

DA-681C Windows 10 Enterprise LTSC User's Manual

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DA-681C Windows 10 Enterprise LTSC User's Manual

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System Initialization

In this chapter, we describe how to initialize the system settings on the DA-681C computer when you boot up the computer for the first time. When you turn on the Windows PC for the first time, you will see the Windows Out of Box Experience (OOBE) wizard. The OOBE wizard 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.

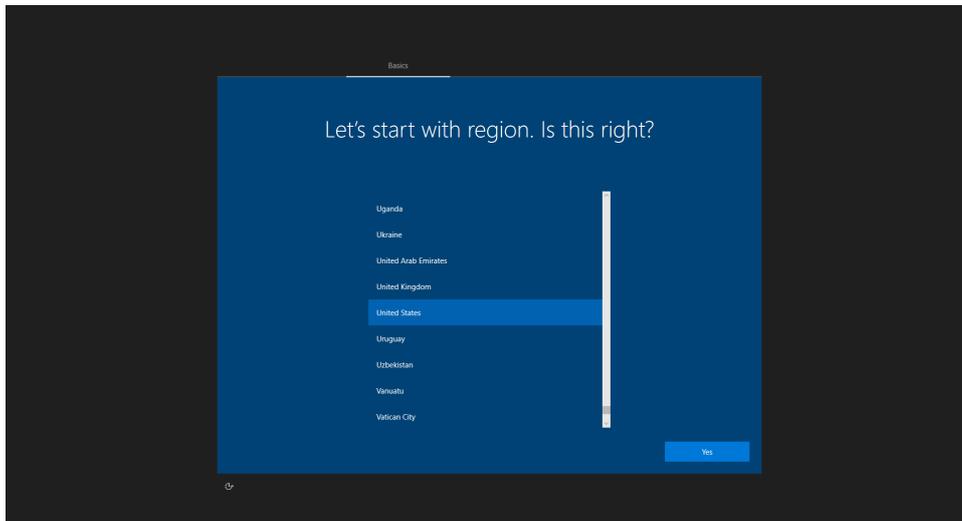
The following topics are covered in this chapter:

- ❑ **Initializing User Settings**
- ❑ **Initializing the System**

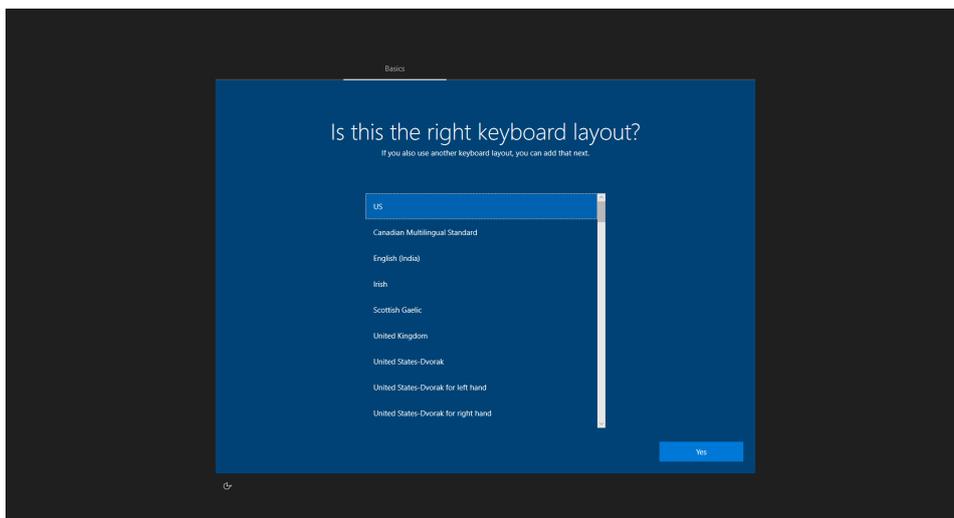
Initializing User Settings

The following is a non-exhaustive list of screens the users may see during the OOBЕ process.

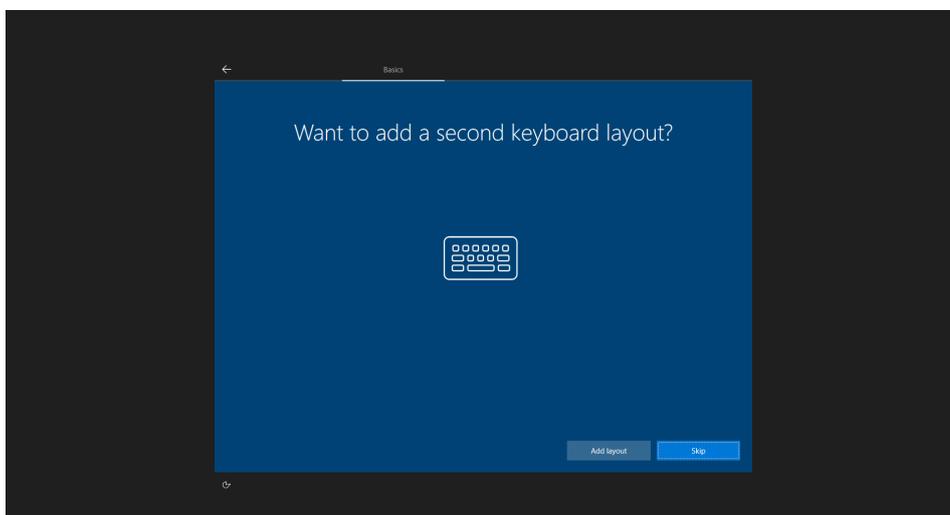
1. Select a region.



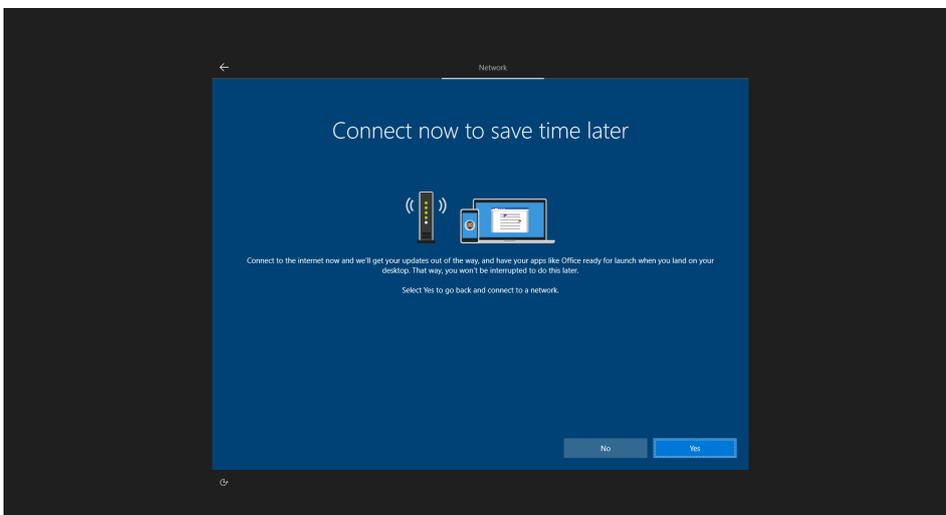
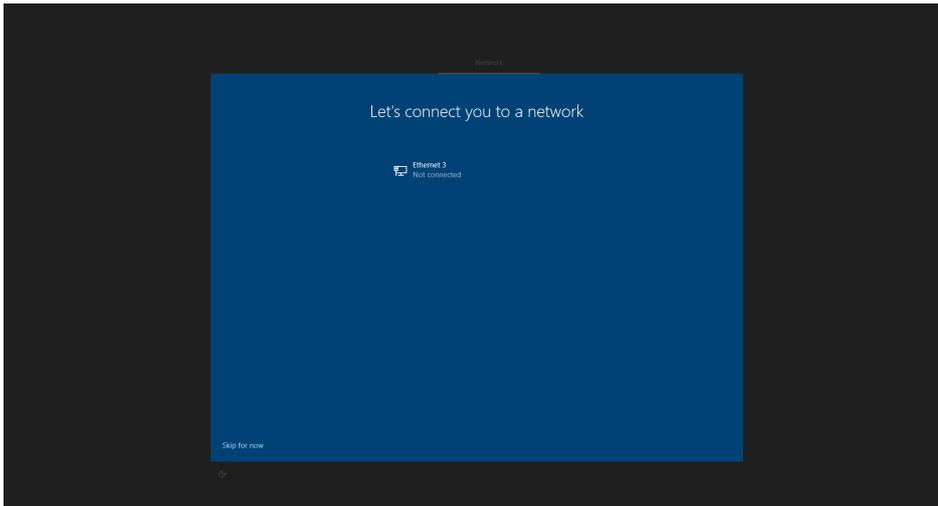
2. Select a keyboard layout.



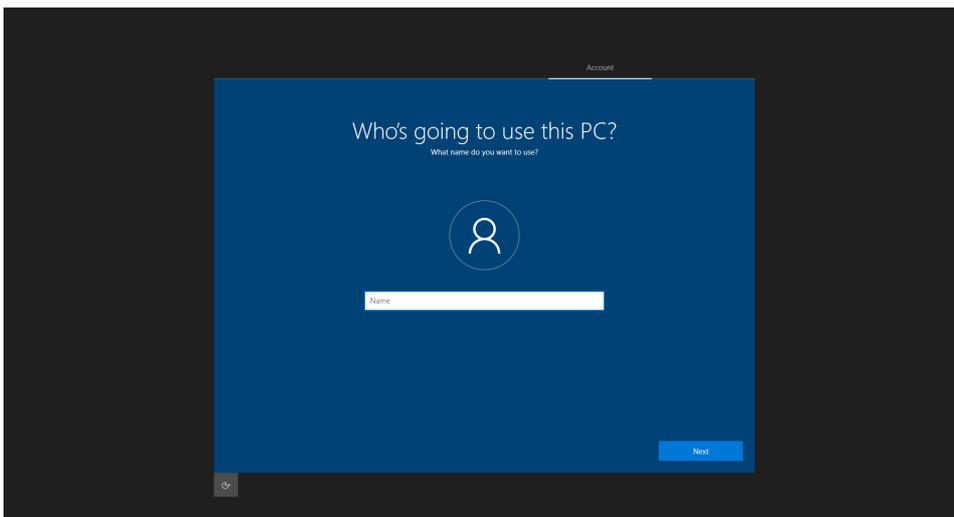
3. Select a second keyboard layout.



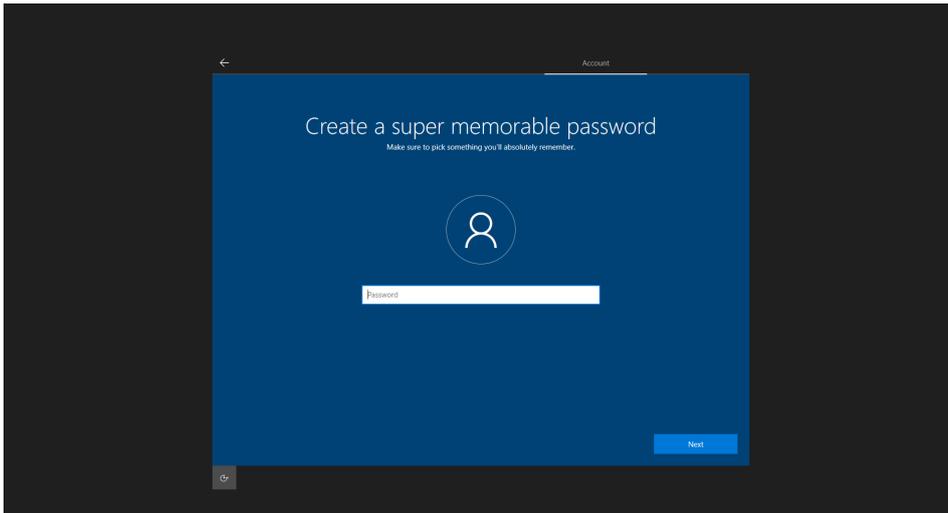
- 4. Connect to a network.



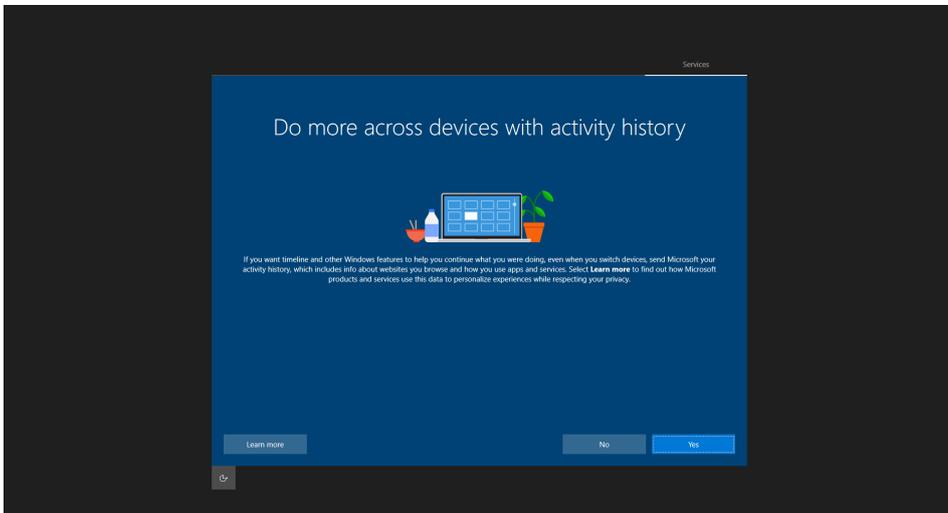
- 5. Sign in to, or create a local account or a Microsoft account (MSA).



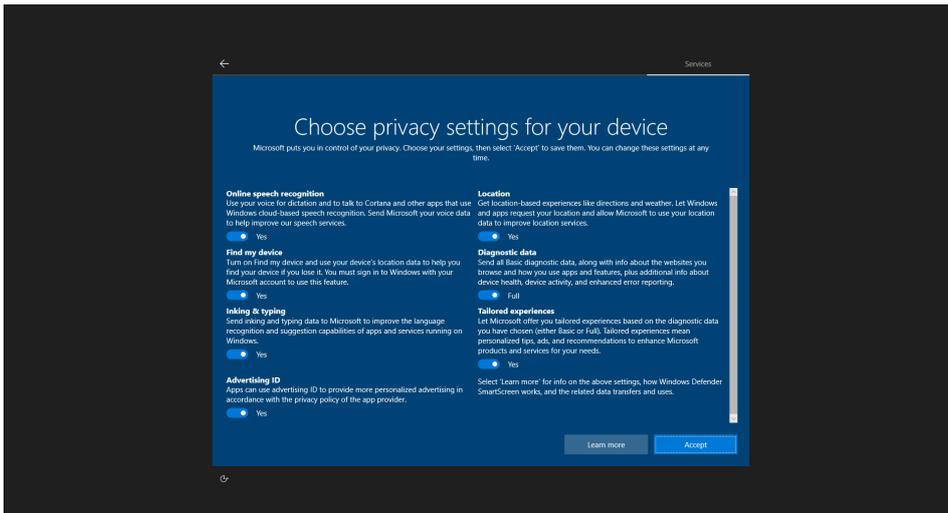
6. Create a password.



7. Do more across devices with activity history.

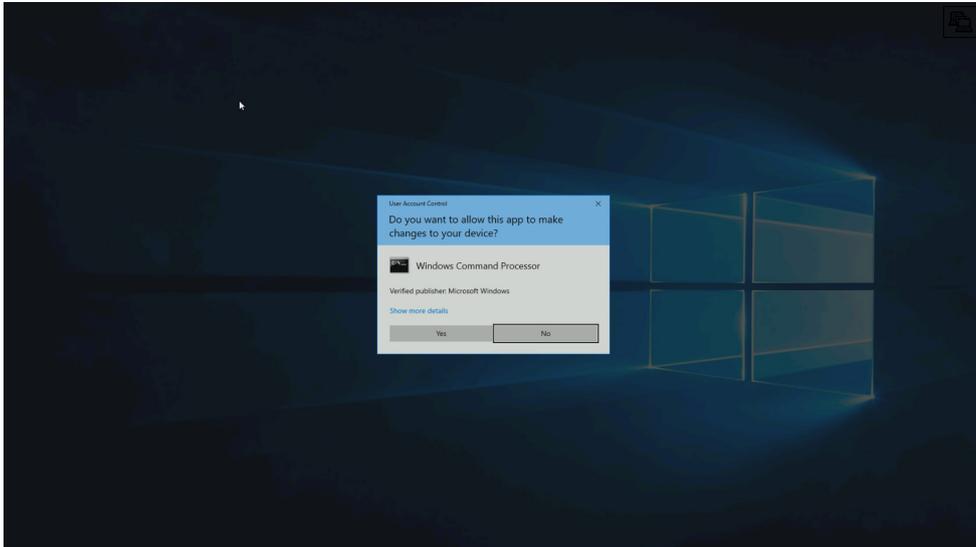


8. Choose privacy settings.

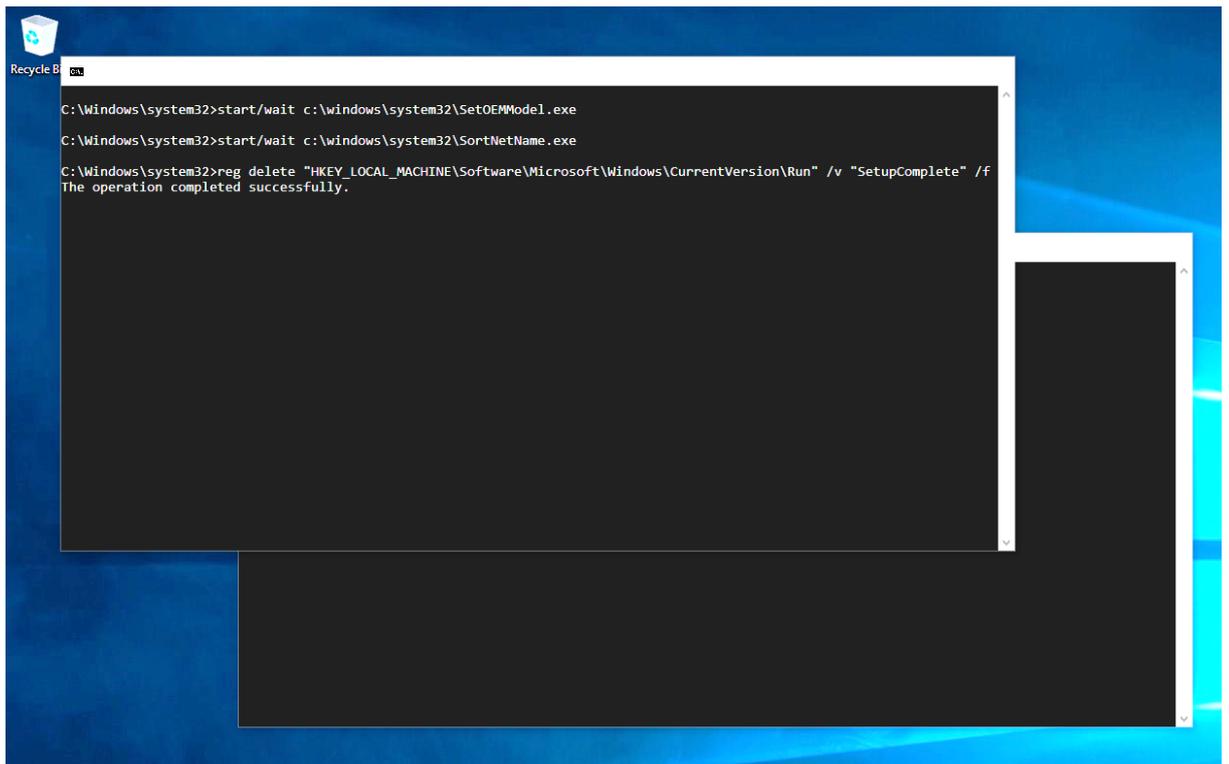


Initializing the System

1. When you sign in into the system for the first time, the Windows Command Processor will run and show the message "**Do you want to allow this app to make changes to your device?**" Click **Yes** to confirm.



2. Wait until the process is complete.



When the process is completed, the system is initialized.

Configuring the Serial Interface

In this chapter, we describe how to use the Moxa Serial Interface utility to set the UART mode in your DA-681C computer's serial interface.

The following topics are covered in this chapter:

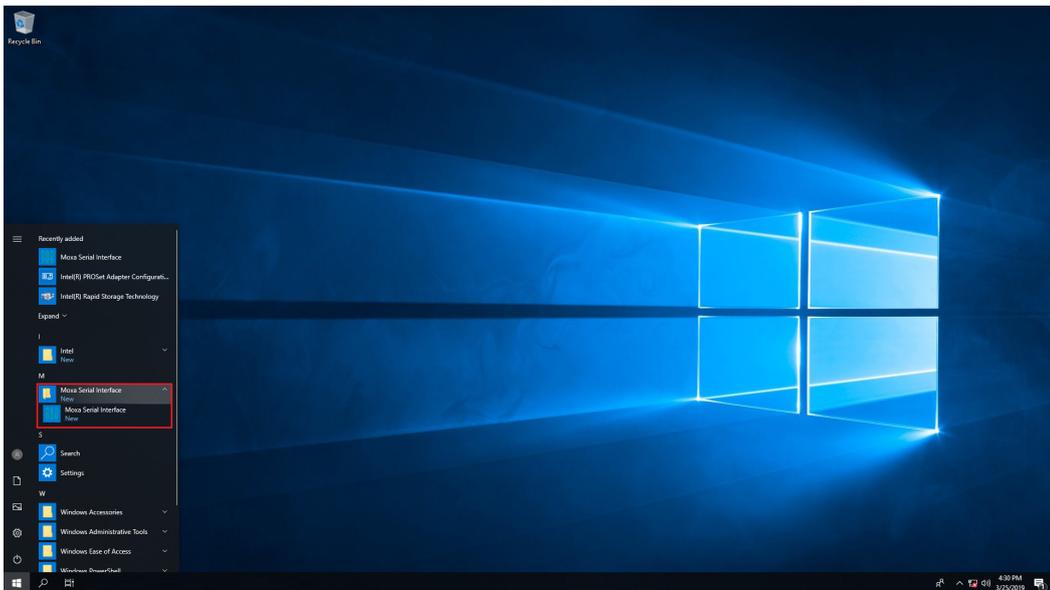
- **Overview**
- **Setting the UART Mode**

Overview

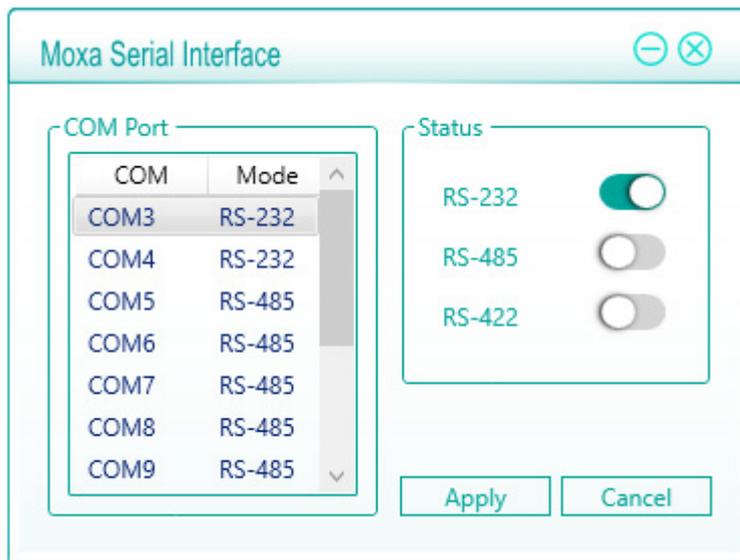
The DA-681C has two serial ports labeled COM1 and COM2. Each serial port can be configured to use any one of the following serial interface modes: **RS-232**, **RS-485-2-wire**, or **RS-422/RS-485-4-wire**.

Setting the UART Mode

1. Install the Moxa Serial Interface utility.
2. From the Windows programs menu, run the Moxa Serial Interface utility.



3. Select the target COM port and UART mode, click **Apply** to save the settings.
The COM ports applicable for the DA-681C are **COM3 to COM14**.



3

Teaming

This chapter describes the setup process for the Intel® Teaming function.

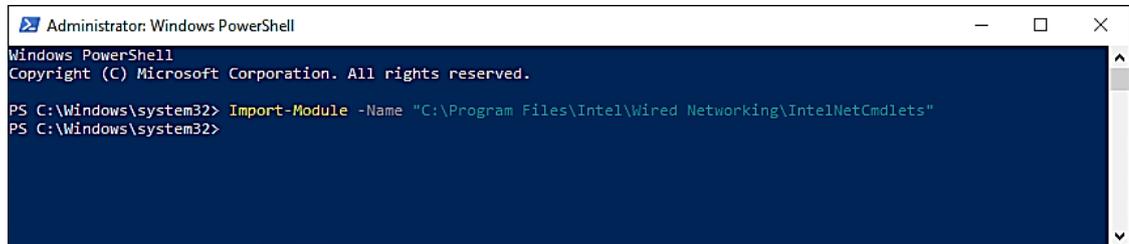
The following topics are covered in this chapter:

- ❑ **Creating an Intel® Net Team**
- ❑ **Adding an Intel® Net Team Member**
- ❑ **Removing an Intel® Net Team Member**
- ❑ **Removing an Intel® Net Team**

Creating an Intel® Net Team

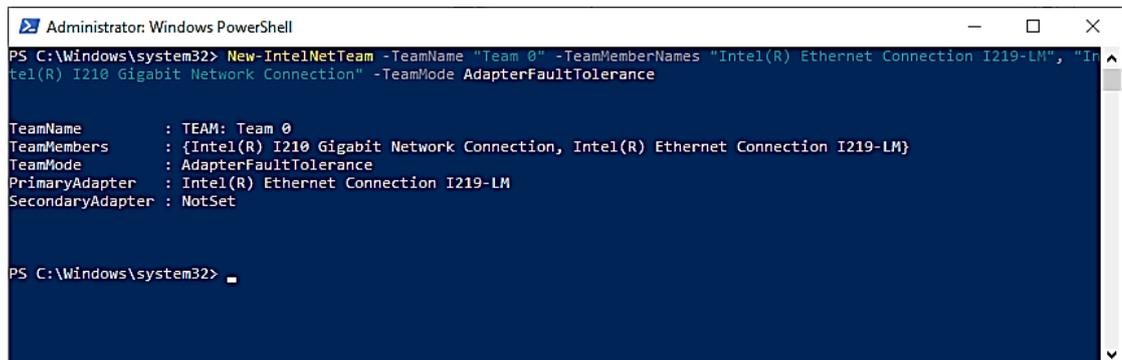
1. Run the Windows PowerShell as an **Administrator**.
2. Run the following command:

```
Import-Module -Name "C:\Program Files\Intel\Wired Networking\IntelNetCmdlets"
```

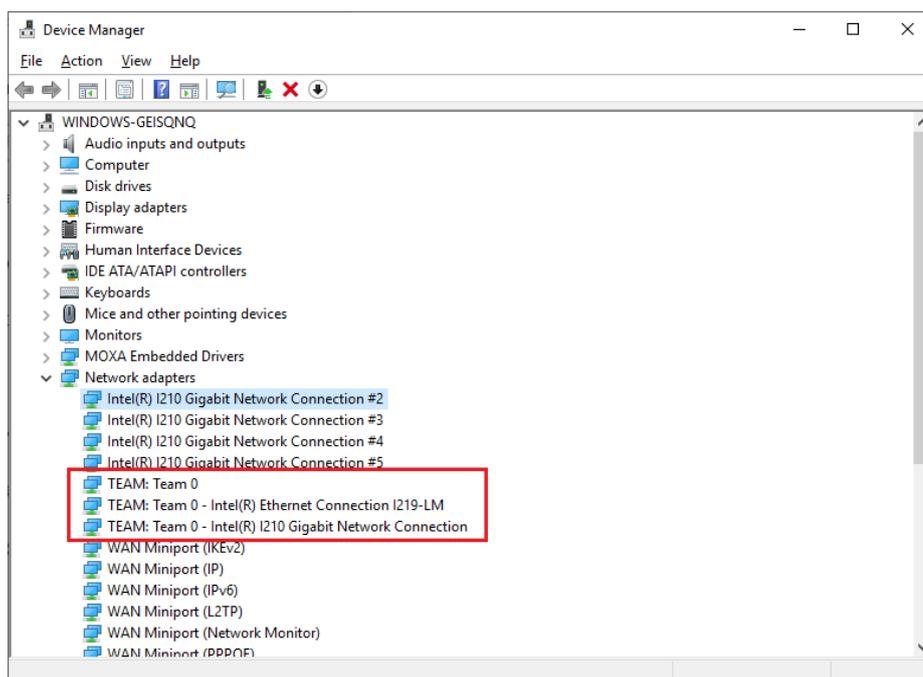


3. Run the **New-IntelNetTeam** command.

This command creates a new Intel ANS team consisting of one or more adapters. A team may consist of both Intel and non-Intel adapters. Adapter objects obtained using the **Get-IntelNetAdapter** command can be passed into this cmdlet using the **TeamMembers** parameter.



4. Check the Network adapters in the Windows Device Manager to confirm the creation of the Intel Net Team adapter.

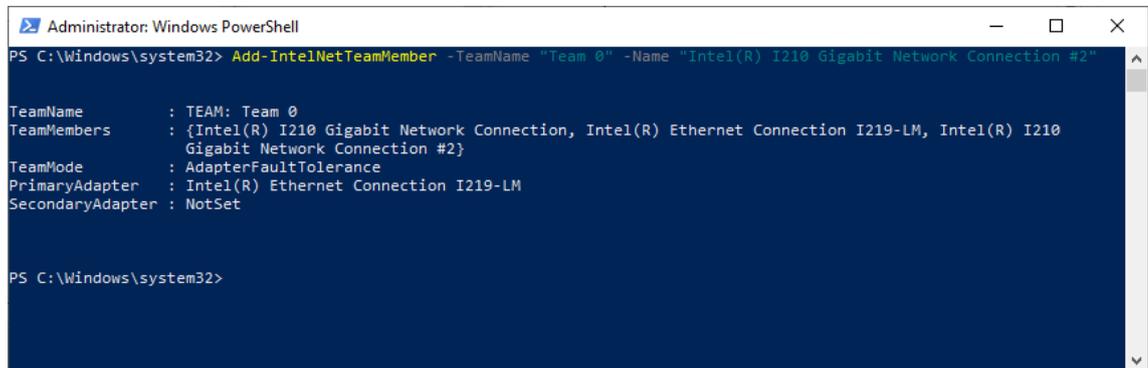


Adding an Intel® Net Team Member

1. Run the **Add-IntelNetTeamMember** command.

This command adds a new team member to an existing Intel® Advanced Network Services (Intel® ANS) Team.

2. The new team member can be piped into the cmdlet or passed in using the adapter's name. An Intel ANS team can contain a maximum of eight members.

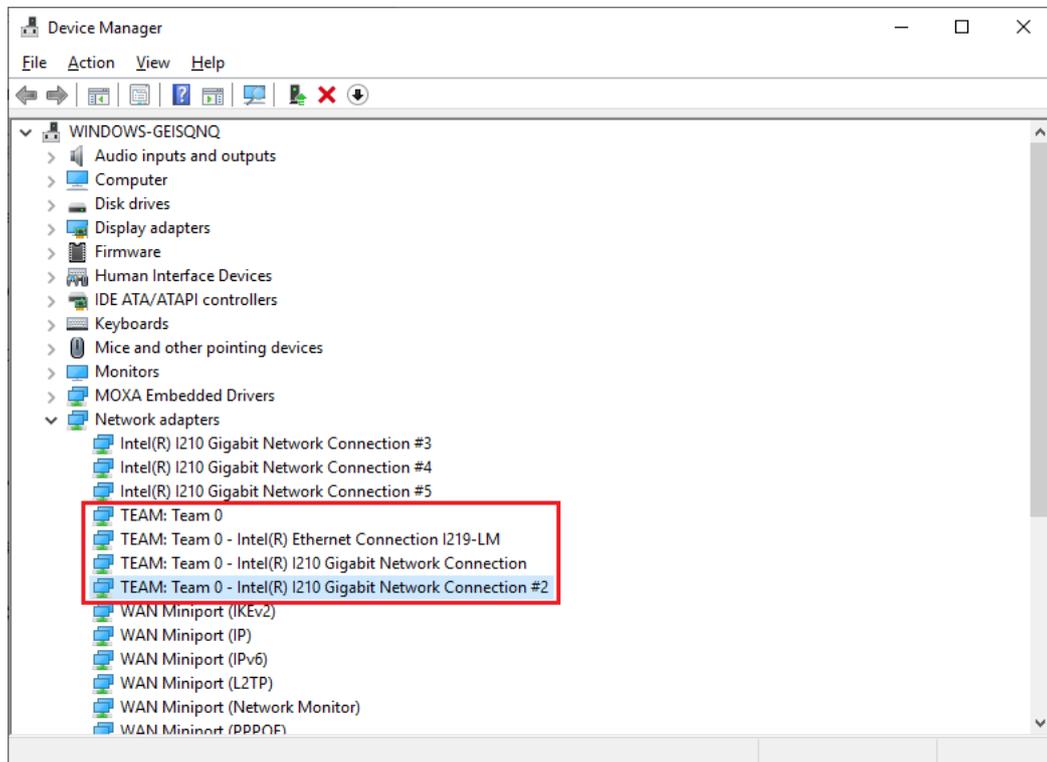


```
Administrator: Windows PowerShell
PS C:\Windows\system32> Add-IntelNetTeamMember -TeamName "Team 0" -Name "Intel(R) I210 Gigabit Network Connection #2"

TeamName       : TEAM: Team 0
TeamMembers    : {Intel(R) I210 Gigabit Network Connection, Intel(R) Ethernet Connection I219-LM, Intel(R) I210
                 Gigabit Network Connection #2}
TeamMode       : AdapterFaultTolerance
PrimaryAdapter : Intel(R) Ethernet Connection I219-LM
SecondaryAdapter : NotSet

PS C:\Windows\system32>
```

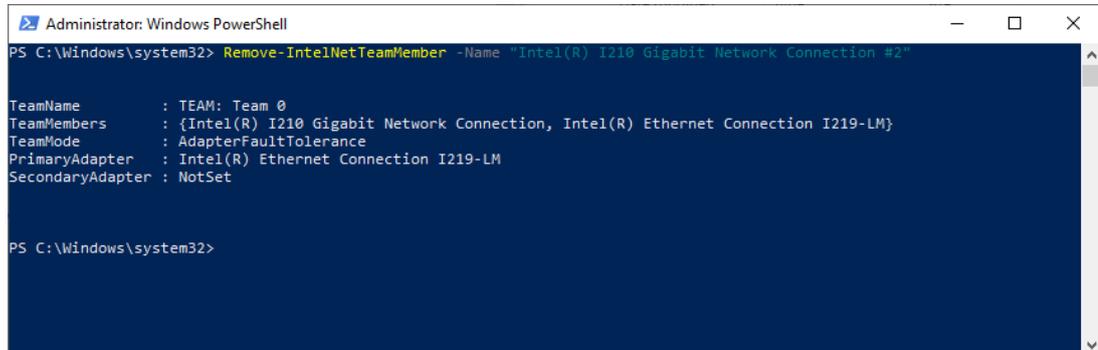
3. Check the Network adapters in the Windows Device Manager to confirm the addition.



Removing an Intel® Net Team Member

1. Run the `Remove-IntelNetTeamMember` command.

Allows users to remove a team member from an Intel ANS team. The team member can be piped into the cmdlet or passed in using a team member's name.

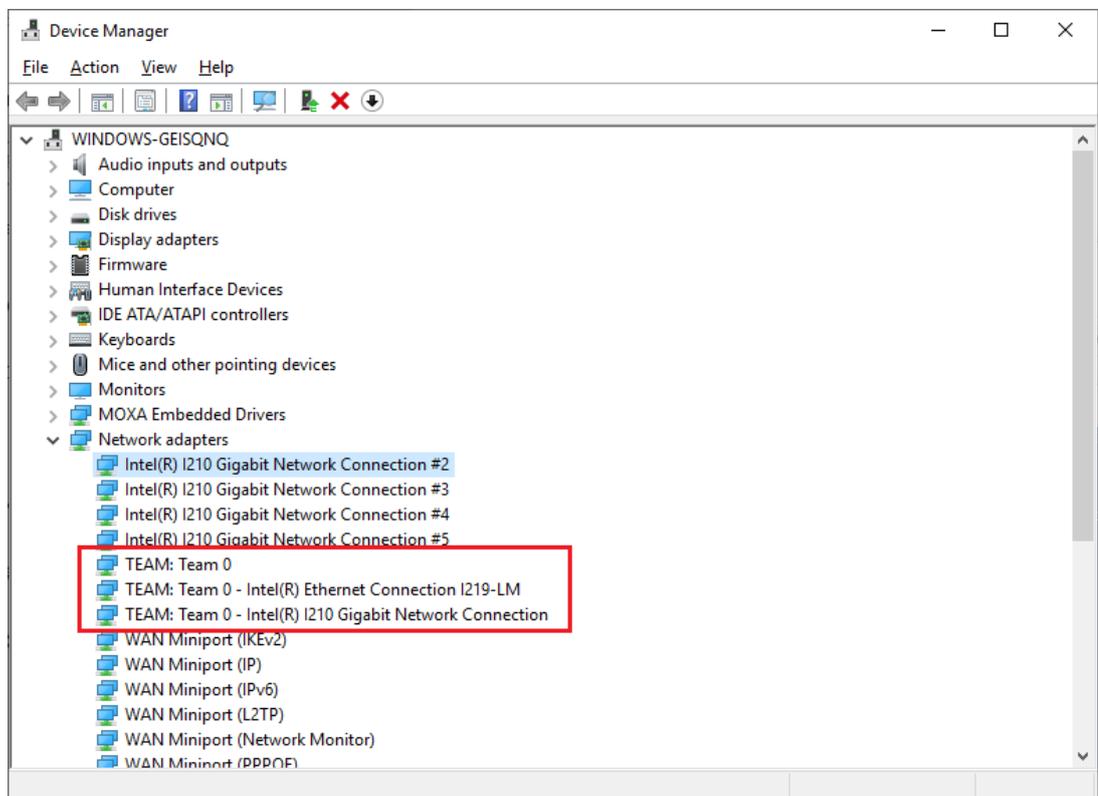


```
Administrator: Windows PowerShell
PS C:\Windows\system32> Remove-IntelNetTeamMember -Name "Intel(R) I210 Gigabit Network Connection #2"

TeamName      : TEAM: Team 0
TeamMembers   : {Intel(R) I210 Gigabit Network Connection, Intel(R) Ethernet Connection I219-LM}
TeamMode      : AdapterFaultTolerance
PrimaryAdapter : Intel(R) Ethernet Connection I219-LM
SecondaryAdapter : NotSet

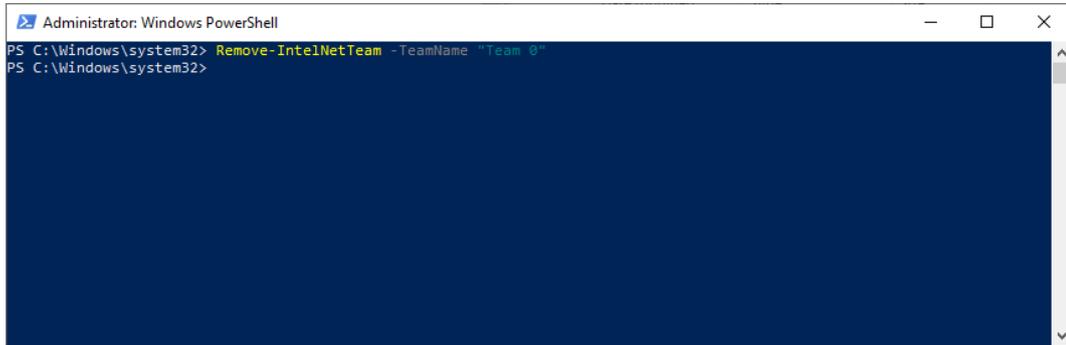
PS C:\Windows\system32>
```

2. Check the Network Adapters in Device Manager to confirm the change.



Removing an Intel® Net Team

The `Remove-IntelNetTeam` command removes a specified Intel ANS team.



```
Administrator: Windows PowerShell
PS C:\Windows\system32> Remove-IntelNetTeam -TeamName "Team 0"
PS C:\Windows\system32>
```

4

BitLocker

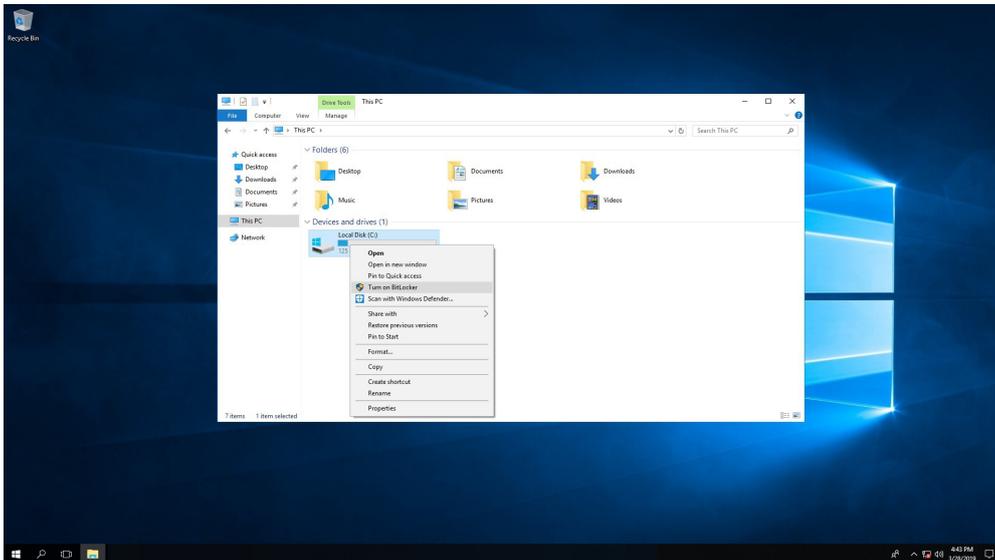
This chapter describes the BitLocker setup process. You must install the TPM module on your computer before you can enable the BitLocker function.

The following topics are covered in this chapter:

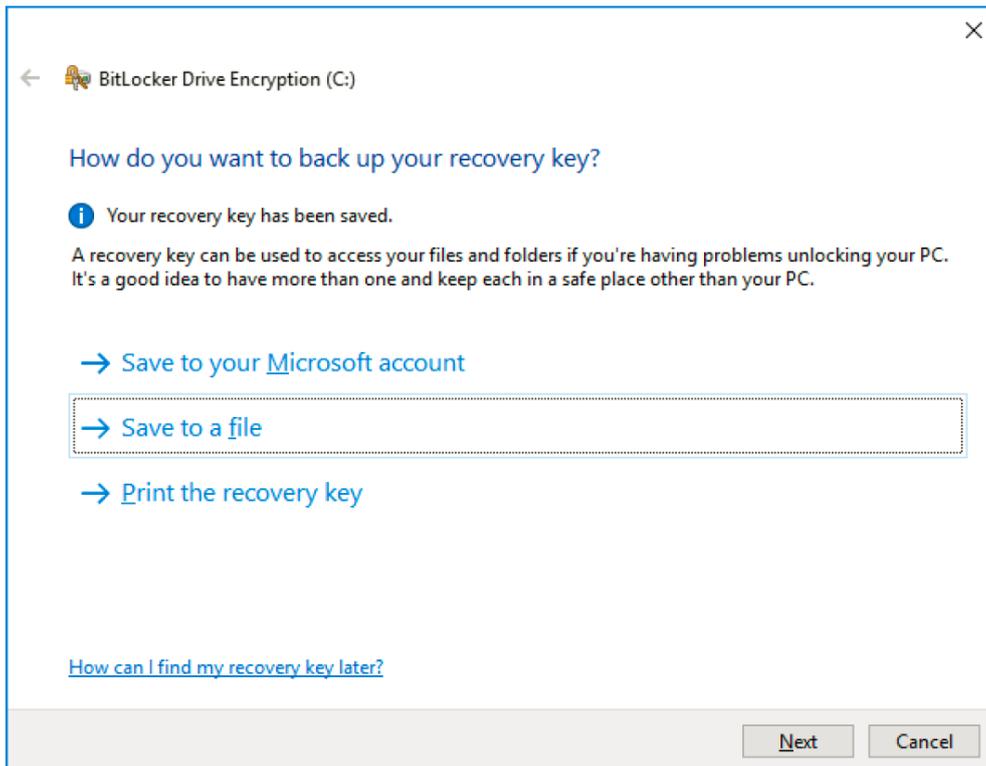
- ❑ **Enabling BitLocker**
- ❑ **Disabling BitLocker**

Enabling BitLocker

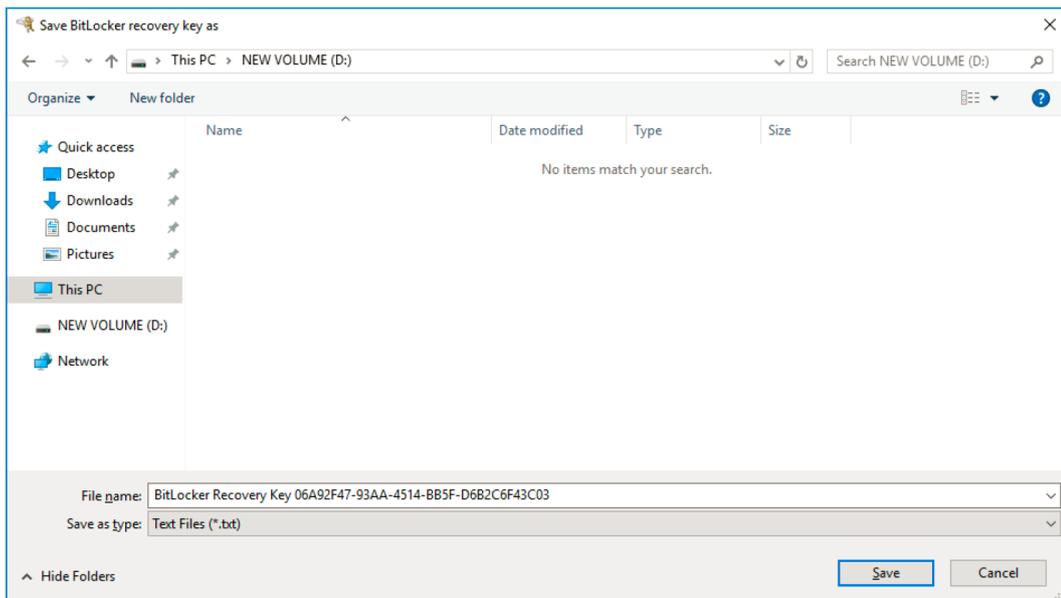
1. To enable the BitLocker function on a drive, right-click on the drive and select the **Turn on BitLocker** option.



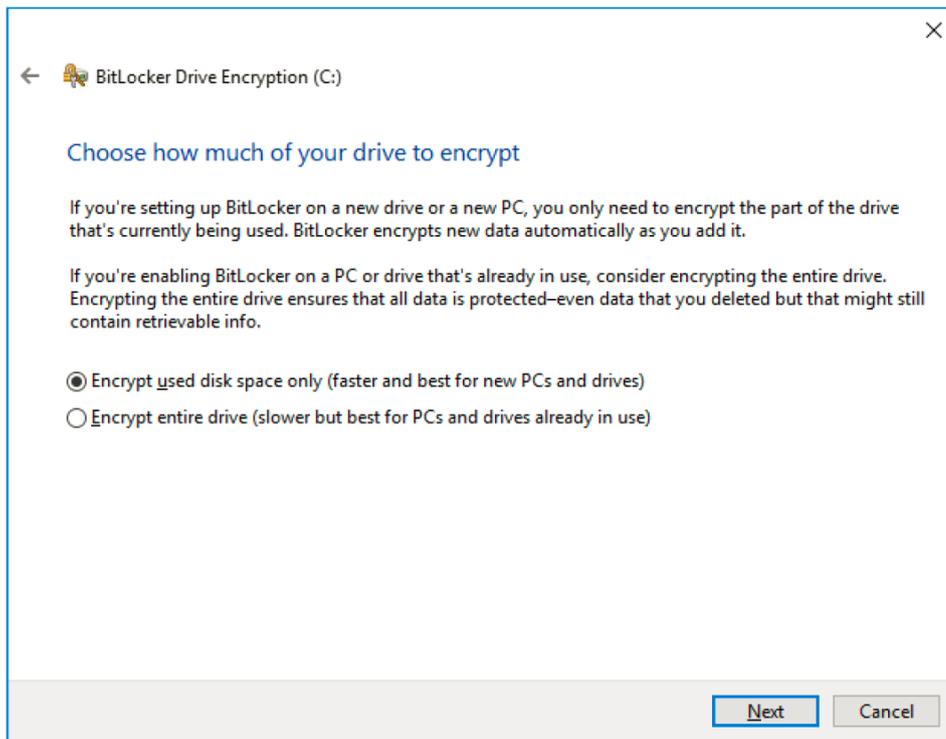
2. Specify the method to back up the recovery key.
For example, select **Save to a file**.

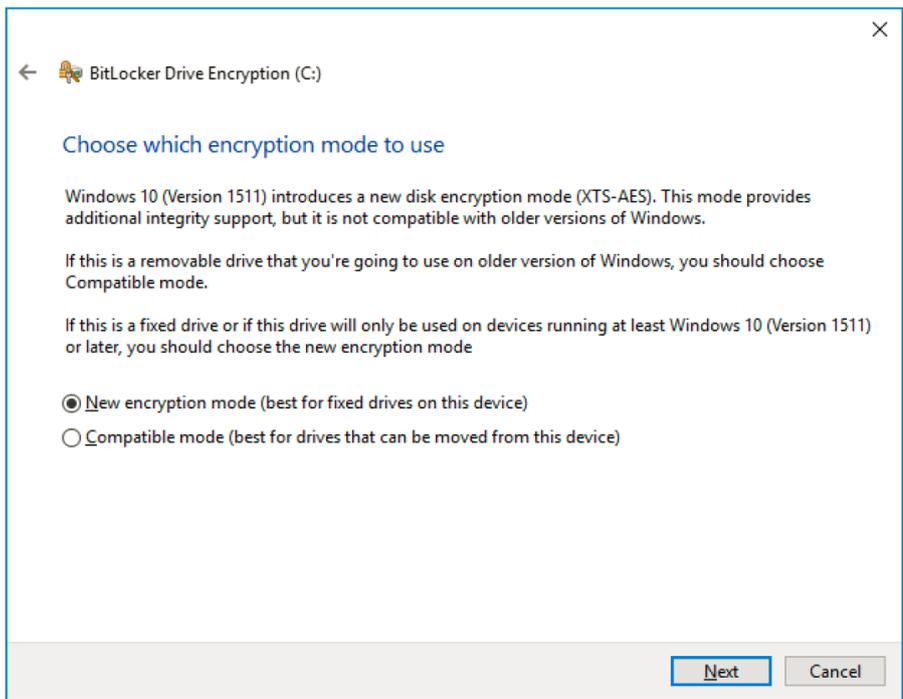


3. Select the path to store the file in.

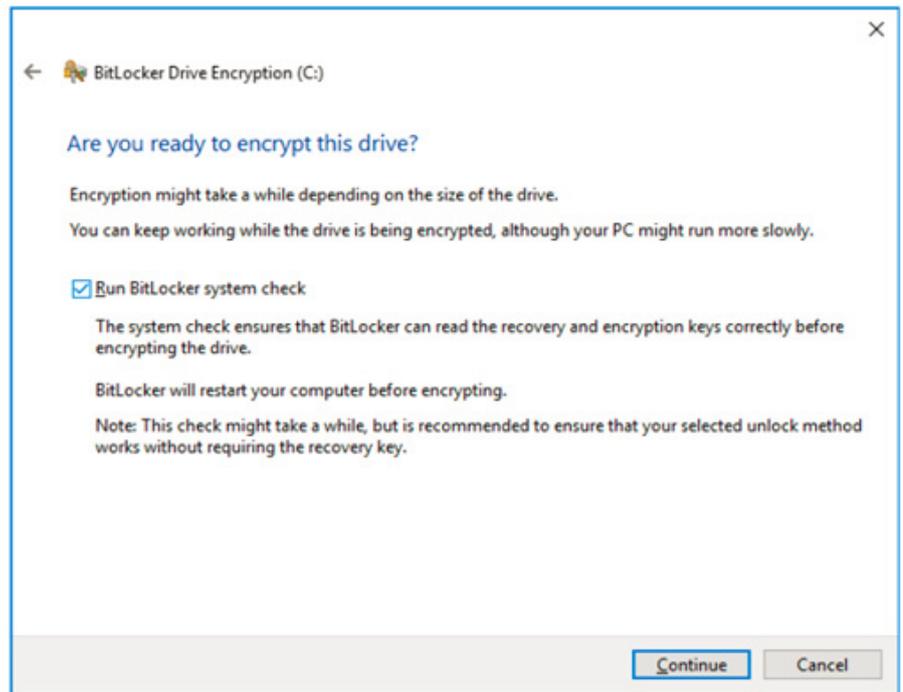


4. Follow the onscreen instructions to specify the drive encryption options.





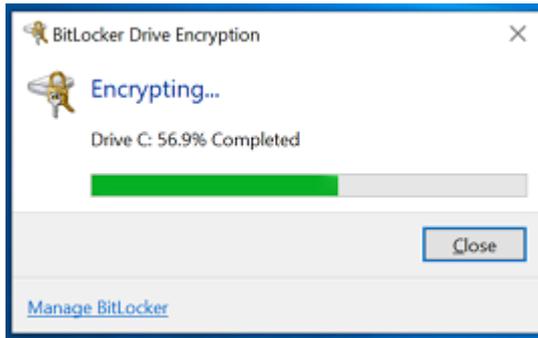
5. Click **Continue**.



6. Restart the computer.

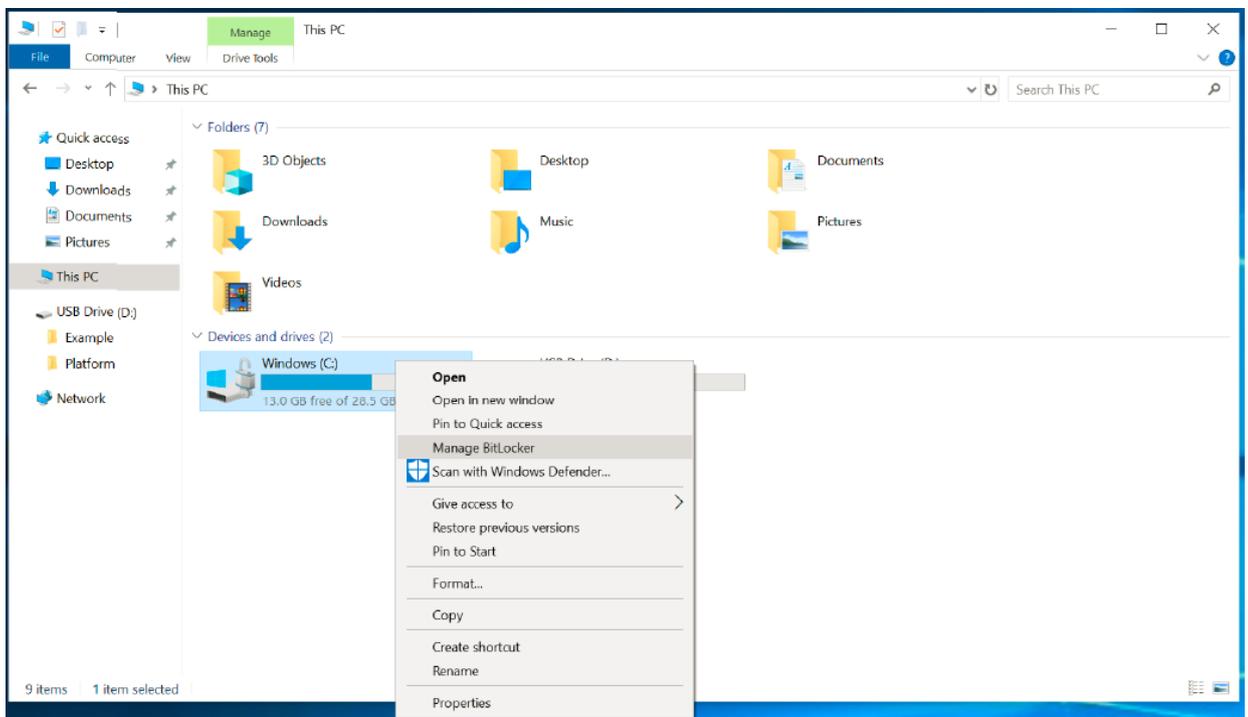


7. Wait for the encryption process to complete and click **Close**.



Disabling BitLocker

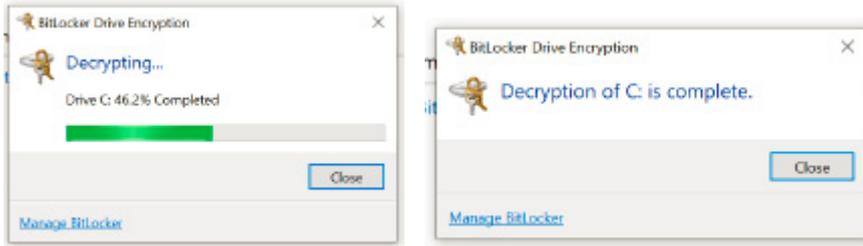
1. Right-click on the drive and select the **Manage BitLocker** option



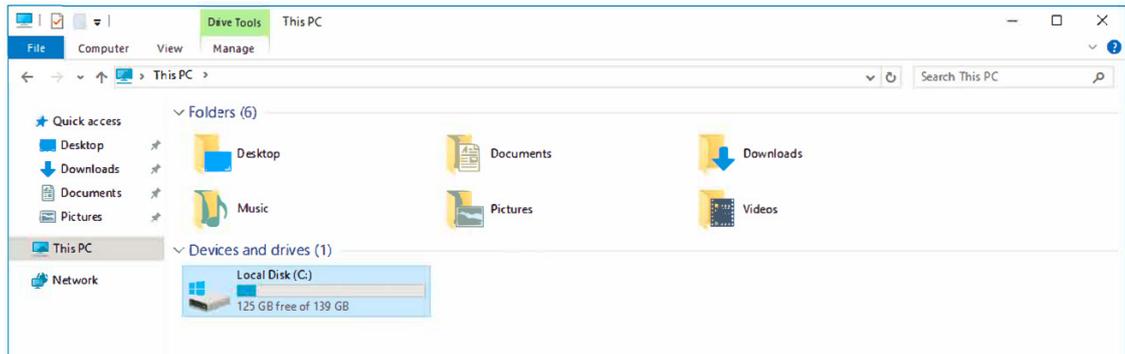
2. Click on the **Turn off BitLocker** button.



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



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



Configuring RAID

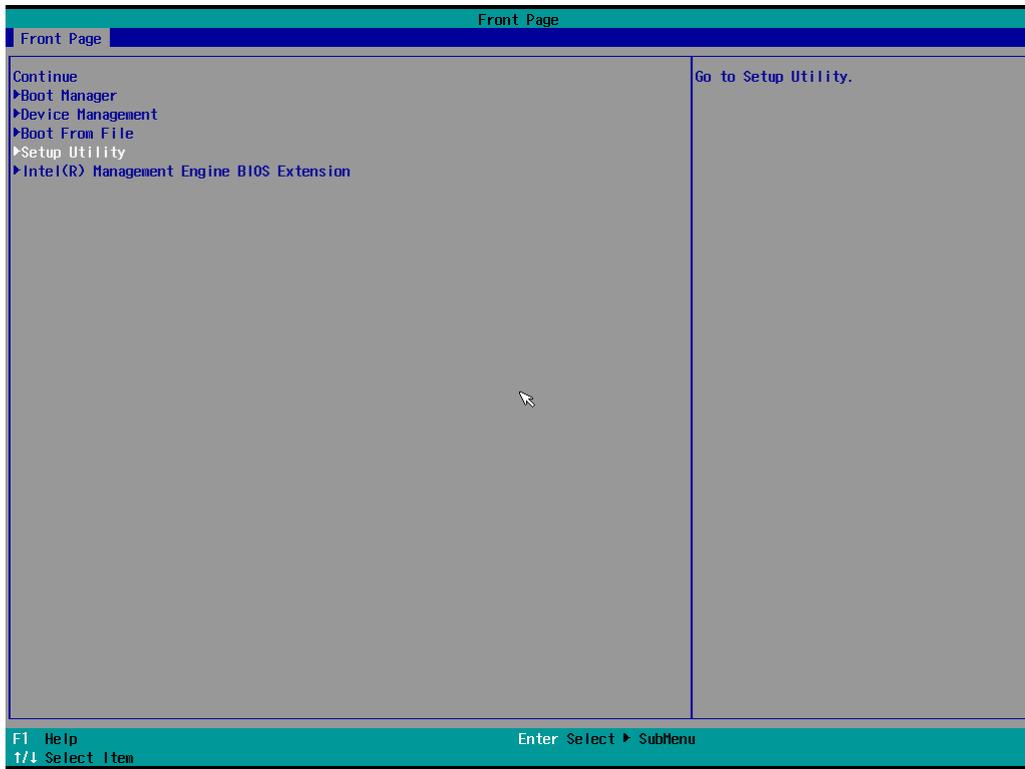
This chapter describes the setup process for RAID.

The following topics are covered in this chapter:

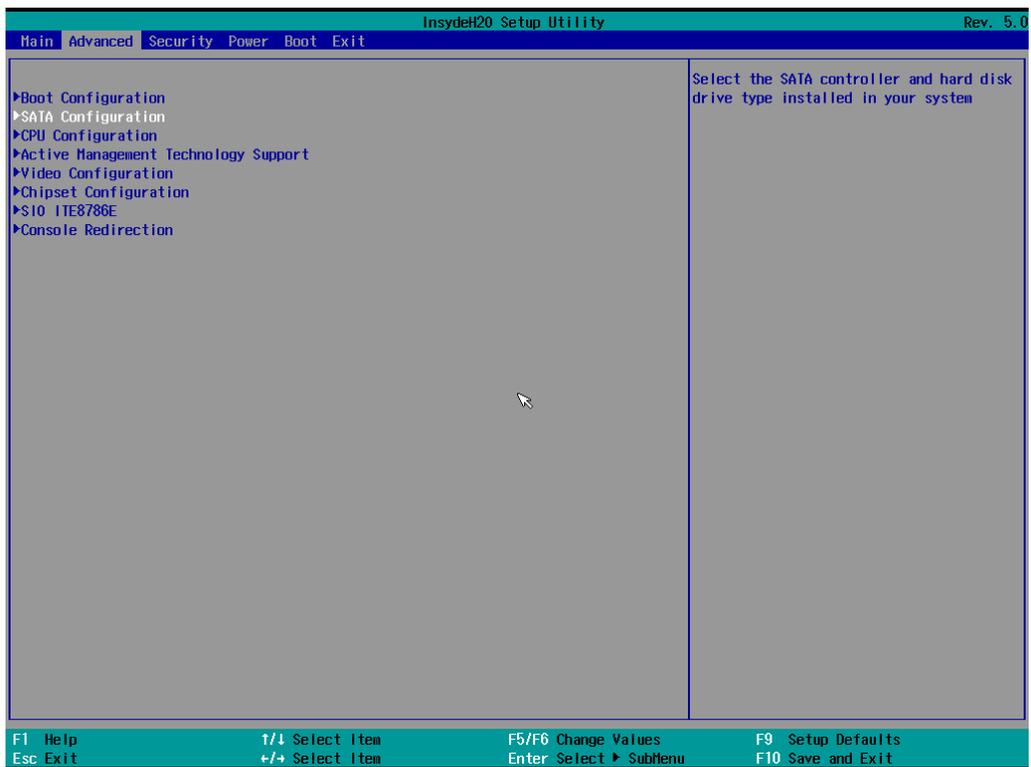
- ❑ **Changing the RAID Mode**
- ❑ **Creating a RAID Disk in BIOS**
- ❑ **Replacing a Disk**
- ❑ **Removing a RAID Volume in the BIOS**

Changing the RAID Mode

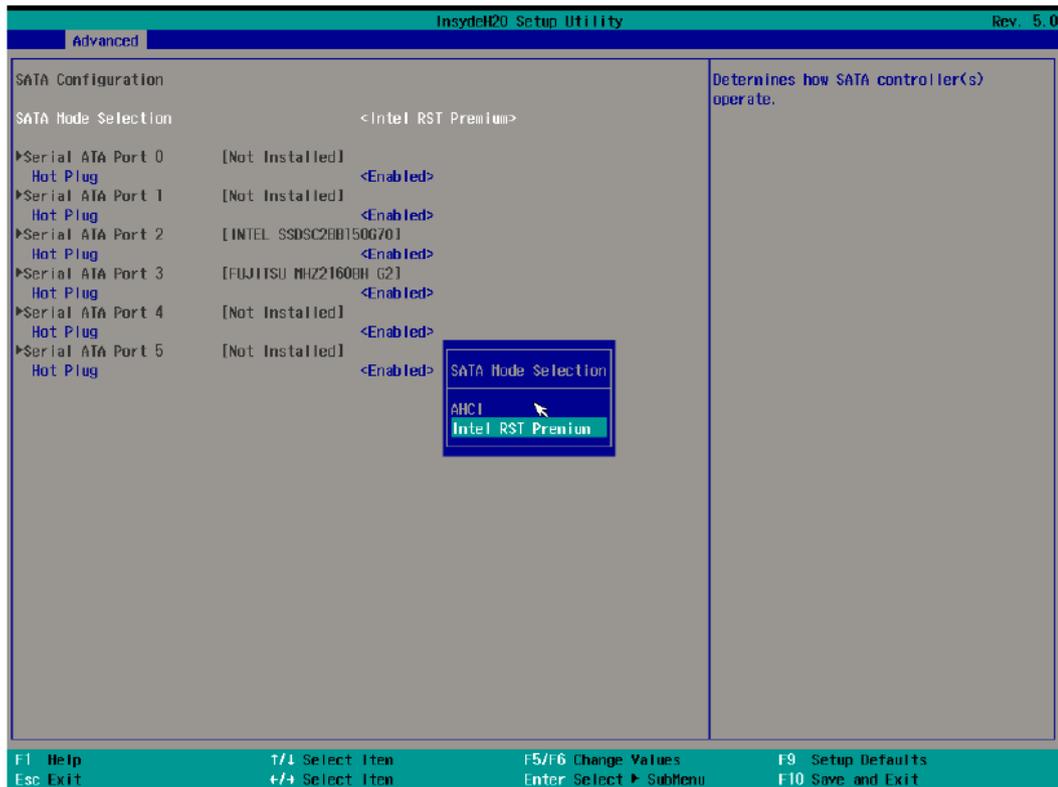
1. Power on the computer and press F2 to enter the BIOS menu.
2. Select the **Setup Utility** option.



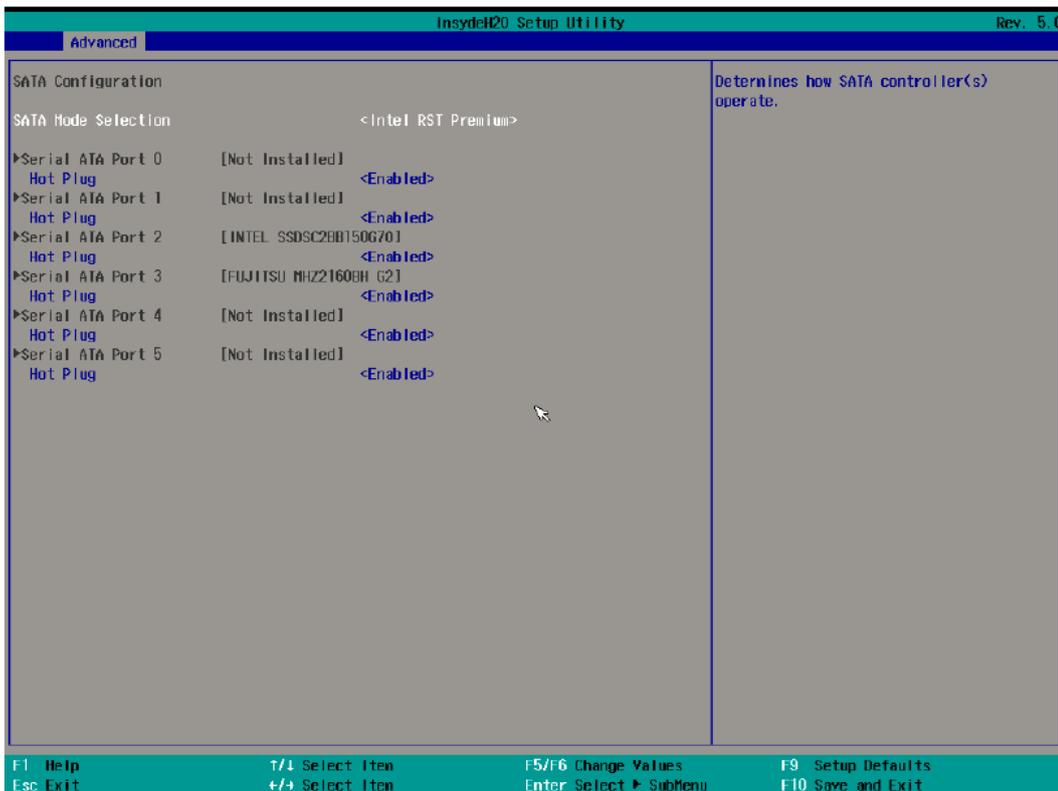
3. Select the **SATA Configuration** option.



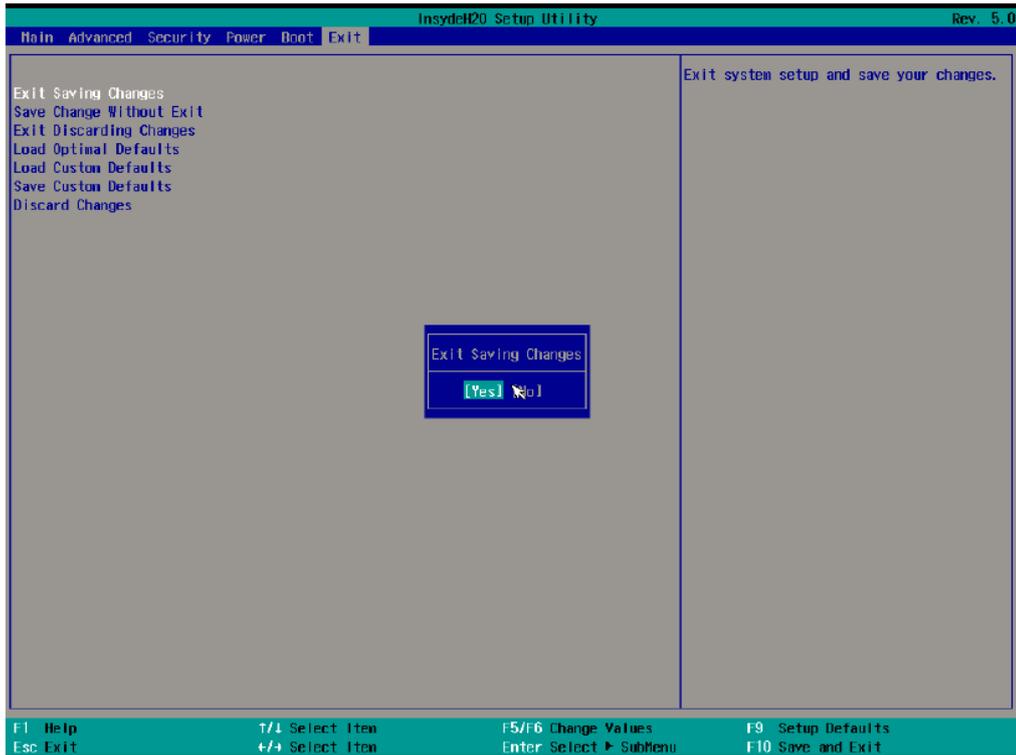
4. Select the **SATA Mode Selection** option followed by the **Intel RST Premium** and then enable the **Hot Plug** function on each port.



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

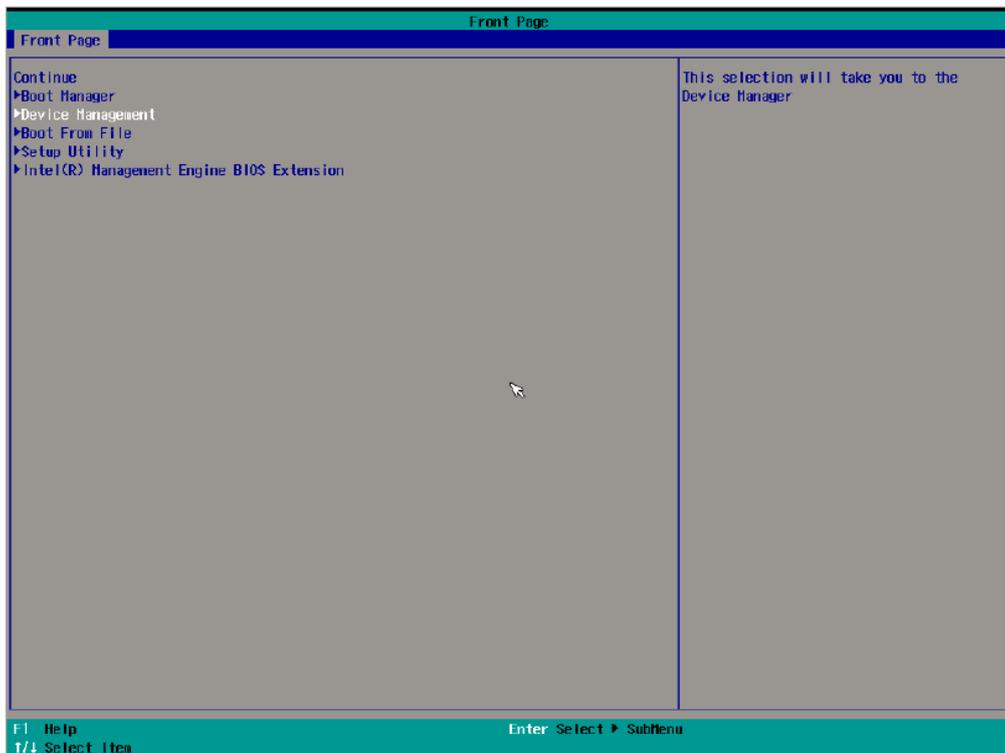


Click the **Exit** for options to exit the setup utility.

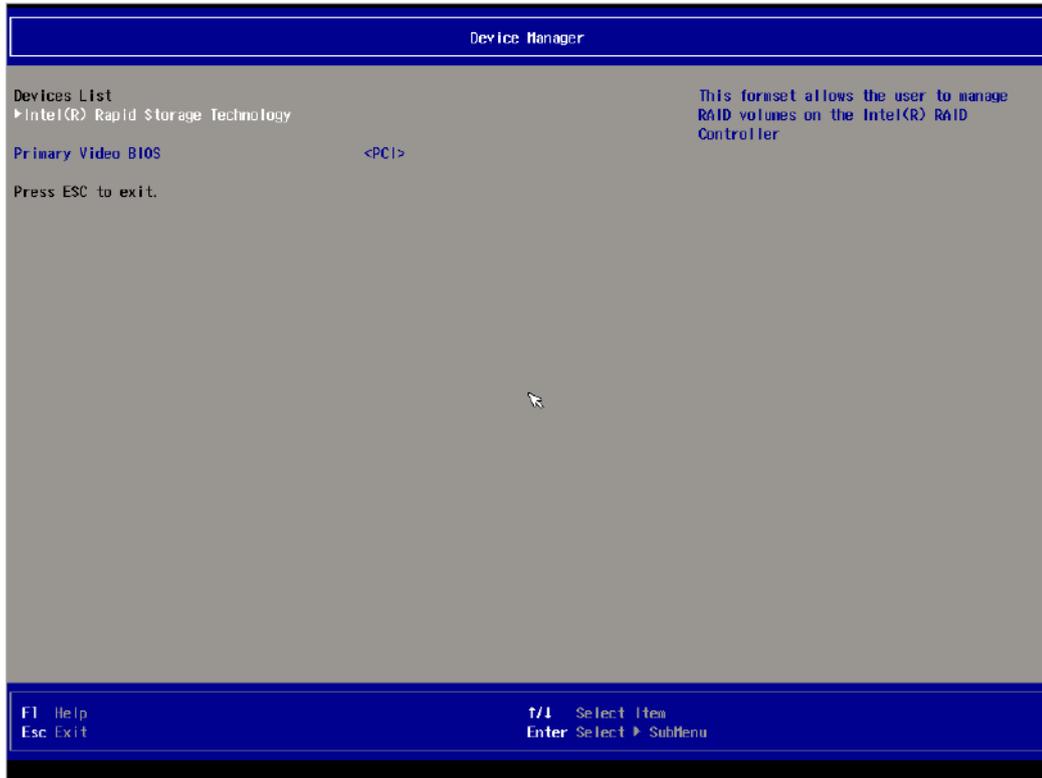


Creating a RAID Disk in BIOS

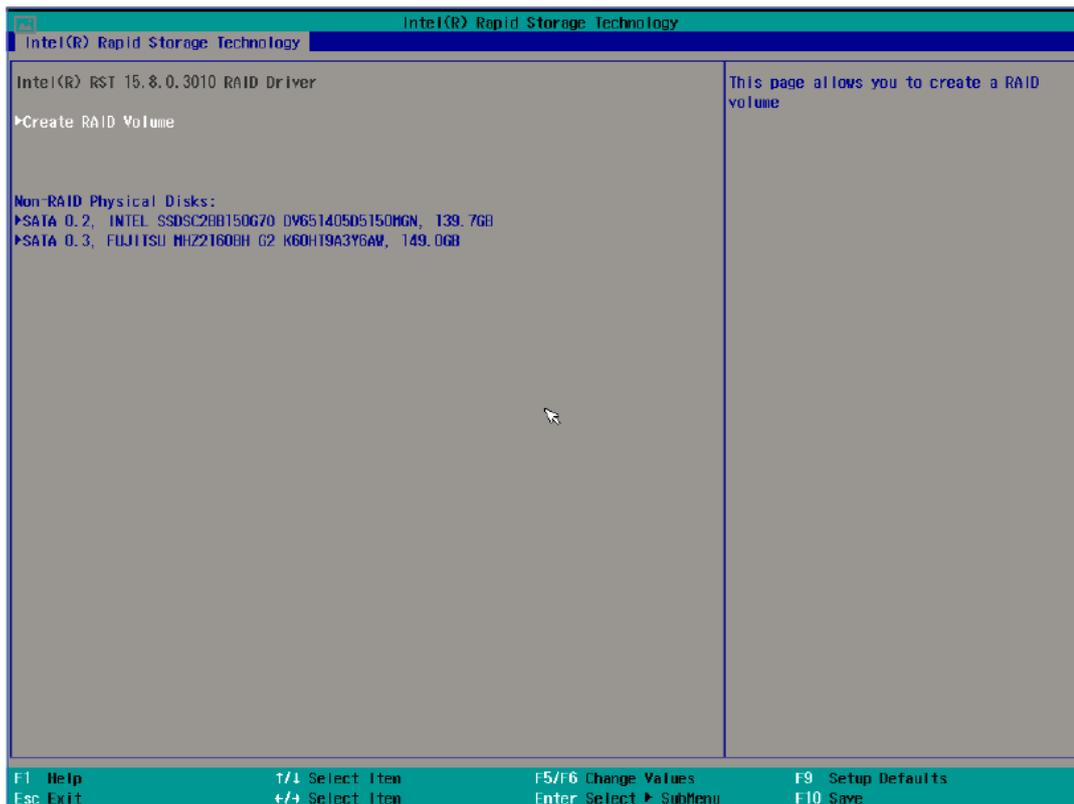
1. Power on the computer and press **F2** to enter the BIOS menu.
2. Select the **Device Management** option.



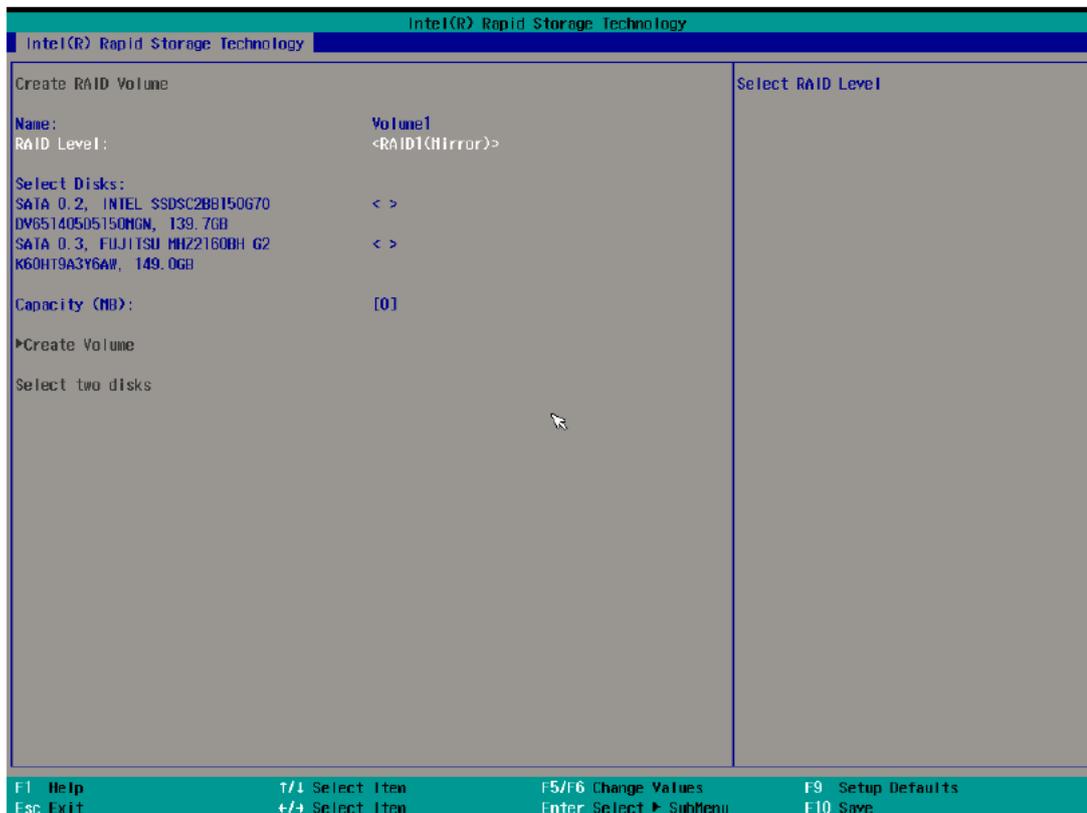
- 3. Select the **Intel(R) Rapid Storage Technology** option.



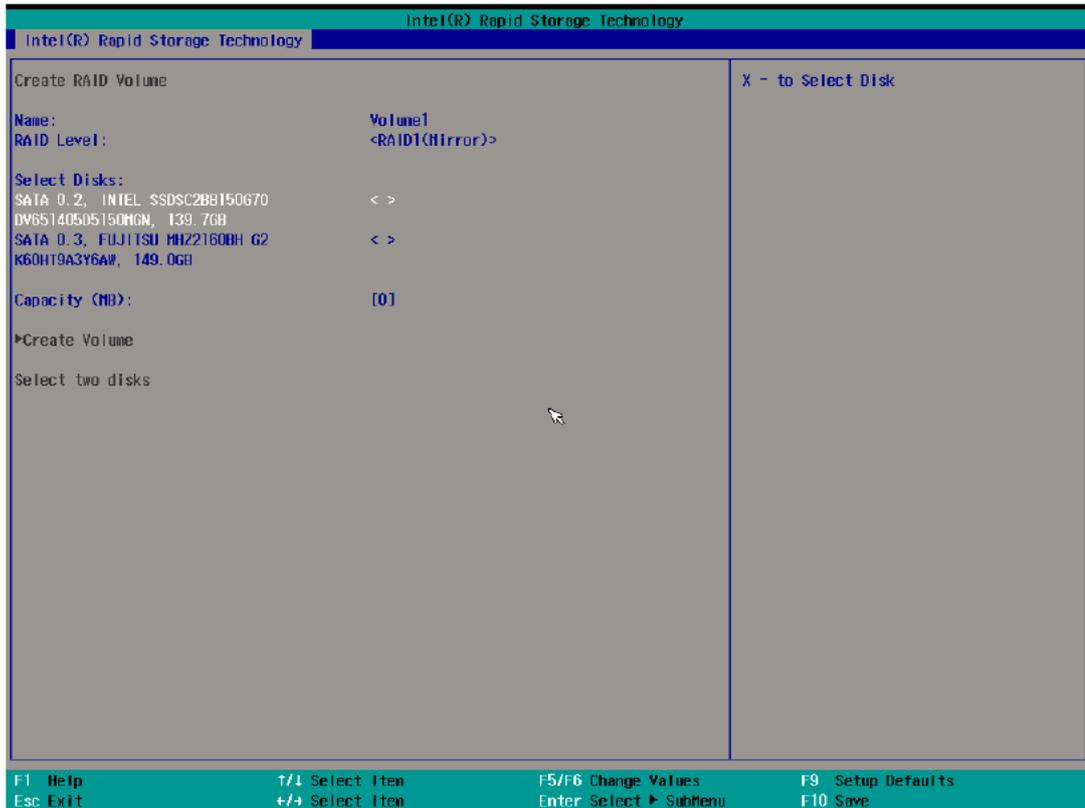
- 4. Select the **Create RAID Volume** option.



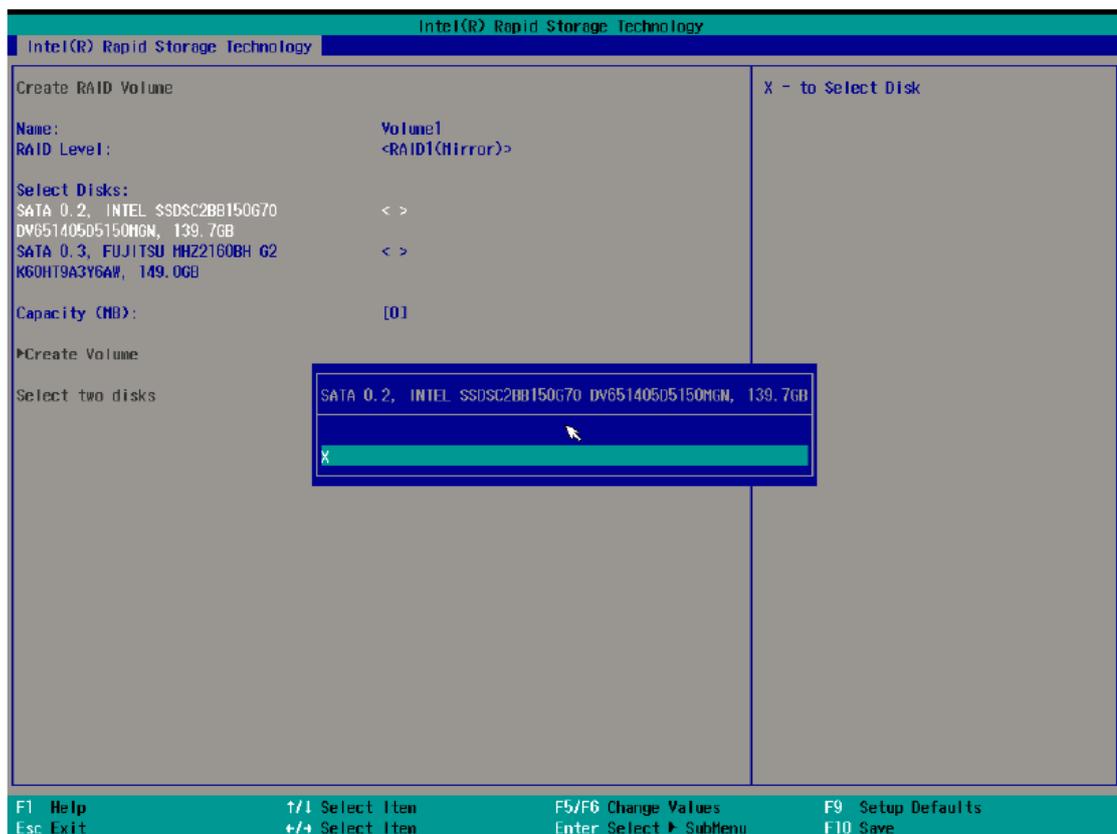
5. Select the **RAID Level** option and then press **Enter** to select the raid level. For example, **RAID1(Mirror)**.

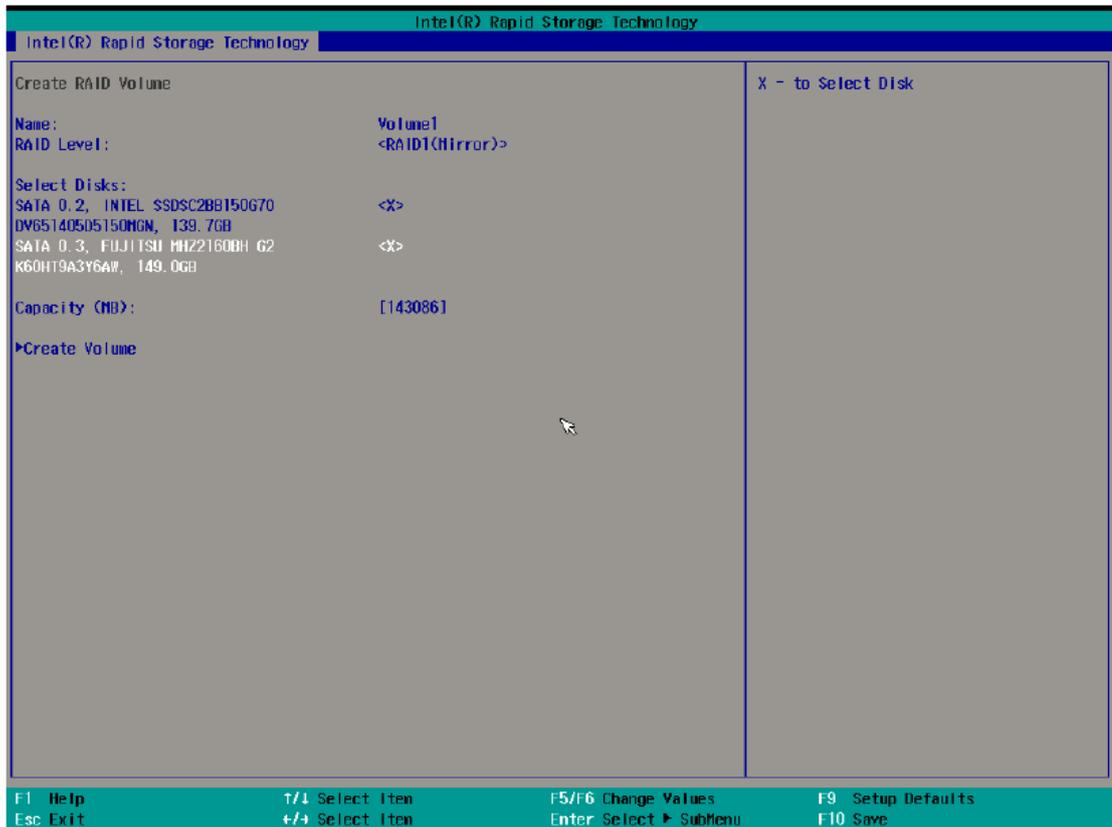


6. Select the disk and then press **Enter**.

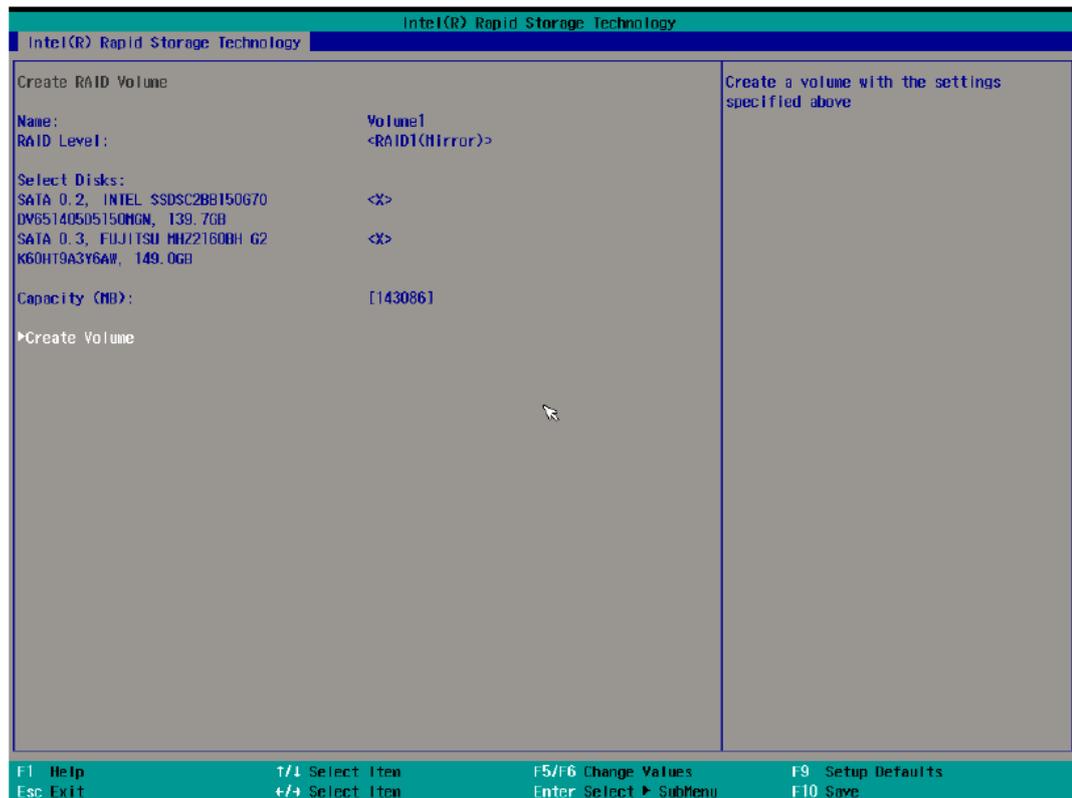


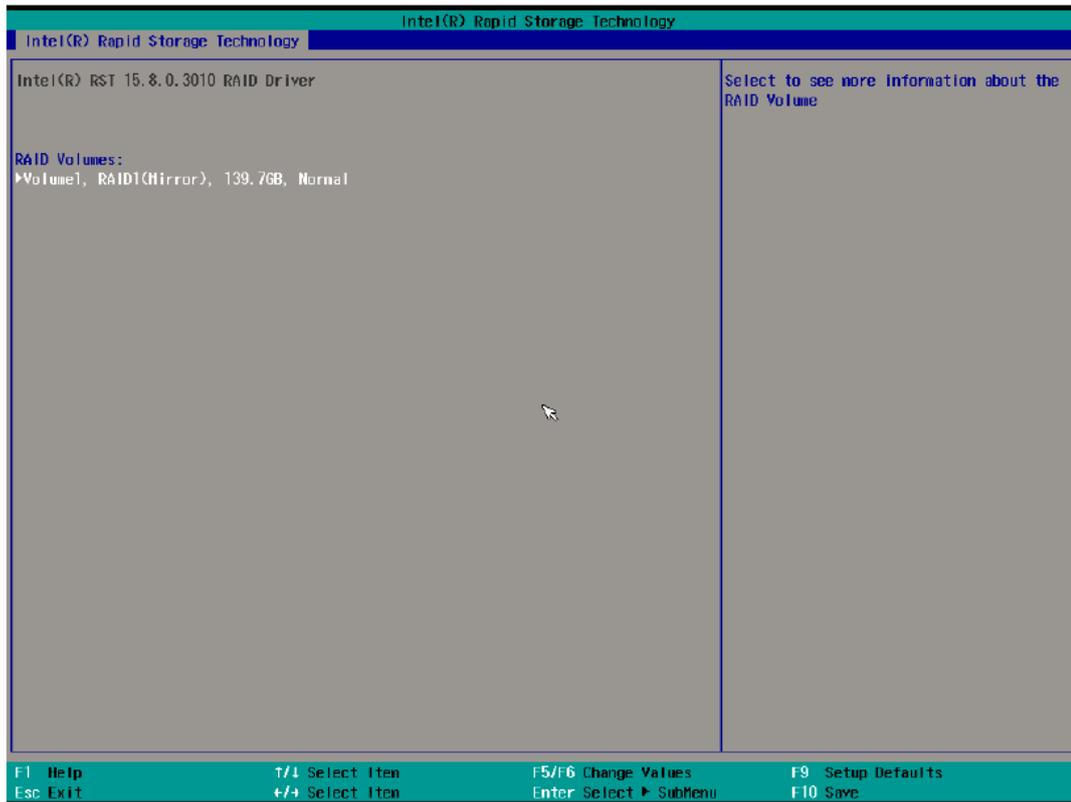
7. Use the up/down arrow key to select the disk and press **Enter**.





8. Select the **Create Volume** option.



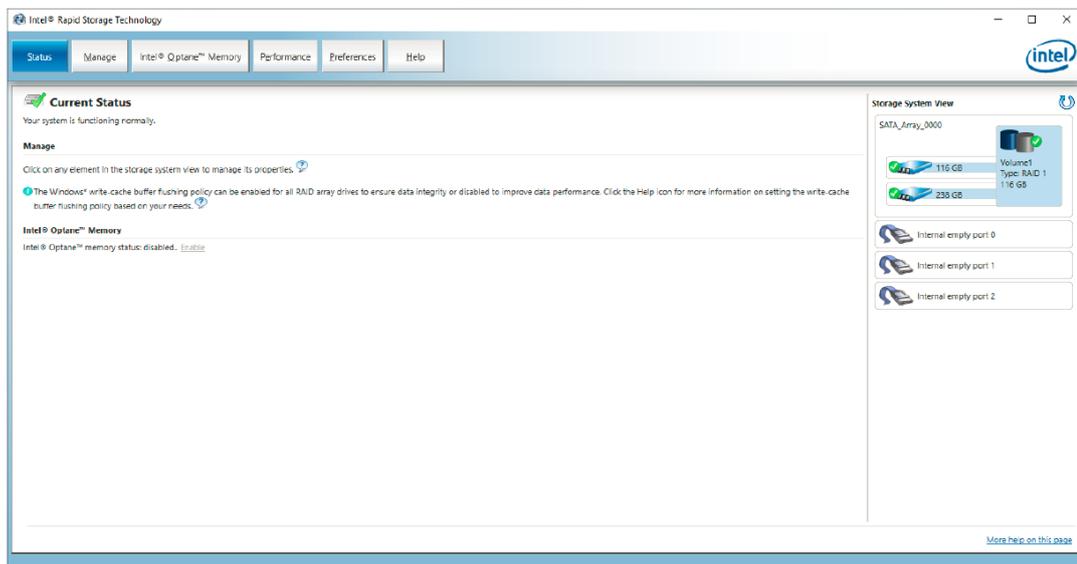


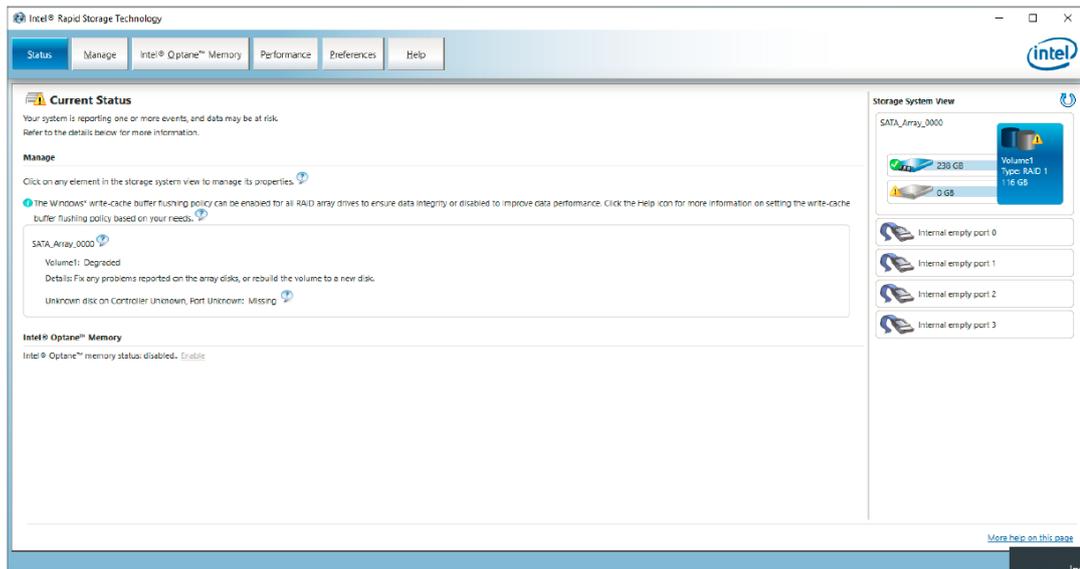
9. Press **F10** to save the settings.

Replacing a Disk

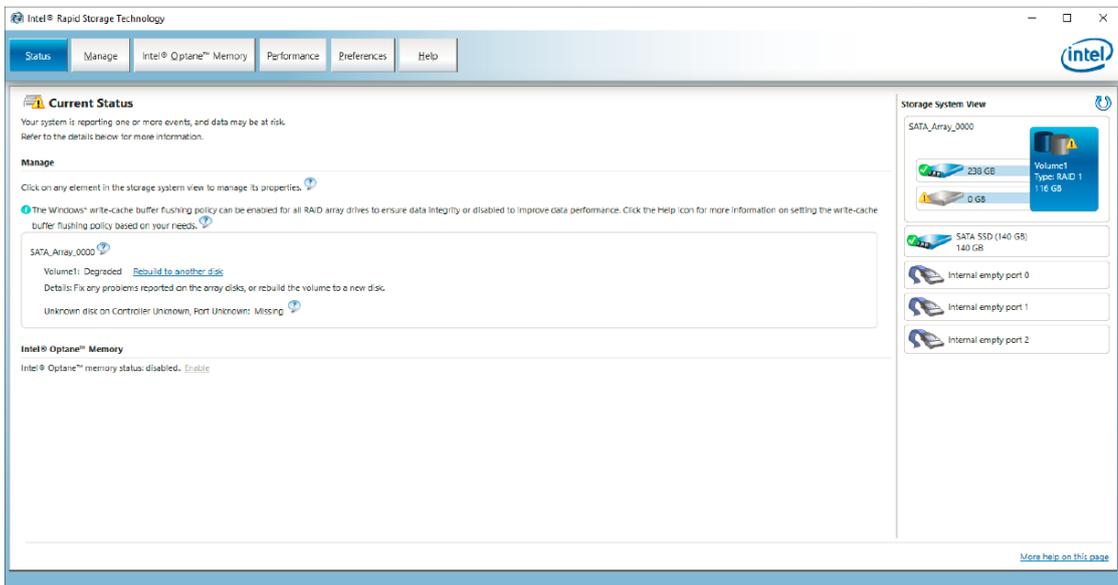
To replace the current SSD disk on your computer, do the following:

1. Remove the cover of the storage slots and unplug the current SSD.

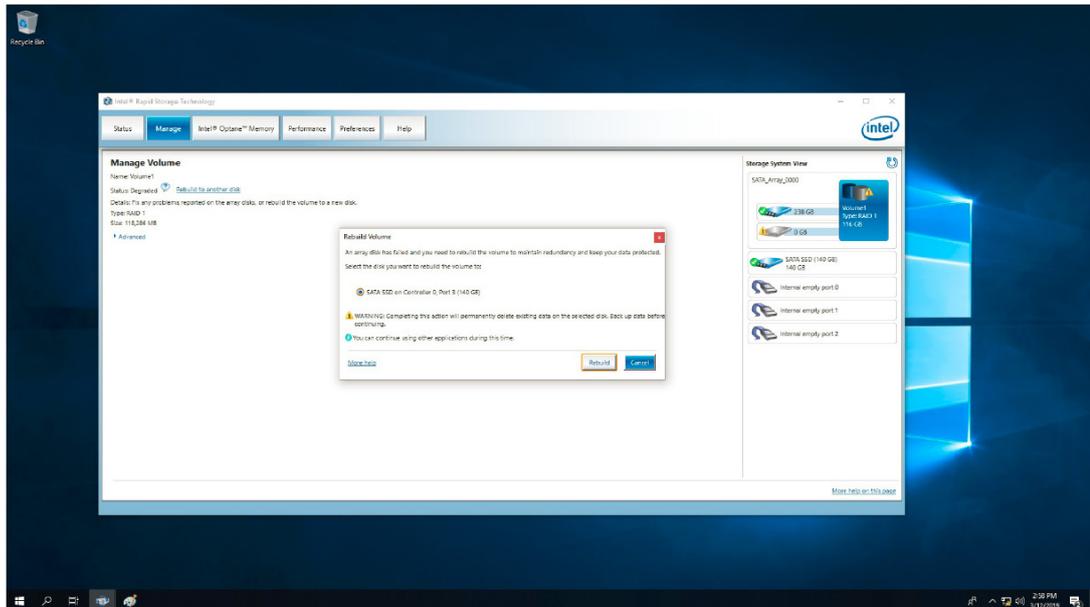
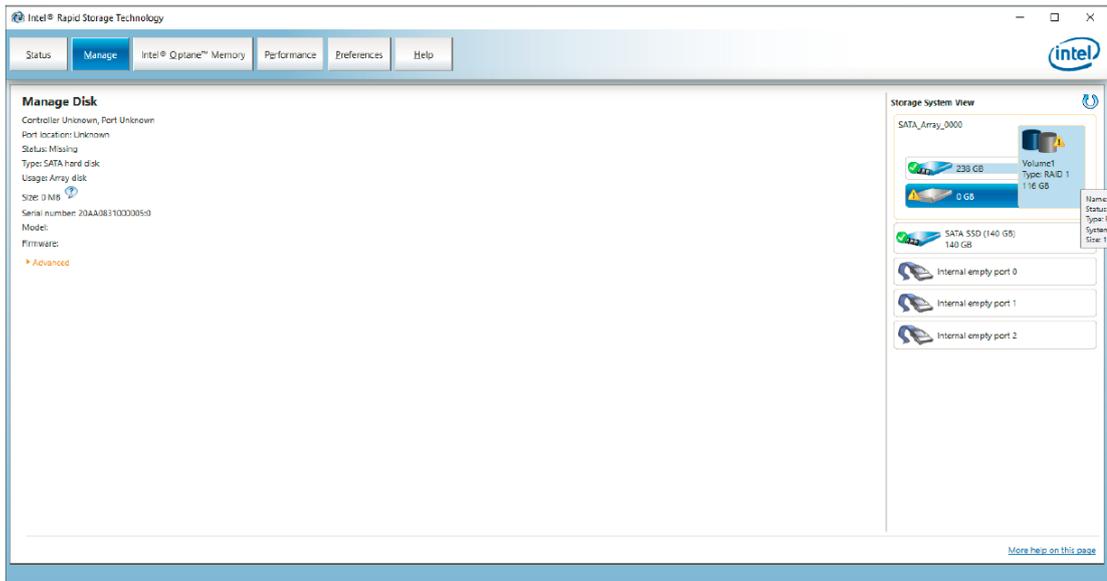




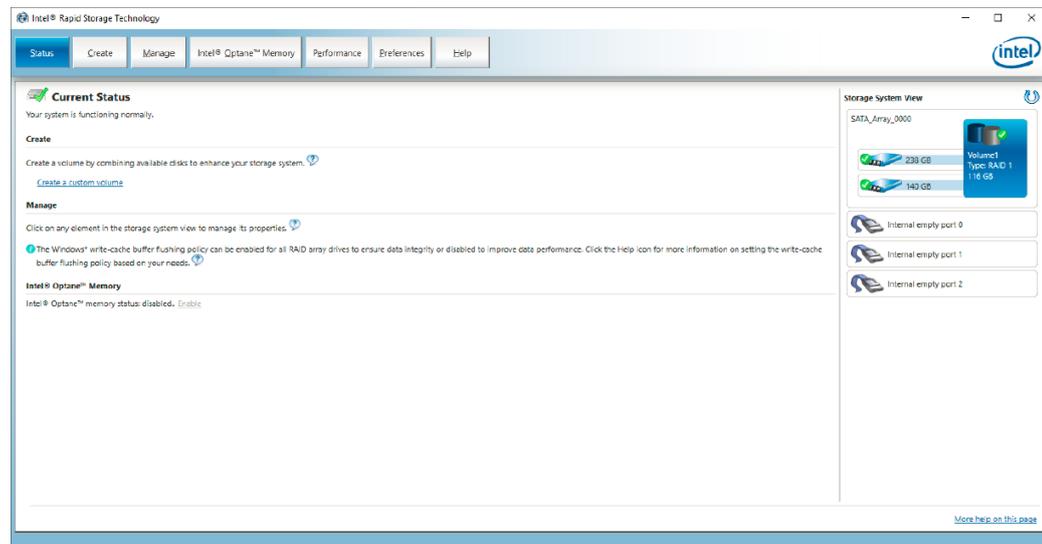
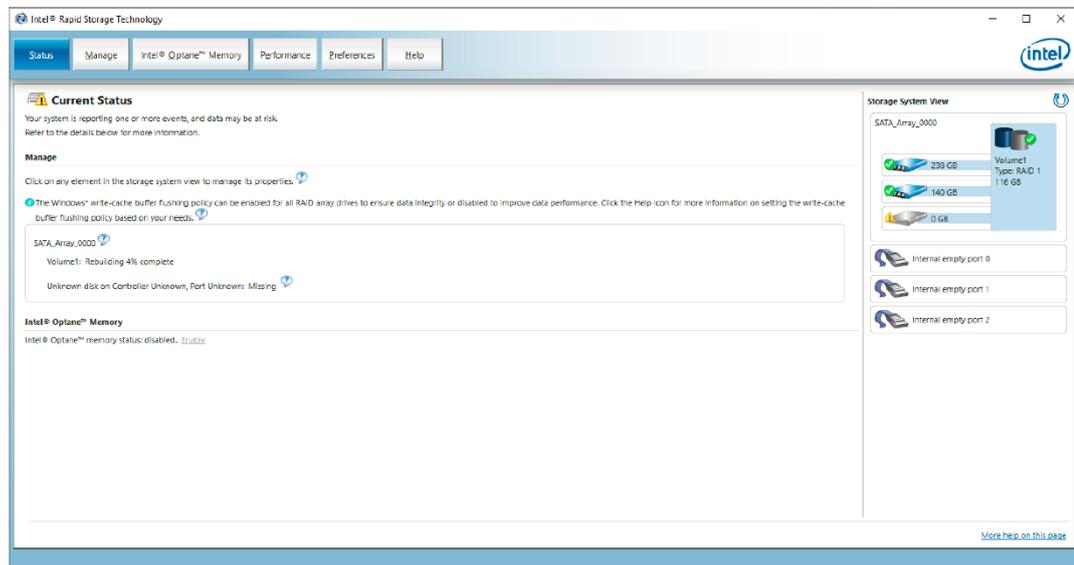
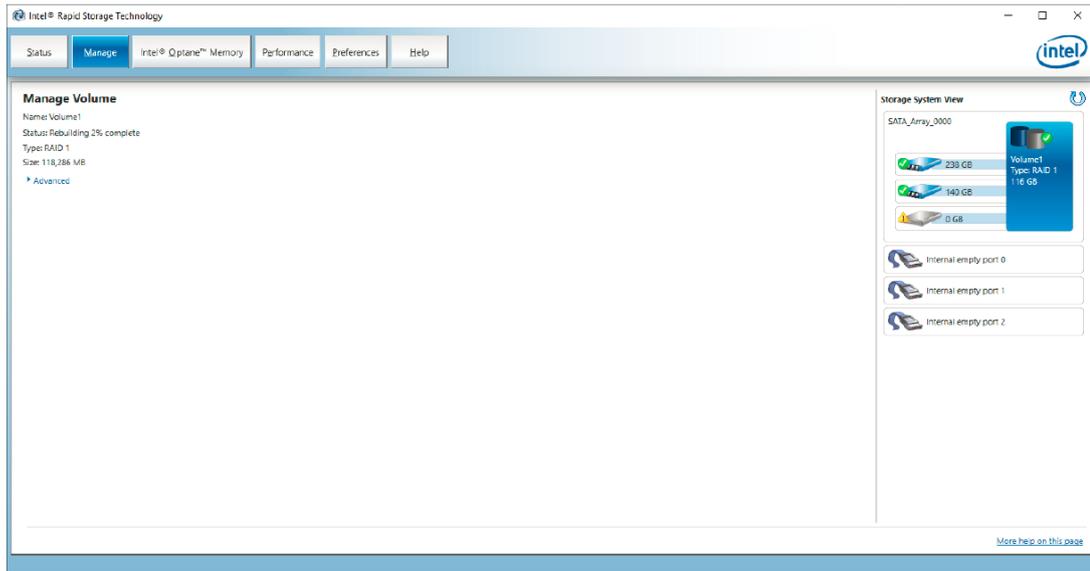
2. Install the new SSD.



3. Click on the **Manage** tab, select the new SSD, and click **Rebuild**.

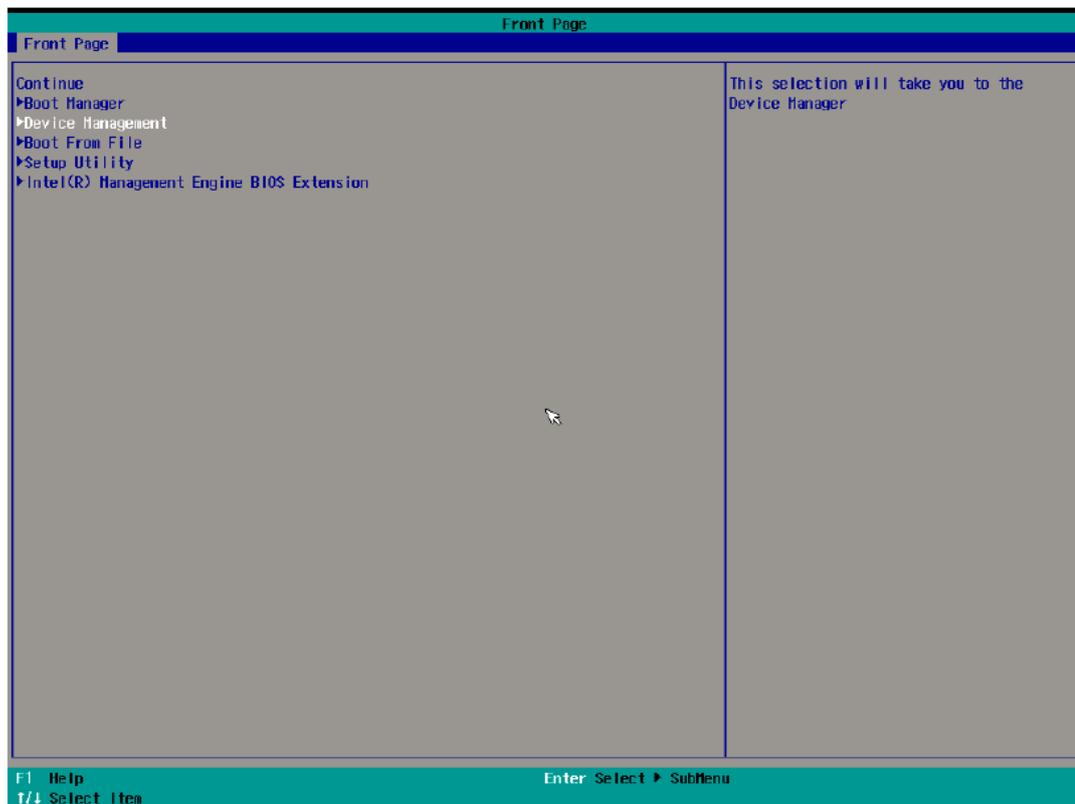


4. Wait for the rebuild process to complete.

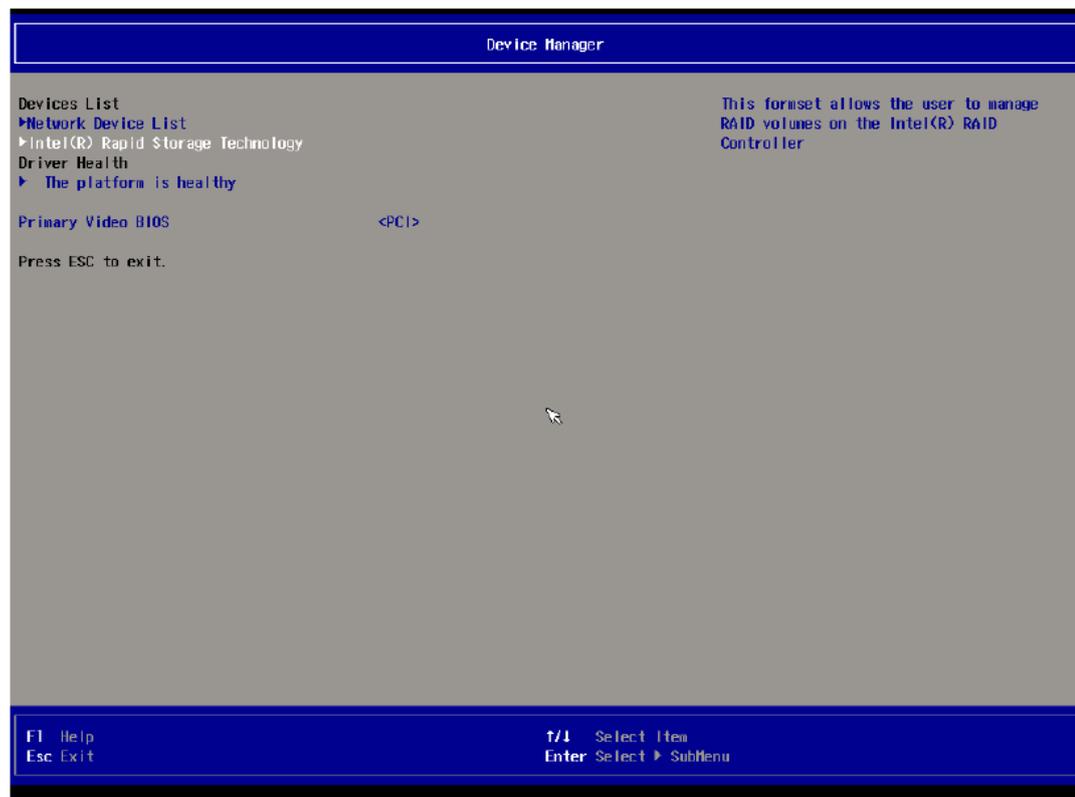


Removing a RAID Volume in the BIOS

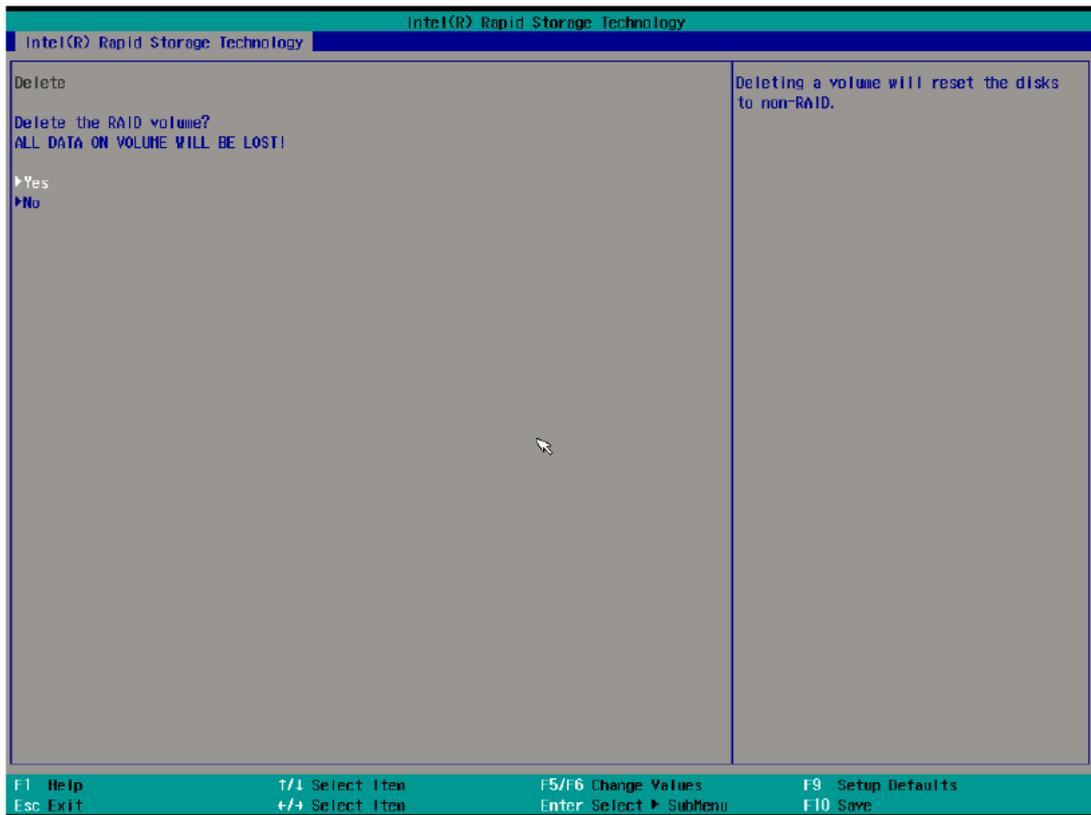
1. Power on the computer and press **F2** to enter the BIOS menu.
2. Select the **Device Management** option



3. Select the **Intel(R) Rapid Storage Technology** option.



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



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

Unified Write Filters

Unified write filters (UWF) help you run PCs and devices and manage them remotely using the Windows Management Instrumentation (WMI). To use UWF, you'll need to install the feature and enable (and optionally configure) it. The first time you enable UWF on your device, UWF makes the following changes to your system to improve the performance of UWF:

- Paging files are disabled
- System restore is disabled
- SuperFetch is disabled
- File indexing service is turned off
- Fast boot is disabled
- Defragmentation service is turned off
- The BCD setting bootstatuspolicy is set to ignoreallfailures.
- After UWF is enabled, you can finally select a drive to protect and start using UWF.

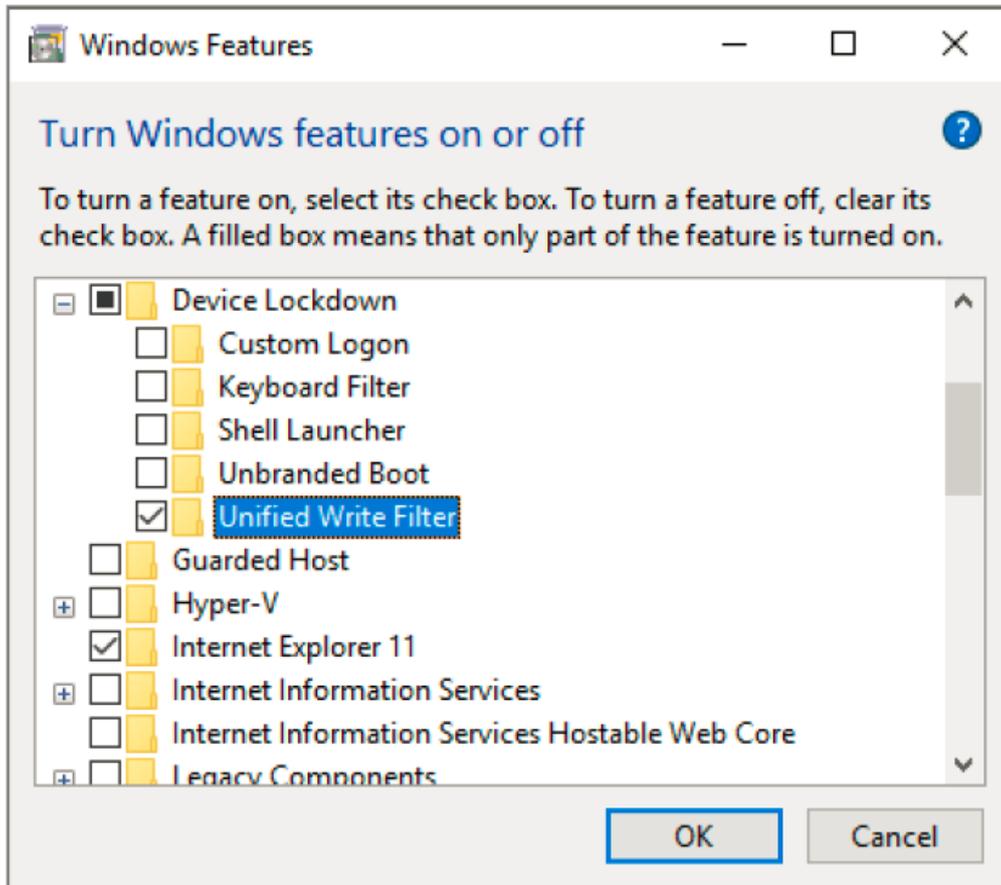
In this chapter, we describe how to use the unified write filters (UWF).

The following topics are covered in this chapter:

- **Turning ON the UWF on a Running PC**
- **Installing the UWF Feature Using the WMI**

Turning ON the UWF on a Running PC

1. Install the UWF feature.
 - a. In the Windows start menu, type **Turn Windows features on or off** and press **Enter**.
 - b. In the **Windows Features** window, expand the **Device Lockdown** node, and select **Unified Write Filter**.
 - c. **Click** OK.



The Windows Features window displays a progress bar. When the process is complete, the window indicates that the requested changes are completed.

- d. Click **Close** to close the Windows Features window.
2. Enable the UWF.

Use the command: `cmd uwfmgr filter enable`

```
Administrator: Command Prompt

C:\Windows\system32>uwfmgr filter enable
Unified Write Filter Configuration Utility version 10.0.17763
Copyright (C) Microsoft Corporation. All rights reserved.

Unified Write Filter will be enabled after system restart.

C:\Windows\system32>_
```

3. Enable the UWF feature for a drive; for example, the C drive.
Use the command: `cmd uwfmgr.exe volume protect C`

```
Administrator: Command Prompt

C:\Windows\system32>uwfmgr filter enable
Unified Write Filter Configuration Utility version 10.0.17763
Copyright (C) Microsoft Corporation. All rights reserved.

Unified Write Filter will be enabled after system restart.

C:\Windows\system32>uwfmgr.exe volume protect C:
Unified Write Filter Configuration Utility version 10.0.17763
Copyright (C) Microsoft Corporation. All rights reserved.

The volume C: will be protected by Unified Write Filter after system restart.

C:\Windows\system32>
```

4. Restart your computer.
5. Confirm that the UWF feature is running.

Use the command: `cmd uwfmgr.exe get-config`

```
Administrator: Command Prompt

C:\windows\system32>uwfmgr.exe get-config
Unified Write Filter Configuration Utility version 10.0.17763
Copyright (C) Microsoft Corporation. All rights reserved.

Current Session Settings

FILTER SETTINGS
  Filter state:      ON
  Pending commit:   N/A
  Shutdown pending: No

SERVICING SETTINGS
  Servicing State:  OFF

OVERLAY SETTINGS
  Type:              RAM
  Maximum size:      1024 MB
  Warning Threshold: 512 MB
  Critical Threshold: 1024 MB
  Freespace Passthrough: OFF
  Persistent:        OFF
  Reset Mode:        N/A
```

Installing the UWF Feature Using the WMI

If Windows has already been installed and you do not want to use a provisioning package, you can also configure the UWF feature by using the Windows Management Instrumentation (WMI) providers. To turn on UWF using the WMI providers, you can use the **UWF_Filter** function, specifically the **UWF_Filter.Enable** method. You can do this in one of the following ways:

- Use the WMI providers directly in the PowerShell script
- Use the WMI providers directly in an application
- Use the command line tool; uwfmgm.exe

You must restart your device after you turn on or turn off UWF for the changes to take effect. You can change the settings that are modified by the UWF after you have turned on feature. For example, you can move the page file location to an unprotected volume and re-enable paging files.



IMPORTANT!

If you add UWF to your image by using SMI settings in a unattend.xml file, turning on UWF only sets the bootstatuspolicy BCD setting and turns off the defragmentation service. In this case, you must manually turn off the other features and services if you want to increase the performance of UWF.

All configuration settings for UWF are stored in the registry. UWF automatically excludes these registry entries from being filtered. UWF maintains configuration settings in the registry for the current session and for the next session after a device restart. Static configuration changes do not take effect until after a device restart, and these changes are saved as registry entries for the next session. Dynamic configuration changes occur immediately and persist after a device restart.

Moxa IO Control Utility

This chapter describes how to use Moxa IO Controller utility.

The following topics are covered in this chapter:

- **Overview**
- **Setting the DIO Status**
- **Setting the UART Mode**
- **Setting the Relay Status**
- **Setting the LED Status**

Overview

To use the Moxa IO Controller utility, first install the utility and enable the utility to configure the DIO, UART mode, relay, and LED settings. After the installation process is complete, run the Command Prompt as an Administrator and change the path to **C:\Program Files\Moxa\Moxa Computer IO Controller**.

```

Administrator: Command Prompt
Microsoft Windows [Version 10.0.17763.292]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Windows\system32>cd /d C:\Program Files\Moxa\Moxa Computer IO Controller

C:\Program Files\Moxa\Moxa Computer IO Controller>_

```

Setting the DIO Status

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



IMPORTANT!

The DIN and DOUT indices start at 0. Even though the printing on the screen starts at 1, the indices still start at 0.

```

Administrator: Command Prompt

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-dio-ctl --help
mx-dio-ctl 1.0.1903.0
Copyright (C) 2019 Moxa Inc. All rights reserved.
USAGE:
Get value from DIN port 1:
  mx-dio-ctl -i 1
Get value from DOUT port 1:
  mx-dio-ctl -o 1
Set DOUT port 2 value to HIGH:
  mx-dio-ctl -m 1 -o 2

-i          -i <#DIN index> (Start from 0)

-o          -o <#DOUT index> (Start from 0)

-m          -m <status>
            0 --> LOW
            1 --> HIGH

--help     Display this help screen.

--version  Display version information.

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

```

Example:

```
Administrator: Command Prompt

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

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

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

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

C:\Program Files\Moxa\Moxa Computer 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 start at 0. Even though the printing on the screen starts at 1, the index still starts at 0.

```
Administrator: Command Prompt

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-uart-ctl --help
mx-uart-ctl 1.0.1903.0
Copyright (C) 2019 Moxa Inc. All rights reserved.
USAGE:
Get uart mode from port 2:
  mx-uart-ctl -p 2
Set port 1 to mode RS-422:
  mx-uart-ctl -m 2 -p 1

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

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

  --help     Display this help screen.

  --version  Display version information.

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

Example:

```
Administrator: Command Prompt

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

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

Current uart mode is RS485-2W interface.

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

Setting the Relay Status

Type the `mx-relay-ctl --help` command to see instructions on using this utility and follow the onscreen instructions to get or set the status of the relay output.



IMPORTANT!

The relay output index starts at 0. Even though the printing on the screen starts at 1, the index still starts at 0.

```
Administrator: Command Prompt

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-relay-ctl --help
mx-relay-ctl 1.0.1903.0
Copyright (C) 2019 Moxa Inc. All rights reserved.
USAGE:
Get value from relay index 1:
  mx-relay-ctl -i 1
Turn on relay index 2:
  mx-relay-ctl -i 2 -m 1

-i          Required. -i <#Relay index> (Start from 0)

-m          -m <status>
            0 --> turn off
            1 --> turn on

--help     Display this help screen.

--version  Display version information.

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

Example:

```
Administrator: Command Prompt

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-relay-ctl -i 0
Relay index 0 data: 1

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-relay-ctl -i 0 -m 0
Relay index 0 data: 0

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

Setting the LED Status

Type the command `mx-led-ctl --help` to see instructions on using this utility and following the onscreen instructions to get or set LED status.



IMPORTANT!

The LED indices start at 0. Even though the printing on the screen starts at 1, the index still starts at 0.

```

Administrator: Command Prompt

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-led-ctl --help
mx-led-ctl 1.0.1903.0
Copyright (C) 2019 Moxa Inc. All rights reserved.
USAGE:
Get value from LED index 1:
  mx-led-ctl -i 1
Turn on LED index 2:
  mx-led-ctl -i 2 -m 1
Set LED index 3 to blink mode:
  mx-led-ctl -i 3 -m 2

  -i          Required. -i <#LED index> (Start from 0)

  -m          -m <status>
              0 --> led off
              1 --> led on
              2 --> led blink

  --help     Display this help screen.

  --version  Display version information.

C:\Program Files\Moxa\Moxa Computer IO Controller>_

```

Example:

```

Administrator: Command Prompt

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-led-ctl -i 0
LED index 0 data: 0

C:\Program Files\Moxa\Moxa Computer IO Controller>mx-led-ctl -i 0 -m 1
LED index 0 data: 1

C:\Program Files\Moxa\Moxa Computer IO Controller>_

```

This chapter describes how to use the IO Control API.

The following topics are covered in this chapter:

▣ **Downloading the API**

▣ **mxgio**

- GetDinStatus
- GetDoutStatus
- SetDoutStatus

▣ **mxled**

- GetLedData
- SetLedData

▣ **mxrelay**

- GetRelayData
- SetRelayData

▣ **mxsp**

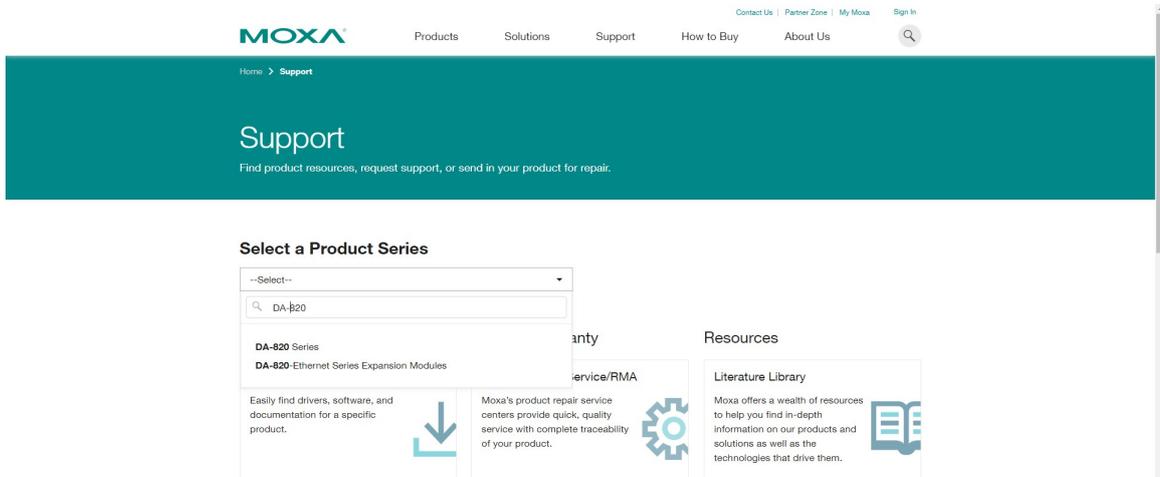
- GetUartMode
- SetUartMode

▣ **mxwdg**

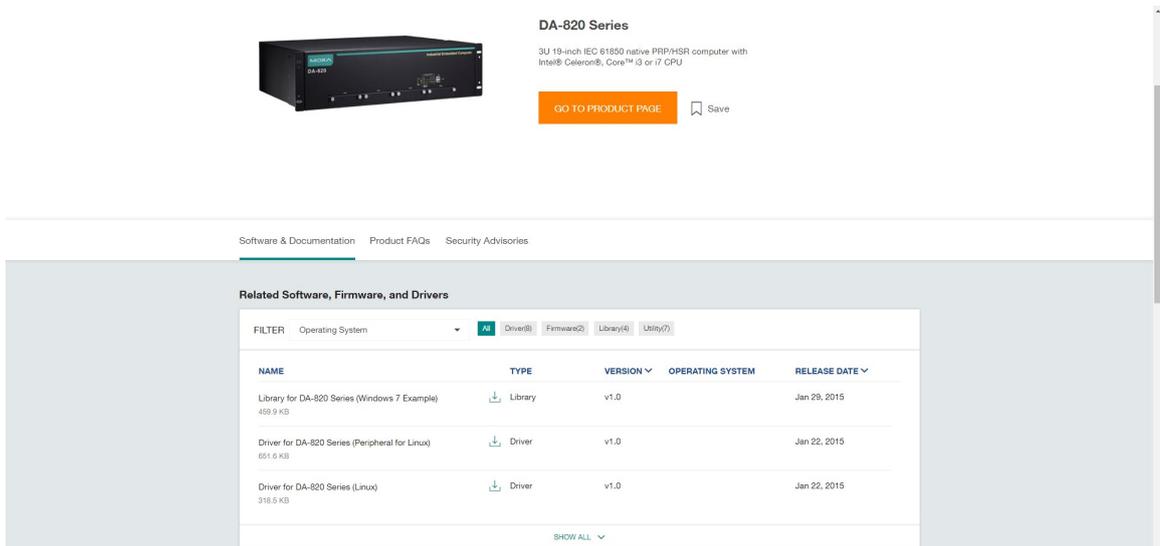
- mxwdg_open
- mxwdg_refresh
- mxwdg_close

Downloading the API

1. Access the Moxa support page: <https://www.moxa.com/en/support>
2. Select the product series DA-681C.



3. Download the related files.



mxdgio

The **mxdgio** library operates on the digital I/O.

GetDinStatus

Syntax:

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

Description:

Gets the status of a digital input port.

Parameters:

Parameter	Description
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. Can't open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.

Requirements:

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

GetDoutStatus

Syntax:

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

Description:

Gets the status of a digital output port.

Parameters:

Parameter	Description
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. Can't open json profile.
PORT_OUTOF_INDEX	-2	Target port index is out of range.

Requirements:

Item/Name	File
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:

Parameter	Description
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. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.
SET_STATUS_ERR	-3	Sets the status to fail.

Requirements:

Item/Name	File
Header	mxdgio.h
Library	mxdgio.lib
DLL	mxdgio.dll
Profile	MxdgioProfile[ModelName].json

mxled

The **mxled** library operates on the programmable LEDs.

GetLedData

Syntax:

```
int GetLedData(int port);
```

Description:

Gets the status of the LED port.

Parameters:

Parameter	Description
port	The index of the LED port; starts at 0.

Return Value:

The status of a LED port; 0 for OFF, 1 for ON.

Error Codes:

The following error codes can be retrieved by the **LED_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxled library initialization failed. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.

Requirements:

Item/Name	File
Header	mxled.h
Library	mxled.lib
DLL	mxled.dll
Profile	MxledProfile[ModelName].json

SetLedData

Syntax:

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

Description:

Sets the status of the LED port.

Parameters:

Parameter	Description
port	The index of the LED port; starts at 0.
status	The status of the LED; 0 for OFF, 1 for ON, and 2 for blinking.

Return Value:

Returns 0 if the LED status is set successfully.

Error Codes:

The following error codes can be retrieved by the **LED_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxled library initialization failed. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.
SET_STATUS_ERR	-3	Sets the status to fail.

Requirements:

Item/Name	File
Header	mxled.h
Library	mxled.lib
DLL	mxled.dll
Profile	MxledProfile[ModelName].json

mxrelay

The **mxrelay** library operates on the relay output.

GetRelayData

Syntax:

```
int GetRelayData(int port);
```

Description:

Gets the status of the relay output port.

Parameters:

Parameter	Description
port	The index of the relay output port; starts at 0.

Return Value:

The status of a relay output port; 0 for OFF, 1 for ON.

Error Codes:

The following error codes can be retrieved by the **RELAY_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxrelay library initialization failed. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.

Requirements:

Item/Name	File
Header	mxrelay.h
Library	mxrelay.lib
DLL	mxrelay.dll
Profile	MxrelayProfile[ModelName].json

SetRelayData

Syntax:

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

Description:

Sets the status of the relay output port.

Parameters:

Parameter	Description
port	The index of the relay output port; starts at 0.
status	The status of a relay output; 0 for OFF, 1 for ON.

Return Value:

Returns 0 if the status of the relay output is successfully set.

Error Codes:

The following error codes can be retrieved by the **RELAY_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxrelay library initialization failed. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.
SET_STATUS_ERR	-3	Sets the status to fail.

Requirements:

Item/Name	File
Header	mxrelay.h
Library	mxrelay.lib
DLL	mxrelay.dll
Profile	MxrelayProfile[ModelName].json

mxsp

The mxsp library operates on the serial port.

GetUartMode

Syntax:

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

Description:

Gets the status of the UART port.

Parameters:

Parameter	Description
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.

Error Codes:

The following error codes can be retrieved by the **RELAY_STATUS** function.

Name	Value	Meaning
LIB_INITIALIZE_FAIL	-1	The mxsp library initialization failed. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.

Requirements:

Item/Name	File
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:

Parameter	Description
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.

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. Can't open json profile.
PORT_OUTOF_INDEX	-2	The target port index is out of range.
SET_STATUS_ERR	-3	Sets the status to fail.

Requirements:

Item/Name	File
Header	mxsp.h
Library	mxsp.lib
DLL	mxsp.dll
Profile	MxspProfile[ModelName].json

mxwdg

The **mxwdg** library operates on the watchdog timer.

mxwdg_open

Syntax:

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

Description:

Initializes the watchdog timer.

Parameters:

Parameter	Description
time	The interval at which the watchdog timer is refreshed; unit is seconds.

Return Value:

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

Requirements:

Item/Name	File
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

mxwdg_refresh

Syntax:

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

Description:

Refreshes the watchdog timer.

Parameters:

Parameter	Description
fd	The handle of the watchdog timer.

Return Value:

Returns 0 on success; otherwise the function has failed.

Requirements:

Item/Name	File
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

mxwdg_close

Syntax:

```
int mxwdg_close(PVOID fd);
```

Description:

Disables the watchdog timer.

Parameters:

Parameter	Description
fd	The handle of the watchdog timer.

Return Value:

This function does not return a value.

Requirements:

Item/Name	File
Header	mxwdg.h
Library	mxwdg.lib
DLL	mxwdg.dll

Windows Recovery

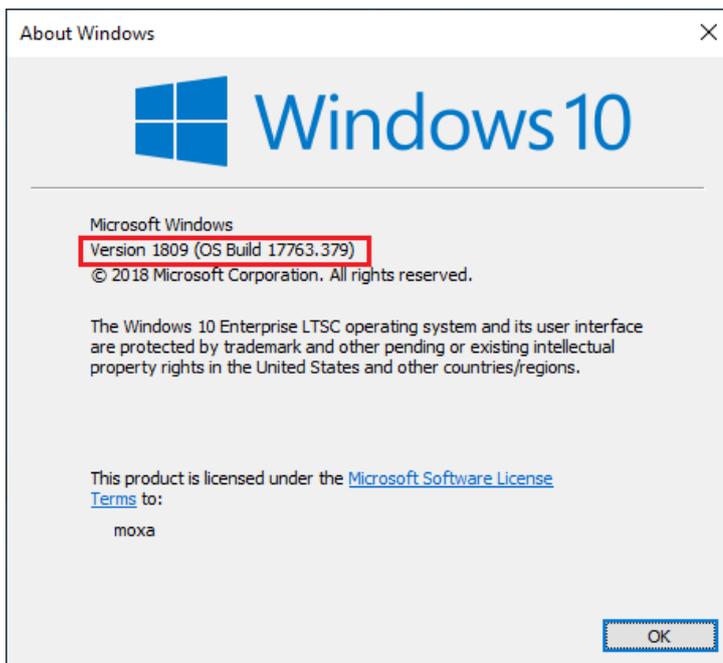
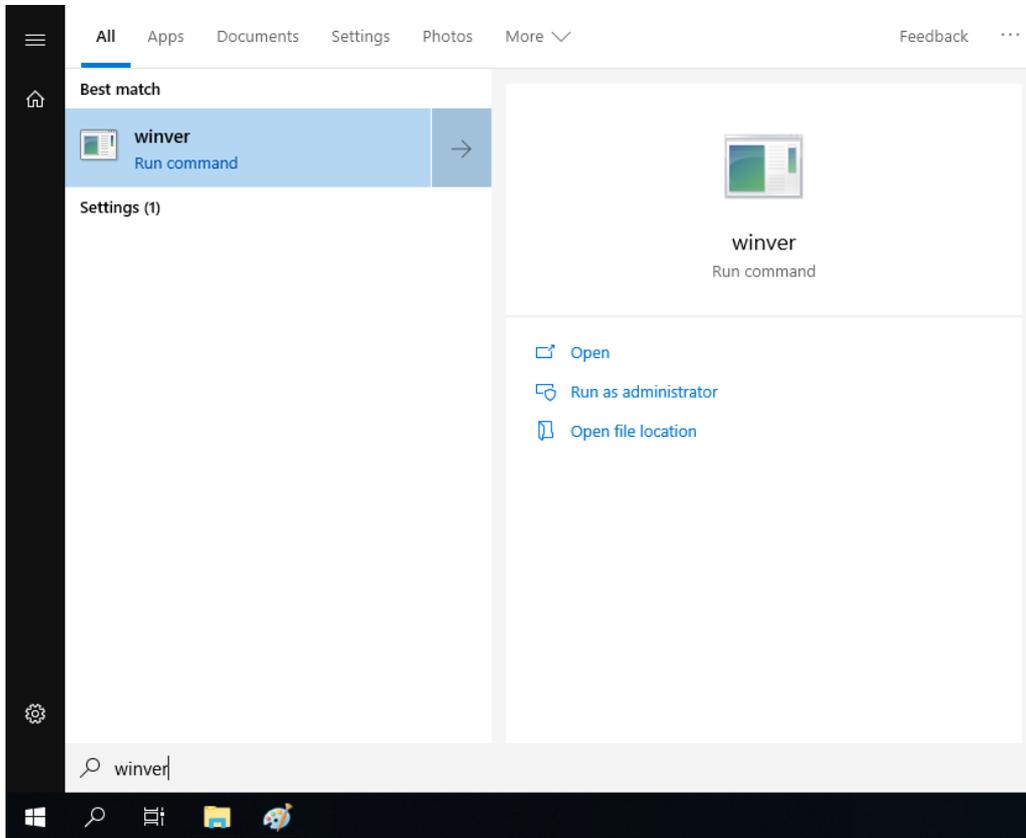
This chapter describes the setup process for the Windows Recovery function.

The following topics are covered in this chapter:

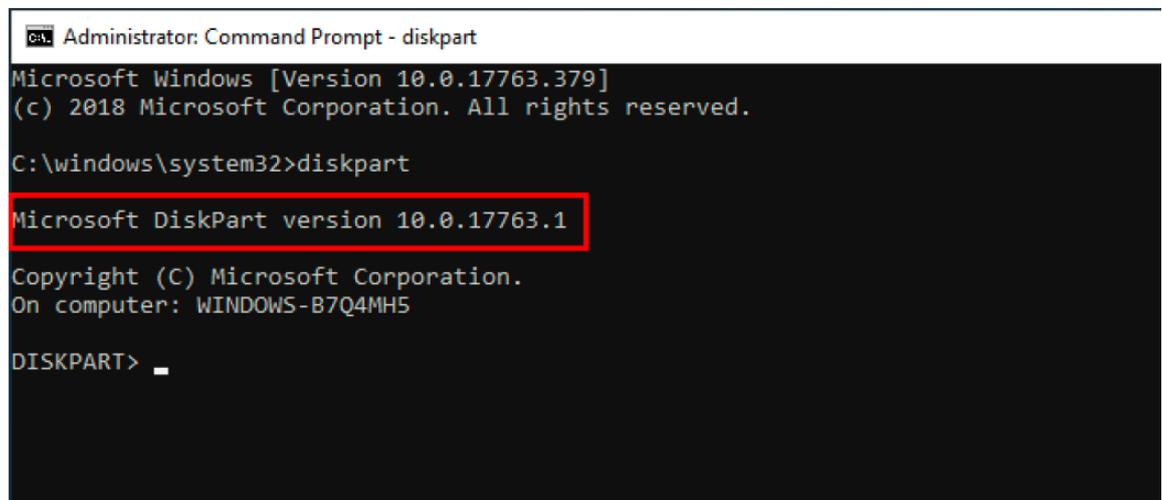
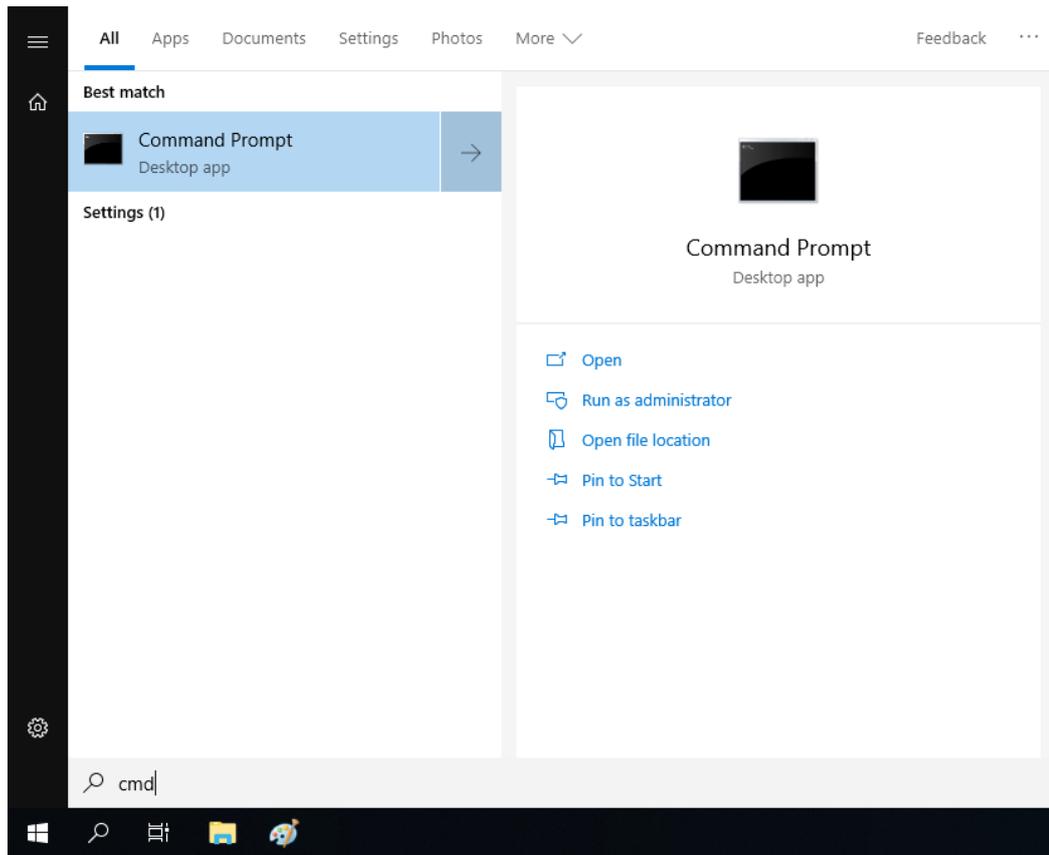
- ❑ **Preparing the USB Device**
- ❑ **Booting From the USB Recovery Disk**
- ❑ **System Image Backup**
- ❑ **Restoring the System Image**

Preparing the USB Device

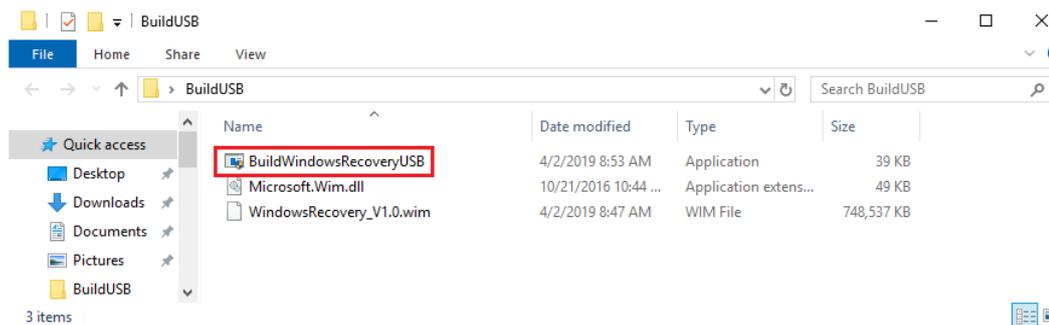
1. Ensure that your computer has the Diskpart version 10.0.17134.0 or higher installed. There have two ways to check the version of the Diskpart tool.
 - a. In the Windows start menu, type winver to check OS Build, the OS version must have 1803 or later version and the specific OS Build will be 17763 or later.



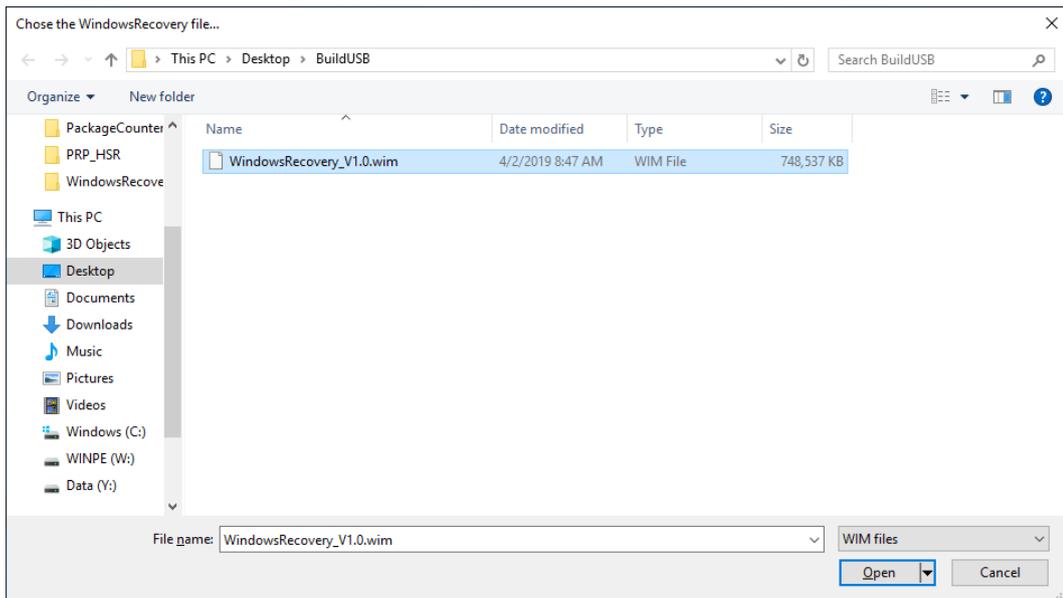
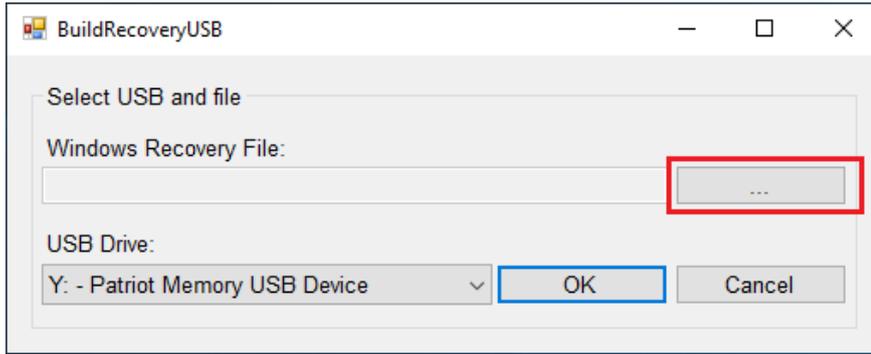
b. Run the command line as an **Administrator** and type diskpart to run diskpart and check the diskpart version.



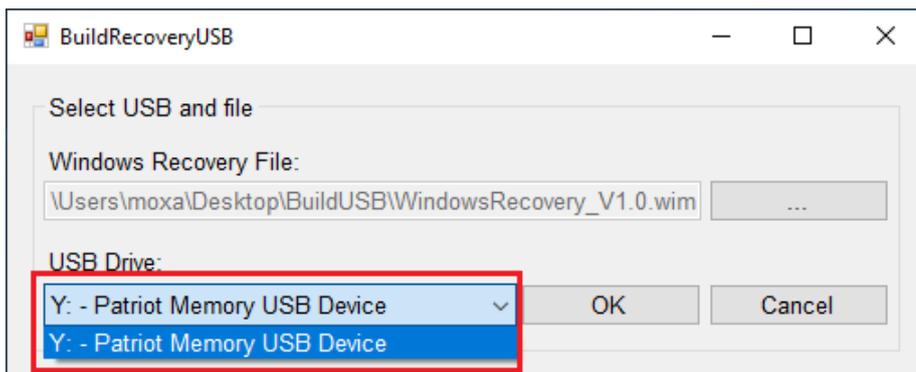
2. Run the **BuildWindowsRecoveryUSB.exe** program from the <Software DVD>**recovery** folder.



3. Click "..."/> to select the .wim file from the <Software DVD>\recovery folder.

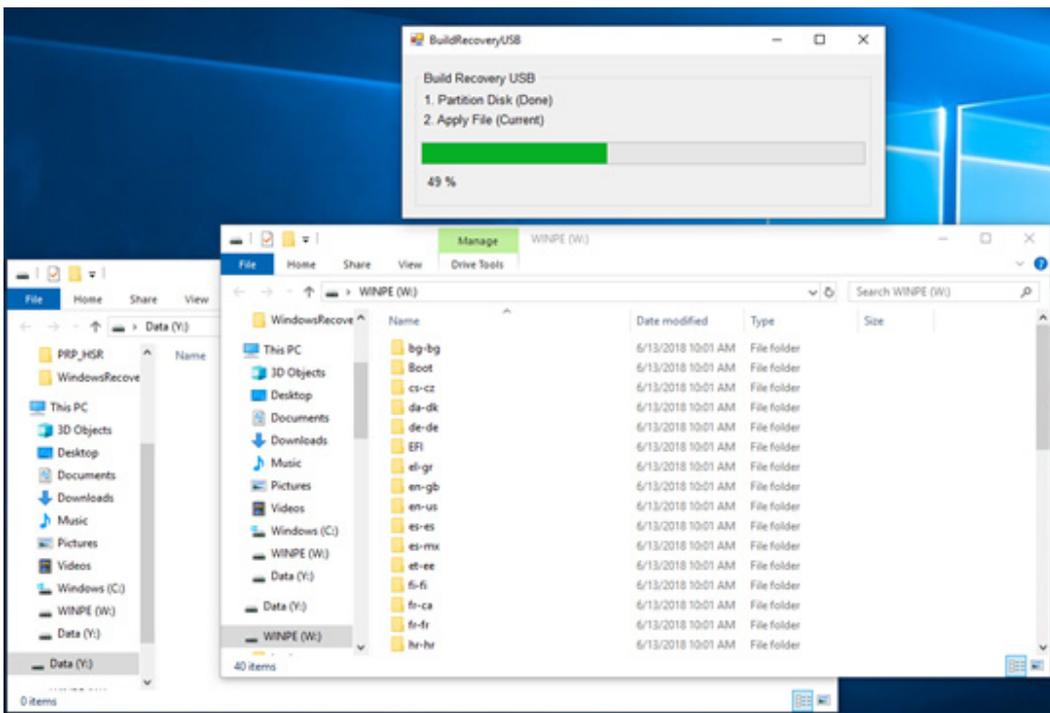


4. Select the USB drive option and click **OK**.
The USB disk will be formatted.

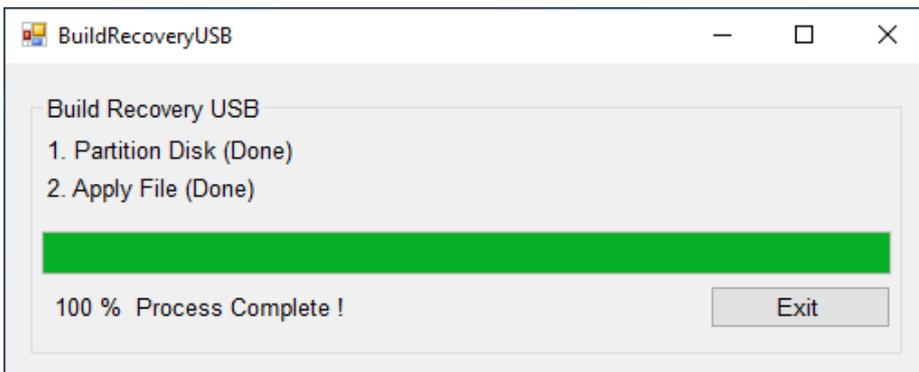


The program will create two volumes on the USB disk and the boot file will be copied to your USB.

Some additional windows may appear during this process. You can close these windows after the process is completed.

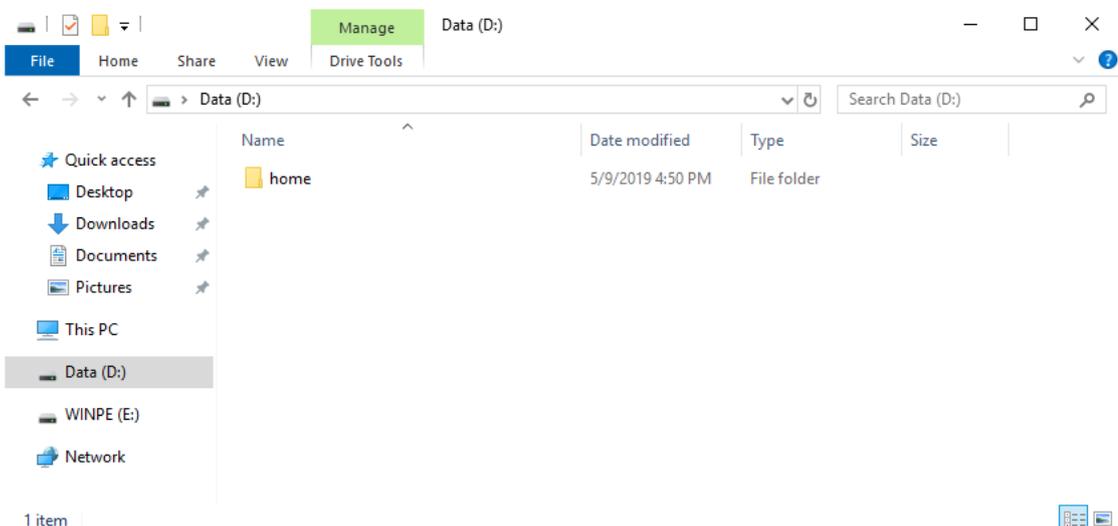


5. Click **Exit** to close the program.

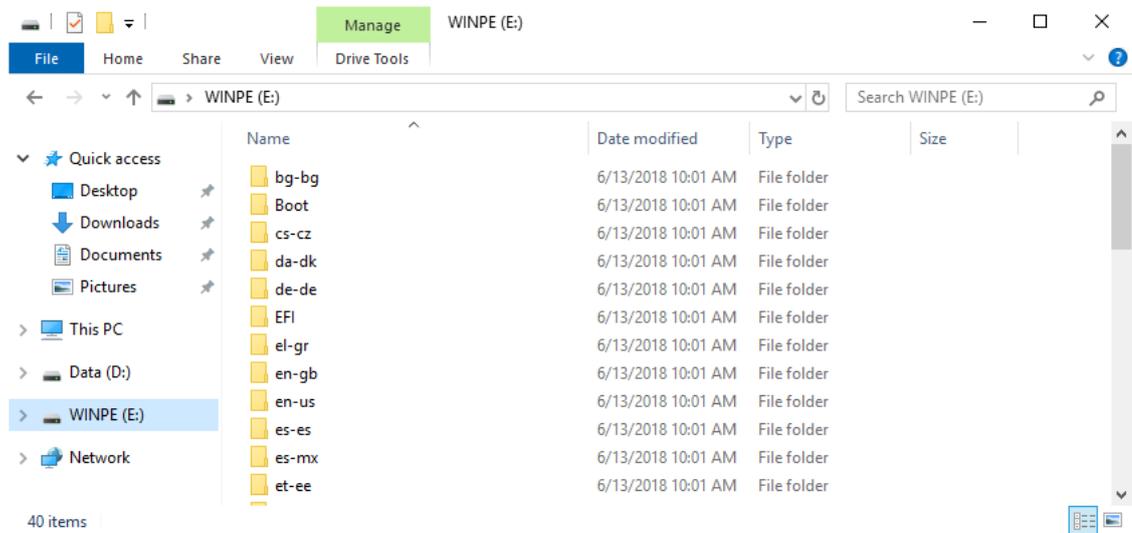


After the process is completed, two volumes are created on the USB disk.

- a. One volume has a "home" folder, which can be used to store the OS image.

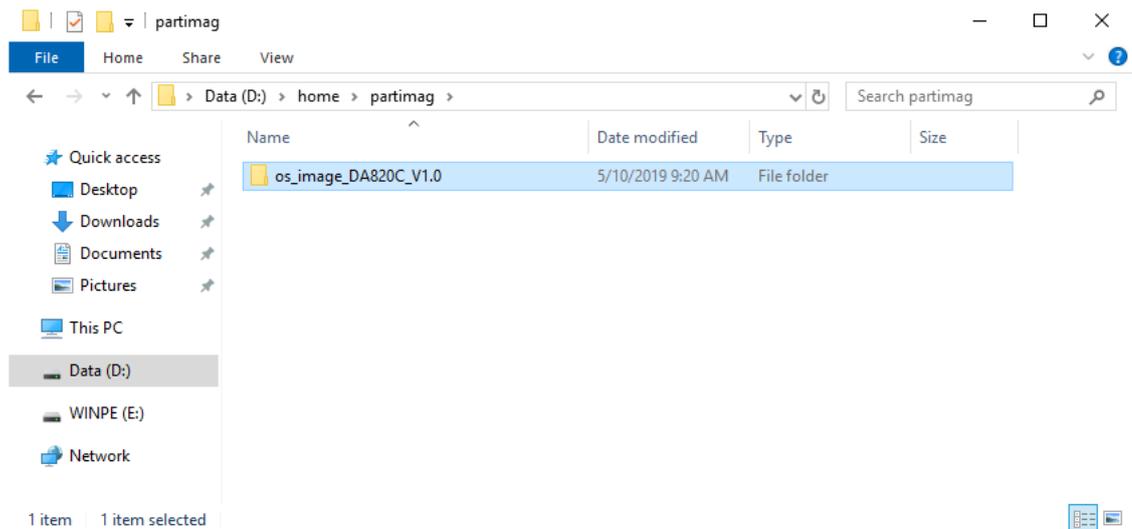


- b. The second volume has many folders, which contains data for booting into WinPE to run the recovery program. This volume may not be visible in systems running Windows 7 or Windows 10 versions prior to 1803.



6. Copy the **os_image_ModelName** directory from the <Software DVD>\recovery folder to the \home\partimag\ folder on the USB drive.

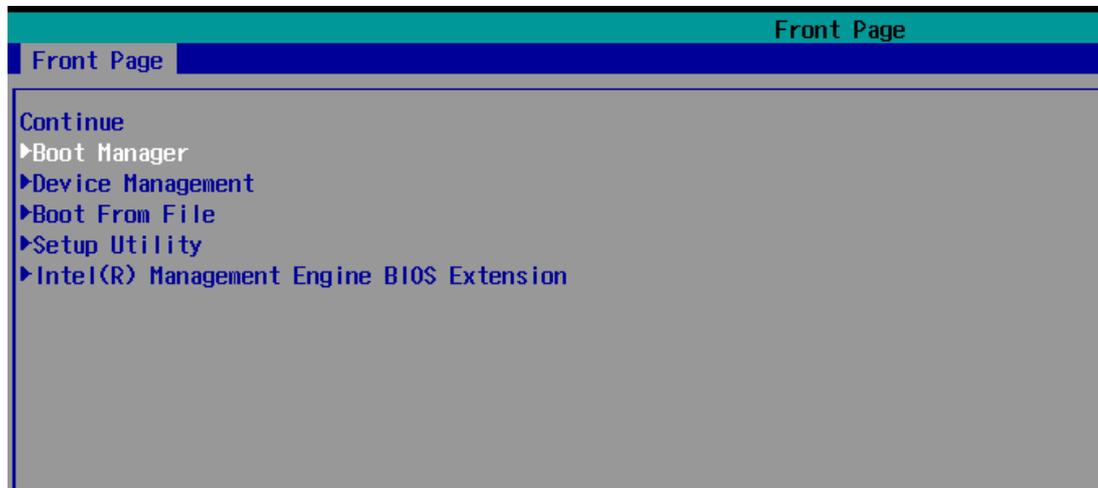
The USB disk is now ready for use in the recover process.



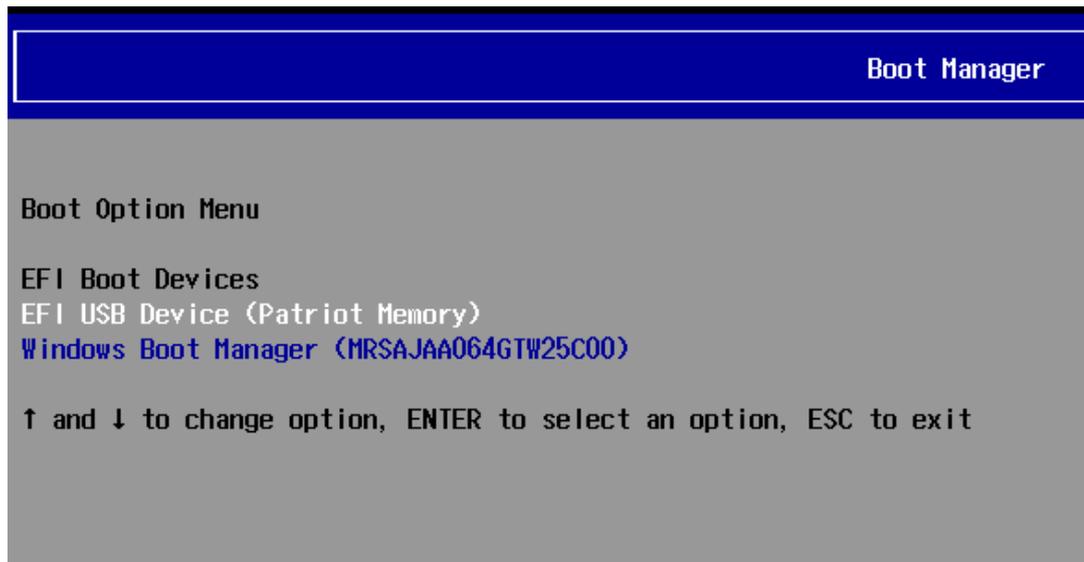
Booting From the USB Recovery Disk

To boot up from the USB recovery disk, do the following:

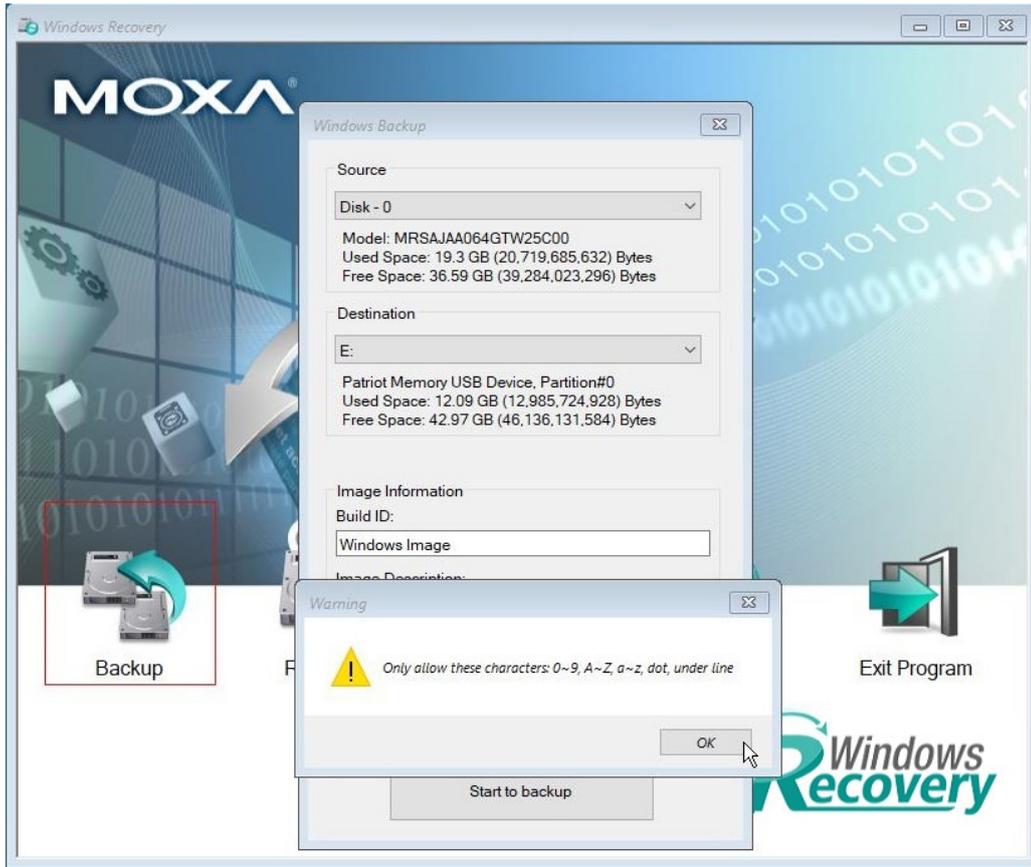
1. Turn on the computer and press **F2** when you hear the beep sound to enter the BIOS setup menu.
2. Select **Boot Manager** and press **Enter** to continue.



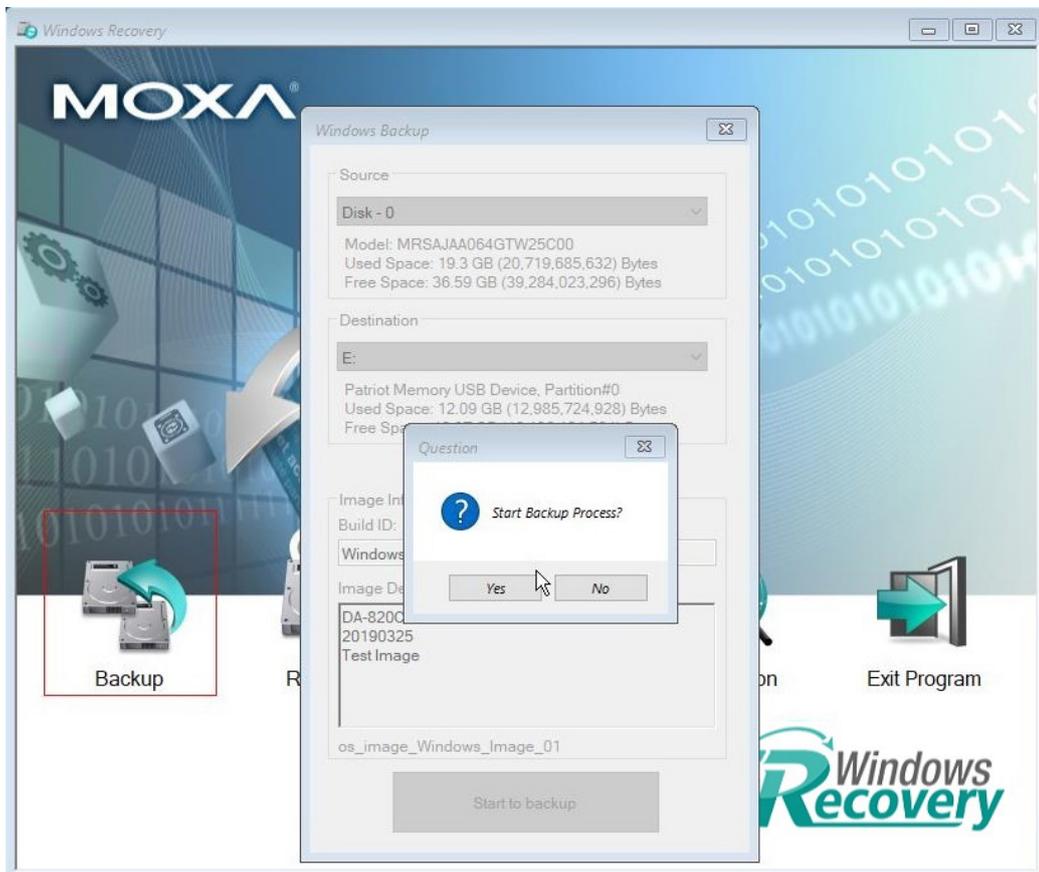
3. Select the **EFI USB Device** option and press **Enter** to continue to boot from a USB device.



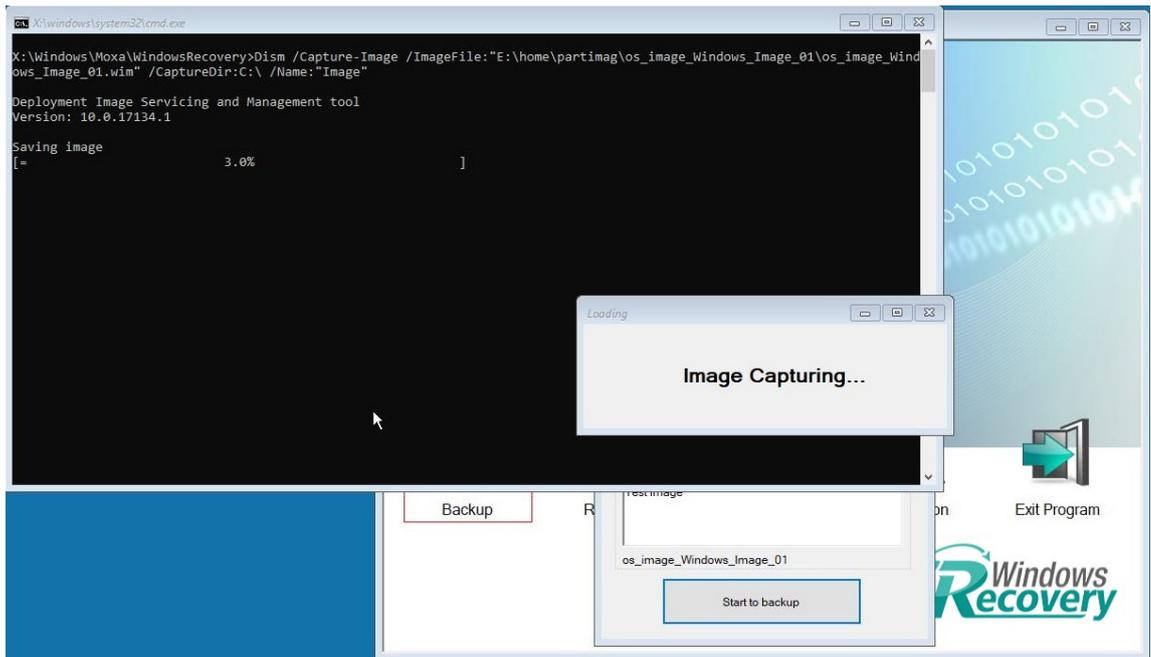
- 4. Click **Start to backup**.



- 5. Click **Yes** to continue the process.



6. Wait for the backup process to finish.



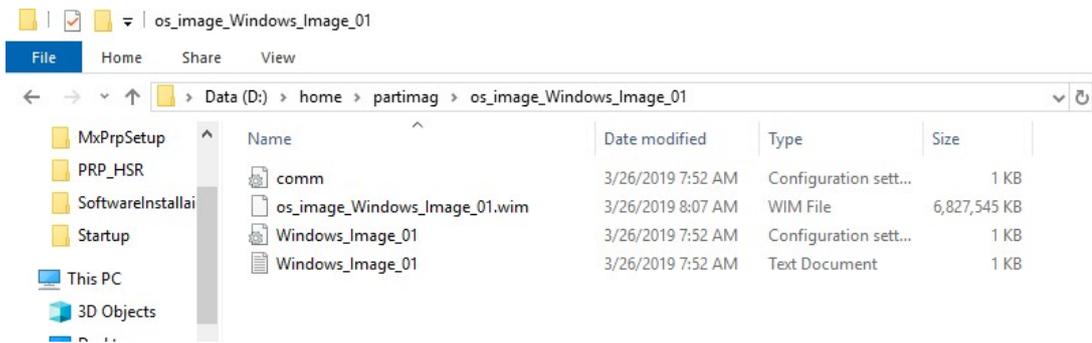
7. After the backup process is completed, click **OK**.



8. Click **Shutdown** and click **OK**.
The program will shut down the computer automatically.



9. The OS image will be saved in the USB disk at **home\partimag**.



The **os_image** folder will have the backup information and the image file.

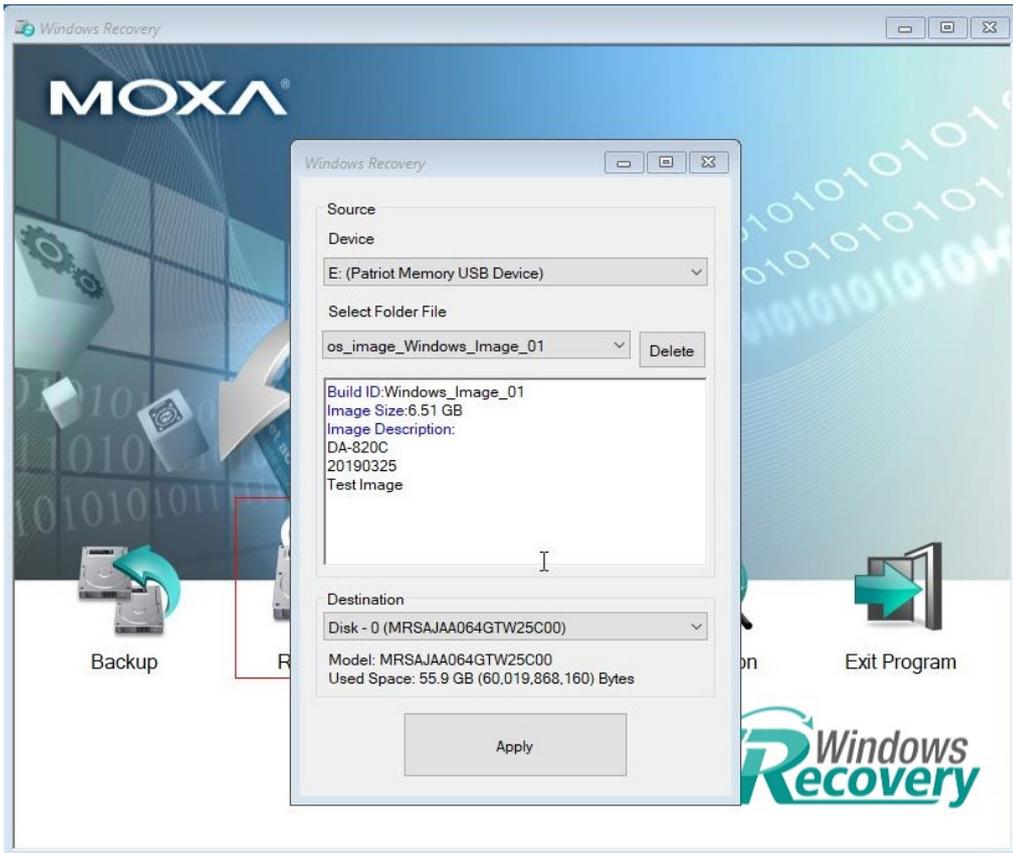
Restoring the System Image

To restore the system image from a USB disk, do the following:

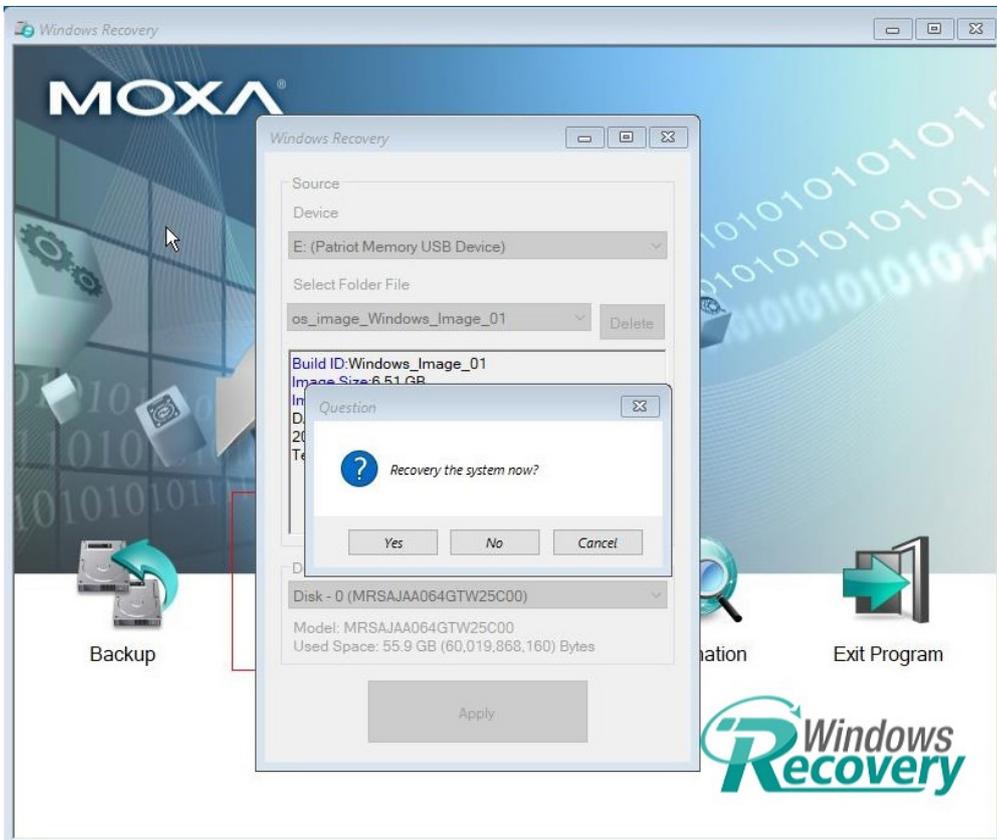
1. Boot the system from the USB disk.
The Windows Preinstallation Environment (WinPE) and the Windows Recovery utility will be displayed.
2. Click **Recovery**.



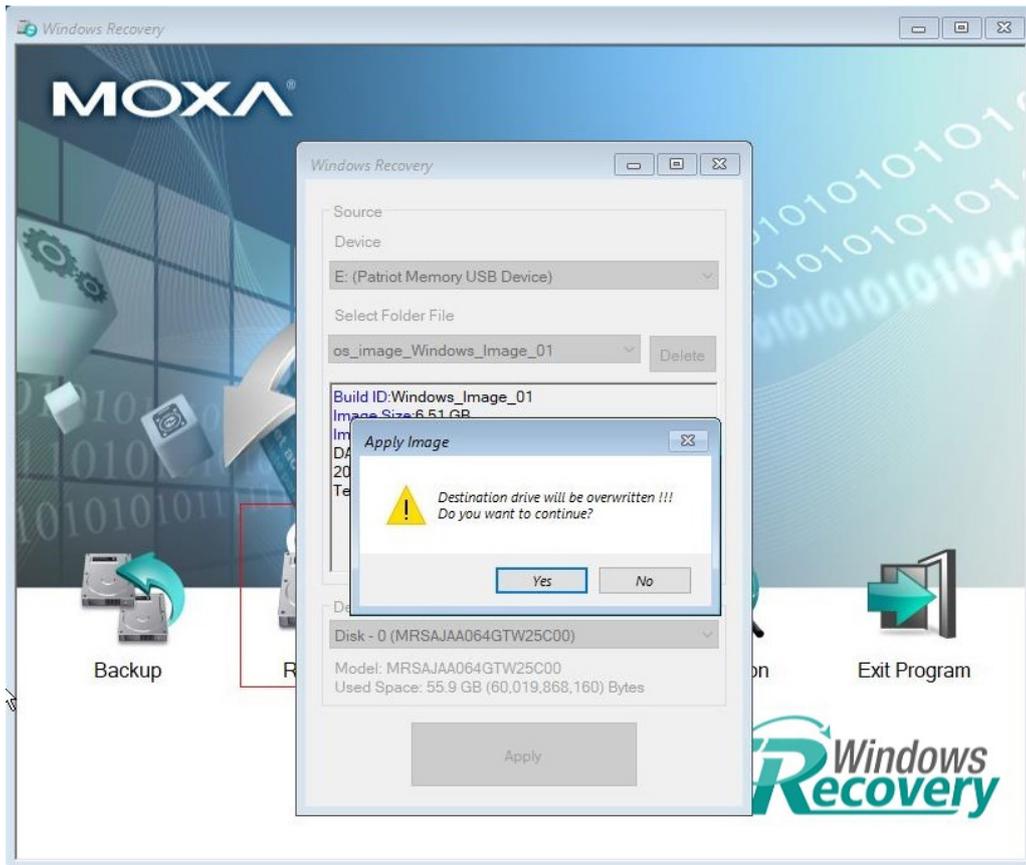
3. Select the **Source** USB Device and the folder for the image file and check the image information. Select the **Destination** Disk to restore. Click **Apply**.



4. Click **Yes** to start the recovery process.



5. Click **Yes** to confirm.



6. Wait for the restore process to complete.



7. Click **OK**.



8. Click **Shutdown** and click **OK**, the program will shut down the computer automatically.



9. Reboot the computer.

**IMPORTANT!**

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