V2201 Series Windows 10 LTSC Software User's Manual

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www.moxa.com/product

V2201 Series Windows 10 LTSC Software User's Manual

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Table of Contents

1

System Initialization

This chapter describes how to initialize the system settings when you boot up the computer for the first time.

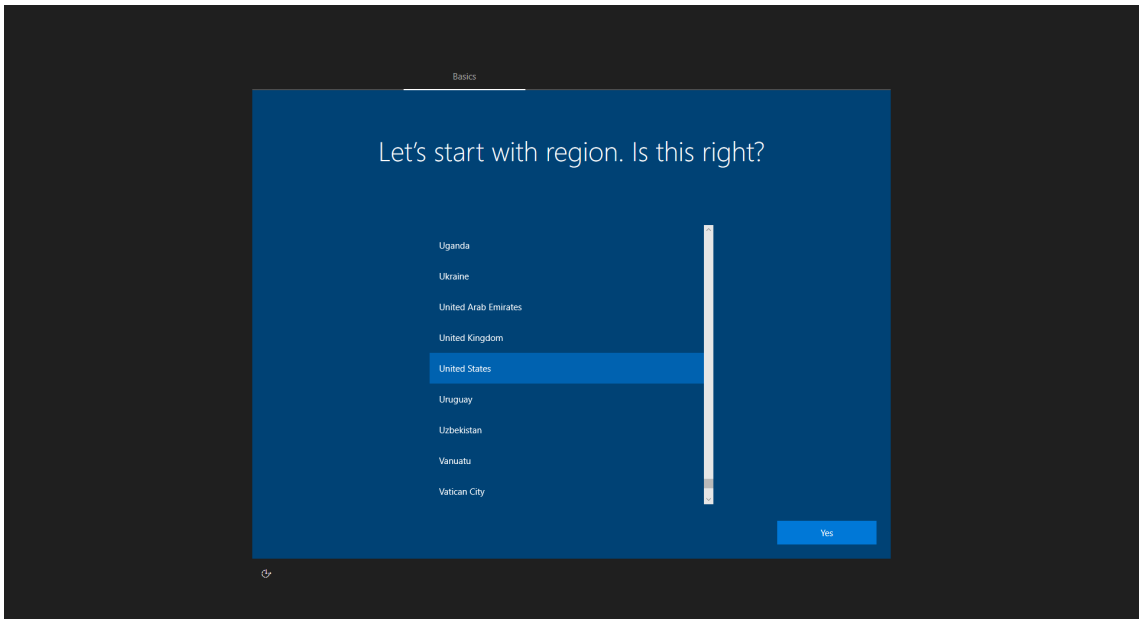
The following topics are covered in this chapter:

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

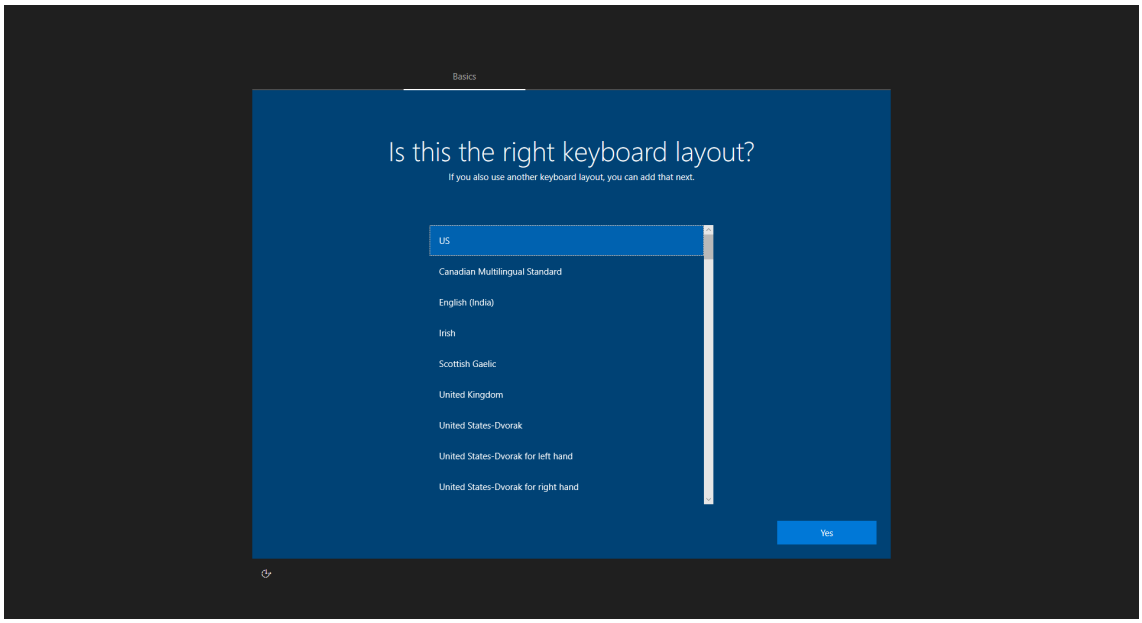
Initializing User Settings

The following is a non-exhaustive list of screens that you will see when configuring the Out Of Box Experience (OOBE) settings.

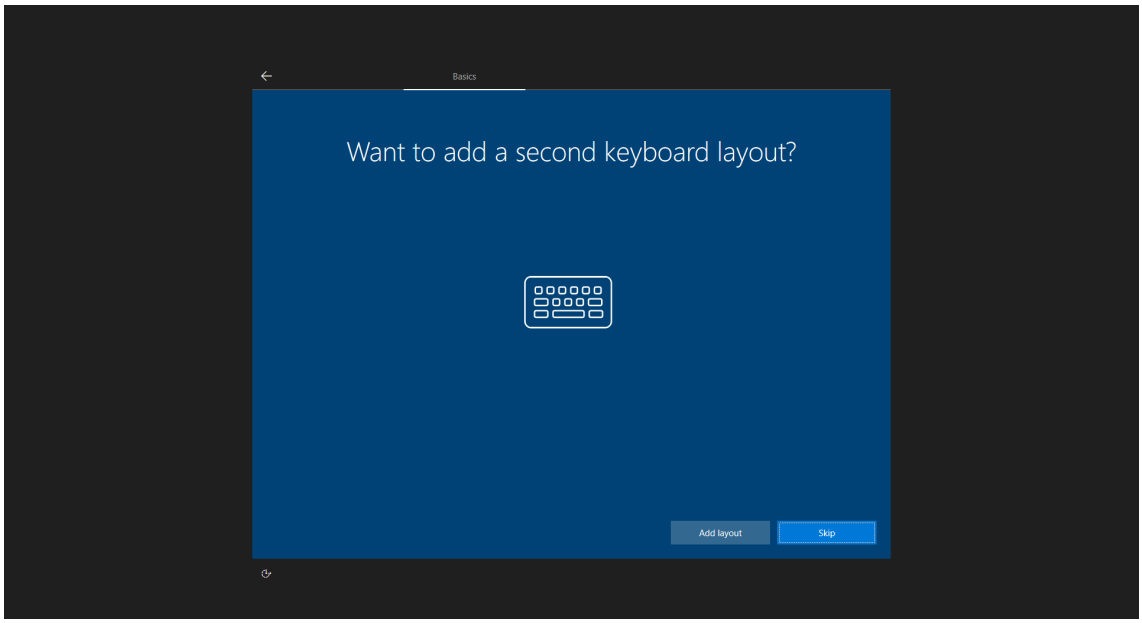
1. Select your region.



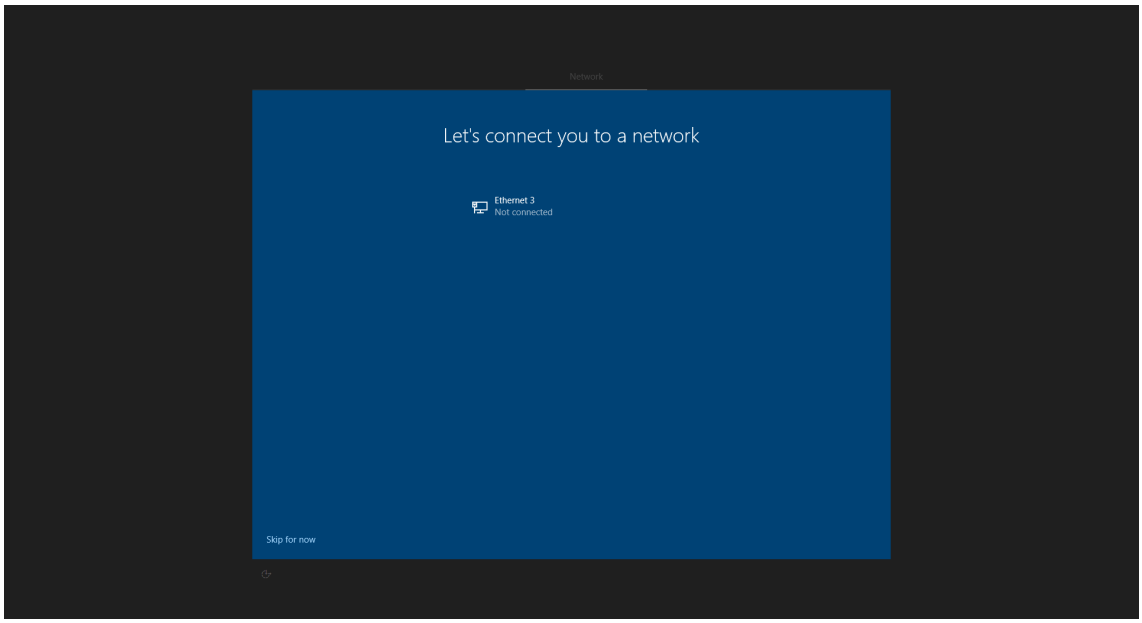
2. Select your keyboard layout.



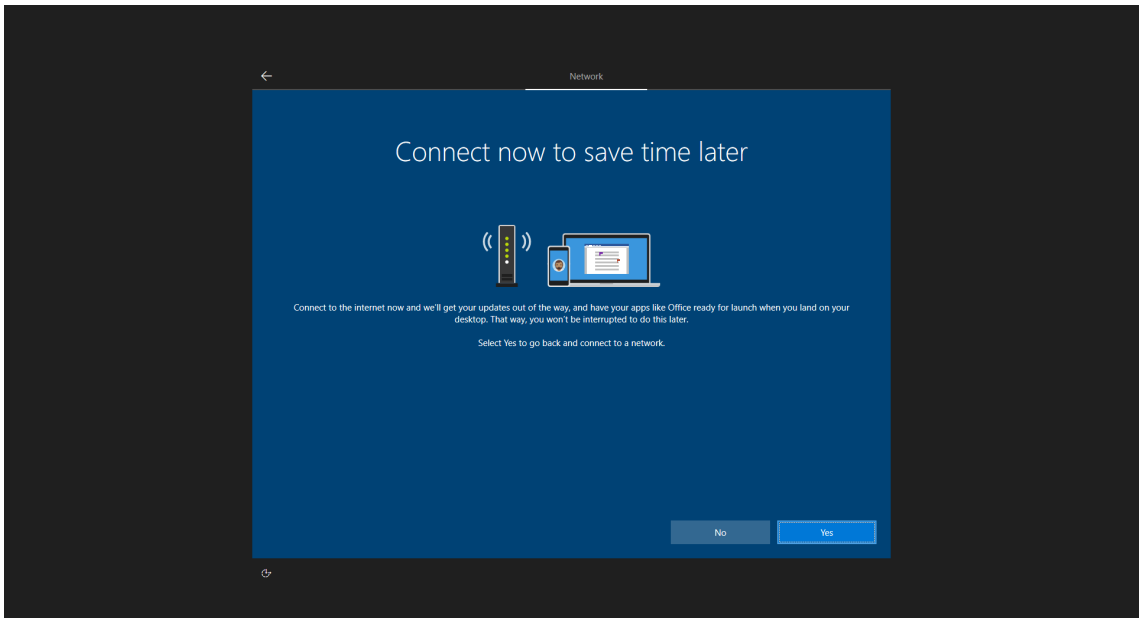
3. Select a second keyboard layout if necessary.



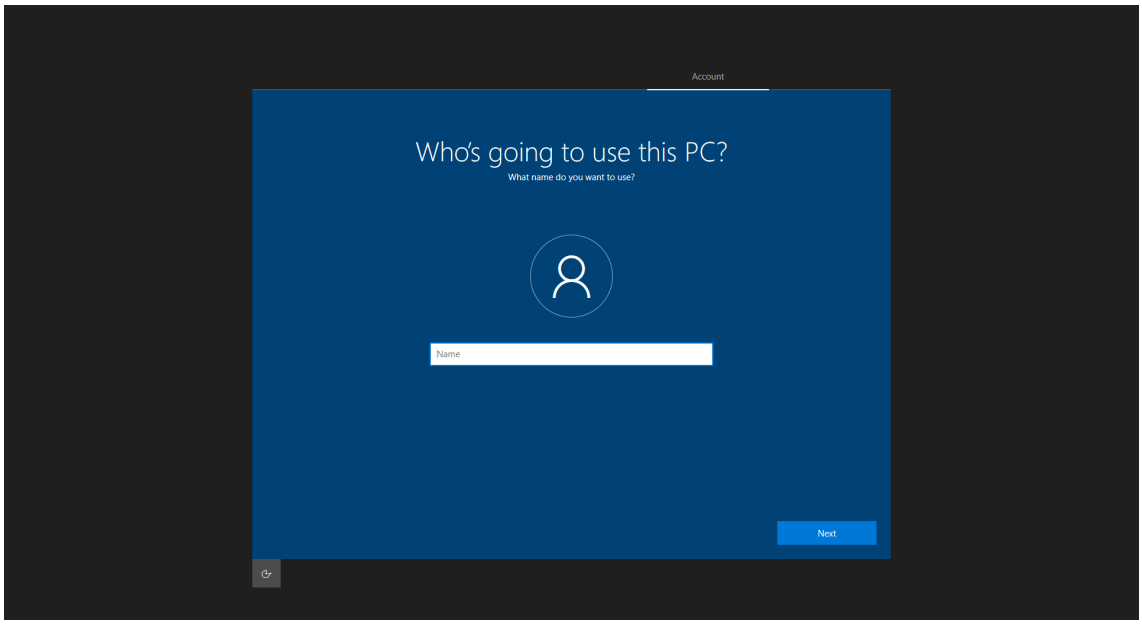
4. Connect to a network. You may click **Skip for now** if you do not want to connect to a network now.



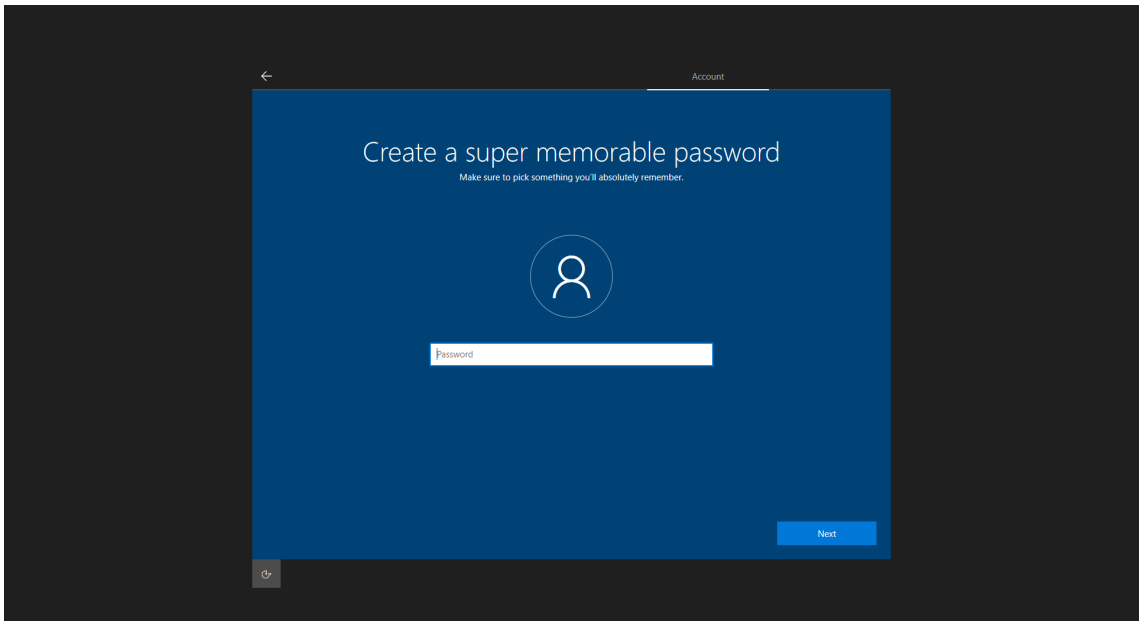
We recommend that you click **Yes** and connect to a network.



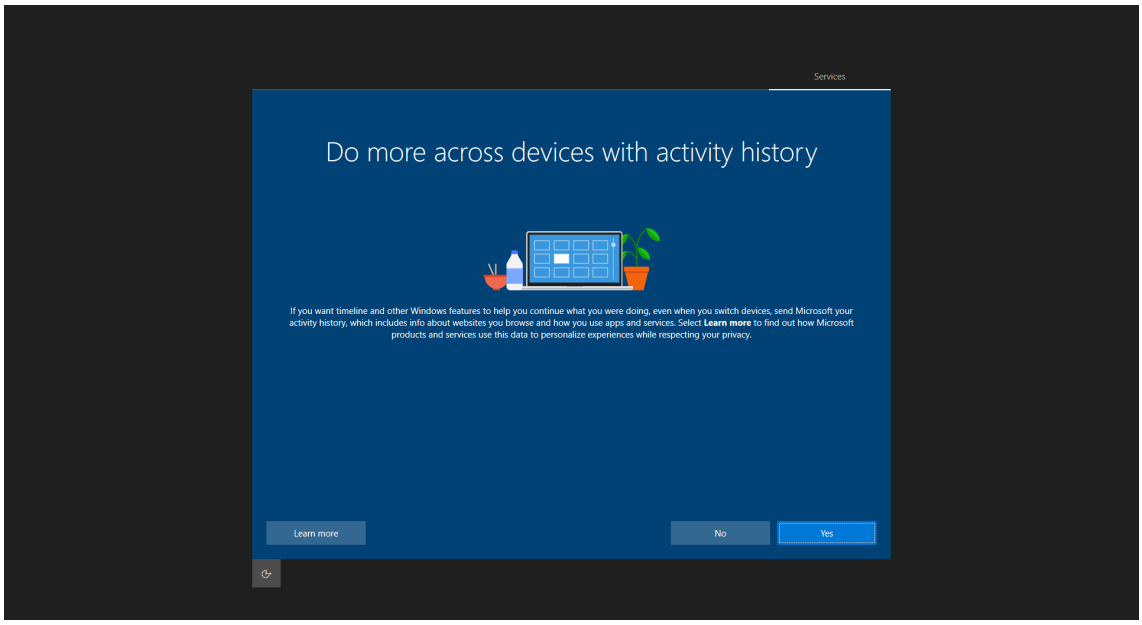
5. Enter a username for this computer and click **Next** to continue.



6. Enter the password for this user and click **Next** to continue.



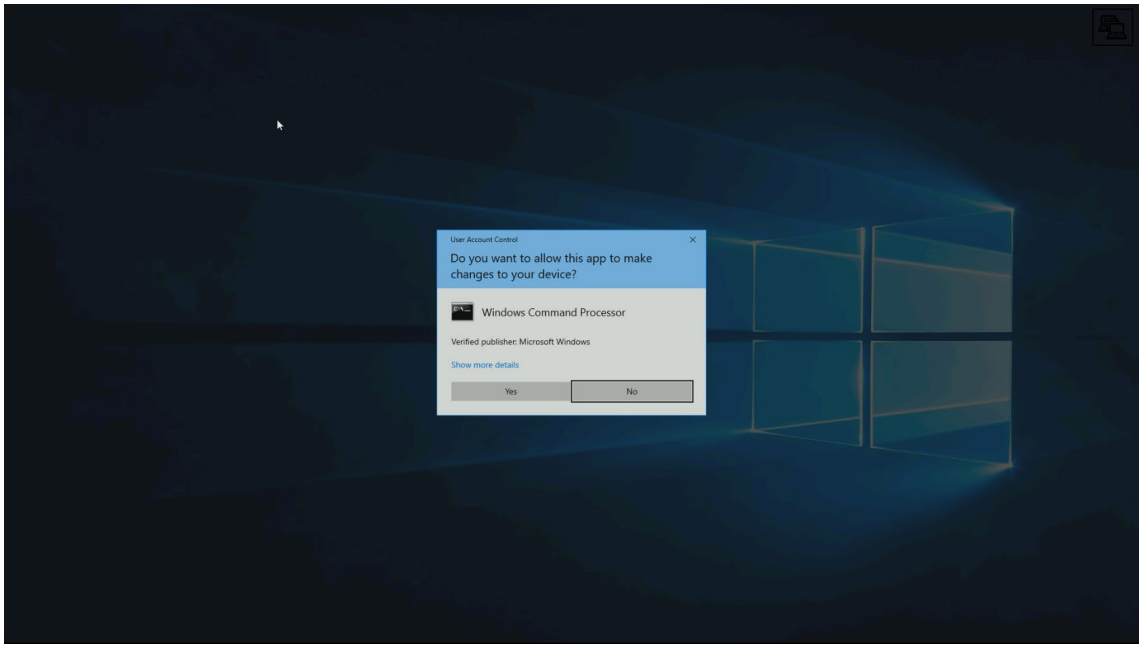
7. Click **Yes** to see additional settings.



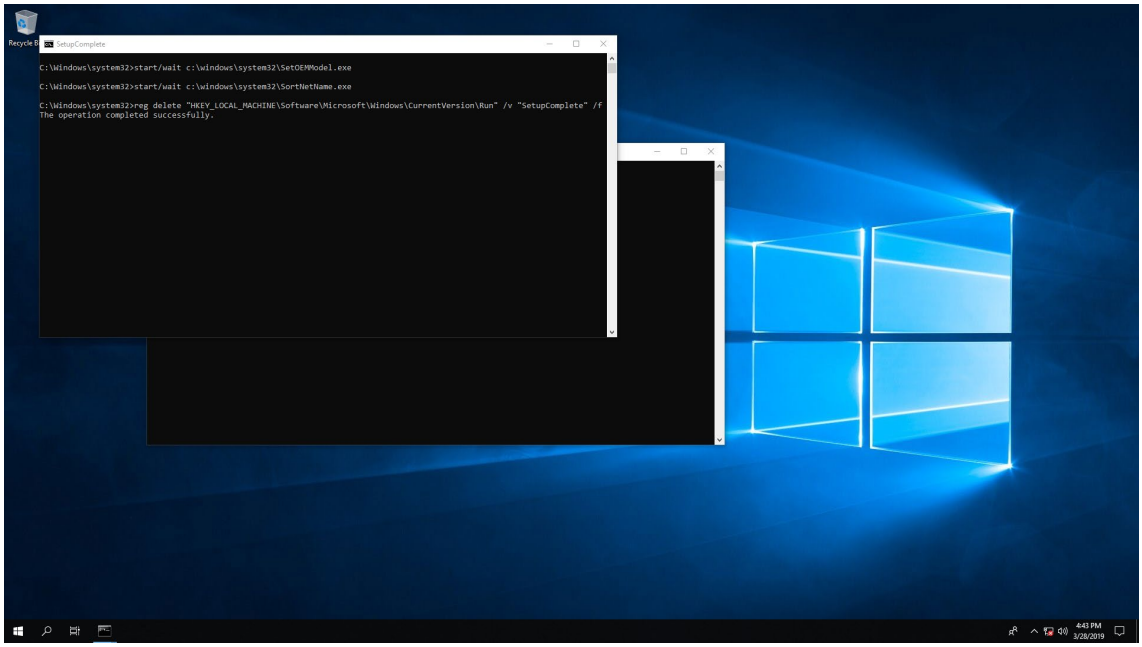
8. Choose the privacy settings for your device and configure them on the setting page. When finished, click **Accept** to complete.

Initializing the System

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



2. Wait for the process to complete. It might take a couple of seconds.



2

BitLocker

This chapter describes the BitLocker setup process.

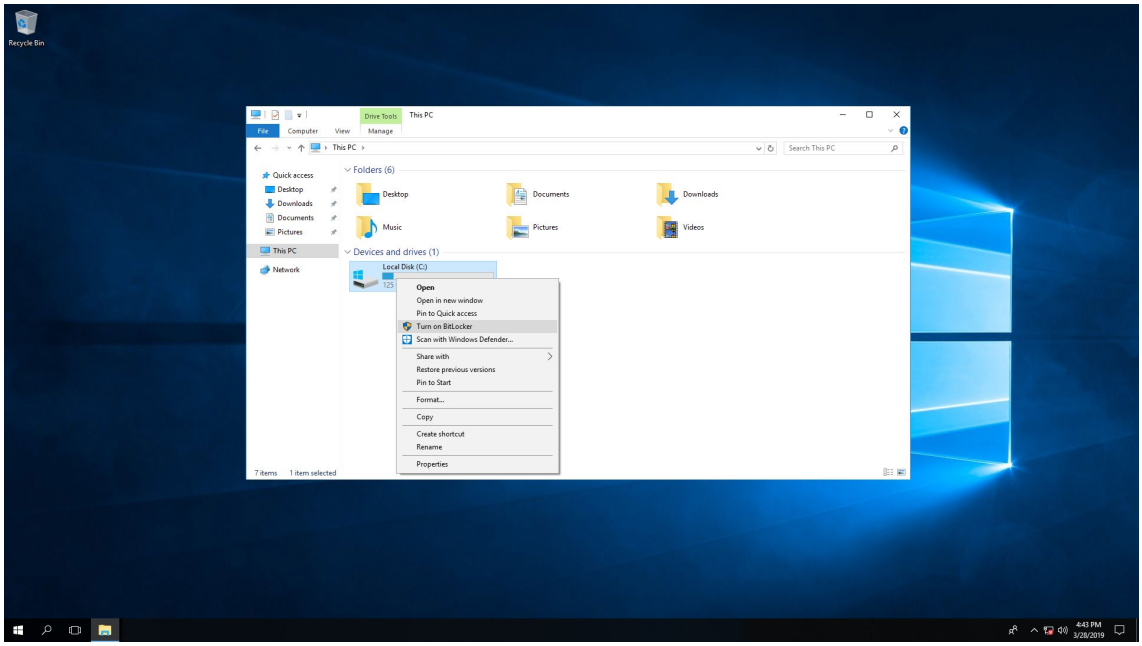
The following topics are covered in this chapter:

- **Enabling the BitLocker**
- **Disabling the BitLocker**

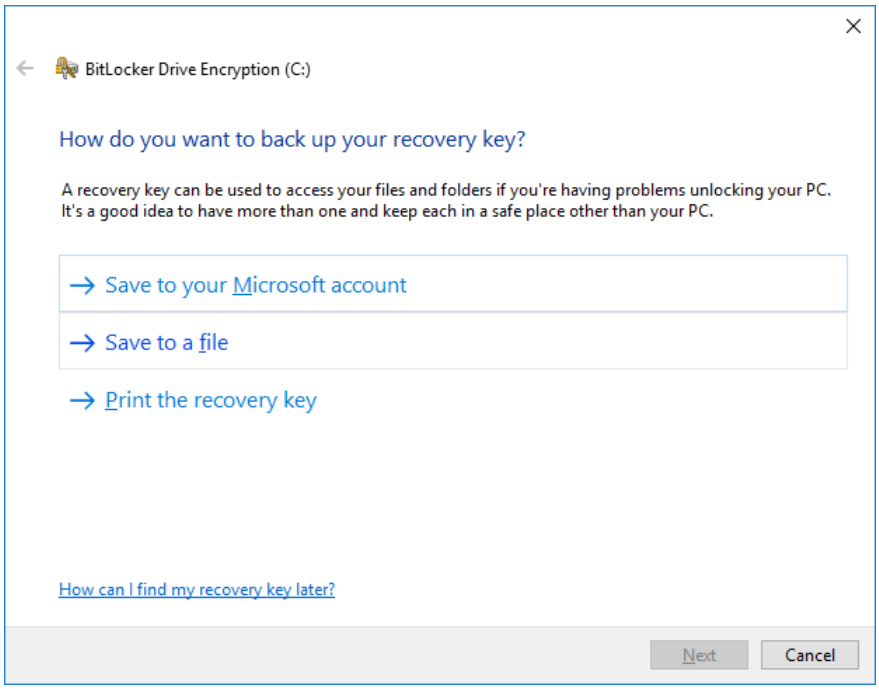
Enabling the BitLocker

To enable the BitLocker for a drive:

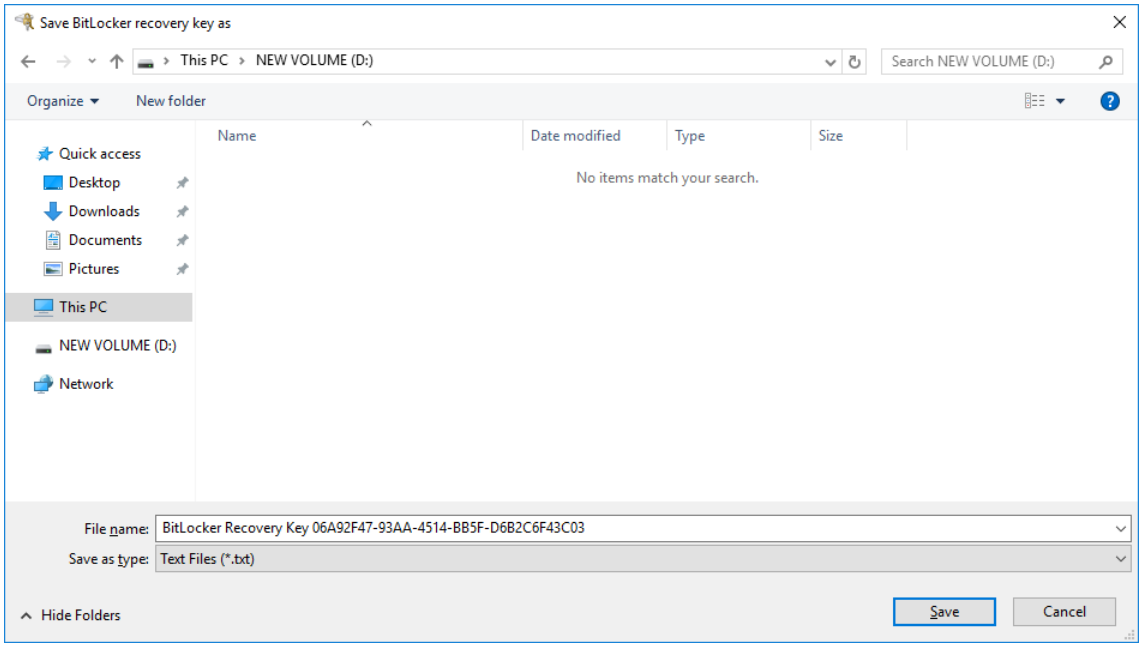
1. Right-click on the drive and select the **Turn on BitLocker** option.



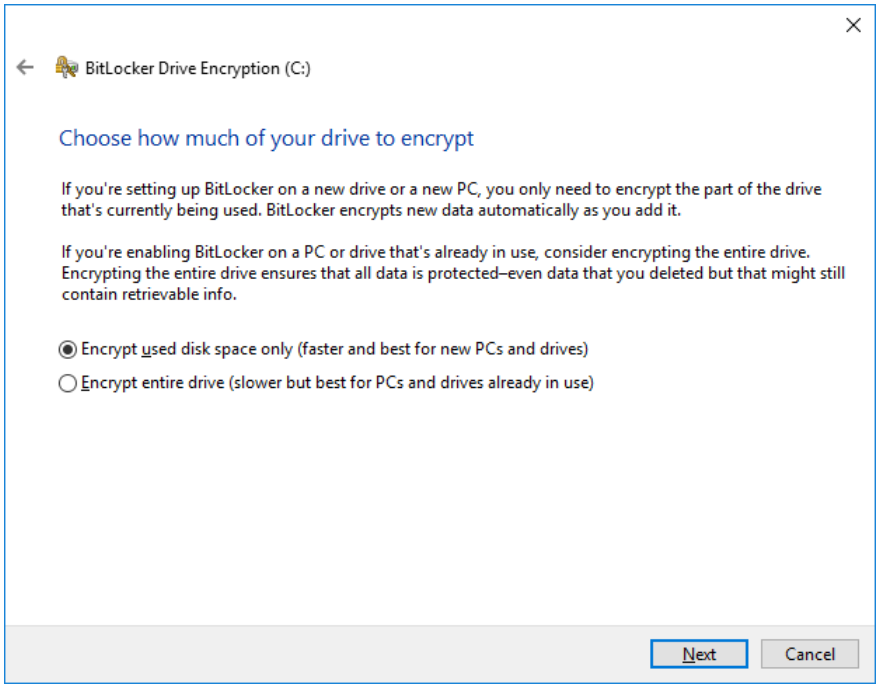
2. Select a method to back up the recovery key. For example, select **Save to a file**.



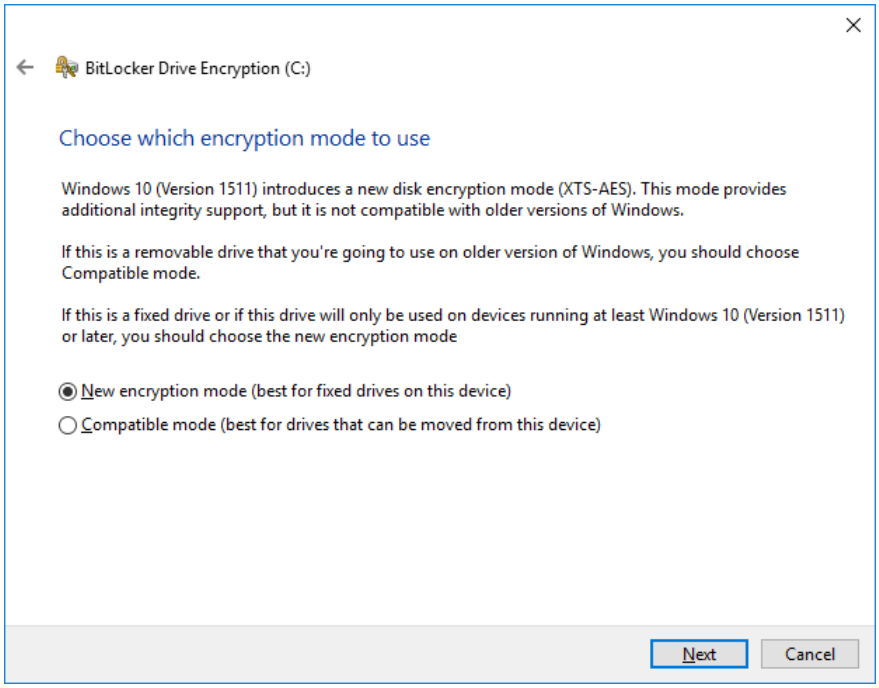
3. Select the path to store the file.



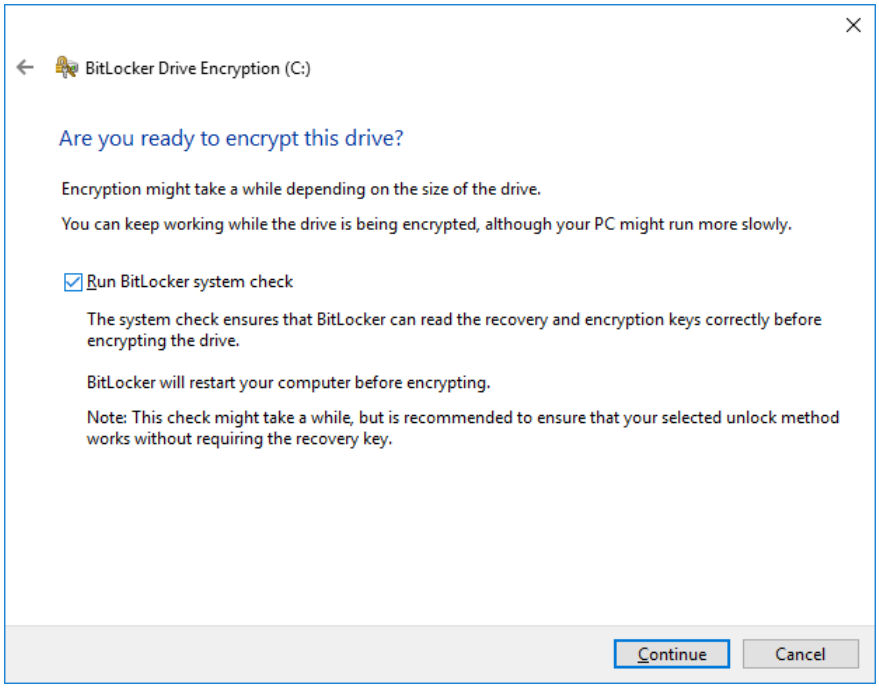
4. Select an option to specify which part of the drive to encryption and click **Next**.



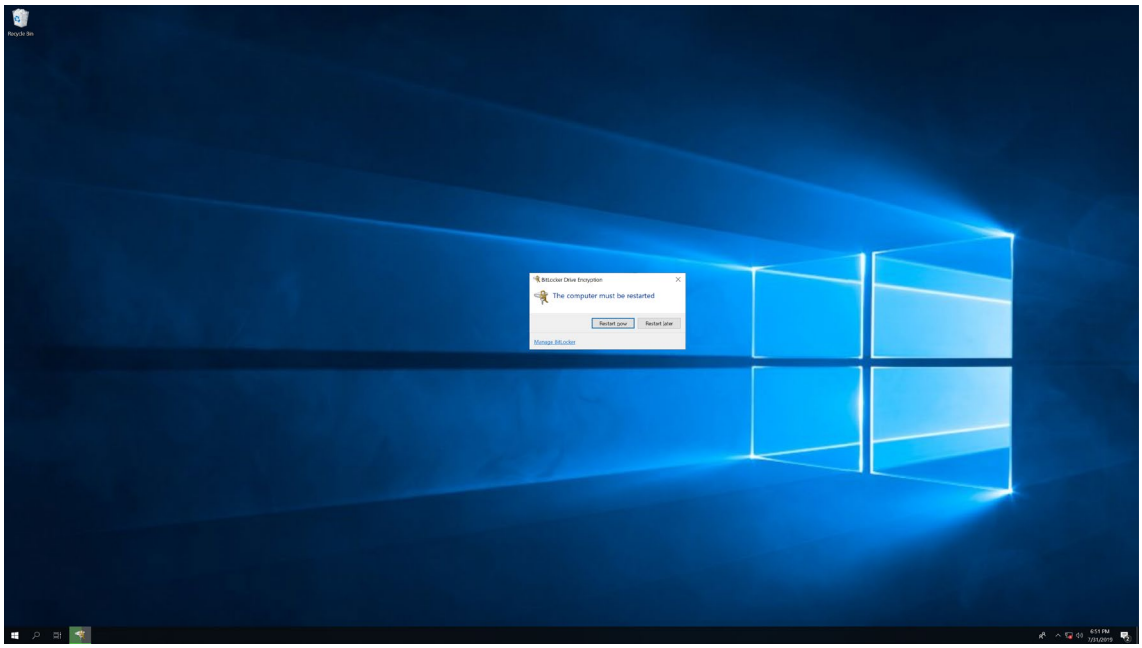
5. Choose the drive encryption mode and click **Next**.



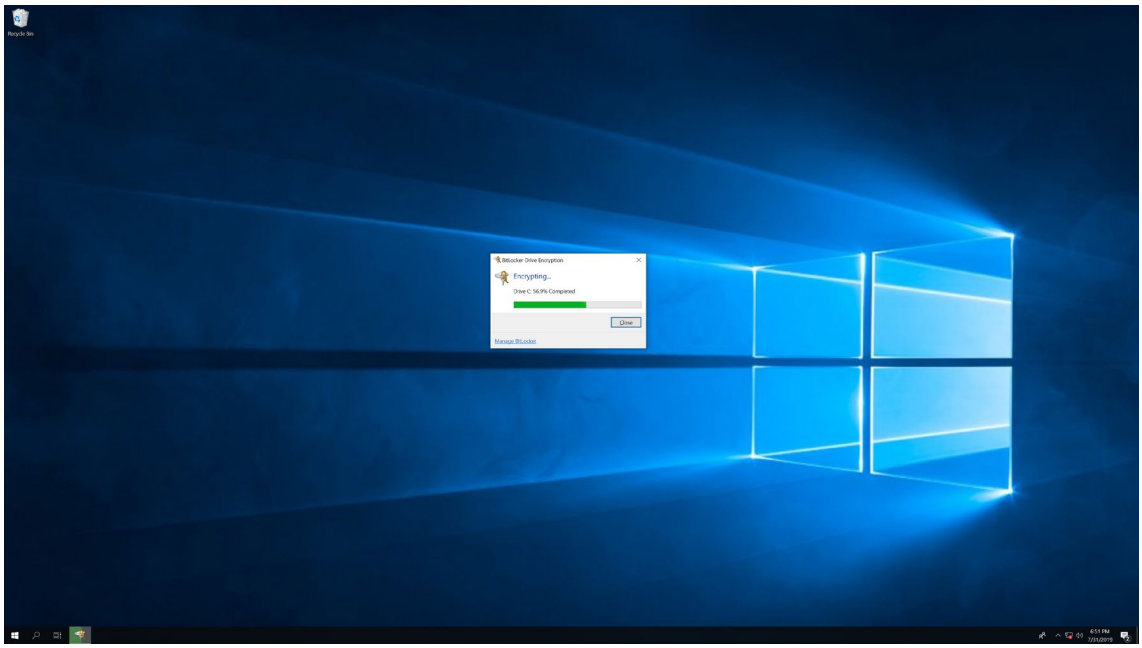
6. Click **Continue** with the **Run BitLocker**… option checked (default).



7. Click **Restart now**.



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

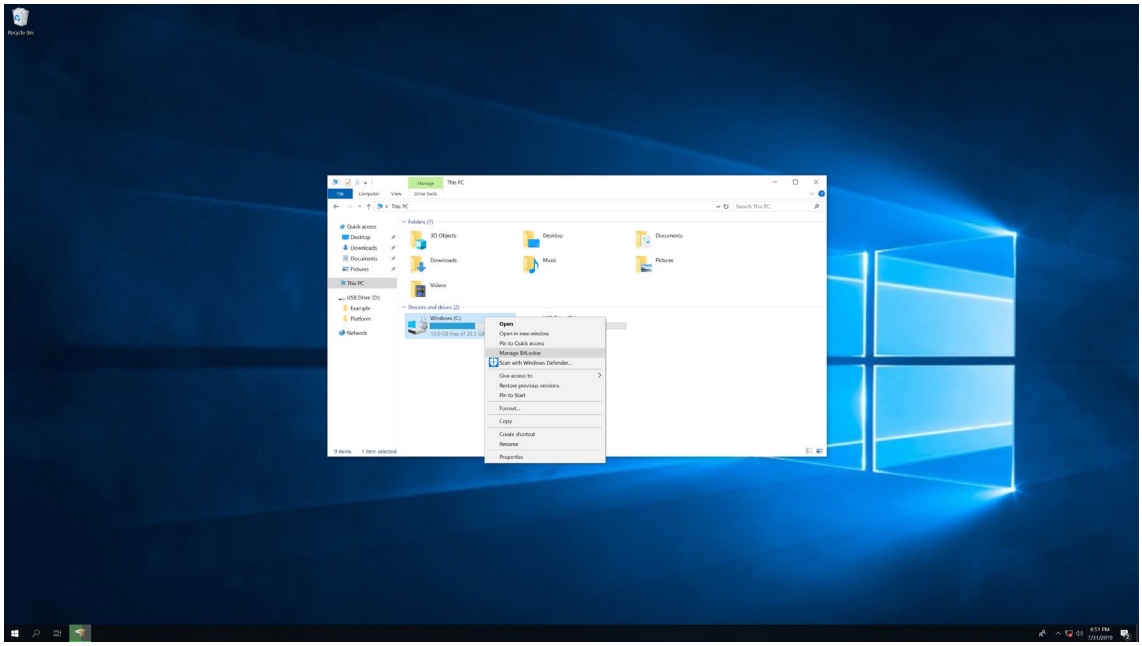


The system will be restarted immediately.

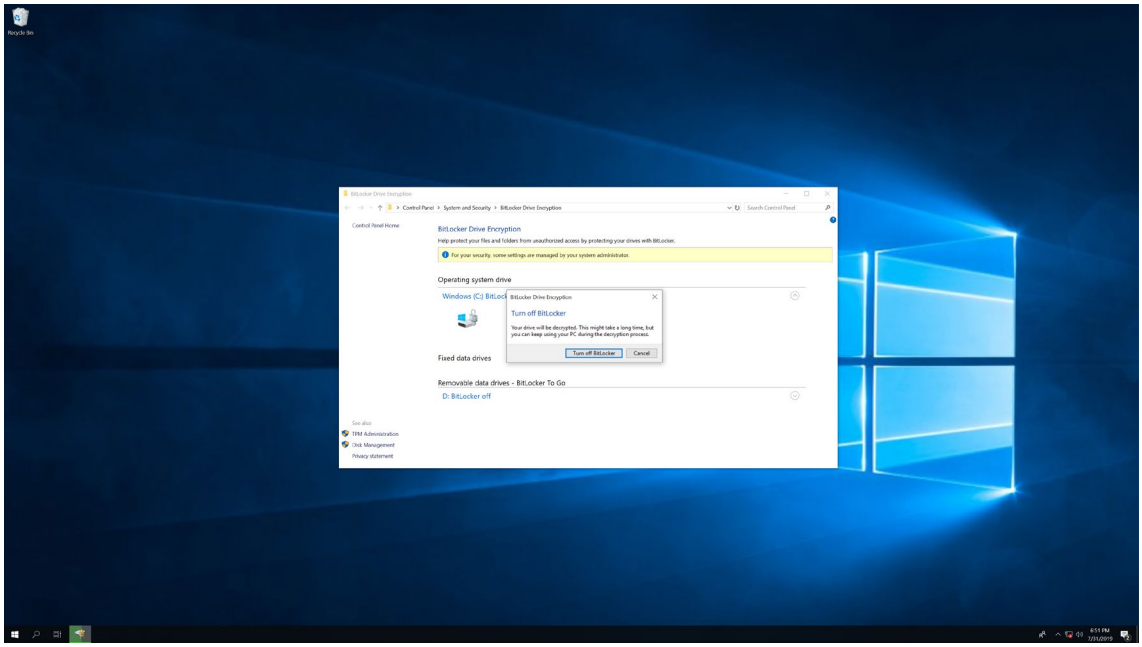
Disabling the BitLocker

To disable the BitLocker for a drive:

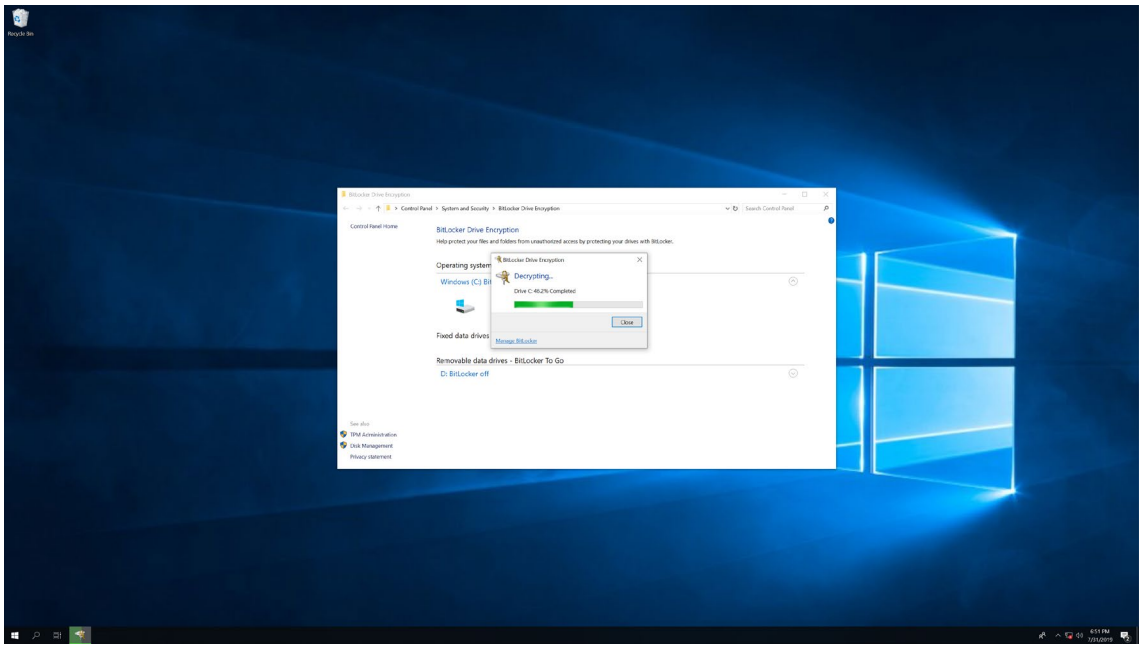
1. Right-click on the drive and select the **Manage BitLocker** option.

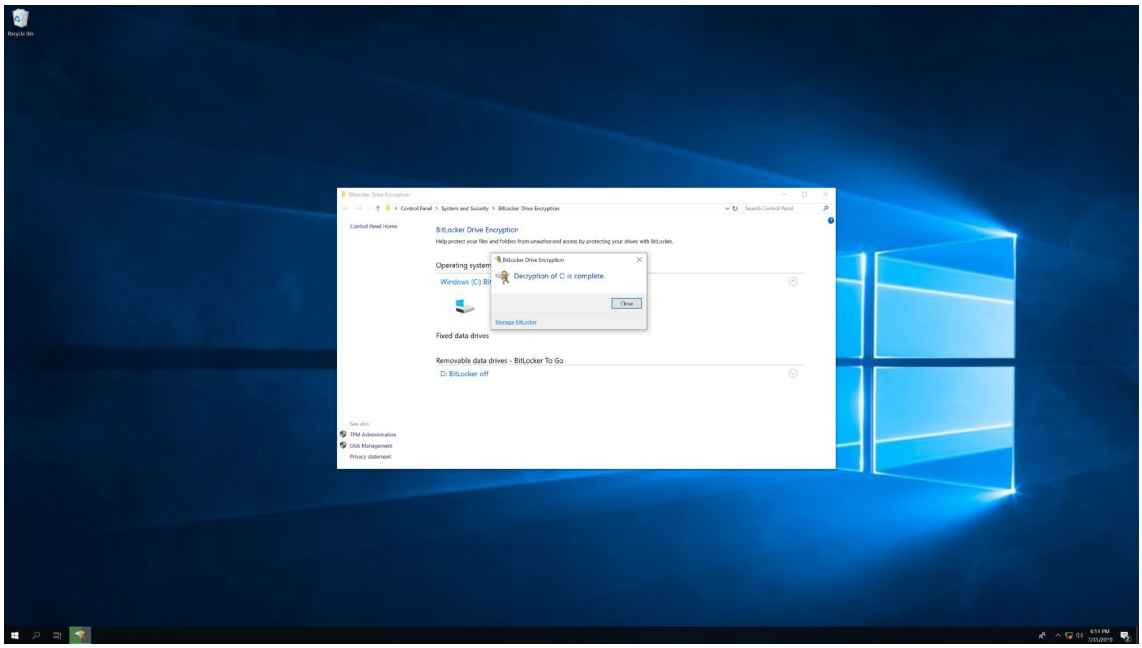


2. Click **Turn off BitLocker**.

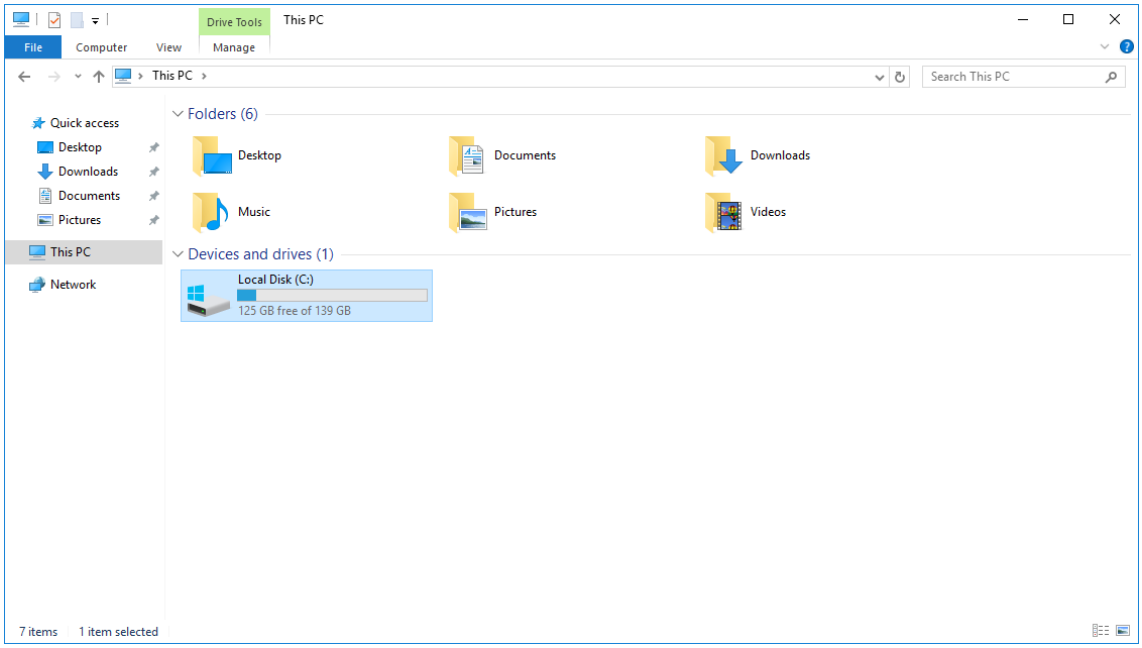


3. Wait for the decryption process to complete and click **Close** to exit the program.





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



3

Unified Write Filter

This chapter describes how to use the Unified Write Filter.

The following topics are covered in this chapter:

- **Getting Started**
- **Turning On UWF in a Running PC**
- **Installing UWF Using WMI**

Getting Started

The Unified Write Filter (UWF) needs to be installed and enabled (and optionally configured) on your system before you can use it. The first time you enable UWF on your system, the following changes are made 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.
- BCD setting **bootstatuspolicy** is set to **ignoreallfailures**.

After UWF is enabled, select a drive to protect and start using UWF. You can install UWF for running PCs and devices and manage them remotely using Windows Management Instrumentation (WMI).

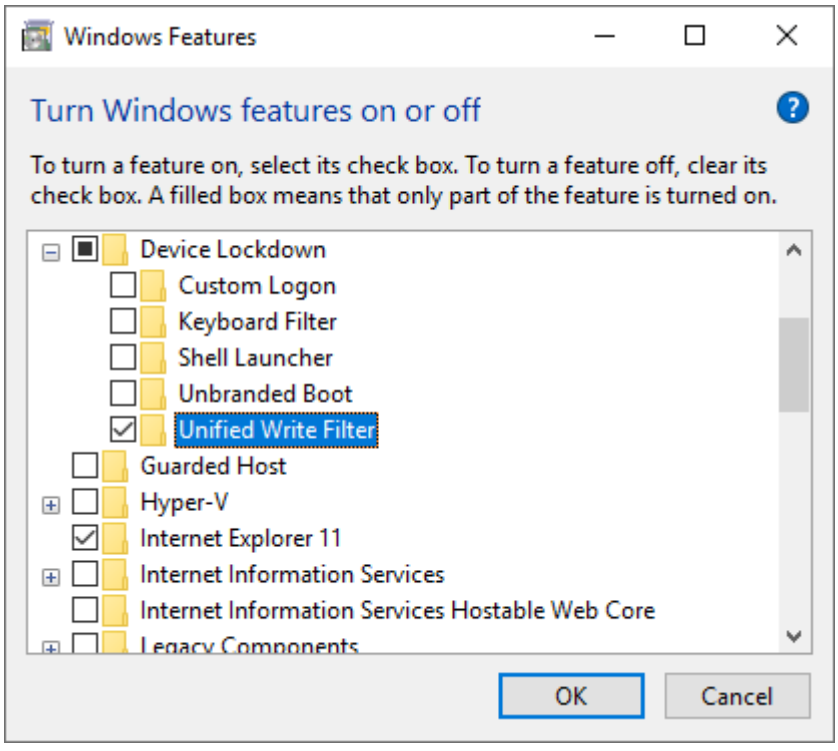
Turning On UWF in a Running PC

Using Windows Features.

a. In the Windows taskbar, click on the start icon and type **Turn Windows features on or off**.

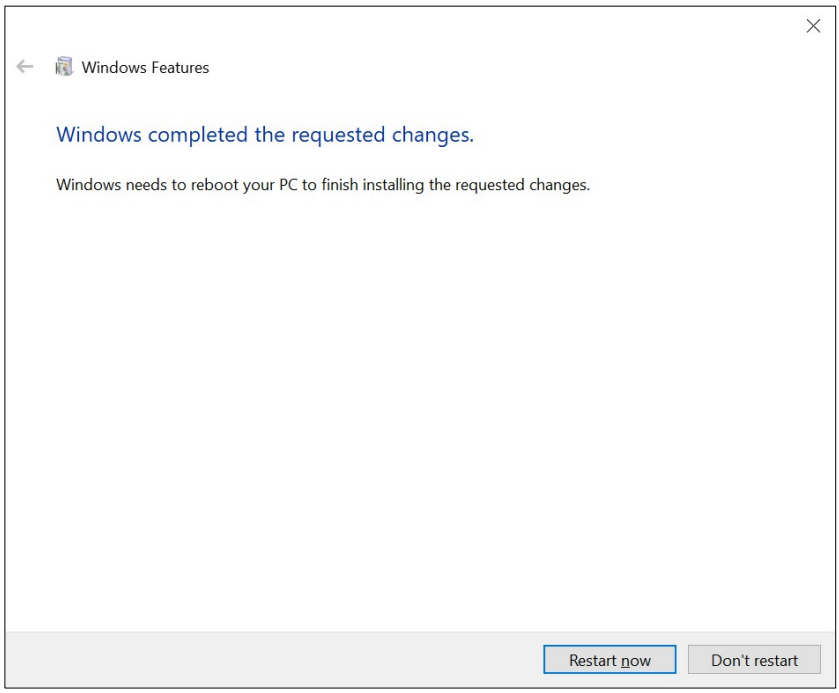
b. In **Windows Features**, expand the Device Lockdown node and check **Unified Write Filter.**

c. Click **OK**.



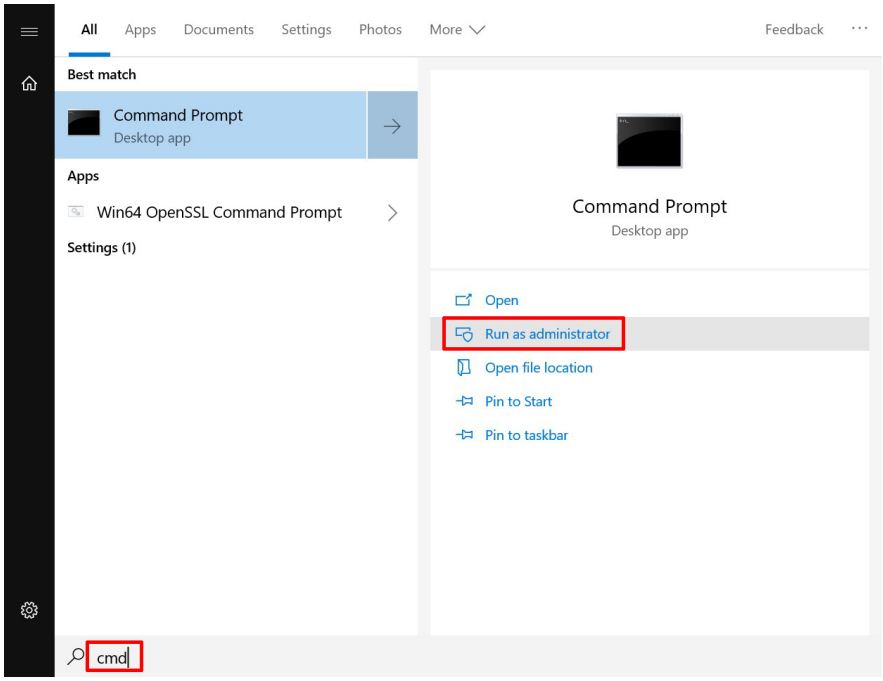
A progress bar is displayed indicating that Windows is searching for required files. Once the files are found, the progress bar will indicate that Windows is applying the changes.

d. When the process is completed, click **Restart now** to reboot your computer.



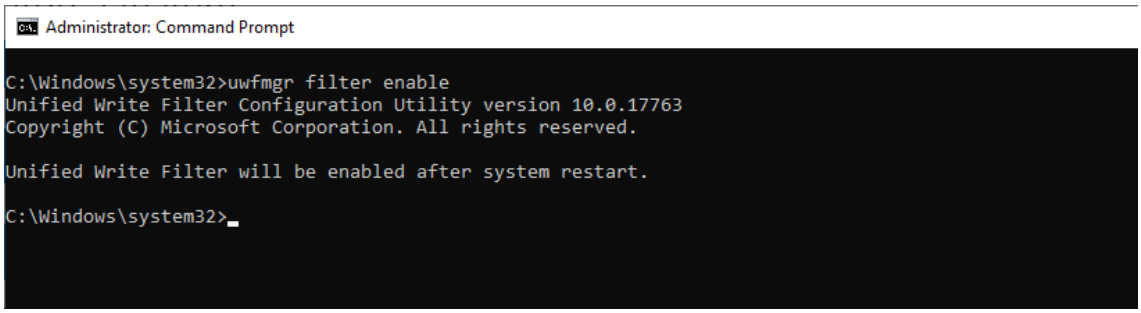
Using the Windows Command Line

1. Type **CMD** in the Windows search box and select **Run as administrator**.



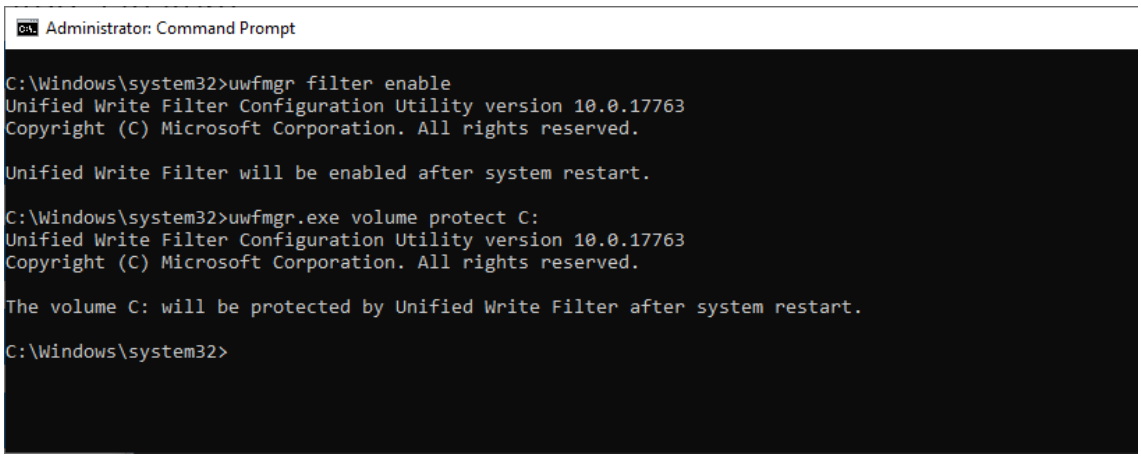
2. Run the following command to enable the filter.

```
cmd uwfmgr filter enable
```



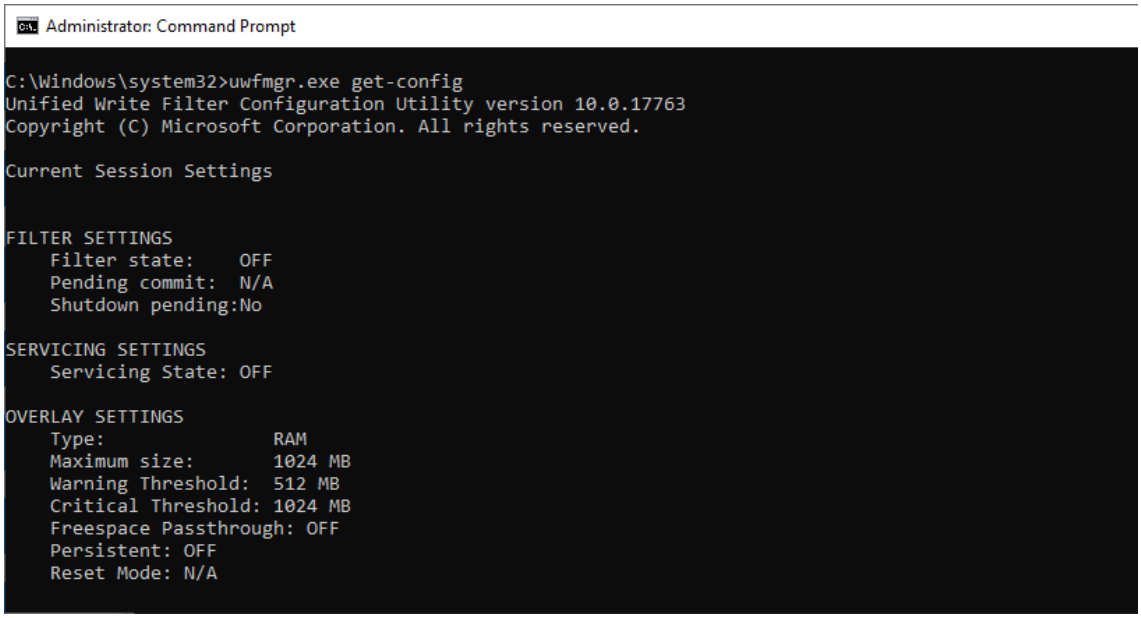
2. To enable write protection for a specific drive (e.g., **C**), run the command:

   `cmd uwfmgr.exe volume protect C:`



3. Restart your computer.
4. After the computer restarts, use the following command to confirm that UWF is running:

   `cmd uwfmgr.exe get-config`



Installing UWF Using WMI

If your computer is already set up and you do not want to use a provisioning package, you can configure UWF using Windows Management Instrumentation (WMI) providers. To turn on UWF using WMI, use the **UWF_Filter** function, specifically the **`UWF_Filter.Enable`** method, in one of the following ways:

- Use the WMI providers in a PowerShell script
- Use the WMI providers in an application
- Use the command line tool **uwfmgr.exe**

You must restart your device after you turn on or turn off UWF for the changes to take effect.

You can change the UWF settings even after the UWF is turned on. For example, you can move the page file location to an unprotected volume and re-enable the paging files.

IMPORTANT!

If you have added UWF to your image by using SMI settings in a unattend.xml file, turning on UWF will only set the bootstatuspolicy BCD setting and turn 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 filtering. After a device restarts, the configuration settings are stored in the registry for the current session and the next session. Static configuration changes do not take effect until after a device restarts, and these changes are saved in the registry entries for the next session. Dynamic configuration changes occur immediately and take effect after a device restart.

4

Moxa IO Controller Utility

This chapter describes how to use the Moxa IO Controller utility.

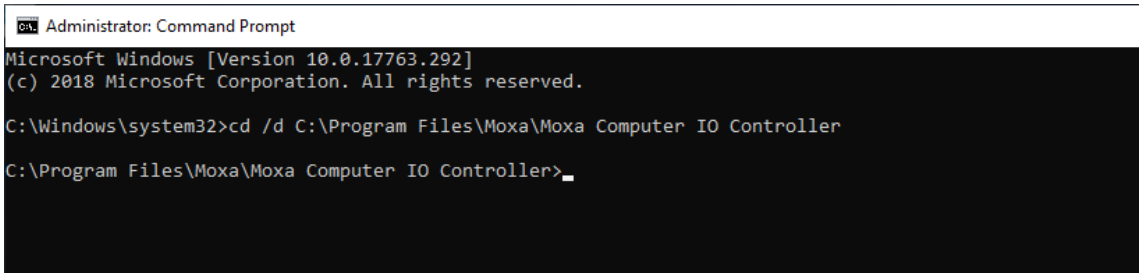
The following topics are covered in this chapter:

- **Getting Started**
- **Setting the DIO Status**
- **Setting the UART Mode**
- **Setting the PCIE Status**
- **Setting the LED Status**

Getting Started

To use the Moxa IO Controller utility, do the following:

1. Install the utility.
2. Enable the settings for DIO, UART mode, PCIE, and LED.
3. Run the **Command Prompt** as an **Administrator and** change the path to:
   C:\Program Files\Moxa\Moxa Computer IO Controller.



Refer to the following sections for instructions on configuring additional settings.

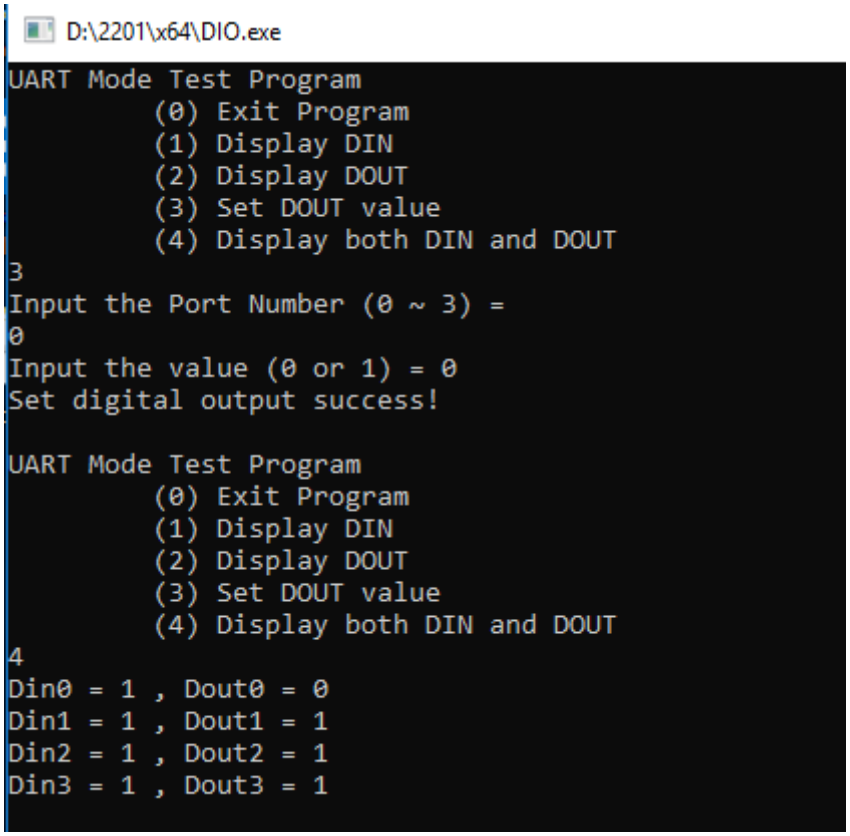
Setting the DIO Status

Run **DIO.exe** and follow the onscreen instructions to view or configure the DIO status.

IMPORTANT!

The DIN and DOUT indices start from 0 in the Moxa IO Controller utility although the indices are printed starting from 1.

Example:



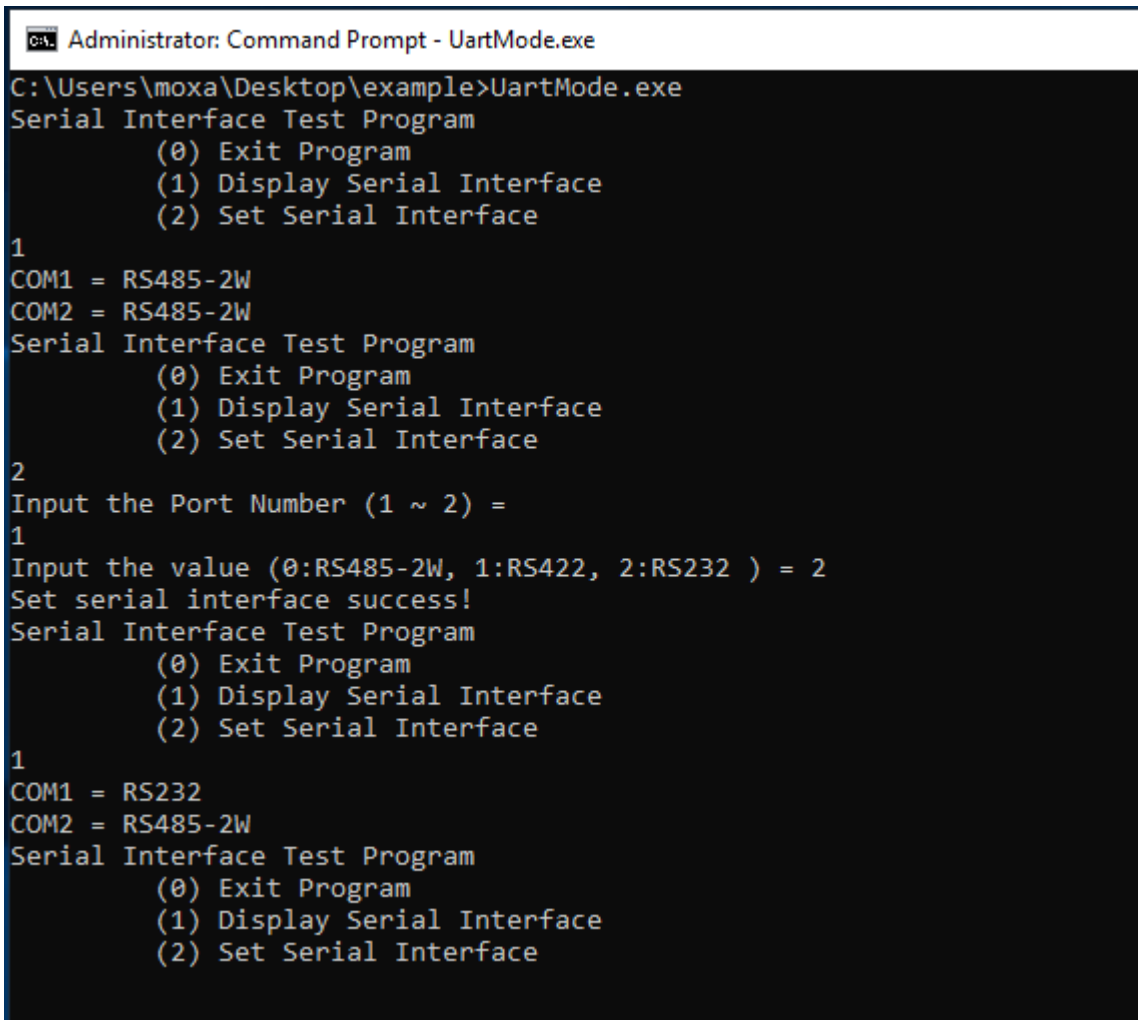
Setting the UART Mode

Run **UartMode.exe** and follow the onscreen instructions to view or configure the UART mode.

IMPORTANT!

The UART index starts from 0 in the Moxa IO Controller utility although it is printed starting with 1.

Example:



Setting the PCIE Status

Run **PwrExample.exe** and follow the onscreen instructions to view or configure the PCIE status.

IMPORTANT!

The PCIE index starts from 0 in the Moxa IO Controller utility although it is printed starting with 1.

Example:

```
D:\2201\x64\PwrExample.exe
         (2) Set Power on/off
2
Input the Socket Number (1 ~ 2) =
2
Input 0 or 1 (0 = Off, 1 = On) = 0
Set Power success!

Mini PCIE Power Contol Test Program
         (0) Exit Program
         (1) Display Power condition
         (2) Set Power on/off
1
Socket1 is on
Socket2 is off

Mini PCIE Power Contol Test Program
         (0) Exit Program
         (1) Display Power condition
         (2) Set Power on/off
2
Input the Socket Number (1 ~ 2) =
2
Input 0 or 1 (0 = Off, 1 = On) = 1
Set Power success!

Mini PCIE Power Contol Test Program
         (0) Exit Program
         (1) Display Power condition
         (2) Set Power on/off
```

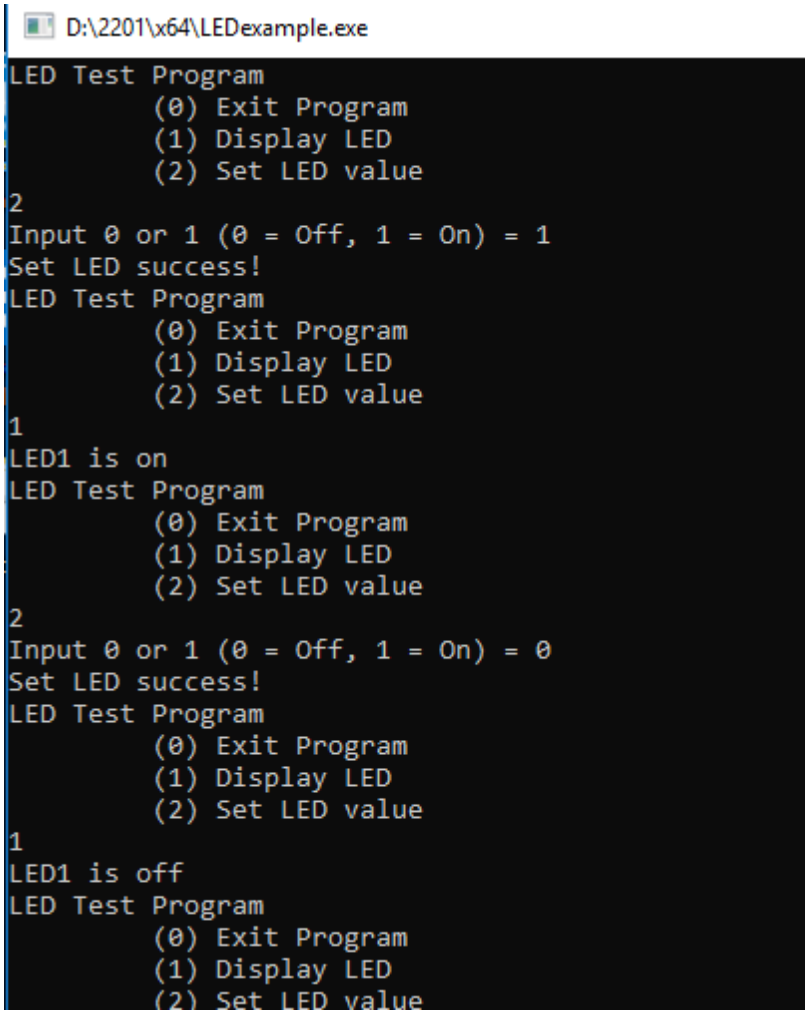
Setting the LED Status

Run **LEDexample.exe** and follow the onscreen instructions to view or configure the LED status.

IMPORTANT!

The LED index starts from 0 in the Moxa IO Controller utility although it is printed starting with 1.

Example:



5

Moxa Serial Interface Utility

This chapter describes how to use Serial Interface utility to set the UART mode.

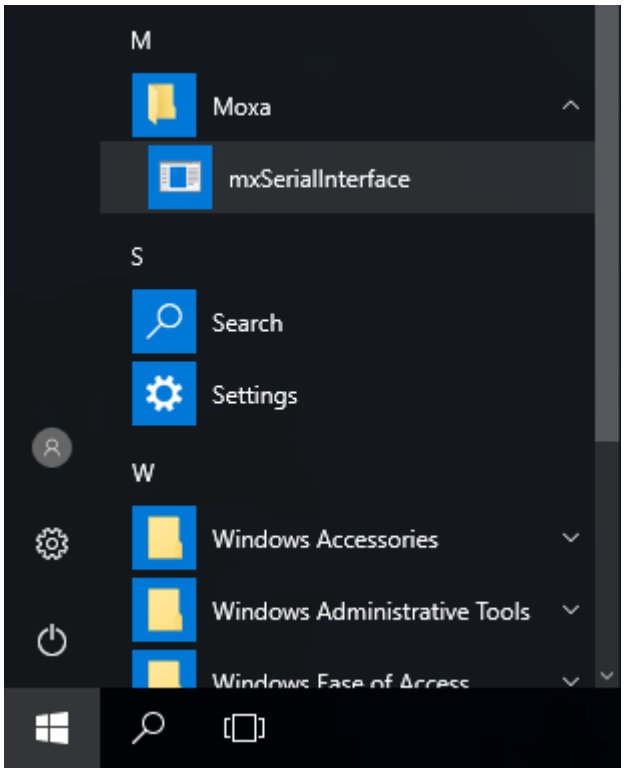
The following topics are covered in this chapter:

- **Setting the UART Mode**

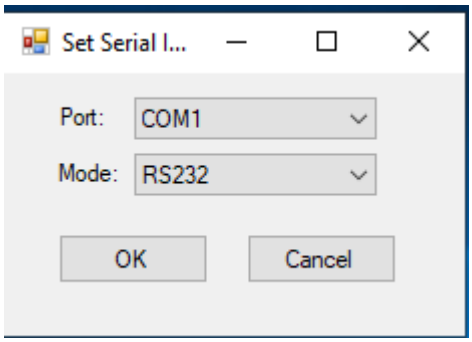
Setting the UART Mode

1. Install the Moxa Serial Interface utility.

   After the installation is complete, you should be able to see the **mxSerialInterface** utility in the programs menu by clicking on the **Start** button.



2. Run the **mxSerialInterface** utility.
3. Select the target COM port and UART mode and click **OK** to save the settings.



6

IO Control API

The following topics are covered in this chapter:

- **mxgpio**
  - mxdgio_open
  - mxgpio_get_data
  - mxgpio_set_data
  - mxgpio_close
- **mxdgio**
  - mxdgio_open
  - mxdgio_get_input_signal
  - mxdgio_get_output_signal
  - mxdgio_set_output_signal_low
  - mxdgio_set_output_signal_high
  - mxdgio_close
- **mxsp**
  - mxsp_open
  - mxsp_get_interface
  - mxsp_set_interface
  - mxsp_close
- **mxwdg**
  - mxwdg_open
  - mxwdg_refresh
  - mxwdg_close

mxgpio

The **mxgpio** library operates on the general-purpose I/Os (GPIO) and consists of the following functions:

- **mxgpio_open**
- **mxgpio_get_data**
- **mxgpio_set_data**
- **mxgpio_close**

Requirements

Name	Items
Header	**mxgpio.h**
Library	**mxgpio.lib**
DLL	**mxgpio.dll**

mxdgio_open

Syntax	**HANDLE mxgpio_open(void);**
Description	Open a GPIO handle
Parameters	None
Return Value	The status of the GPIO interface (1 or 0)

mxgpio_get_data

Syntax	**int mxgpio_get_data(HANDLE fd, unsigned int port_no);**	
Description	Get the GPIO input status.	
Parameters	**fd**	Handle of the GPIO device
	port	A GPIO port index; starts from 0.
Return Value	The status of GPIO port; **0** is low, **1** is high.	

mxgpio_set_data

Syntax	**int mxgpio_set_data(HANDLE fd, unsigned int port_no, int data);**	
Description	Set the GPIO status to high.	
Parameters	**fd**	Handle of the GPIO device
	port	A GPIO port index; starts from 0.
Return Value	Returns 0 on success, otherwise the function has failed	

mxgpio_close

Syntax	**void mxgpio_close(HANDLE fd);**	
Description	Close the GPIO device.	
Parameters	**fd**	Handle of the GPIO device
Return Value	None	

mxdgio

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

- **mxdgio_open**
- **mxdgio_get_input_signal**
- **mxdgio_get_output_signal**
- **mxdgio_set_output_signal_low**
- **mxdgio_set_output_signal_high**
- **mxdgio_close**

Requirements

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

mxdgio_open

Syntax	**HANDLE mxdgio_open();**
Description	Opens the digital I/O device
Parameters	None
Return Value	The handle of the digital I/O

mxdgio_get_input_signal

Syntax	**int mxdgio_get_input_signal(HANDLE fd, int port);**	
Description	Gets the digital input status	
Parameters	**fd**	Handle of the digital I/O device
	port	A digital input port index; starts from 0
Return Value	The status of the digital input port; 0 is low, 1 is high	

mxdgio_get_output_signal

Syntax	**int mxdgio_get_output_signal(HANDLE fd, int port);**	
Description	Gets the digital output status	
Parameters	**fd**	Handle of the digital I/O device
	port	A digital output port index; starts from **0**
Return Value	The status of the digital output port; **0** is low, **1** is high	

mxdgio_set_output_signal_low

Syntax	**int mxdgio_set_output_signal_low(HANDLE fd, unsigned int port);**	
Description	Sets the digital output status to **low**	
Parameters	**fd**	Handle of the digital I/O device
	port	A digital output port index; starts from 0
Return Value	Returns 0 on success; otherwise, the function has failed	

mxdgio_set_output_signal_high

Syntax	**int mxdgio_set_output_signal_high(HANDLE fd, unsigned int port);**	
Description	Sets the digital output status to **high**	
Parameters	**fd**	Handle of the digital I/O device
	port	A port index of a digital output port; starts from 0
Return Value	Returns 0 on success; otherwise the function has failed	

mxdgio_close

Syntax	**void mxdgio_close(HANDLE fd);**	
Description	Closes the digital I/O device	
Parameters	**fd**	Handle of the digital I/O device
Return Value	None	

mxsp

The **mxsp** library operates on the UART (serial) interface and consists of the following functions:

- **mxsp_open**
- **mxsp_get_interface**
- **mxsp_set_interface**
- **mxsp_close**

Requirements

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

mxsp_open

Syntax	**HANDLE mxsp_open();;**
Description	Initializes the serial interface
Parameters	None
Return Value	Returns the serial interface handle.

mxsp_get_interface

Syntax	**int mxsp_get_interface(HANDLE fd, int port_index);**	
Description	Gets the serial interface mode	
Parameters	**fd**	The serial interface handle
	port_index	A serial interface port index; starts from 0.
Return Value	0: RS-232 mode 1: RS-485-2W mode 2: RS-422 mode 3: RS-485-4W mode	

mxsp_set_interface

Syntax	**int mxsp_set_interface(HANDLE fd, int port_index, int port_interface);**	
Description	Sets the serial interface mode	
Parameters	**fd**	The serial interface handle
	port_index	A port index of the serial port; starts from 0
	port_interface	0: RS-232 mode 1: RS-485-2W mode 2: RS-422 mode 3: RS-485-4W mode
Return Value	Return 0 on success, otherwise the function has failed.	

mxsp_close

Syntax	**void mxsp_close();**
Description	Close the serial interface.
Parameters	None
Return Value	None

mxwdg

The **mxwdg** library operates on the watchdog timer and consists of the following functions:

- **mxwdg_open**
- **mxwdg_refresh**
- **mxwdg_close**

Requirements

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

mxwdg_open

Syntax	**PVOID mxwdg_open(unsigned long time);**	
Description	Open the watchdog timer	
Parameters	**time**	Initial refresh time in second.
Return Value	Return Pointer to Watchdog handle. Return -1 on failure.	

mxwdg_refresh

Syntax	**int mxwdg_refresh(PVOID fd);**	
Description	Refresh the watchdog timer.	
Parameters	**fd**	The handle.
Return Value	Returns 0 on success, otherwise the function has failed.	

mxwdg_close

Syntax	**void mxwdg_close(PVOID fd);**	
Description	Closes the watchdog timer.	
Parameters	**fd**	The handle.
Return Value	This function does not return a value.	

7

System Recovery

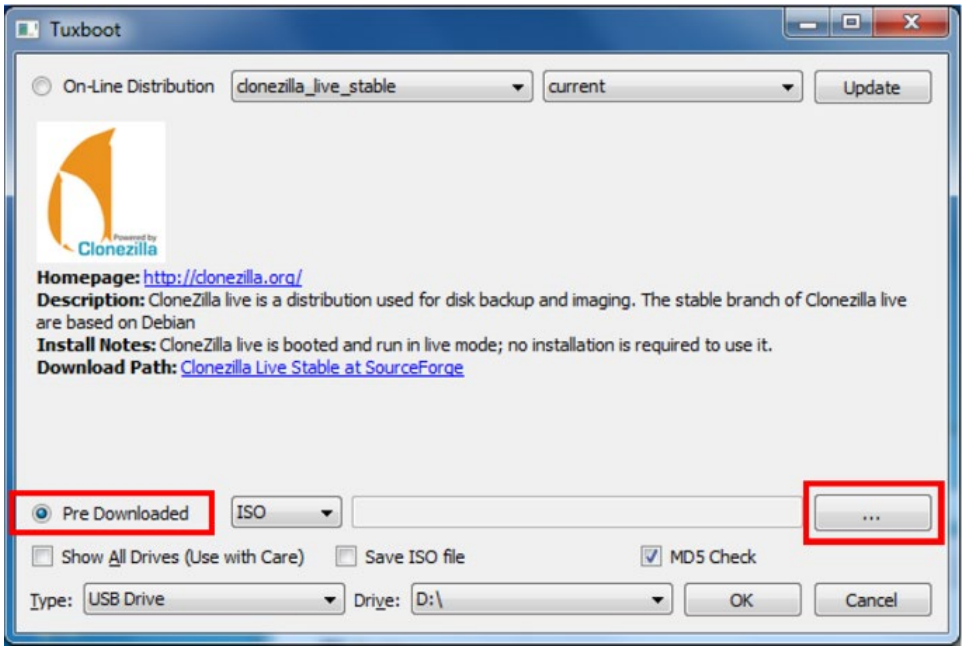
This chapter describes the Windows Recovery setup process.

The following topics are covered in this chapter:

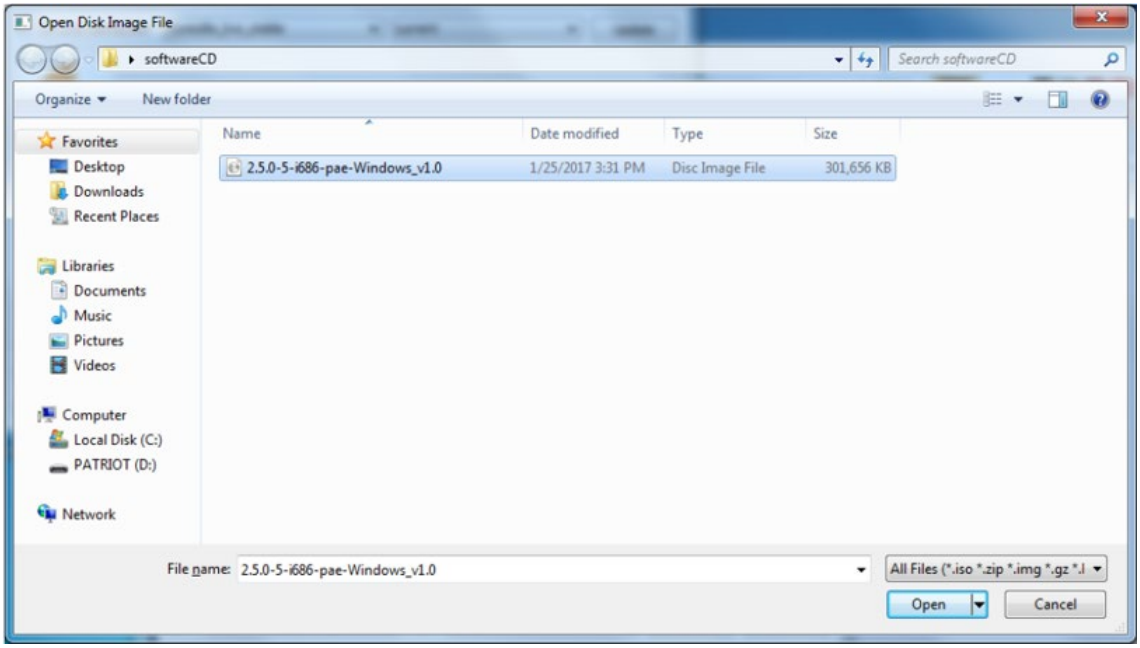
- **Preparing a USB device**
- **Booting From a USB Disk**
- **Creating a Backup Image**
- **Restoring the System Using a Backup Image**

Preparing a USB device

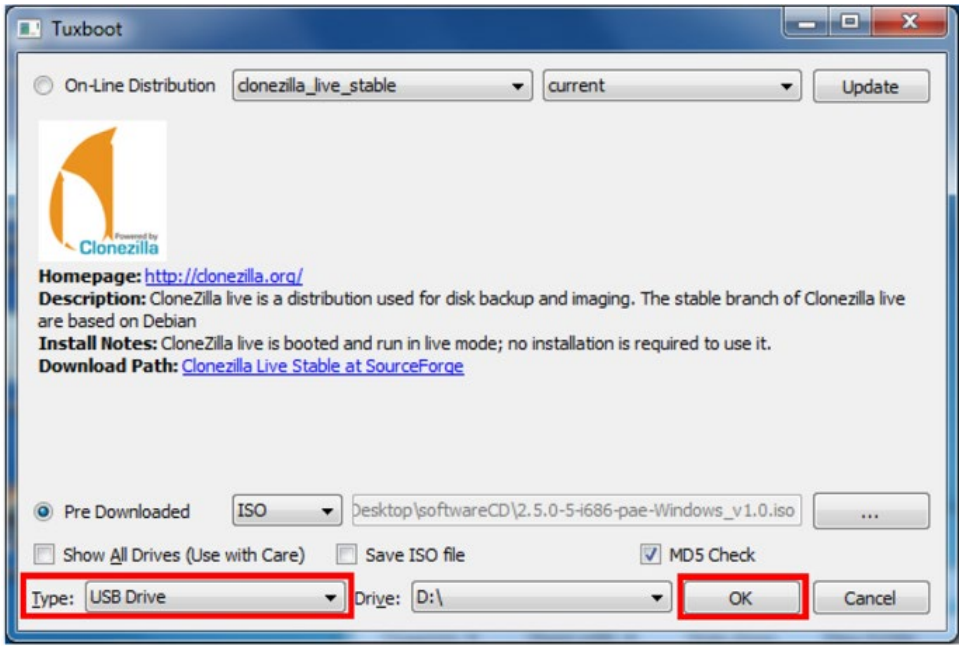
1. Format the USB disk for the FAT32 file system.
2. Run the **tuxboot-windows-23.exe** program from the **\recovery** folder.
3. Select **Pre Downloaded** and click on the browse button (**...**).



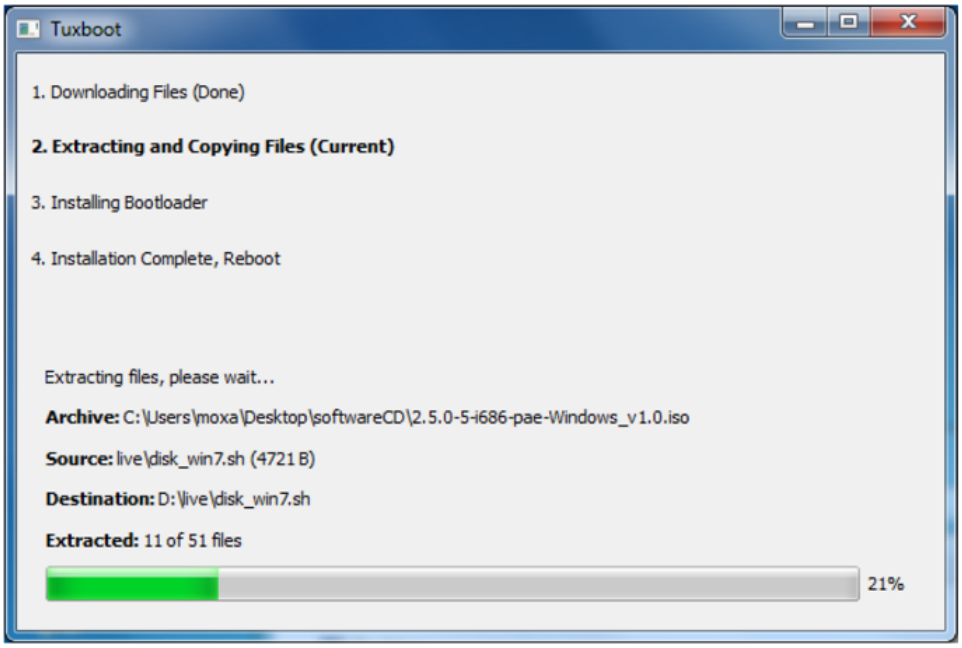
4. Browse to and select the ISO file from the **\recovery** folder.



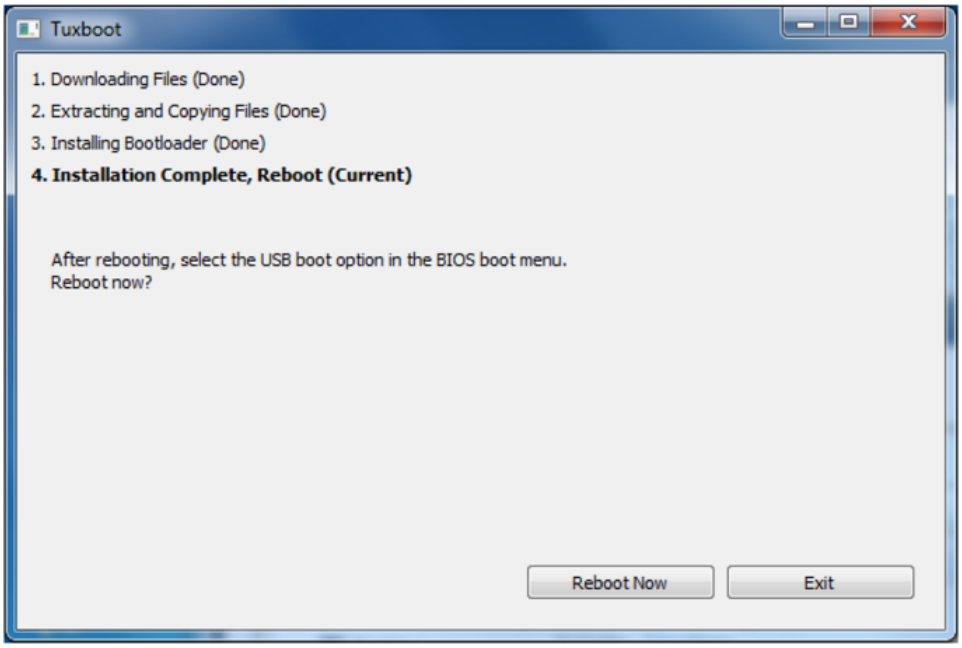
5. Select the USB Drive type and the Drive.
6. Click **OK**.



The boot files will be copied to your USB device.



7. After the files are copied, click **Exit** to stop the program.

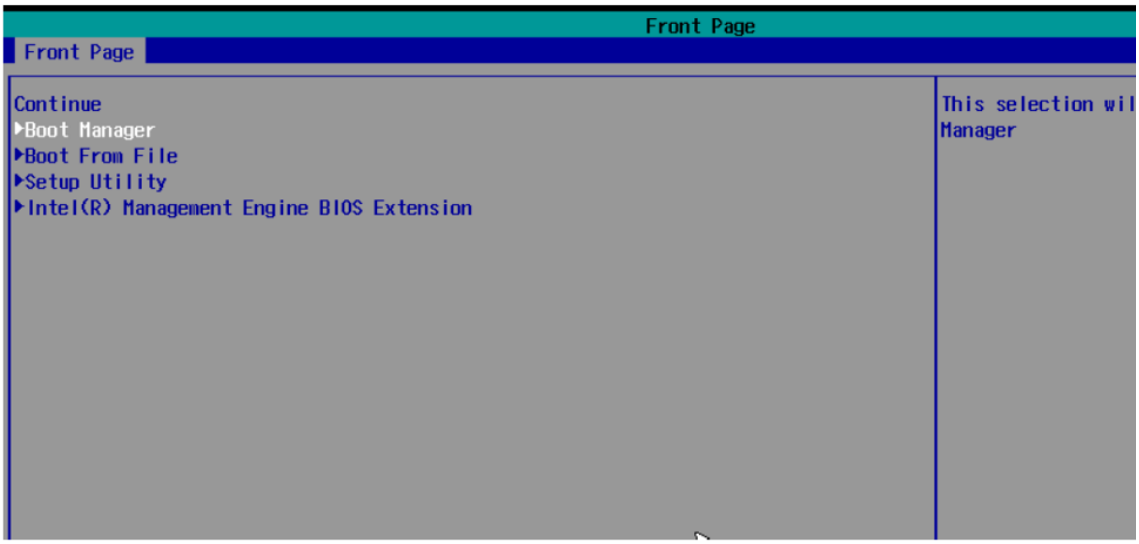


8. Copy the **os_image** directory from the **\recovery** folder to the ***\home\partimag*** folder on the USB device.

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

Booting From a USB Disk

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.

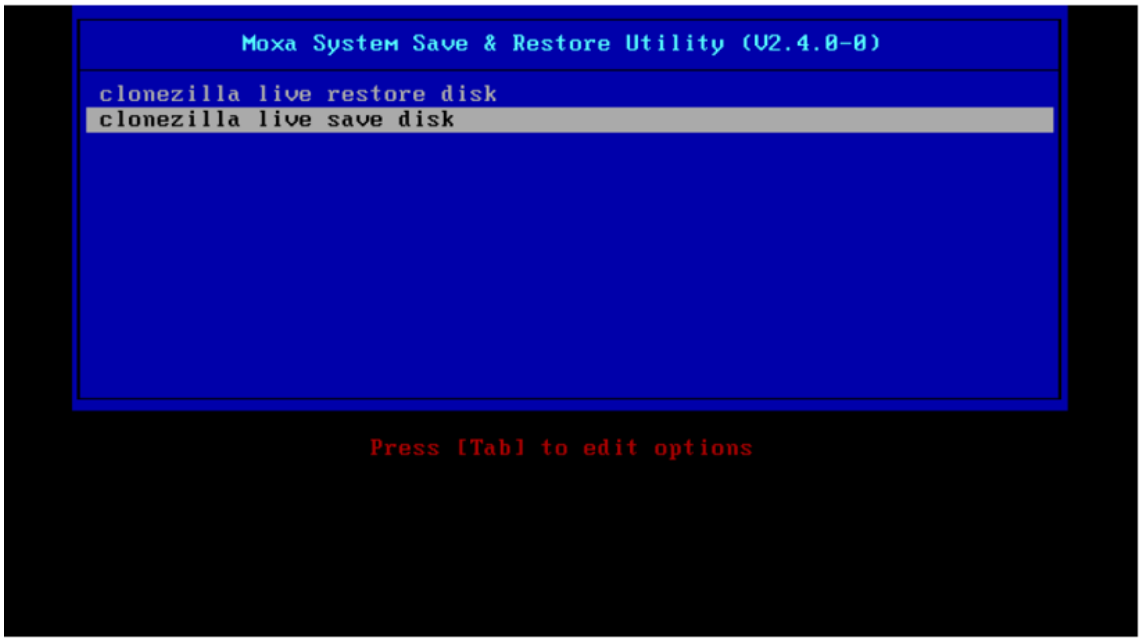


3. Select **EFI USB Devices** and press **Enter** to continue to boot from the USB device.

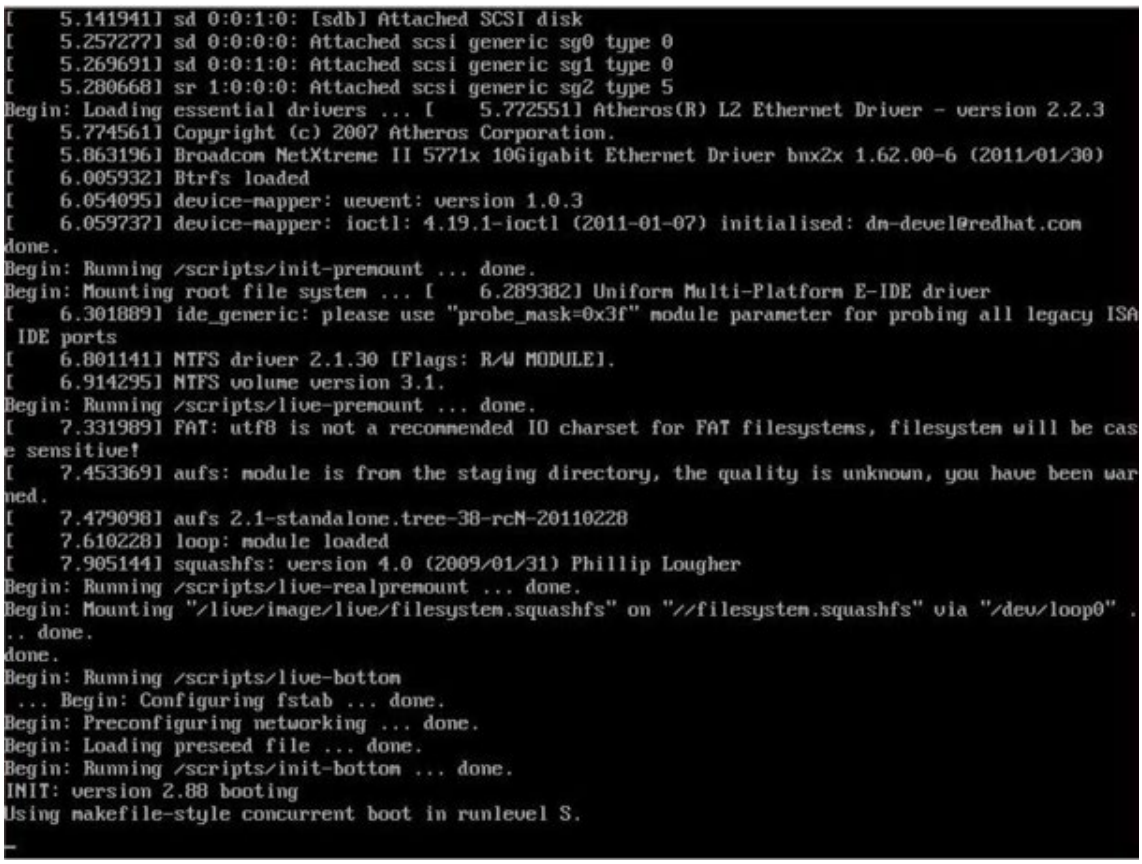
Creating a Backup Image

After you boot the system from a USB disk, you will see the **Moxa System Save & Restore Utility** page.

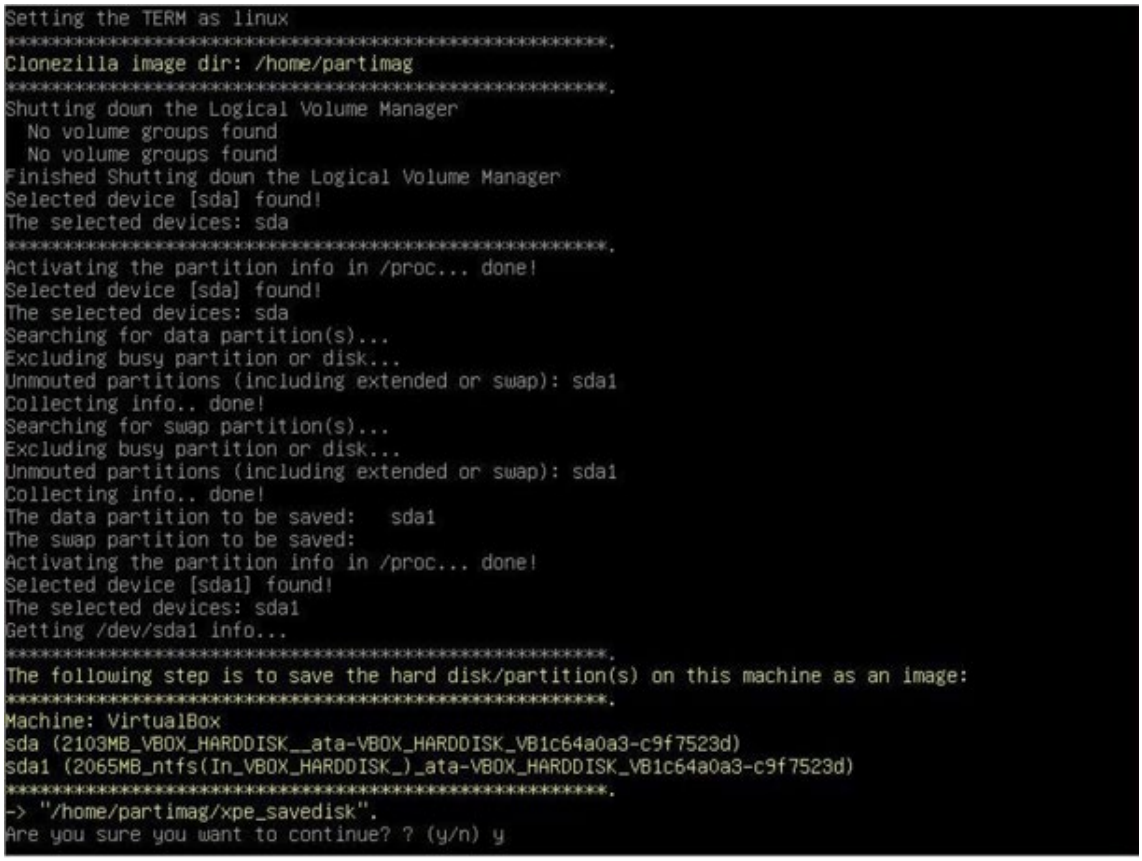
1. In the **Moxa System Save & Restore** Utility, select **clonezilla live save disk**.



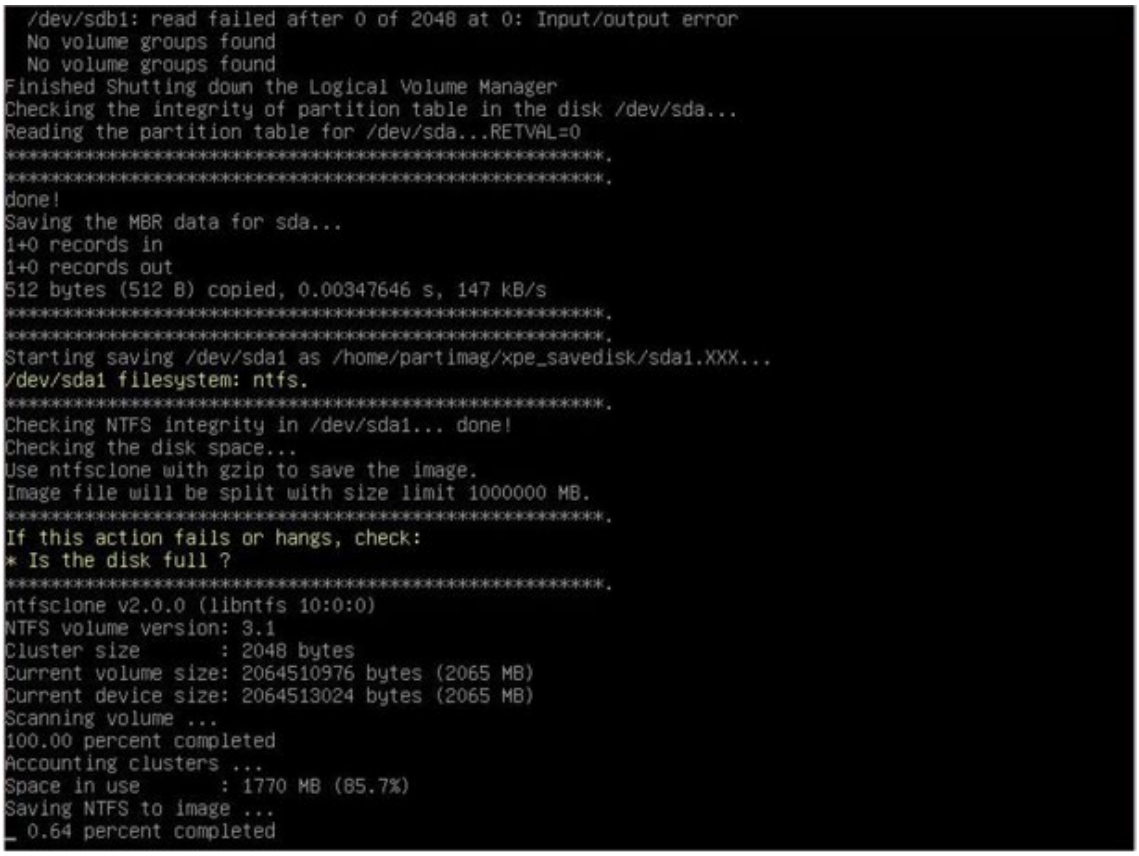
2. Wait for the USB device boot process to finish.



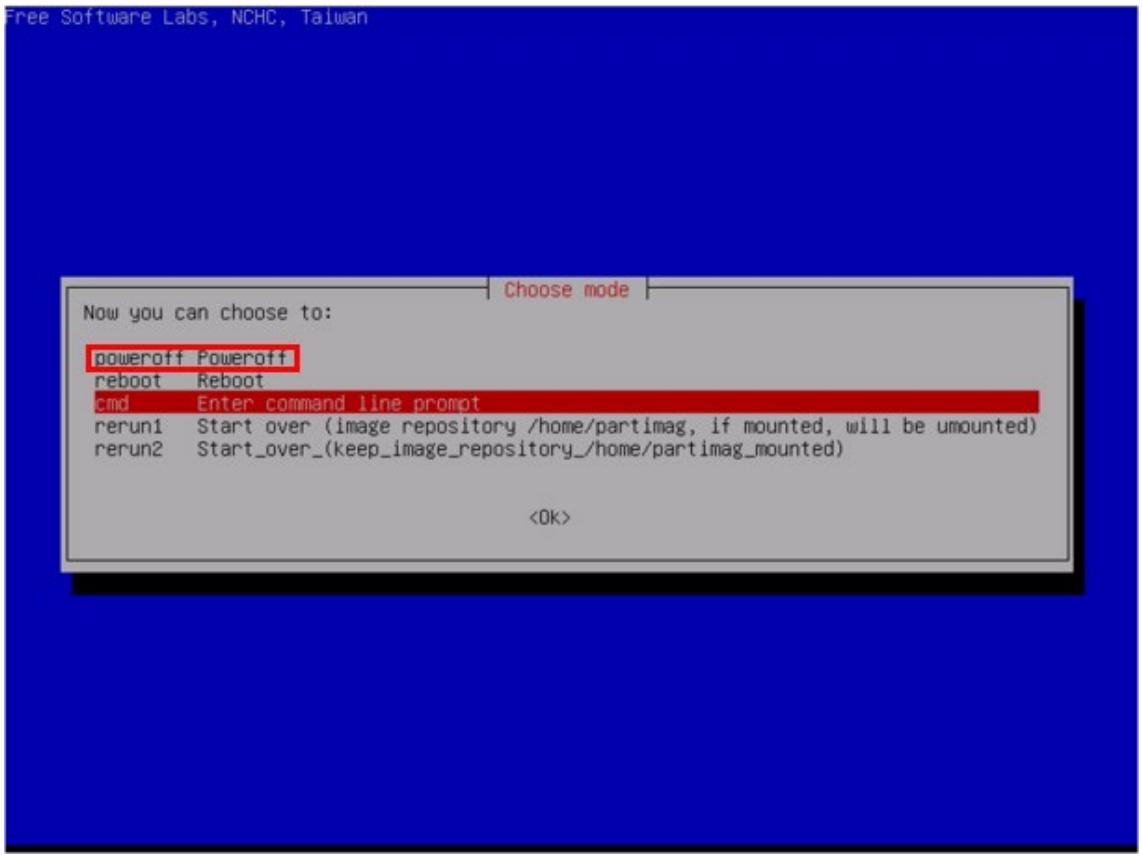
3. Click **y** to continue the process.



4. Wait for the backup process to complete.



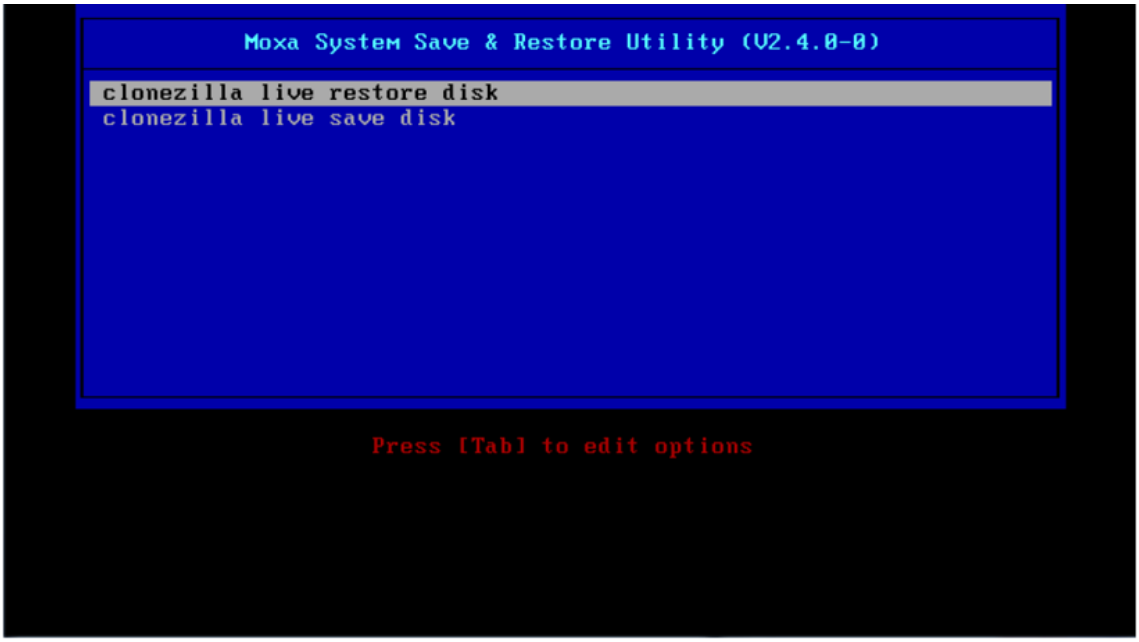
5. Select **poweroff** to power off the computer when the backup process is completed.



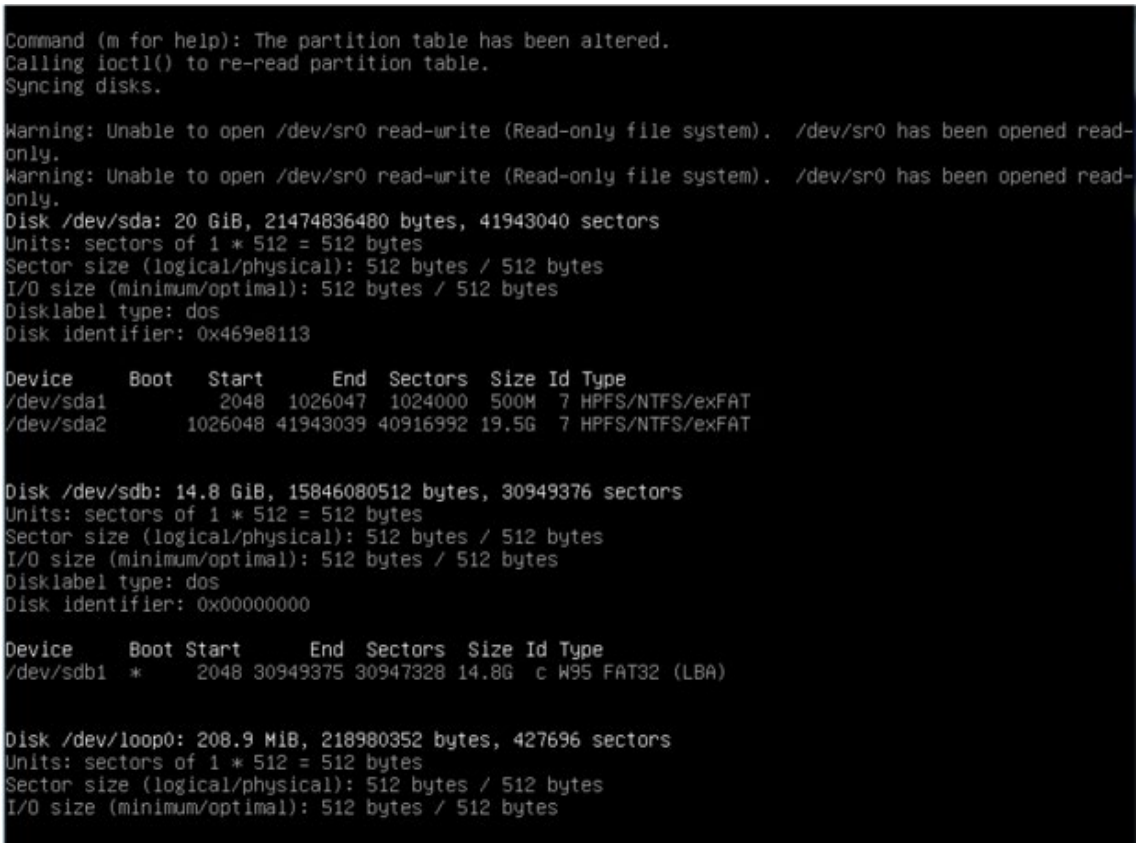
Restoring the System Using a Backup Image

After you boot the system from a USB disk, you will see the **Moxa System Save & Restore Utility** page.

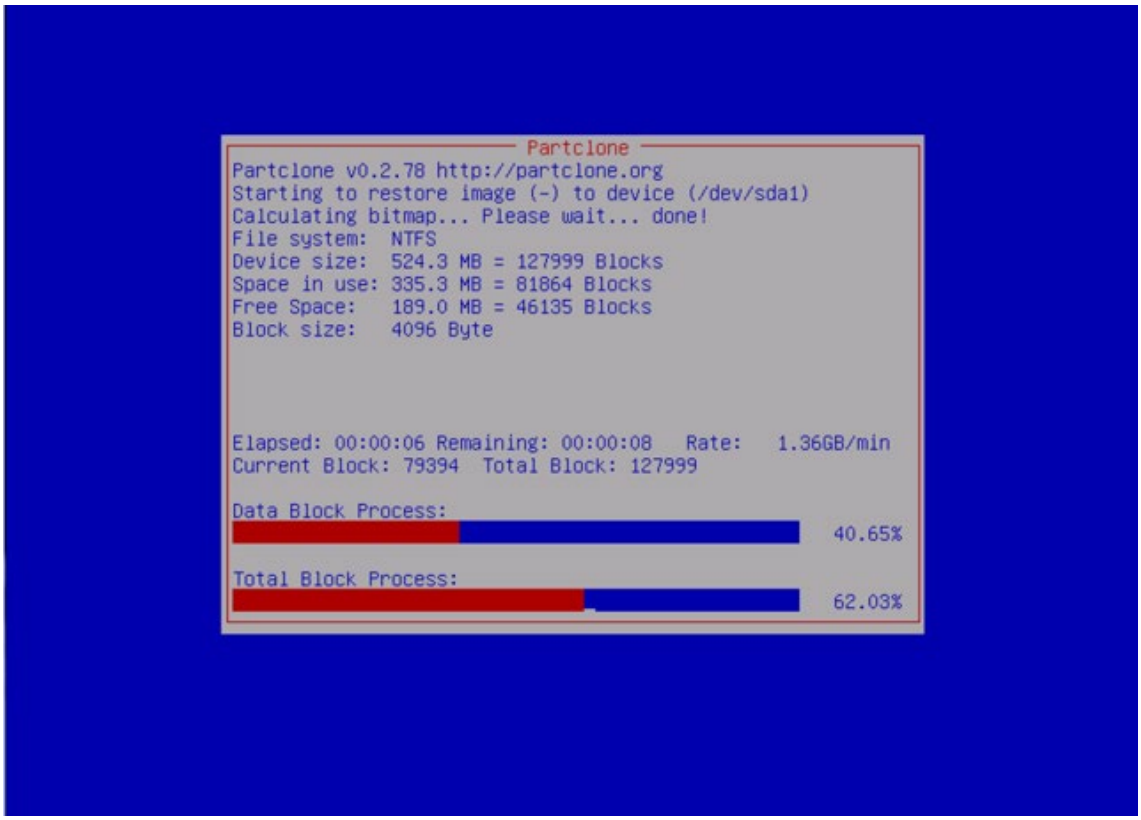
1. In the **Moxa System Save & Restore Utility**, select **clonezilla live restore disk**.



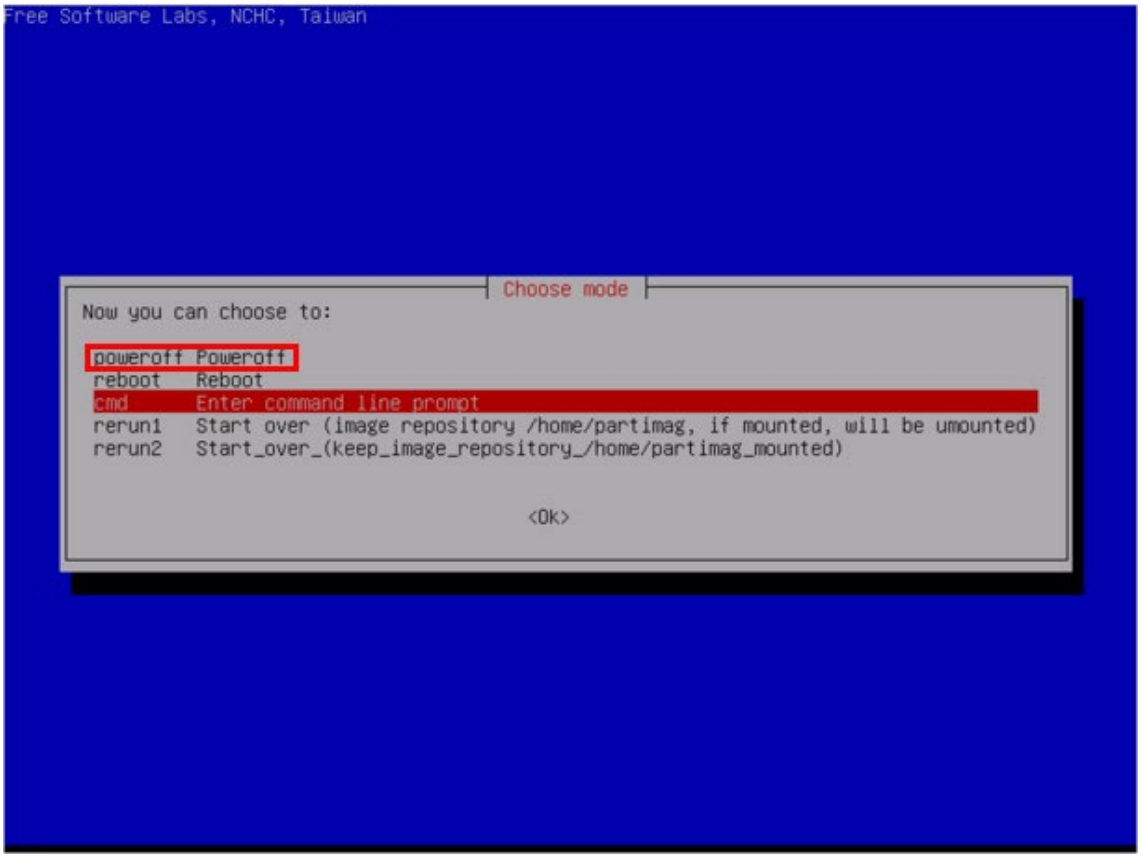
2. Wait for the USB boot process to complete.



3. Wait for the system restore process to complete.



4. Select **poweroff** to power off the computer after the backup process is complete.



5. Remove the USB device after the computer has been powered off.