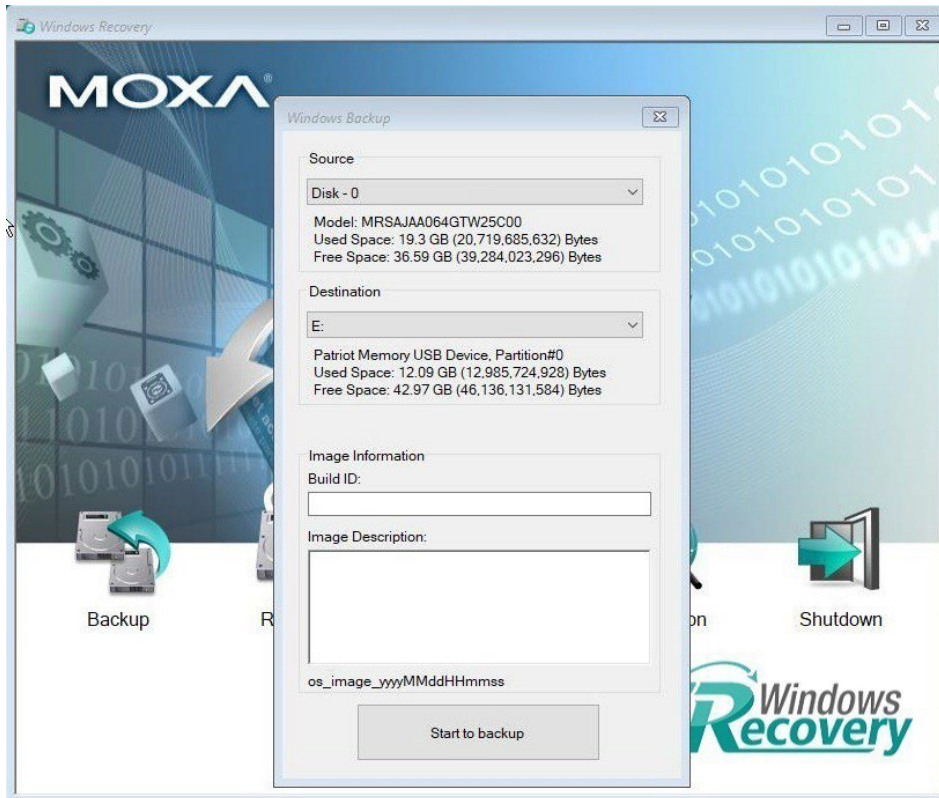
# System Image Backup

To back up the image from the USB disk, run **Windows Preinstallation Environment(WinPE)** and the **Windows Recovery utility** will display. Follow these steps.

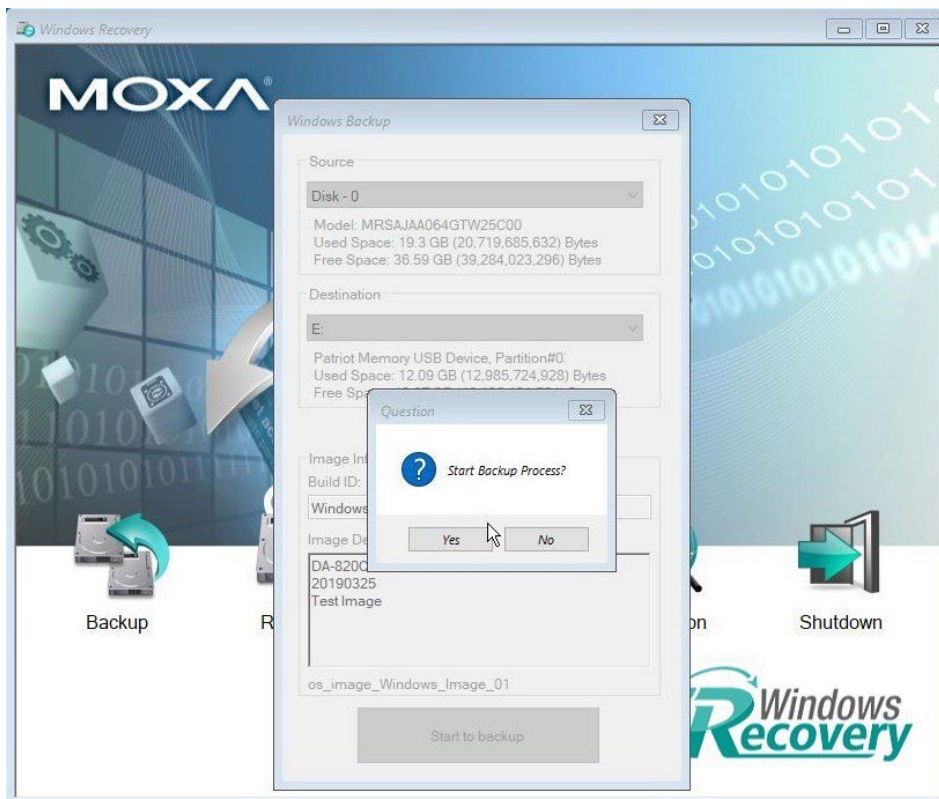
1. Click **Backup**.



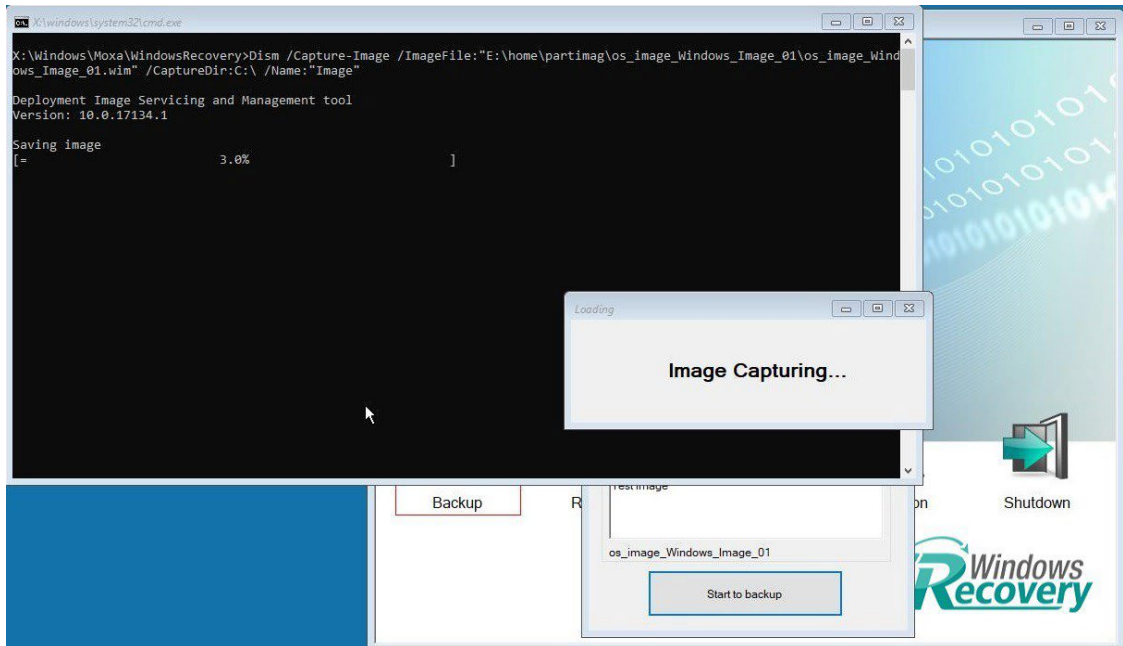
2. Select the **Source disk** to backup and **Destination USB** to store the OS image, also give an image name and description. Click **Start to backup**.



3. Click **Yes** to continue.



4. Wait for the backup process to complete.



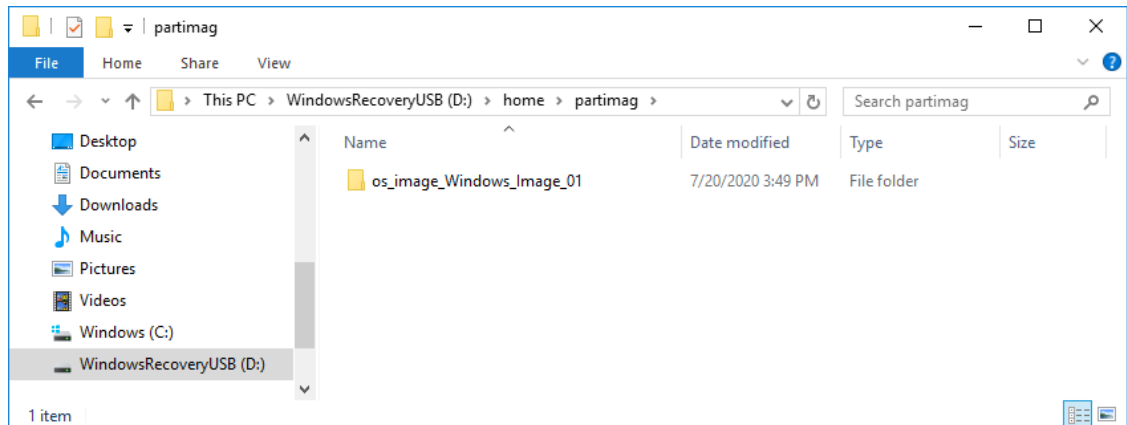
5. When the process is done, click **OK**.



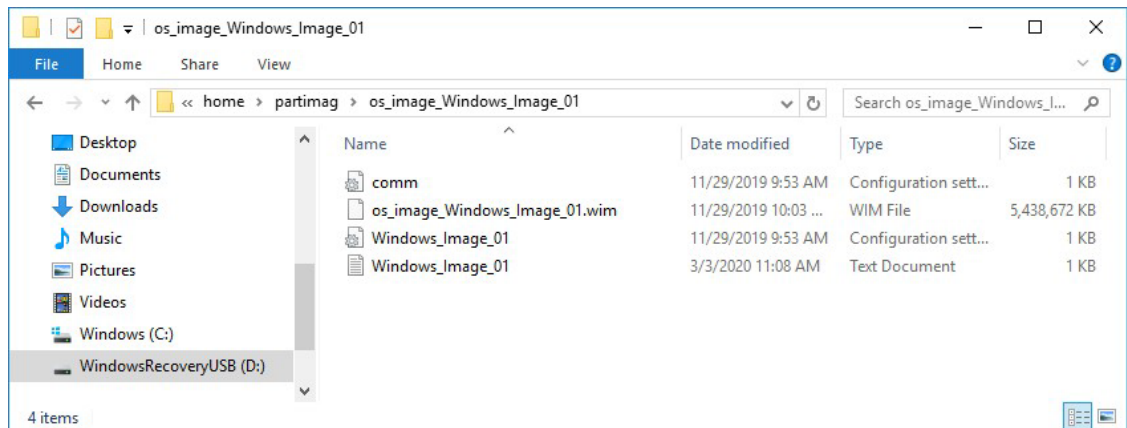
6. Click **OK**, the computer will shut down.



7. The OS image will be saved in USB disk **home\partimag**.



8. In the **os\_image** folder you can view the backup information and the image files.



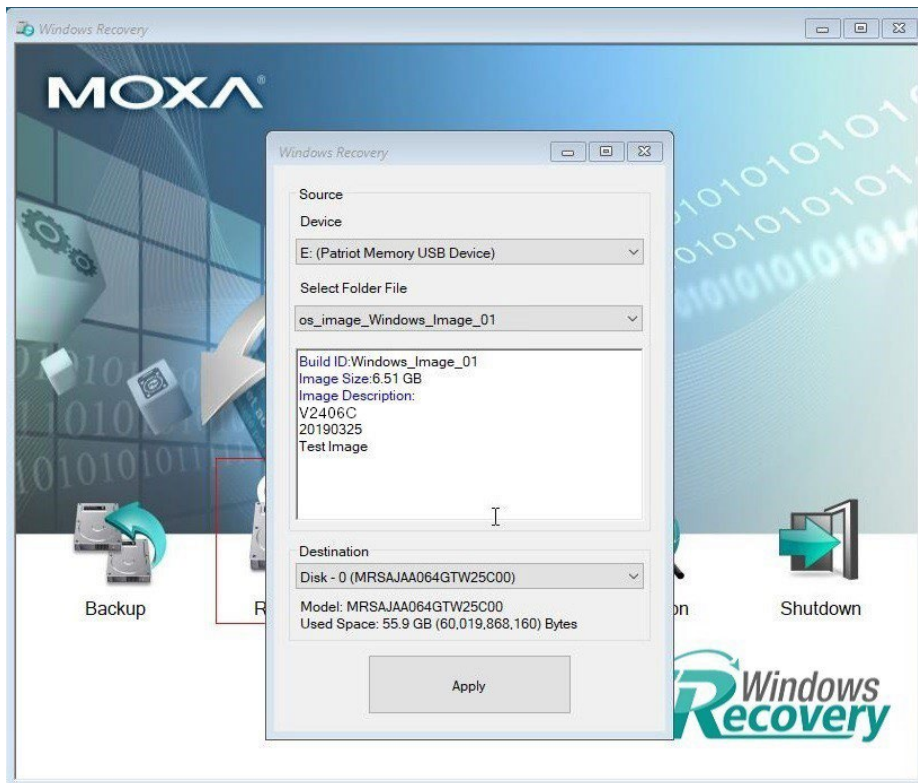
# Restoring the System From a Backup

To restore the image, run the **Windows Preinstallation Environment (WinPE)** and the **Windows Recovery utility** will display. Follow these steps.

1. Click **Recovery**.



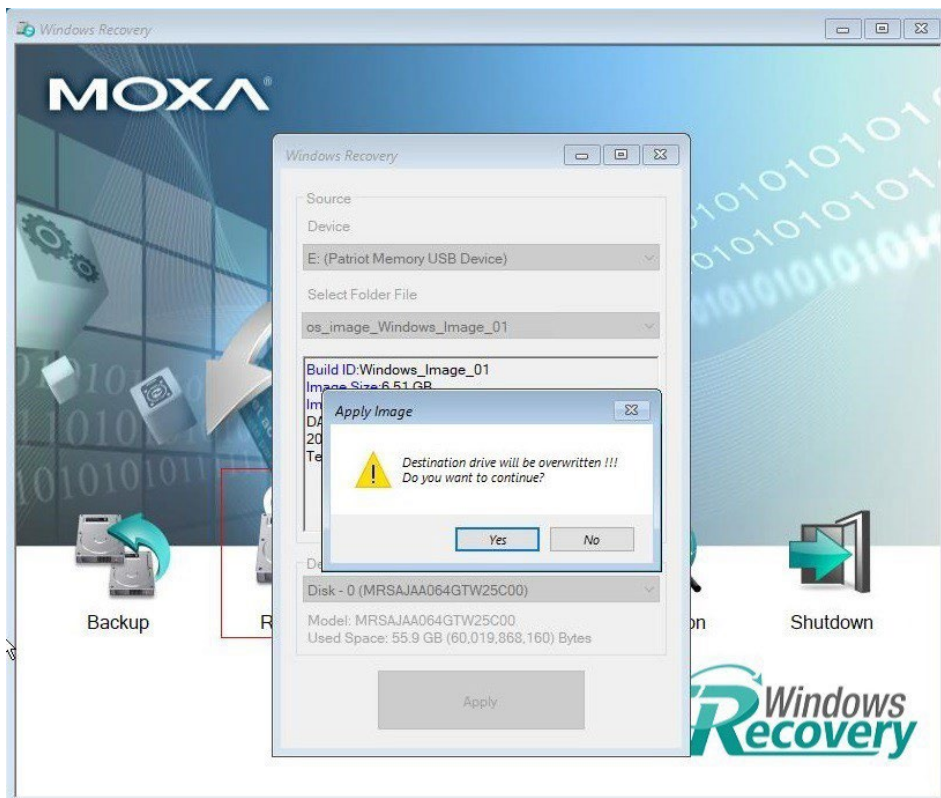
2. Select the **Source USB Device, Image Folder File** and check the image information, select the **Destination Disk** to restore. Click **Apply**.



3. Click **Yes** to continue the process.



4. Click **Yes** to overwrite the destination drive.





5. Wait for the process to complete.



6. Click **OK**.



7. Click **OK**, the system will shut down.



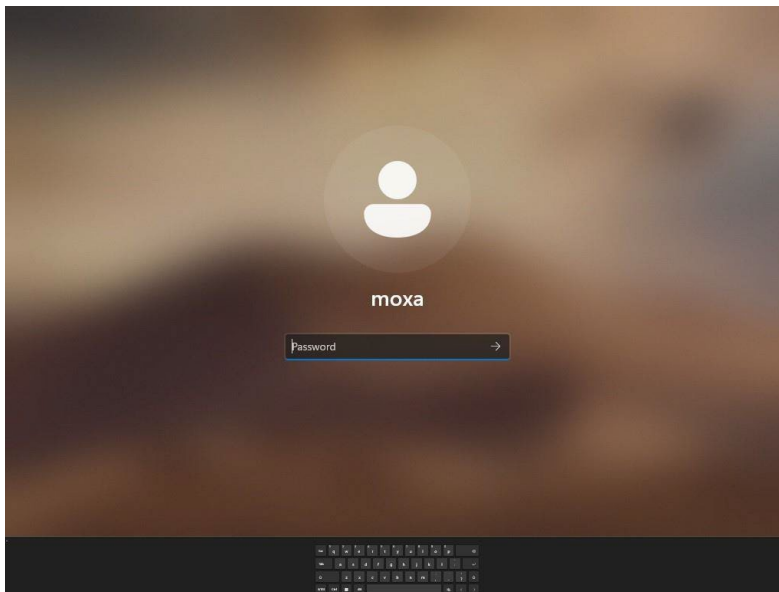
## NOTE

When you restart the computer, you will need to wait about 5 minutes for the computer to go through two cycles of the reboot process. The system configuration files will be initiated during the first boot-up process. Do not turn off or shut down the computer while the system is restarting.

## How do I fix the abnormal size of the touch keyboard when using MPC-3000 with Windows 11 Pro?

Activate Windows On-Screen Keyboard. See [Use the On-Screen Keyboard \(OSK\) to type - Microsoft Support](#).

### Abnormal Size Touch Keyboard



### After Activating Windows On-screen Keyboard

