

User Guide



Lenovo

Lenovo 100w Gen 5 / Lenovo 300w 2-in-1 Gen 5 / Lenovo 500w 2-in-1 Gen 5

Read this first

Before using this documentation and the product it supports, ensure that you read and understand the following:

- *Safety and Warranty Guide*
- *Setup Guide*
- [Generic Safety and Compliance Notices](#)

Second Edition (June 2025)

© Copyright Lenovo 2025.

LIMITED AND RESTRICTED RIGHTS NOTICE: If data or software is delivered pursuant to a General Services Administration "GSA" contract, use, reproduction, or disclosure is subject to restrictions set forth in Contract No. GS-35F-05925.

Contents

Discover your Lenovo notebook.iii

Chapter 1. Meet your computer. 1

Front view	1
Lenovo 100w Gen 5	1
Lenovo 300w 2-in-1 Gen 5.	3
Lenovo 500w 2-in-1 Gen 5.	5
Side view	7
Bottom view	8
Features and specifications	9
USB specifications	9

Chapter 2. Get started with your computer. 11

Set up your computer	11
Turn on the computer.	11
Complete the operating system setup	11
Access networks	12
Connect to Wi-Fi networks.	12
Turn on Airplane mode	12
Connect to a cellular network (for selected models of Lenovo 300w 2-in-1 Gen 5 only)	12
Interact with your computer	13
Use the keyboard shortcuts	13
Use the touch screen (for Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)	15
Use Lenovo Integrated Pen (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5)	17
Use pencil on the touch screen (for selected models)	18
Get to know convertible multi-modes (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)	19
Connect to an external display	20

Chapter 3. Explore your computer 23

Lock the computer	23
Lenovo Commercial Vantage	23
Copilot in Windows	24
Manage power	24
Check the battery status	24
Charge the battery with ac power	24
Maximize the life of the battery	25
Change the power settings	25
Connect to a Bluetooth device	25
Conventional pair	25
Swift pair	26

Chapter 4. Configure advanced settings. 27

UEFI BIOS	27
Enter the UEFI BIOS menu.	27
Navigate the UEFI BIOS menu	27
Customize BIOS Defaults	27
UEFI BIOS passwords	28
Password types	28
Set a supervisor password.	29
Change or remove the supervisor password	29
Set a user password	29
Change or remove the user password	29
Enable the power on password	30
Set a hard disk password	30
Change or remove the hard disk password	30

Chapter 5. Frequently asked questions. 33

Camera problems	33
Audio problems.	33
Mouse problems	34
Keyboard problems	35
My keyboard does not work	35
Battery problems	36
My computer battery discharges quickly	36
My computer battery is not recognized	36
My computer battery icon disappears	37
Display problems	37
Blue screen	37
Black screen	37
Screen flickering.	38
The external display does not work	39
The display remains dim.	39
Touchpad or trackpad problems	40
My touchpad or trackpad does not respond	40
My touchpad or trackpad responds slowly	40
Touch screen problems.	40
Hinge problems.	42
My computer hinges lose torque	42
My computer cannot be opened or closed	42
Pen problems	42
USB problems	43
My USB connector does not work.	43
Recover data from a USB drive	43
Create a recovery drive	44
Copilot key problems	44

Bluetooth connection problems	45
Network connection problems	46
Power charging problems	47
My computer is not charged when connected to ac power	47
My built-in battery cannot be charged	48
My built-in battery is not fully charged	48
Startup problems	48
My computer does not start up	48
Windows login error	49
Blue screen during the startup	49
Performance problems	50
My computer does not work	50
My computer responds slowly	50
Password problems	51
Change my Windows password.	51
Reset my Windows password	51
Retrieve my BitLocker recovery key in Windows	51
OS problems	52
Install the Windows operating system	52
Windows operating system installation error	53
Upgrade my Windows operating system	54
Windows operating system upgrading error	54
Recover Windows operating system	55
Windows operating system recovery error.	56
Driver problems	56
Update or install the latest device driver	56
Driver installation error	57
UEFI BIOS problems	58
Update the UEFI BIOS	58
Recover the UEFI BIOS	58
Reset system to factory defaults	59
Self-help resource	59

Chapter 6. Help and support 63

Windows label	63
Call Lenovo	63
Before you contact Lenovo	63
Lenovo Customer Support Center.	64

Chapter 7. CRU replacement 67

What are CRUs	67
CRU list	67
Before you replace any CRU	68
Disable Fast Startup	68
Disable the built-in battery.	68
Replace a CRU	68
Pen dummy (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5).	68
Base cover assembly	69
Built-in battery	70
Coin-cell battery.	72
Daughter board cable.	73
Keyboard	74
M.2 solid-state drive and M.2 solid-state drive bracket (for selected models).	78
Wireless WAN module and wireless WAN module bracket (for selected models of Lenovo 300w 2-in-1 Gen 5 only)	80

Appendix A. Compliance information. 81

Appendix B. Accessibility features . . 85

Appendix C. Notice for USB connector name update 87

Appendix D. Notices and trademarks. 89

Discover your Lenovo notebook

Thank you for choosing a Lenovo® notebook! We are dedicated to delivering the best solution to you.

Before starting your tour, please read the following information:

- Illustrations in this documentation might look different from your product.
- Depending on the model, some optional accessories, features, software programs, and user interface instructions might not be applicable to your computer.
- Documentation content is subject to change without notice. To get the latest documentation, go to <https://pcsupport.lenovo.com>.

Chapter 1. Meet your computer





This chapter introduces the appearance, features and specifications of your computer.

Front view

Have a quick glance at the front view of your computer.

Lenovo 100w Gen 5



Item	Description	Item	Description
	Camera		Webcam privacy shutter
	Microphone		Trackpad

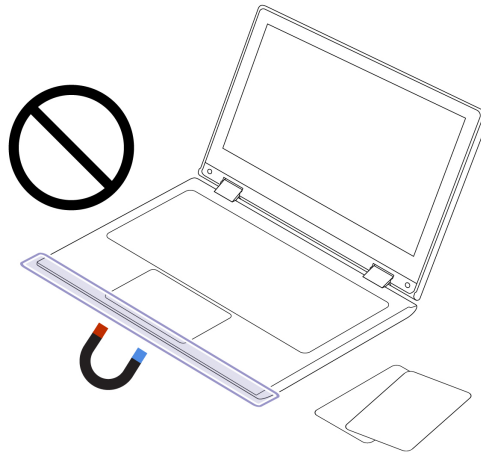


Webcam privacy shutter

Slide the webcam privacy shutter to cover or uncover the camera lens. It is designed to protect your privacy.






Important information

Your computer contains magnets. Keep a safe distance away from devices and objects that might be affected by magnets, such as credit cards.



Lenovo 300w 2-in-1 Gen 5



Item	Description	Item	Description
	Camera		Webcam privacy shutter
	Microphone		Touch screen
	Trackpad		

* for selected models

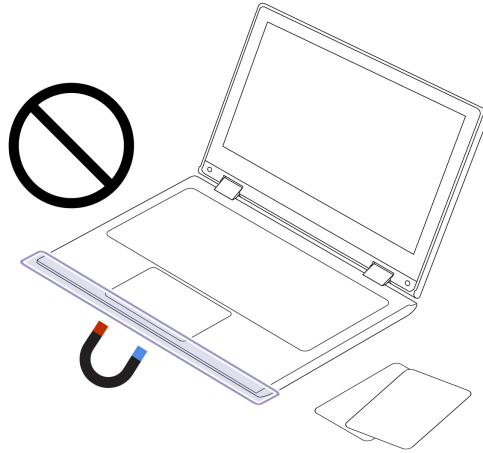


Webcam privacy shutter

Slide the webcam privacy shutter to cover or uncover the camera lens. It is designed to protect your privacy.

Important information

Your computer contains magnets. Keep a safe distance away from devices and objects that might be affected by magnets, such as credit cards.








Related topics

- “Use the touch screen (for Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)” on page 15

Lenovo 500w 2-in-1 Gen 5



Item	Description	Item	Description
	Microphone		Camera
	Webcam privacy shutter		Touch screen
	Trackpad		

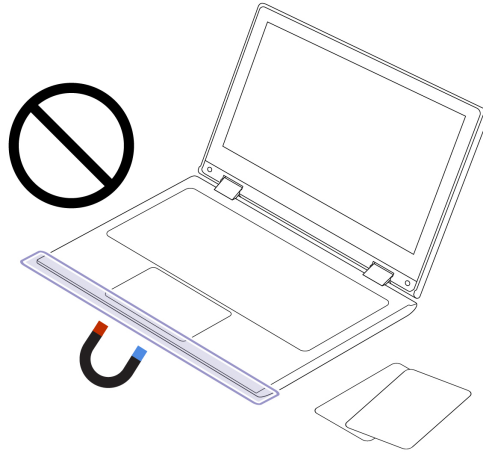
* for selected models

Webcam privacy shutter

Slide the webcam privacy shutter to cover or uncover the camera lens. It is designed to protect your privacy.

Important information

Your computer contains magnets. Keep a safe distance away from devices and objects that might be affected by magnets, such as credit cards.

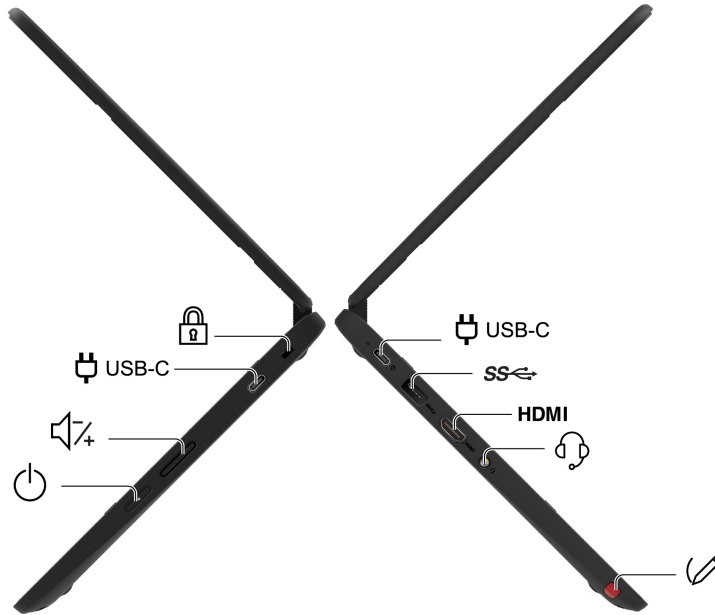


Related topics

- “Use the touch screen (for Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)” on page 15

Side view

Have a quick glance at ports on both sides of your computer.



Item	Description	Item	Description
USB-C	USB-C® power connector (USB 10Gbps)	SS	USB-A connector (USB 5Gbps)
HDMI	HDMI™ connector		Audio connector
	Lenovo Integrated Pen (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5)		Power button
	Volume button (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5)	USB-C	USB-C power connector (USB 5Gbps)
	Security-lock slot		

Note: For more information about the USB connector name update, see Appendix C “Notice for USB connector name update” on page 87.

Related topics



- “USB specifications” on page 9
- “Connect to an external display” on page 20
- “Use Lenovo Integrated Pen (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5)” on page 17
- “Lock the computer” on page 23

- “Charge the battery with ac power” on page 24

Bottom view

Have a quick glance at the bottom part of your computer.



Item	Description	Item	Description
	Keyboard drainage hole		Speakers

Keyboard drainage hole

Drain out liquid from your computer if you accidentally spill liquid on the keyboard.

CAUTION:

When the computer is operating, it should be placed on a hard and flat surface with its bottom area not in contact with user’s bare skin. Under normal operating conditions, the temperature of the bottom surface will remain within an acceptable range as defined in IEC 62368-1, but such temperatures can still be high enough to cause discomfort or harm to the user if directly touched for over one minute at a time. As such, it is recommended that users avoid prolonged direct contact with the bottom of the computer.

Note: Some Lenovo computers include a display that can be rotated 360 degrees. When those products are used as a tablet computer, the temperatures of all the accessible parts are within an acceptable range as defined in IEC 62368-1.

Features and specifications

Get to know more hardware and software details of your computer.

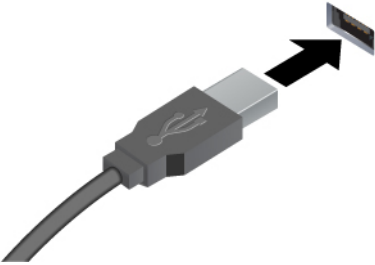
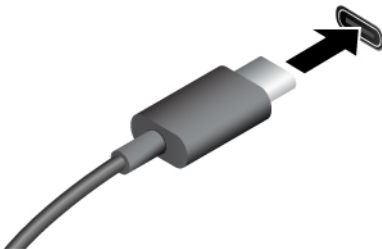
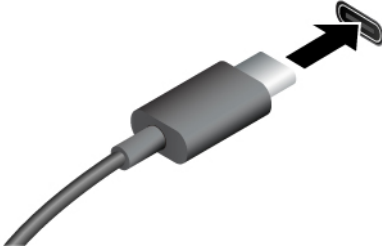
Specifications	Description
Memory	Low Power Double Data Rate 5 (LPDDR5), soldered on board, 4 GB or 8 GB
Storage device	<ul style="list-style-type: none">• Universal Flash Storage (UFS)*, 128 GB• 2242 M.2 solid-state drive*, 128 GB or 256 GB
Audio	Dolby Audio™
Display	<ul style="list-style-type: none">• Display technology:<ul style="list-style-type: none">– Lenovo 100w Gen 5: In-Plane Switching (IPS)– Lenovo 300w 2-in-1 Gen 5: IPS, anti-fingerprint treatment– Lenovo 500w 2-in-1 Gen 5: Widescreen Ultra eXtended Graphics Array (WUXGA), anti-fingerprint treatment• Display ratio:<ul style="list-style-type: none">– Lenovo 100w Gen 5 / Lenovo 300w 2-in-1 Gen 5: 16:9– Lenovo 500w 2-in-1 Gen 5: 16:10• Display resolution:<ul style="list-style-type: none">– Lenovo 100w Gen 5 / Lenovo 300w 2-in-1 Gen 5: 1366 x 768 pixels– Lenovo 500w 2-in-1 Gen 5: 1920 x 1200 pixels• Multi-touch technology (for Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)
Security features	<ul style="list-style-type: none">• Trusted Platform Module (TPM)*
Wireless features	<ul style="list-style-type: none">• Bluetooth• GPS (for wireless WAN model of Lenovo 300w 2-in-1 Gen 5 only)*• Wireless LAN• Wireless WAN (4G) (for selected models of Lenovo 300w 2-in-1 Gen 5 only)* <p>Note: The 4G cellular service is provided by authorized mobile service carriers in some countries or regions. You must have a cellular plan from a service carrier to connect to the cellular network. The cellular data plan might vary by location.</p>

* for selected models

USB specifications

Get to know more USB specifications.

Note: Depending on the model, some USB connectors might not be available on your computer.

Connector name	Description
	<p>Connect USB-compatible devices, such as a USB keyboard, USB mouse, USB storage device, or USB printer.</p>
<ul style="list-style-type: none"> • USB-A connector (USB 5Gbps) 	
	<ul style="list-style-type: none"> • Charge USB-C compatible devices with the output voltage and current of 5 V and 3 A. • Connect to an external display: <ul style="list-style-type: none"> – USB-C to VGA: up to 1920 x 1200 pixels, 60 Hz – USB-C to DP: up to 4096 x 2304 pixels, 60 Hz • Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to https://www.lenovo.com/accessories.
<ul style="list-style-type: none"> • USB-C power connector (USB 10Gbps) 	
	<ul style="list-style-type: none"> • Charge USB-C compatible devices with the output voltage and current of 5 V and 1.5 A. • Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to https://www.lenovo.com/accessories.
<ul style="list-style-type: none"> • USB-C power connector (USB 5Gbps) 	

Chapter 2. Get started with your computer

This chapter introduces the instructions of setting up your computer, various ways to connect to networks, and to interact with your computer.

Set up your computer

This section helps you to set up your computer and get it ready for use.

Turn on the computer

Follow the instructions to turn on your computer.

- Step 1. Connect the power cord to the ac power adapter.
- Step 2. Connect the power adapter to your computer.
- Step 3. Plug the power cord into the ac power.
- Step 4. Press the power button to turn on your computer.



Notes:

- The appearance varies depending on the computer model.
- It is recommended to fully charge the computer when using it for the first time. Click the battery status icon at the bottom right of your desktop to check the battery status.

Related topics

- “Check the battery status” on page 24
- “Charge the computer with ac power” on page 24

Complete the operating system setup

Before exploring your computer, you need to complete the operating system setup. The setup includes but is not limited to:

- Select the country or region.
- Connect to an available network.
- Accept the license agreement.
- Create a Microsoft account or log in with your Microsoft account.
- Set up your password, fingerprint, or facial recognition as preferred.
- Customize your experience.

Notes:

- Depending on the model, some settings might not be available on your computer.
- Do not turn off your computer and ensure it is connected to the ac power during the whole process.

Follow the instructions to set up the operating system.


Step 1. Connect the computer to the ac power and turn it on.

Step 2. Follow the on-screen instructions to complete the operating system setup.

Access networks


This section helps you connect to a wireless or wired network.

Connect to Wi-Fi networks

Click the network icon  on the bottom right of your display to connect to an available network. Provide required information, if needed.

Note: The wireless LAN module on your computer might support different standards. For some countries or regions, use of 802.11ax might be disabled according to local regulations.

Turn on Airplane mode

You might need to turn on Airplane mode if you board an airplane. When Airplane mode is on, all wireless features are turned off automatically. Click the network icon  on the bottom right of your display to turn on Airplane mode.

Note: You can enable Wi-Fi networks in this mode according to your actual needs.

Connect to a cellular network (for selected models of Lenovo 300w 2-in-1 Gen 5 only)

To connect a 4G cellular data network, you must have a wireless wide area network (WWAN) module and a nano-SIM card installed. The nano-SIM card might come with your computer by countries or regions. If no nano-SIM card is shipped, you will need to purchase one from authorized service carriers.

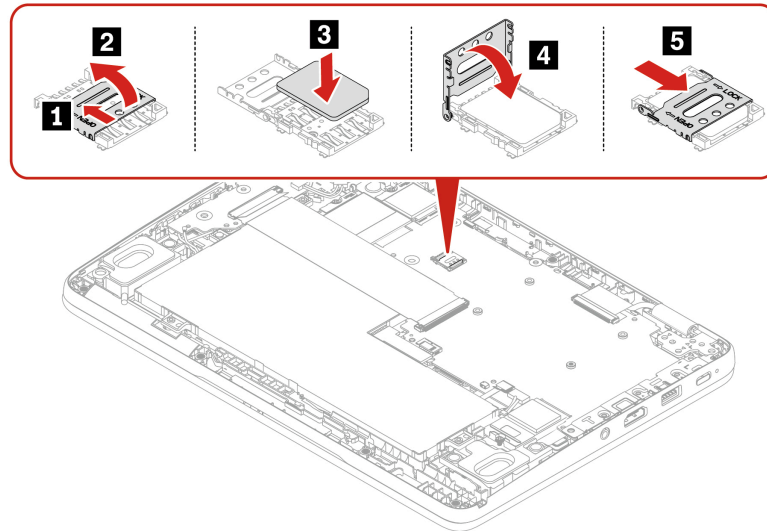
Notes:


- Depending on the model, your computer might have no WWAN module installed.
- The 4G cellular service is provided by authorized mobile service carriers in some countries or regions. You must have a cellular plan from a service carrier to connect to the cellular network. The cellular data plan might vary by location.
- Network connection speeds might also vary by location, environment, network conditions and other factors.

Establish a cellular connection

This section introduces how to establish a cellular connection.

- Step 1. Turn off the computer and remove the base cover assembly. See “Base cover assembly” on page 69.
- Step 2. Slide the socket cover slightly to the left and pivot the socket cover upward. Install a nano-SIM card and close the socket cover. Then slide the socket cover slightly to the right and ensure that the card is seated correctly.



- Step 3. Turn on the computer.
- Step 4. Click the network icon, and then select the cellular network icon  from the list. Provide required information, if needed.






Interact with your computer













Your computer provides you various ways to navigate the screen.

Use the keyboard shortcuts

Keyboard shortcuts are keys or combinations of keys that provide a quick way to perform particular functions. They help you work more efficiently.

The following tables introduce the functions of keyboard shortcuts.

Key / Key combination	Function description
	Switch between the special and standard functions of the function keys (F1–F12).
Fn+FnLock	Function keys provide two sets of functions: special function and standard function. Icons on the key denote the special function, such as  and  . Characters on the key denote the standard function, such as F1 and F2.
	Mute / unmute (speaker).
	Decrease the volume.
	Increase the volume.

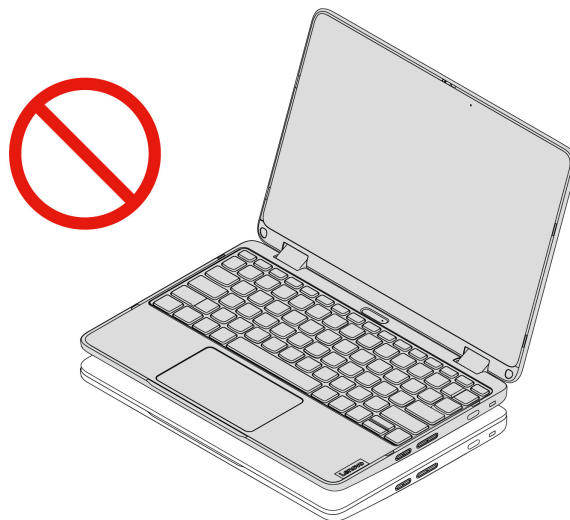
Key / Key combination	Function description
	Mute / unmute the microphones.
	Decrease display brightness.
	Increase display brightness.
	Select and set up display devices.
	Enable / Disable Airplane mode.
	Open the Settings window.
	Lock the screen.
	Open Microsoft® Phone Link.
	Open the Calculator.
	Open the Lenovo Commercial Vantage app.
	Print screen.
	<ul style="list-style-type: none"> • Launch Copilot in Windows. • Launch Windows Search. <p>Note: The function varies by countries or regions.</p>

You can customize keyboard settings in Vantage app. To customize detailed settings, open the Vantage app, and then click **Device → Input & Accessories**.

For more keyboard shortcuts, go to <https://support.lenovo.com/solutions/windows-support>.

Important note for Lenovo 300w 2-in-1 Gen 5 / Lenovo 500w 2-in-1 Gen 5

Do not place your computer on another computer (the same model) while it is in use. Otherwise, the keyboard and the trackpad will be disabled.




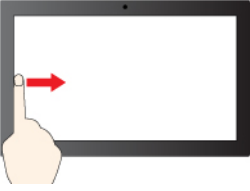
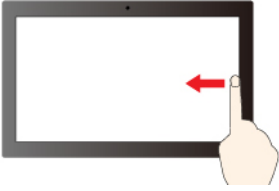
Use the touch screen (for Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)

For computers with a touch-enabled screen, you can touch the screen directly with your fingers and interact with computer in a simple way. The following sections introduce frequently used touch gestures.

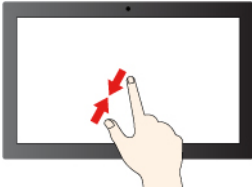
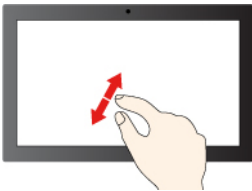
Notes:

- Some gestures might not be available when you are using certain apps.
- Do not use gloved fingers or incompatible pens for input on the screen. Otherwise, the touch screen might be not sensitive or does not respond.
- The touch screen is delicate. Do not apply pressure on the screen or touch the screen with anything hard or sharp. Otherwise, the touch panel might malfunction or get damaged.

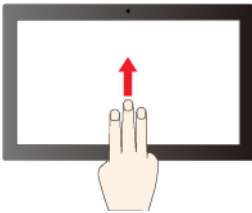
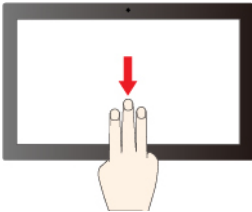
One-finger touch gesture

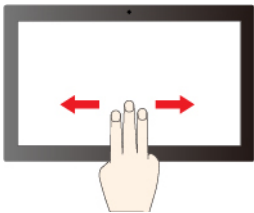
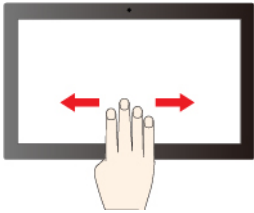
To do this	Gesture
Open a shortcut menu.	Tap and hold. 
Open the widget panel.	Swipe from the left. 
Open notification center.	Swipe from the right. 

Two-finger touch gesture

To do this	Gesture
Zoom out.	Move two fingers towards. 
Zoom in.	Spread two fingers apart. 

Three-and-four-finger touch gesture

To do this	Gesture
Show all open windows.	Swipe with three fingers up. 
Show the desktop.	Swipe with three fingers down. 

To do this	Gesture
Switch apps.	Swipe with three fingers to the left or right. 
Switch desktops.	Swipe with four fingers to the left or right. 

Enable three-and-four-finger touch gestures (for selected models)

Step 1. Type **touch gesture** in the Windows search box and then press Enter.

Step 2. Turn on the **Three-** and **four-finger touch gestures** switch.

What to do if the touch screen is not sensitive or does not respond

Follow the instructions to troubleshoot the touch screen.

Step 1. Turn off the computer.

Step 2. Use a dry, soft, and lint-free cloth or a piece of absorbent cotton to remove fingerprints or dust from the touch screen. Do not apply solvents to the cloth.

Step 3. Restart the computer and check if the touch screen works normally.

Step 4. If the touch screen cannot work normally, type **Windows Update** in the Windows search box and then press Enter.

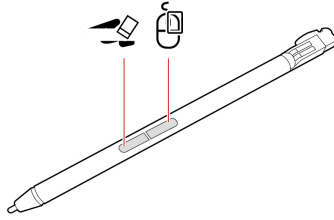
Step 5. Follow the on-screen instructions to update Windows.



Step 6. After updating Windows, check if the touch screen works normally.

Step 7. If the touch screen still cannot work normally, the touch screen might get damaged. You can call Lenovo Customer Support Center to get further help.

Use Lenovo Integrated Pen (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5)

The garaged rechargeable electronic pen enables a more precise and easier way of selecting, writing and sketching.



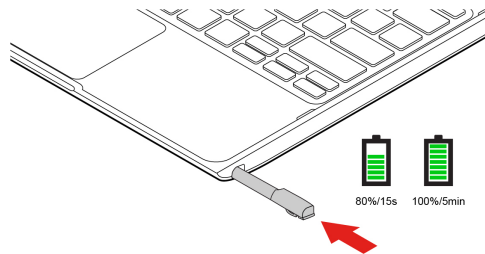
Item	Description	Item	Description
	Eraser button (default)		Right-click button (default)

Notes:

- The default function of each barrel button might vary in different apps.
- To customize the barrel button functions, use Lenovo Pen Settings. If Lenovo Pen Settings is not installed on your computer, download and install the latest WinTab driver from <https://support.lenovo.com>.
- Lenovo Integrated Pen is not waterproof. Keep the pen away from water and excessive moisture.
- To purchase Lenovo Integrated Pen, go to <https://www.lenovo.com/accessories>.
- Selected models support pencil with a conductive tip. The tip diameter should be more than 2 mm. Also, the diameter of the contact area between the tip and screen should be more than 1.5 mm.

Charge Lenovo Integrated Pen

1. Ensure that your computer is on or in sleep mode.
2. Insert the pen back into the pen slot. The pen is 80% charged in about 15 seconds and 100% charged in about five minutes.



Use pencil on the touch screen (for selected models)

Selected models support pencil with a conductive tip. This option is handy for sketches or navigation when a dedicated stylus pen is unavailable. For detailed tasks such as digital art or prolonged writing, it is recommended to use the Lenovo Integrated Pen for optimal performance.

Usage tips:

- **Supported pencil types and hardness:** Use graphite pencils with HB, B, or 2B hardness.
- **Pencil tip preparation:** The tip diameter should be more than 2 mm. Also, the diameter of the contact area between the tip and screen should be more than 1.5 mm.
- **Initial calibration:** Before writing, lightly draw a straight line on the screen to activate touch responsiveness.
- **Gentle pressure:** Apply minimal force to avoid screen damage or unintended marks.

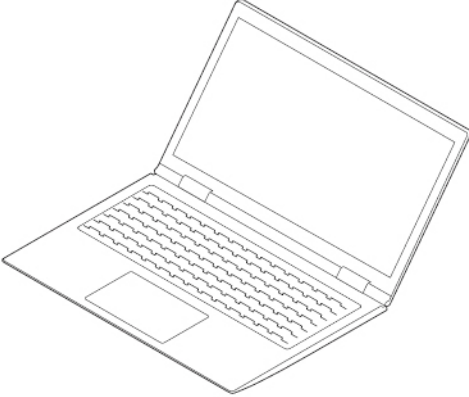
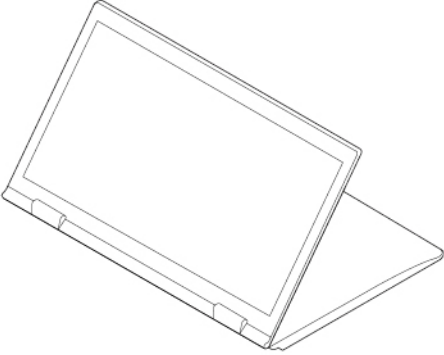
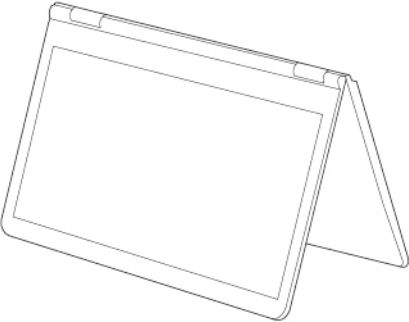
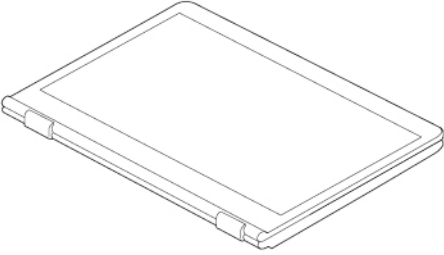
- **Avoid unstable states:** Pencil responsiveness may degrade during system charging, low battery status, or performance lag. Prioritize stylus pen use in these scenarios.
- **Clean regularly:** Wipe the screen with a microfiber cloth to remove graphite dust buildup.

Get to know convertible multi-modes (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)

The computer display can be opened up to an angle of 360 degrees. Rotate the computer display to switch among different convertible multi-modes for different purposes.

Notes:

- Do not rotate the display with too much force, or apply too much force to the upper-right or upper-left corner of the display. Otherwise, the computer display or hinges might get damaged.
- The keyboard and the pointing device are automatically disabled in the stand mode, tent mode, and tablet mode. Use the touch screen to control your computer instead. The keyboard and the pointing device will be enabled again automatically when you switch from other modes to notebook mode.

Recommended scenario	Recommended scenario
<p data-bbox="386 226 565 252">Notebook mode</p> <p data-bbox="418 285 532 310">Enter text.</p> <p data-bbox="253 344 698 369">Use the Trackpad and the pointing device.</p> 	<p data-bbox="1045 226 1192 252">Stand mode</p> <p data-bbox="1019 285 1218 310">Have a video call.</p> <p data-bbox="1006 344 1230 369">Give a presentation.</p> 
<p data-bbox="415 957 535 982">Tent mode</p> <p data-bbox="396 1016 555 1041">Watch a video.</p> <p data-bbox="376 1075 574 1100">View a slide show.</p> 	<p data-bbox="1042 957 1188 982">Tablet mode</p> <p data-bbox="1029 1016 1201 1041">Write and draw.</p> <p data-bbox="967 1075 1263 1100">Play touch-enabled games.</p> 

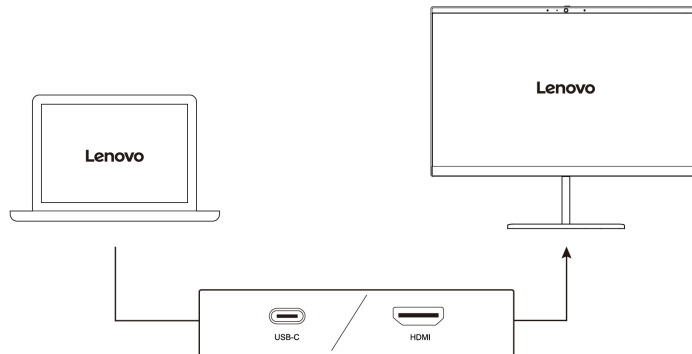
Connect to an external display

Connect your computer to a projector or a monitor to give presentations or expand your workspace.

Connect to a wired display

You can connect a wired display with your computer through the USB-C connector and / or HDMI connector.

If your computer cannot detect the external display, right-click a blank area on the desktop and select **Display settings**. Then follow the on-screen instructions to detect the external display.



Supported resolution

The following table lists the supported maximum resolution of the external display.

Connect the external display to	Supported resolution
USB-C power connector (USB 10Gbps)	Up to 4K / 60 Hz
HDMI connector	Up to 4K / 30 Hz

Connect to a wireless display

To use a wireless display, ensure that both your computer and the external display support the Miracast[®] feature.

Press Windows logo key+K and then select a wireless display to connect with.

Set the display mode

Press  or Fn key+ and then select a display mode of your preference.

Change display settings

You can change the settings for both the computer display and the external display, such as the main or the secondary display, brightness, resolution, and orientation.

To change the settings, do the following:

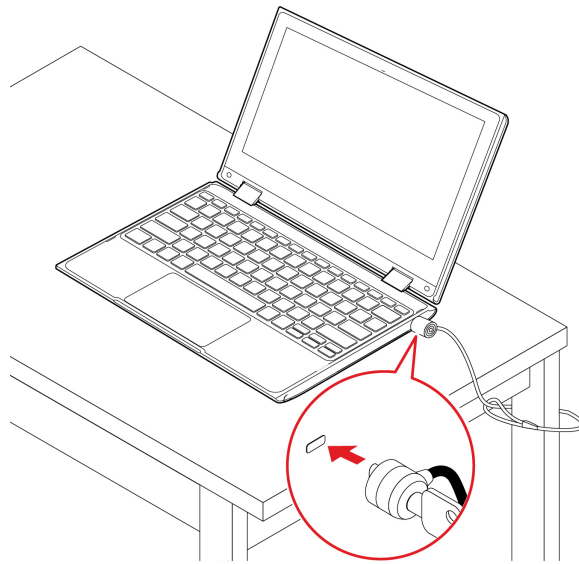
- Step 1. Right-click a blank area on the desktop and select **Display settings**.
- Step 2. Select the display that you want to configure and change display settings of your preference.

Chapter 3. Explore your computer

This chapter helps you get full use of your computer.

Lock the computer

Lock your computer to a desk, table, or other fixtures through a compatible security cable lock.



Note: The slot supports cable locks that conform to the Kensington NanoSaver® lock standards using Cleat™ locking technology. You are responsible for evaluating, selecting, and implementing the locking device and security feature. Lenovo is not responsible for the locking device and security feature. You can purchase the cable locks at <https://smartfind.lenovo.com>.

Lenovo Commercial Vantage

The Lenovo Commercial Vantage app (hereafter referred to as Vantage app) is a customized one-stop solution to help you maintain your computer with automated updates and fixes, configure hardware settings, and get personalized support.

To access the Vantage app, type Lenovo Commercial Vantage in the Windows search box.

Notes:

- The available features vary depending on the computer model.
- The Vantage app makes periodic updates of the features to keep improving your experience with your computer. The description of features might be different from that on your actual user interface. Ensure that you use the latest version of Vantage app, and apply Windows Update to get the latest updates.

The Vantage app enables you to:


- Know the device status easily and customize device settings.
- Download and install UEFI BIOS, firmware, and driver updates to keep your computer up-to-date.
- Monitor your computer health, and secure your computer against outside threats.

- Scan your computer hardware and diagnose hardware problems.
- Look up warranty status (online).
- Access *User Guide* and helpful articles.

Copilot in Windows

Copilot in Windows is an AI-powered assistant to help enhance work efficiency and creativity.

To access Copilot in Windows, do one of the following:

- Press the Copilot key .
- Click the Copilot icon  on the task bar.

Key functions

- Provide answers or suggestions to your questions through live chat. For example, you could ask Copilot how to change your Windows password.
- Assist you to analyse image by clicking the image button at the bottom right of the chat box. For example, you could ask Copilot to summarize the image you have uploaded.

Notes:

- This app might not be available in your country or region.
- This app makes periodic updates of the features. Explore this app on your actual user interface.

Manage power

Use the information in this section to achieve the best balance between performance and power efficiency.

Check the battery status

Check the battery status to help use computer properly.

Go to **Settings** → **System** to check the battery status. For more details about your battery, refer to the Vantage app.

Charge the battery with ac power

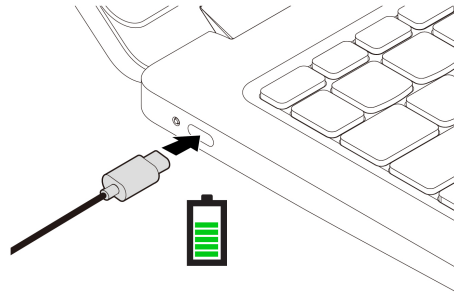
Power source of the ac power adapter:

- Power: 45 W or 65 W
- Sine-wave input at 50 Hz to 60 Hz
- Input rating of the ac power adapter: 100 V to 240 V ac, 50 Hz to 60 Hz
- Output rating of the ac power adapter: 20 V dc, 2.25 A or 3.25 A

When the battery power is low, charge your battery by connecting your computer to ac power with the supplied power adapter. The 65 W ac power adapter supports the rapid charge function, the battery is 80% charged in about one hour when the computer is turned off. The actual charging time depends on the battery size, the physical environment, and whether you are using the computer.

Battery charging is also affected by its temperature. The recommended temperature range for charging the battery is between 10°C (50°F) and 35°C (95°F).

Note: Some models might not ship with ac adapters or power cords. Use only the certified adapters and power cords that comply with the requirements of relevant national standards (such as UL/EN/IEC 62368-1) to charge the product. It is recommended to use the Lenovo qualified adapters. Unqualified adapters may cause hazards. You can refer to <https://www.lenovo.com/us/en/compliance/eu-doc>.



Maximize the life of the battery

Follow the instructions to maximize the life of the battery.

- Use the battery until the charge is depleted and recharge the battery completely before using it. Once the battery is fully charged, it must discharge to 94% or lower before it will be allowed to recharge again.
- Keep the battery from full charge when it is not in heavy use. For more information, refer to the **Battery settings** tab in the **Power** section of the Vantage app.
- The battery might optimize its full charge capacity based on your usage. After prolonged periods of limited use, full battery capacity might not be available until you discharge to as low as 20% and recharge completely. For more information, refer to the **Battery settings** tab in the **Power** section of the Vantage app.

Change the power settings

Follow the instructions to change the power settings of your preference.

For ENERGY STAR® compliant computers, the following power plan takes effect by default when your computer is on ac power and has been idle for a specified duration:

- Turn off the display: After 5 minutes
- Put the computer to sleep: After 15 minutes

To change the power plan, the power button function and other settings, do the following:

- Step 1. Go to **Control Panel** and view by Large icons or Small icons.
- Step 2. Click **Power Options**.
- Step 3. Change the settings as you prefer.

Connect to a Bluetooth device

You can connect all types of Bluetooth-enabled devices to your computer, such as a keyboard, a mouse, a smartphone, or speakers. To ensure successful connection, place the devices at most 10 meters (33 feet) from the computer.

Conventional pair

This topic helps you connect to a Bluetooth device by conventional pair.

- Step 1. Type **Bluetooth** in the Windows search box and then press Enter.
- Step 2. Turn on both the Bluetooth on your computer and the Bluetooth device. Make sure the device is discoverable.
- Step 3. Select the device when it is displayed on the **Add device** list, and then follow the on-screen instructions.

Swift pair

This topic helps you connect to a Bluetooth device by swift pair.

If your Bluetooth device supports swift pair, do the following:

- Step 1. Enable swift pair notification on Bluetooth settings page.
- Step 2. Turn on both the Bluetooth on your computer and the Bluetooth device. Make sure the device is discoverable.
- Step 3. Click **Connect** when a swift pair notification appears on your computer.

Chapter 4. Configure advanced settings

UEFI BIOS

UEFI BIOS is the first program that the computer runs. When the computer turns on, UEFI BIOS performs a self test to make sure that various devices in the computer are functioning properly.

Enter the UEFI BIOS menu

Turn on or restart the computer. When the logo screen is displayed, press F1 repeatedly to enter the UEFI BIOS menu.

Navigate the UEFI BIOS menu

Follow the on-screen instructions to navigate in the UEFI BIOS menu.

The table below introduces some available settings of the UEFI BIOS menu. To know more about the UEFI BIOS, you can go to <https://pcsupport.lenovo.com> and then type **UEFI BIOS** in search box.

Note: The UEFI BIOS menu might vary depending on system configurations.

Menu	Introduction
Main	This category displays the general product-related information, such as UEFI BIOS version, machine type, system serial number, and preinstalled OS license.
Config	This category enables you to update configurations relating to system settings such as network, USB, keyboard, CPU, and power.
Date/Time	This category enables you to set computer date and time in this category.
Security	This category enables you to configure security settings related to such as password and I/O accessibility.
Startup	This category enables you to manage settings relevant to booting up.
Restart	This category enables you to save or discard changes before exiting.

You can go to Lenovo BIOS Simulator Center <https://download.lenovo.com/bSCO/index.html> to explore the detailed settings by your product name.

Note: The Lenovo BIOS Simulator Center makes periodic updates of the settings. The UEFI BIOS simulator interface and description of settings might be different from that on your actual user interface.

Customize BIOS Defaults

The feature provides a solution to backup your preferred BIOS Setup settings.

It helps you to save the BIOS Setup settings as customized BIOS default settings, load them to current BIOS settings when needed, and reset the settings to Setup Defaults.

Save the customized settings configuration

Follow the instructions to save the customized settings configuration.

Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.

- Step 2. Select **Restart → Save Custom Defaults**.
- Step 3. Click **Yes** to save the settings configuration you customized.

Load the customized settings configuration

Follow the instructions to load the customized settings configuration.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Restart → Load Custom Defaults**.
- Step 3. Click **Yes** to load the customized settings configuration you saved.

You can also press F9 and click **Custom Defaults** to load the customized settings configuration.

Note: **Load Custom Defaults** is unavailable if no customized BIOS default settings are saved.

Reset the settings configuration to Setup Defaults

Follow the instructions to reset the settings configuration to Setup Defaults.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Restart → Load Factory Defaults**.
- Step 3. Click **Yes** to reset the settings configuration to Setup Defaults.

You can also press F9 and click **Factory Defaults** to reset the settings configuration to Setup Defaults.

UEFI BIOS passwords

You can set passwords in UEFI (Unified Extensible Firmware Interface) BIOS (Basic Input/Output System) to strengthen the security of your computer.

Password types

You can set various types of passwords in the UEFI BIOS menu.

Notes:

- All passwords set in the UEFI BIOS menu consist of alphanumeric characters only.
- If you start the UEFI BIOS menu using the user password, you can only change a few settings.

Password type	Pre-requisite	Usage
Supervisor password	No	Use the supervisor password to enter the UEFI BIOS menu.
User password	The supervisor password must be set.	Use the user password to enter the UEFI BIOS menu.
Master hard disk password	No	Use master hard disk password to enter the UEFI BIOS menu or operating system.
User hard disk password	The master hard disk password must be set.	Use the user hard disk password to enter the UEFI BIOS menu or operating system.

Set a supervisor password

You can set the supervisor password to prevent unauthorized access to the UEFI BIOS menu.

Attention: If you forget the supervisor password, a Lenovo-authorized service personnel cannot reset your password. You must take your computer to a Lenovo-authorized service personnel to have the system board replaced. Proof of purchase is required and a fee will be charged for parts and service.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Security → Password → Set Supervisor password** and press Enter.
- Step 3. Enter a password string that contains only letters and numbers and then press Enter.
- Step 4. Enter the password again and press Enter.
- Step 5. Press F10 to save changes and exit the UEFI BIOS menu.

Next time you turn on the computer, you should enter the supervisor password to enter the UEFI BIOS menu.

Change or remove the supervisor password

Only the administrator can change or remove the supervisor password.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Security → Password → Set Supervisor password** and press Enter.
- Step 3. Enter the current password.
- Step 4. In the **Enter New Password** field, enter the new password.
- Step 5. In the **Confirm New Password** field, enter the new password again.

Note: If you want to remove the password, leave both fields blank, and press Enter twice.

- Step 6. Press F10 to save changes and exit the UEFI BIOS menu.

If you remove the supervisor password, the user password is also removed.

Set a user password

You must set the supervisor password before you can set the user password.

Attention: If you forget the supervisor password, a Lenovo-authorized service personnel cannot reset your password. You must take your computer to a Lenovo-authorized service personnel to have the system board replaced. Proof of purchase is required and a fee will be charged for parts and service.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Security → Password → Set User Password** and press Enter.
- Step 3. Enter a password string that contains only letters and numbers and then press Enter.

Note: The user password should be different from the supervisor password.

- Step 4. Enter the password again and press Enter.
- Step 5. Press F10 to save changes and exit the UEFI BIOS menu.

Change or remove the user password

Follow the instructions to change or remove the user password.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.

- Step 2. Select **Security → Password → Set User Password** and press Enter.
- Step 3. Enter the current password.
- Step 4. In the **Enter New Password** field, enter the new password.
- Step 5. In the **Confirm New Password** field, enter the new password again.

Note: If you want to remove the password, leave both fields blank, and press Enter twice.

- Step 6. Press F10 to save changes and exit the UEFI BIOS menu.

Enable the power on password

If the supervisor password has been set, you can enable the power on password to enforce stronger security.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Security → Password → Power on Password** and press Enter.

Note: The supervisor password must be set in advance.

- Step 3. Change the setting to **Enabled**.
- Step 4. Press F10 to save changes and exit the UEFI BIOS menu.

If the power on password is enabled, you must enter the supervisor password or user password every time you enter the UEFI BIOS menu.

Set a hard disk password

You can set a hard disk password in the UEFI BIOS menu to prevent unauthorized access to your data.

Attention: Be extremely careful when setting a hard disk password. If you forget the master hard disk password, a Lenovo-authorized service personnel cannot reset your password or recover data from the hard disk. You must take your computer to a Lenovo-authorized service personnel to have the hard disk drive replaced. Proof of purchase is required and a fee will be charged for parts and service.

Notes:

- If you start the UEFI BIOS menu using the user password, you cannot set the hard disk password.
- The master hard disk password and user hard disk password must be set at the same time.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Security → Password → Set Hard Disk Password** and press Enter.
- Step 3. Follow the on-screen instructions to set both the master hard disk password and user hard disk password.
- Step 4. Press F10 to save changes and exit the UEFI BIOS menu.

If the hard disk password is set, you must enter the password to enter the UEFI BIOS menu or the operating system.

Change or remove the hard disk password

Follow the instructions to change or remove the hard disk password.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Security → Password**.

Step 3. To change or remove the hard disk password, do one of the following:

- a. To change or remove the master hard disk password, select **Change Master Password** and press Enter.

Notes:

- If you remove the master hard disk password, the user hard disk password is also removed.
 - The user hard disk password cannot be removed separately.
- b. To change the user hard disk password, select **Change User Password** and press Enter.

Step 4. Press F10 to save changes and exit the UEFI BIOS menu.

Chapter 5. Frequently asked questions

This chapter provides solutions to some hardware and software issues.

Camera problems

My camera can't be launched or found

Problem: What should I do if my camera can't be launched or found?

Solution: If your camera can't be launched or found, try the following solutions one by one to troubleshoot and fix the issue:

1. If you are using an external camera, ensure that it is connected to a working USB connector on your computer.
2. If you are using an integrated camera, ensure that it is uncovered and enabled. Take the following steps:
 - a. Open the camera shutter.
 - b. Open the Start menu, click **Settings** → **Bluetooth & devices** → **Cameras**, and enable the camera.
3. Authorize apps to have access to the camera. Take the following steps:
 - a. Open the **Start** menu, and select **Settings** → **Privacy & security** → **Camera**.
 - b. Turn on **Camera access** switch and **Let apps access your camera** switch.
4. Unblock access to the camera in your antivirus software settings.
5. Update the camera driver. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click **Device Manager** from the list of results. The Device Manager window opens.
 - c. Click arrow icon > next to **Cameras** to expand the section.
 - d. Right-click the camera that you would like to update.
 - e. Select **Update driver** and follow the on-screen instructions.
6. Run the automated camera troubleshooter in the Get Help app. Take the following steps:
 - a. Open the **Start** menu and click **Settings** → **Privacy & security** → **Camera**.
 - b. Scroll down to the bottom. Click **Get help** and follow the on-screen instructions.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Audio problems

The audio does not work

Problem: What should I do if the audio does not work?

Solution: If you encounter any audio problems, such as no audio or malfunctioning audio, try the following solutions one by one to troubleshoot and fix the issue:

1. If you are using an external audio device, ensure that the device is properly connected to your computer.
2. Verify your audio settings. Take the following steps:

- a. Go to **Start → Settings → System → Sound**.
 - b. Verify that the sound output and input devices are selected correctly.
 - c. Verify that the volume is properly set and your computer is not muted.
3. Run the audio troubleshooter. Take the following steps:
- a. Go to **Start → Settings → System → Sound**.
 - b. Under **Advanced**, find **Troubleshoot common sound problems**, and click **Output devices** or **Input devices** to troubleshoot and fix the problem.

For more solutions to audio problems, go to <https://support.lenovo.com/solutions/ht501860>.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Mouse problems

My mouse does not work

Problem: What should I do if my mouse does not work?

Solution: If you encounter mouse problems such as mouse not responding or mouse cursor disappearing, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure the power switch on your mouse is turned on.
2. If you are using a wireless mouse, try the following solutions one by one:
 - Ensure that the battery power is enough for working.
 - If it is connected through a USB dongle, ensure that the USB dongle is connected to a working USB connector of your computer. The USB dongle is usually stored within the battery compartment of the mouse.
 - If it is a Bluetooth mouse, ensure that the Bluetooth connection with your computer is correct. If there is a Bluetooth connection problem, refer to “Bluetooth connection problems” in this *User Guide*.
3. If you are using a wired mouse, try the following solutions one by one:
 - Connect it to a working USB connector on your computer correctly.
 - Connect another wired mouse to the same USB connector. If it is connected correctly and works well, there may be something wrong with the original mouse.
4. Update the mouse driver. Take the following steps:
 - a. Type **device manager** in the Windows search box.
 - b. Click **Device Manager** from the list of results. The Device Manager window opens.
 - c. Click arrow icon > next to **Mice and other pointing devices** to expand the section.
 - d. Right-click the mouse driver, click **Update driver**, and then follow the on-screen instructions to update the driver.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Keyboard problems

My keyboard does not work

Problem: What should I do if my keyboard does not work?

Solution: If your keyboard does not work or types wrong characters, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that the keyboard is well connected.
 - If you are using a wired keyboard, check if it is connected to your computer correctly or try to connect the keyboard to another compatible connector on your computer.
 - If you are using a wireless keyboard, ensure that your keyboard is powered on. Check if the dongle is connected to your computer correctly or the Bluetooth connection with your computer is established.
2. Ensure that the keyboard layout settings are correct. Take the following steps:
 - a. Go to **Settings → Time & language → Language & region**.
 - b. Under **Preferred languages**, click on the three horizontal dots next to your primary language preference and select **Language options**.
 - c. Under **Installed keyboards**, check the keyboard layout and add the corresponding keyboard if you're not using the right one.
3. Ensure that the keyboard is in good status. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click **Device Manager** from the list of results. The Device Manager window opens.
 - c. Click arrow icon > next to **Keyboard** to expand the section.
 - d. Double-click the keyboard that is not working and check the status.
 - e. If it is not working properly, select **Driver** from the tabs on the top and click **Uninstall device** to uninstall the device.
 - f. Apply Windows Update to install the latest driver automatically.
4. Ensure that the sticky keys and filter keys are disabled. Take the following steps:
 - a. Open the **Start** menu, and click **Settings → Accessibility → Keyboard**.
 - b. Disable **Sticky keys** switch and **Filter keys** switch.
5. Clean the keyboard.
 - For external keyboard, take the following steps:
 - a. Disconnect your keyboard.
 - b. Turn the keyboard upside down and gently shake it.
 - c. Use compressed air to blow out the dirt and debris from underneath the keys.
 - d. Use a cotton swab dipped in rubbing alcohol to remove stickiness around and underneath stuck keys.
 - For integrated keyboard, take the following steps:
 - a. Turn off your computer.
 - b. Use compressed air to blow out the dirt and debris from underneath the keys.
 - c. Use a cotton swab dipped in rubbing alcohol to remove stickiness around and underneath stuck keys.
6. Restart your computer.


If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Battery problems

My computer battery discharges quickly

Problem: What should I do if my computer battery discharges quickly?

Solution: If your computer battery discharges quickly, try the following solutions one by one to troubleshoot and fix the issue:

1. Terminate any power-consuming settings, operations, or running apps, such as:
 - Decrease the screen brightness.
 - Turn off the keyboard backlight.
 - Disconnect unnecessary peripheral devices.
2. Ensure your computer is not set to high performance mode, which can consume more power. Take the following steps:
 - a. Click the quick settings area  on the right side of the taskbar.
 - b. Click the battery icon to change the settings.
3. Reset the battery gauge, which can help estimate the full charge capacity more accurately. Take the following steps:
 - a. Open the Vantage app, and then click **Device → Power**.
 - b. Follow the on-screen instructions to reset the battery gauge.
4. Update the battery driver to the latest version. For details, refer to “Driver problems” in this *User Guide*.
5. If your computer battery is old or drained, consider replacing the battery.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>

My computer battery is not recognized

Problem: What should I do if my computer battery is not recognized?

Solution: If your computer battery is not recognized, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that the ac power adapter, power cord, power connector, and the power outlet are working correctly.
2. Restart the computer.
3. Reset the computer. Remove the ac power adapter and take the following steps:
 - For models with an emergency reset hole, insert a straightened paper clip into the emergency reset hole. Then, restart the computer with ac power connected.
 - For models without an emergency reset hole, press and hold the power button for about seven seconds. Then, restart the computer with ac power connected.
4. Update the battery driver to the latest version. For details, refer to “Driver problems” in this *User Guide*.

5. Update UEFI BIOS to the latest version. For details, refer to “UEFI BIOS problems” in this *User Guide*.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

My computer battery icon disappears

Problem: What to do if the battery icon in the quick settings area disappeared?

Solution: If the battery icon in the quick settings area disappeared, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that the ac power adapter, power cord, power connector, and the power outlet are working correctly.
2. Restart the computer.
3. Reset the computer. Remove the ac power adapter and take the following steps:
 - For models with an emergency reset hole, insert a straightened paper clip into the emergency reset hole. Then, restart the computer with ac power connected.
 - For models without an emergency reset hole, press and hold the power button for about seven seconds. Then, restart the computer with ac power connected.
4. Update the battery driver to the latest version. For details, refer to “Driver problems” in this *User Guide*.
5. Update UEFI BIOS to the latest version. For details, refer to “UEFI BIOS problems” in this *User Guide*.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Display problems

Blue screen

Problem: How to troubleshoot blue screen errors?

Solution: To troubleshoot blue screen errors, take the following steps:

1. Type **get help** in the Windows search box and then press Enter.
2. In the search box of the Get Help app, type **troubleshoot BSOD error**.
3. Follow the guided walkthrough.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Black screen

Problem: How to troubleshoot black screen issues?

Solution: To troubleshoot black screen errors, try the following solutions one by one:

1. Update the Windows operating system. Take the following steps:
 - a. Press the Windows logo key+Ctrl+Shift+B to wake your computer from the black screen.
 - b. Select the Start menu on the taskbar and then select **Settings**.
 - c. Select **Windows Updates** and then select **Check for updates**. If updates are available, download and install them.

2. Update the mouse and keyboard drivers. Take the following steps:
 - a. Press the Windows logo key+Ctrl+Shift+B to wake your computer from the black screen.
 - b. Type **device manager** in the Windows search box and then press Enter.
 - c. Under **Keyboards**, select **HID Keyboard Device**.
 - d. Select the **Power Management** tab and then check **Allow this device to wake the computer**.
 - e. Under **Keyboards**, select **HID Keyboard Device**, and then select **Update driver**.
 - f. Select **Search automatically for drivers** and then follow the on-screen instructions to confirm the best available driver is installed.

Note: If there is more than one HID keyboard device listed, perform steps c-f for each device.

- g. Repeat steps c-f for **Mice and other pointing devices**.

Note: If there is more than one HID-compliant mouse device listed, perform steps c-f for each device.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Screen flickering

Problem: What should I do if my screen flickers?

Solution: If your screen flickers, take the following steps:

1. Check whether Task Manager also flickers. To open Task Manager, press Ctrl+Alt+Delete or Ctrl+Shift+Esc.
 2. If Task Manager also flickers, roll back your display driver. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Under **Display adapters**, select a display adapter.
 - c. Click the **Driver** tab and then select **Roll Back Driver**.
 - d. Click **Yes** to roll back your display driver and restart your computer.
- Note:** If the **Roll Back Driver** option is unavailable, Windows does not have a previous driver to roll back to. In this scenario, you can try updating or uninstalling your display driver in the **Driver** tab.
3. If Task Manager does not flicker, update or uninstall incompatible apps that are probably causing the problem. Take the following steps:
 - a. Keep all apps updated from the Microsoft Store or the manufacturer's site.
 - b. Check whether screen flickers in a specific app. If yes, uninstall the app. Take the following steps:
 - 1) Click the Start menu on the taskbar and then select **Settings**.
 - 2) Click **Apps → Installed apps**.
 - 3) Scroll down the list, find the app you want to uninstall, and then click **Uninstall**.
 - 4) In the popup window, select **Uninstall**.
 - 5) If you're asked to confirm your choice, select **Yes**.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

The external display does not work

Problem: What should I do if the external display does not work?

Solution: If the external display does not work, try the following solutions one by one to troubleshoot and fix the issue:

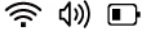
1. Ensure that the external display is well connected to your computer
2. Reconnect the external display to your computer.
3. Update the display driver. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click the arrow icon > next to **Display adapters** to expand the section.
 - c. Right-click your display adapter, select **Update driver**, and follow the on-screen instructions.
4. Roll back to the previous installed driver if the display problem occurs after a recent driver update. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click the arrow icon > next to **Display adapters** to expand the section.
 - c. Right-click the display driver and select **Properties**.
 - d. Under **Driver**, select **Roll Back Driver** and follow the on-screen instructions.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

The display remains dim

Problem: What should I do if the display remains dim?

Solution: If the display remains dim, try the following solutions one by one to troubleshoot and fix the issue:

1. Adjust the display brightness. Choose one of the following ways:
 - Press the function key F6 to increase the display brightness.
 - Go to **Start** → **Settings** → **System** → **Display**, and move the **Brightness** slider to the right.
 - Click the quick settings area  on the right side of the taskbar to open the quick settings panel, and then move the **Brightness** slider to the right.
2. Update the display driver. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click the arrow icon > next to **Display adapters** to expand the section.
 - c. Right-click your display adapter, select **Update driver**, and follow the on-screen instructions.
3. Roll back to the previous installed driver if the problem occurs after a recent driver update. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click the arrow icon > next to **Display adapters** to expand the section.
 - c. Right-click the display driver and select **Properties**.
 - d. Under **Driver**, select **Roll Back Driver** and follow the on-screen instructions.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.


Touchpad or trackpad problems

My touchpad or trackpad does not respond

Problem: What should I do if my touchpad or trackpad does not respond?

Solution: If your touchpad or trackpad is not responding, try the following solutions one by one to troubleshoot and fix the issue:

1. Enable the touchpad. Take the following steps:
 - a. Go to **Start → Settings → Bluetooth & devices → Touchpad**.
 - b. Turn on the **Touchpad** toggle.

Note: For some Lenovo computers, you can also press the touchpad hotkey  or the key combination Fn+M to enable or disable the touchpad.
2. Update the touchpad driver. Take the following steps:
 - a. Type **device Manager** in the Windows search box and then press Enter.
 - b. Click the arrow next to **Human Interface Devices** to expand the section.
 - c. Right-click the touchpad, select **Update driver**, and follow the on-screen instructions.
3. Roll back the touchpad driver. Take the following steps:
 - a. Type **device Manager** in the Windows search box and then press Enter.
 - b. Click the arrow icon > next to **Human Interface Devices** to expand the section.
 - c. Right-click the touchpad, and select **Properties**.
 - d. Under **Driver**, select **Roll Back Driver** and follow the on-screen instructions.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

My touchpad or trackpad responds slowly

Problem: What should I do if my touchpad or trackpad responds slowly?

Solution: If your touchpad or trackpad response is very slow, take the following steps to troubleshoot and fix the issue:

1. Go to **Start → Settings → Bluetooth & devices → Touchpad**.
2. Adjust the cursor speed.
3. Under **Taps**, adjust the touchpad or trackpad sensitivity.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Touch screen problems

My touch screen does not respond

Problem: What should I do if my touch screen does not respond?

Solution: If your touch screen does not respond, try the following solutions one by one to troubleshoot and fix the issue:

1. Clean your touch screen. Take the following steps:
 - a. Turn off the computer.
 - b. Use a dry, soft, and lint-free cloth or a piece of absorbent cotton to remove fingerprints or dust from the touch screen. Do not apply solvents to the cloth.
 - c. Restart the computer.
2. Enable your touch screen. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Under **Human Interface Devices**, right-click **HID-compliant touch screen**.
 - c. Select the **Driver** tab, select **Enable device**, and then confirm.

Note: If there's more than one HID-compliant touch screen device listed, perform steps b-c for each device.
 - d. If **Intel(R) Quick I2C Host Controller** is listed under **Human Interface Devices**, right-click **Intel(R) Quick I2C Host Controller**, select **Driver** → **Enable device**, and then confirm.

Note: If there is more than one Intel(R) Quick I2C Host Controller device listed, perform step d for each device.
3. Update your touch screen driver. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Under **Human Interface Devices**, right-click **HID-compliant touch screen**.
 - c. Select the **Driver** tab and then select **Update Driver**.
 - d. Select **Search automatically for drivers** and then follow the on-screen instructions to confirm the best available driver is installed.

Note: If there is more than one HID-compliant touch screen device listed, perform steps b-d for each device.
 - e. If **Intel(R) Quick I2C Host Controller** is listed under **Human Interface Devices**, right-click **Intel(R) Quick I2C Host Controller**, select **Driver** → **Update Driver** → **Search automatically for drivers**, and then follow the on-screen instructions to confirm the best available driver is installed.

Note: If there is more than one Intel(R) Quick I2C Host Controller device listed, perform step e for each device.
4. Upgrade the Windows operating system. Take the following steps:
 - a. Type **windows update** in the Windows search box and press Enter.
 - b. Click **Check for updates**. If an operating system update package is available, it will be automatically downloaded and installed.
 - c. Follow the on-screen instructions to install the device drivers and necessary programs.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Hinge problems

My computer hinges lose torque

Problem: What should I do if my computer hinges lose torque?

Solution: If your computer hinges lose torque, take the following steps:

1. Go to <https://support.lenovo.com/partnerlocator> to locate the nearest service center.
2. Go to a service center in your area for professional support.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

My computer cannot be opened or closed

Problem: What should I do if I cannot open or close the computer?

Solution: If you cannot open or close the computer, do not forcibly operate it. Otherwise, other components might be damaged. Take the following steps:

1. Go to <https://support.lenovo.com/partnerlocator> to locate the nearest service center.
2. Go to a service center in your area for professional support.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Pen problems


My pen is not detected or does not work

Problem: What should I do if my pen is not detected or does not work?

Solution: If your pen is not detected or does not work, try the following solutions one by one to troubleshoot and fix the issue:

1. Charge the pen.

Note: The charging time might vary depending on pen types.

2. Establish Bluetooth connection between your pen and your computer properly. Take the following steps:
 - a. Click the quick settings area  on the right side of taskbar.
 - b. Click the Bluetooth settings and turn on the Bluetooth.
 - c. Select the pen in the list displayed and follow on-screen instructions.
3. Update **Lenovo Pen Settings**, an app preinstalled on your computer, and ensure that your pen has paired to your computer through Bluetooth.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

USB problems

My USB connector does not work

Problem: What should I do if my USB connector does not work?

Solution: If your USB connector does not work, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that the cable is connected properly to your computer or there are no debris in your USB connector.
2. Use a different USB connector on your computer.
3. Ensure that your USB connector supports charging function if you are using a USB connector for charging.
4. Disable **USB selective suspend setting**. Take the following steps:
 - a. Type **power plan** in the Windows search box and press Enter.
 - b. Click **Edit power plan → Change advanced power settings**.
 - c. Double-click **USB settings → USB selective suspend setting** to expand the menu.
 - d. Disable **On battery** and **Plugged in** and click **Apply**.
 - e. Restart your computer.
5. Restart your computer.
6. Update the driver. Take the following steps:
 - a. Type **device manager** in the Windows search box and then press Enter.
 - b. Click **Device Manager** from the list of results. The Device Manager window opens.
 - c. Click the arrow icon > next to **Universal Serial Bus controllers** to expand the section.
 - d. Right-click the USB device you would like to update.
 - e. Select **Update driver** and follow the on-screen instructions.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Recover data from a USB drive

Problem: How to recover data from a USB drive?

Solution: To recover data from a USB drive, choose one of the following solutions to troubleshoot and fix the issue:

- Recover data by using command lines. Take the following steps:
 1. Connect the USB drive to your computer.
 2. Press Windows key+R to launch Windows Explorer.
 3. Type **CMD** in the search box and press Enter.
 4. Type **chkdsk E: /f** and press Enter.

Note: Replace E with your actual USB drive letter.

5. Type **ATTRIB -H -R -S /S /D E:*. *** and press Enter.

Note: Replace E with your actual USB drive letter.

6. Wait for the process to finish.

All the recovered files will be in a new folder on your USB drive after the process is complete.

Note: These files names might be with the extension “.chk”. You can change it into the original extension, for example, “.jpg” , and save the files to another location.

- If you have created a recovery USB drive as a backup for the Windows recovery programs, recover data by restoring to a previous version. Take the following steps:
 1. Connect the USB drive to your computer and enter **This PC**.
 2. Right-click your USB drive and select **Properties**.
 3. Click **Previous Versions** and select an available previous version.
 4. Click **Restore to** and choose a new location to save the files.
- Recover data by using a reliable USB data recovery tool.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Create a recovery drive

Problem: How to create a recovery drive?

Solution: To create a recovery drive, take the following steps:

Attention: The process of creating a recovery drive deletes all the data stored on the USB drive, including the data stored in a hidden folder.

1. Prepare a USB drive (at least 32 GB of storage).
2. Type **Create a recovery drive** in the Windows search box and then select it.
3. Ensure that **Back up system files to the recovery drive** is selected and then click **Next**.
4. Connect the USB drive to your computer, select it and then click **Next**.
5. Click **Create** to start the recovery drive creation process.


If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Copilot key problems

Windows Copilot is not launched by pressing the Copilot key

Problem: What should I do if I cannot open Copilot in Windows by pressing the Copilot key on the keyboard?

Solution: If you cannot open Copilot in Windows by pressing the Copilot key on the keyboard, try the following solutions one by one to troubleshoot and fix the issue:

1. Check whether your country or region supports the function. Copilot in Windows is available in selected global markets. If the Windows Search opens after you press the Copilot key  , it means your country or region does not support the function.
2. Update your Windows operating system to 23H2 or later version.

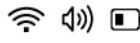
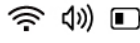
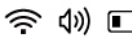
If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Bluetooth connection problems

Bluetooth connection error

Problem: What should I do if I cannot connect to Bluetooth?

Solution: If you cannot connect to Bluetooth, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure Bluetooth is supported and enabled on both your computer and your Bluetooth device. To turn on Bluetooth on your computer, take the following steps:
 - a. Click the quick settings area  on the right side of the taskbar.
 - b. In the Bluetooth quick setting, ensure that Bluetooth is turned on. If not, click the Bluetooth icon to turn it on.
2. Restart your Bluetooth device.
3. Ensure that your Bluetooth device is charged or has enough power.
4. Ensure that your Bluetooth device is placed within the required Bluetooth connection distance range of your computer.
5. Ensure that airplane mode is turned off on your computer. Take the following steps:
 - a. Click the quick settings area  on the right side of the taskbar.
 - b. In the Airplane mode quick setting, ensure that Airplane mode is turned off. If not, click the Airplane mode icon to turn it off.
6. Ensure that your Bluetooth device is not too close to other USB devices that are connected to your computer. Unshielded USB devices might interfere with Bluetooth connections.
7. Remove your Bluetooth device, and then add it again. Take the following steps:
 - a. Remove your Bluetooth device. Take the following steps:
 - 1) Click **Start → Settings → Bluetooth & devices → Devices**.
 - 2) Click **More options** of the Bluetooth device you are having problem with.
 - 3) Click **Remove device** to remove the Bluetooth device.
 - 4) Ensure that the Bluetooth on both your computer and the Bluetooth device are turned on. Ensure that the device is discoverable.
 - b. Add your Bluetooth device. Take the following steps:
 - 1) Click the quick settings area  on the right side of the taskbar.
 - 2) Click **Manage Bluetooth devices** (>) on the Bluetooth quick setting to expand the section.
 - 3) Click the device when it is displayed on the **New devices** list, and then follow the on-screen instructions.
8. Run the Bluetooth troubleshooter. Take the following steps:
 - a. Click **Start → Settings → System → Troubleshoot → Other troubleshooters**.
 - b. Locate the Bluetooth section, click **Run** and then follow the on-screen instructions.
9. Uninstall the driver of the Bluetooth adapter. Windows will automatically install the latest driver. Take the following steps:
 - a. Type **device manager** in the Windows search box.

- b. Click **Device Manager** from the list of results. The Device Manager window opens.
- c. Click the arrow icon > next to **Bluetooth** to expand the section.
- d. Right-click the Bluetooth device you are having problem with, and then click **Uninstall device**.
- e. Confirm that you want to uninstall this device from your system in the Uninstall Device window, and then click **Uninstall**.
- f. After the driver is uninstalled, restart your computer. Windows will automatically install the latest driver.
- g. If Windows does not reinstall the driver automatically, open device manager and click **Action → Scan for hardware changes**.










If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Network connection problems

Wi-Fi connection error

Problem: What should I do if I cannot connect to Wi-Fi?

Solution: If you cannot connect to Wi-Fi, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that Wi-Fi is turned on and Airplane mode is turned off. Take the following steps:
 - a. Click the quick settings area    on the right side of the taskbar.
 - b. Check if Wi-Fi is turned on. If not, click the Wi-Fi icon to turn it on.
 - c. Check if Airplane mode is turned off. If not, click the Airplane mode icon to turn it off.
2. Reconnect to Wi-Fi. Take the following steps:
 - a. Click the quick settings area    on the right side of the taskbar.
 - b. Click **Manage Wi-Fi connections** (>) on the Wi-Fi quick setting to expand the section.
 - c. Select the network you want to connect, and click **Connect**.
3. Connect to the network with a different frequency band. Most Wi-Fi routers support both 2.4 GHz and 5 GHz network frequency bands. They appear as two different networks in the list of Wi-Fi networks. If your list of Wi-Fi networks includes these two networks, connect to the one with different frequency band.
4. Run the network troubleshooter on your computer to diagnose and solve common network connecting problems. Take the following steps:
 - a. Right-click the network icon in the quick settings area    on the right side of the taskbar.
 - b. Click **Diagnose network problems** and follow on-screen instructions.
5. Restart your modem and wireless router. Take the following steps:
 - a. Disconnect your modem and wireless router from power source.
 - b. If your modem has a backup battery, remove the battery.
 - c. Wait for at least 30 seconds.
 - d. If you had removed the backup battery from the modem, install it.
 - e. Connect your modem and wireless router to the power source.

- f. Connect to Wi-Fi network on your computer again.
6. Disable your wireless network adapter driver and enable it again. Take the following steps:
 - a. Type **device manager** in the Windows search box.
 - b. Click **Device Manager** from the list of results. The Device Manager window opens.
 - c. Click the arrow icon > next to **Network adapters** to expand the section.
 - d. Right-click the wireless network adapter driver, and then click **Disable device**.
 - e. Click **Yes** in the window prompted. The wireless network adapter driver is disabled.
 - f. Right-click the wireless network adapter driver again, and then click **Enable device** to enable the driver.
7. Uninstall your wireless network adapter driver and restart your computer. Take the following steps:
 - a. Before uninstalling, download the available driver on a different computer from Lenovo support website and save it to a USB flash drive. For how to download the driver, see “Driver problems” in this *User Guide*.
 - b. Type **device manager** in the Windows search box.
 - c. Click **Device Manager** from the list of results. The Device Manager window opens.
 - d. Click the arrow icon > next to **Network adapters** to expand the section.
 - e. Right-click the wireless network adapter driver, and then click **Uninstall device**.
 - f. In the Uninstall Device window, confirm that you want to uninstall this device from your system, and then click **Uninstall**.
 - g. After the driver is uninstalled, restart your computer.
 - h. Install the driver you have downloaded.
8. Contact your Internet service provider to check if there are any issues with your internet plan or connection.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Power charging problems

My computer is not charged when connected to ac power

Problem: What should I do if my computer is connected to ac power but not charged?

Solution: If your computer is connected to ac power but not charged, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that you use Lenovo-certified ac power adapter and power cord that are designed for charging with proper wattage. If there are any visible signs of damage, you can purchase a new ac power adapter or power cord at <https://www.lenovo.com/accessories>.
2. Ensure that the power connector is clean and well-conditioned.
3. Ensure that the power adapter and power cord are completely and firmly connected to both your computer and a working power outlet.
4. Turn off the computer and disconnect the computer from ac power and all connected cables. Wait a few minutes. Then, reconnect to ac power and turn on the computer.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

My built-in battery cannot be charged

Problem: What should I do if my built-in battery cannot be charged?

Solution: If your built-in battery cannot be charged, try the following solutions one by one to troubleshoot and fix the issue:

1. Ensure that you use the power adapter with proper wattage. Low-wattage power adapters might cause battery charging problem.
2. Exit any heavy-loading programs and charge the computer again. To check the load of programs in process: Press Ctrl+Alt+Delete, and then click **Task Manager** → **Processes**.
3. Move your computer to a cool and well-ventilated spot. Battery charging is also affected by its temperature.
4. Reset the battery gauge. Take the following steps:
 - a. Open the Vantage app, and then click the menu icon at the top-right corner.
 - b. Select **Power** → **BATTERY SETTINGS**, and then click **RESET** in **Battery gauge reset** section.
5. Update the UEFI BIOS to the latest version. For details, refer to “UEFI BIOS problems” in this *User Guide*.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

My built-in battery is not fully charged

Problem: What should I do if my built-in battery is not fully charged?

Solution: Keeping the battery from full charge when battery power is not in heavy use can help extend its lifespan. If you want to fully charge the battery, try the following solutions one by one:

1. Disable the Smart Charge or Conservation Mode. Take the following steps:
 - a. Open the Vantage app, and then click the menu icon at the top-right corner.
 - b. Select **Power** → **BATTERY SETTINGS**, and then slide the **Smart charge** or **Conservation Mode** switch to disable the function.
2. Reset the battery gauge. Take the following steps:
 - a. Open the Vantage app, and then click the menu icon at the top-right corner.
 - b. Select **Power** → **BATTERY SETTINGS**, and then click **RESET** in **Battery gauge reset** section.
3. Update the UEFI BIOS to the latest version. For details, refer to “UEFI BIOS problems” in this *User Guide*.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Startup problems

My computer does not start up

Problem: What should I do if my computer does not start up?

Solution If your computer does not start up, take the following steps:

1. Check if the power indicator is on, to ensure that the power adapter is connected to your computer and the power cord of your computer is plugged into a working electrical outlet.

2. If you are using a power strip or surge protector, ensure it is turned on and working.
3. Press the power button to turn on your computer again.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Windows login error

Problem: What should I do if I cannot log in to Windows?

Solution: If you cannot log in to Windows, try the following solutions one by one to troubleshoot and fix the issue:

1. Restart your computer. The startup process might be interrupted abnormally. Restart to see if your computer can start up normally:
 - a. Shut down your computer by pressing the power button for 10 seconds until the screen turns off.
 - b. Wait about 1 minute. Then, press the power button to turn on your computer again.
2. Set the drive that the operating system has been installed on as the first boot device. Then, restart your computer. For details, refer to the BIOS related information in this *User Guide*.
3. Recover your Windows operating system. Depending on your specific situation, you can choose from different Windows recovery options. For details, go to https://support.microsoft.com/windows_recovery
4. Recover and restore the UEFI BIOS from the last uncorrupted and secure backup. Then, restart your computer. For details, refer to “UEFI BIOS problems” in this *User Guide*.
5. Reset the UEFI BIOS to factory default settings. Then, restart your computer. For details, refer to “BIOS problems” in this *User Guide*.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Blue screen during the startup

Problem: What should I do if I encounter a blue screen during the startup?

Solution: If you encounter a blue screen during the startup, try the following solutions one by one to troubleshoot and fix the issue:

1. Fix STOP code errors:

For details, go to https://support.microsoft.com/stop_code_error.
2. Update the Windows operating system. Take the following steps:
 - a. Restart your computer in safe mode. For details, go to https://support.microsoft.com/safe_mode.
 - b. Get the latest updates from the Windows Update. For details, go to https://support.microsoft.com/windows_update.
 - c. Restart your computer.


If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Performance problems

My computer does not work

Problem: What should I do if my computer does not work?

Solution: If your computer does not work, try the following solutions one by one to troubleshoot and fix the issue:

1. Wait several seconds to see if your computer responds properly later.
2. Terminate tasks that are not responding.
3. Restart your computer.
 - Restart in Windows
 - a. Press Ctrl+Alt+Delete at the same time.
 - b. Click power icon  , then select **Restart**.
 - Shut down and turn on the computer again
 - a. Shut down your computer by pressing the power button for 10 seconds until the screen turns off.
 - b. Wait about 1 minute. Then, press the power button to turn on your computer again.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

My computer responds slowly

Problem: What should I do if my computer responds slowly?

Solution: If your computer responds slowly, try the following solutions one by one to troubleshoot and fix the issue:

1. Restart your computer.
2. Cool down your computer.

Turn off your computer, move it to a cooler place, and let it cool down for at least five minutes.
3. Clean up disks in Windows.

Delete temporary files and free up more drive space on your computer using Disk Cleanup. For details, go to https://support.microsoft.com/disk_cleanup.
4. Remove unnecessary programs from the startup programs.
 - a. Open the **Start** menu, and then click **Settings → Apps → Startup**.
 - b. In the **Startup** section, turn off the switch of programs that are not necessary to start automatically when you log in to Windows.
5. Uninstall unnecessary software.
6. Scan for viruses and Malware using the anti-virus software that is installed on your computer.
7. Change to another power mode with higher performance. For details, go to https://support.microsoft.com/change_the_power_mode_for_your_windows_pc.
8. Repair missing or corrupted system files using the System File Checker tool. For details, go to https://support.microsoft.com/system_file_checker.
9. Update the Windows operating system.

Get the latest updates from the Windows Update. For details, go to https://support.microsoft.com/windows_update.

10. Update drivers.

You can update drivers manually. For details, refer to “Driver problems” in this *User Guide*.

11. Recover your Windows operating system.

Depending on your specific situation, you can choose from different recovery options. For details, go to https://support.microsoft.com/windows_recovery.

12. Use memory module(s) with higher speed.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Password problems

Change my Windows password

Problem: How to change my Windows password?

Solution: To change your Windows password, take the following steps:

1. Type **Sign-in options** in the Windows search box and press Enter.
2. Select **Password** → **Change** and follow on-screen instructions to change the password.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Reset my Windows password

Problem: How to reset my Windows password?

Solution: To reset your Windows password, choose one of the following solutions:

- If you have set security questions, take the following steps:
 1. Click **Reset password** on the sign-in screen after you have entered an incorrect password.

Note: Contact your administrator if you do not see an option to reset your password.
 2. Follow on-screen instructions to reset a new password.
- If you have created a password reset disk, take the following steps:
 1. Connect a password reset disk to a USB-compatible connector on your computer.
 2. Follow on-screen instructions to reset your password.
- If you have an administrator account take the following steps:
 1. Sign in to your computer with the local administrator account.
 2. Follow on-screen instructions to reset your password.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Retrieve my BitLocker recovery key in Windows

Problem: How to retrieve my BitLocker recovery key in Windows?

Solution: To retrieve your BitLocker recovery key in Windows, choose one of the following solutions:

- In your Microsoft account:
 1. Open a web browser on any device such as mobile phone with internet access.
 2. Sign into your Microsoft account at <https://account.microsoft.com/devices/recoverykey>.
 3. Follow on-screen instructions to find the recovery key.
- On a printed paper:

Find out the paper with the record of BitLocker recovery information if you have printed or recorded the recovery key on the paper.
- On a USB flash drive:
 1. Connect the USB flash drive into a USB-compatible connector on your computer.
 2. Follow the on-screen instructions to find the recovery key.
- By your administrator:

Contact your administrator to have the recovery key if your computer is connected to a domain or signed into an organization using a work or school e-mail account.

For more details, go to <https://support.microsoft.com/windows/finding-your-bitlocker-recovery-key-in-windows>.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

OS problems

Install the Windows operating system

Problem: How to install the Windows operating system?

Solution: To install the Windows operating system, take the following steps:

Attention:

- It is recommended that you update your operating system through official channels. Any unofficial update might cause security risks.
- The process of installing a new operating system deletes all the data on your internal storage drive, including the data stored in a hidden folder.
- Before installing or upgrading a particular Windows version, make a backup copy of all the data that you want to keep.
- Ensure that your computer is connected to the network and ac power during the whole process.
 1. Get your computer ready for installing the Windows operating system. Take the following steps:
 - a. Microsoft® constantly makes updates to the Windows operating system. Before installing a particular Windows version, check the compatibility list and the minimum system requirements for the Windows version. For details, go to <https://support.lenovo.com/solutions/ht512575>.
 - b. For models with a Trusted Platform Module, if you are using the Windows BitLocker® Drive Encryption feature, ensure that you have disabled the feature. You can re-enable the feature after the operating system installation is complete.
 - c. Enable the security-related features (Security Chip, Virtualization, and Secure Boot). Take the following steps:

- 1) Restart the computer. When the logo screen is displayed, choose one of the following solutions to enter the UEFI BIOS menu depending on your computer model:
 - For ThinkPad, ThinkBook, and Education series computers: Press F1.
 - For Yoga and IdeaPad computers: Press F2.
 - 2) Select **Security** and select the security-related features. Then, press Enter. Ensure that the security-related features are enabled.
 - 3) Press F10 to save the settings and exit.
2. Connect the drive that contains the operating system installation program to the computer.
To create the installation media, refer to <https://support.microsoft.com/windows>.
 3. Restart the computer. When the logo screen is displayed, choose one of the following solutions to enter the UEFI BIOS menu depending on your computer model:
 - For ThinkPad, ThinkBook, and Education series computers: Press F1.
 - For Yoga and IdeaPad computers: Press F2.
 4. Choose one of the following solutions depending on your computer model:
 - For ThinkPad computers: Select **Startup → Boot** to open the **Boot Priority Order** submenu.
 - For Education series computers: Select **Startup → Boot Order → UEFI Boot Order**.
 - For ThinkBook, Yoga, and IdeaPad computers: Select **Boot**.
 5. Change the startup sequence. Take the following steps:
 - a. Select the drive that contains the operating system installation program. Choose one of the following solutions depending on your computer model:
 - For ThinkPad and Education series computers: Such as **USB HDD**. Then, press Esc.
 - For ThinkBook, Yoga, and IdeaPad computers: Such as **USB Boot**. Then, press Esc.
 - b. Press F10 to save the setting and exit.

Attention: After you change the startup sequence, ensure that you select the correct device during a copy, save, or format operation. If you select the wrong device, the data on that device might be erased or overwritten.

Note: If the system cannot boot from the selected drive, disable **Secure Boot** and try again. Ensure that you re-enable the feature after the operating system installation is complete.
 6. Follow the on-screen instructions to install the device drivers and necessary programs.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist>.

Windows operating system installation error

Problem: What should I do if the installation of Windows operating system fails?

Solution: If the installation of Windows operating system fails, take the following steps:

1. Read the error message to figure out the specific cause.
2. Ensure that the UEFI BIOS version on your device is up-to-date.
3. Ensure that the available disk space of your computer meets the requirement of the new Windows operating system.
4. If you had antivirus software or a firewall installed on the previous system, temporarily disable the antivirus functionality within the BIOS before attempting system installation.

5. Reinstall the Windows system.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Upgrade my Windows operating system

Problem: How to upgrade my Windows operating system?

Solution: To upgrade your Windows operating system, take the following steps:

Attention:

- It is recommended that you upgrade your operating system through official channels. Any unofficial update might cause security risks.
 - Before upgrading a particular Windows version, make a backup copy of all the data that you want to keep.
 - Ensure that your computer is connected to the network and ac power during the whole process.
1. Get your computer ready for updating the Windows operating system. Take the following steps:
 - a. Microsoft constantly makes updates to the Windows operating system. Before upgrading a particular Windows version, check the compatibility list and the minimum system requirements for the Windows version. For details, go to <https://support.lenovo.com/solutions/ht512575>.
 - b. For models with a Trusted Platform Module, if you are using the Windows BitLocker® Drive Encryption feature, ensure that you have disabled the feature. You can re-enable the feature after the operating system installation is complete.
 - c. Enable the security-related features (Security Chip, Virtualization, and Secure Boot). Take the following steps:
 - 1) Restart the computer. When the logo screen is displayed, choose one of the following ways to enter the UEFI BIOS menu depending on your computer model:
 - For ThinkPad, ThinkBook and Education series computers: Press F1.
 - For Yoga and IdeaPad computers: Press F2.
 - 2) Select **Security** and select the security-related features. Then, press Enter. Ensure that the security-related features are enabled.
 - 3) Press F10 to save the settings and exit.
 2. Type **Windows Update** in the Windows search box and press Enter.
 3. Click **Check for updates**. If an operating system update package is available, it will be automatically downloaded and installed.
 4. Follow the on-screen instructions to install the device drivers and necessary programs.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Windows operating system upgrading error

Problem: What should I do if the upgrading of Windows operating system fails?

Solution: If the upgrading of Windows operating system fails, take the following steps:

1. Read the error message to figure out the specific cause.
2. Ensure that the UEFI BIOS version on your device is up-to-date.
3. Ensure that the available disk space of your computer meets the requirement of the new Windows operating system.

- Upgrade the system again.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Recover Windows operating system

Problem: How to recover my Windows operating system?

Solution: To recover your Windows operating system, choose one of the following recovery options:

- **Reset system to factory default:**

- Reset your computer from Settings. Take the following steps:
 - Open the Start menu, and then click **Settings → System → Recovery**.
 - Select **Reset PC** under **Recovery options**.
 - Select **Keep my files** or **Remove everything** as desired to reset the system.
- Reset your computer from Windows Recovery Environment. Take the following steps:
 - Restart your computer. When the logo screen is displayed, press F11 to enter the Windows Recovery Environment.
 - Click **Troubleshoot → Reset this PC → System Restore**.
 - Select **Keep my files** or **Remove everything** as desired to reset the system.
- Refer to the instructions in <https://support.lenovo.com/HowToCreateLenovoRecovery>.

- **Other recovery options such as recovering system to a previous system point:**

Refer to the instructions in Popular Topics: <https://support.lenovo.com/solutions/ht118590>.

Here are some frequently-asked cases and solutions for your reference:

Cases	Solutions
Your computer does not work well and you recently installed a device from Windows Update.	Remove the installed update device.
Your computer does not work well and it has been a while since you installed an app or changed system settings.	Reset your system.
Your computer cannot start or is still loading.	Use the Startup Repair function.
Your computer cannot start, you have not created a recovery drive, and resetting your computer does not work.	Use installation media to reinstall Windows operating system.
Your computer cannot start and you have not created a recovery drive.	Use installation media to restore your computer.
Your computer cannot start and you have created a recovery drive.	Use a recovery drive to restore or recover your computer.
You want to reinstall your previous operating system.	Go back to your previous version of Windows operating system.
Your computer does not work well and you recently installed an app.	Restore from a system restore point.
You suspect your device has been infected.	Use installation media to reinstall Windows operating system.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Windows operating system recovery error

Problem: What should I do if the recovery of Windows operating system fails?

Solution: If the recovery of Windows operating system fails, take the following steps:

1. Read the error message to figure out the specific cause.
2. Ensure that the computer is connected to the network and ac power source.
3. Ensure that the UEFI BIOS version on your device is up-to-date.
4. Ensure that the available disk space of your computer meets the requirement of the new Windows operating system.
5. Reinstall the Windows operating system.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Driver problems

Update or install the latest device driver

Problem: How to update or install the latest device driver?

Solution: Download the latest driver for a component when you notice poor performance from that component or when you install a new component.

Attention:

- Before updating or installing a driver:
 - Check if it is compatible with your computer. Ensure that the driver you download matches your computer and system version to avoid compatibility issues.
 - Make a backup copy of all the essential data to avoid data loss, especially for drivers like graphic card, sound card, network card, and so on. These drivers might affect the stability and the performance of your computer.
- During the process of updating or installing a driver, ensure that your computer is connected to the network.
- After completing the process of updating or installing a driver, restart your computer to enable the new driver.
- Among the following solutions, it is recommended to download Lenovo-qualified drivers from Lenovo Support Web site.

To update and install the latest driver, try one of the following solutions:

- From the Lenovo Support Web site:
 1. Go to <https://pcsupport.lenovo.com> and type the product name or the serial number of your computer into the search box and select your product from the dropdown list.
 2. Click **Drivers & Software**. Click **Select Drivers** under the **Manual Update** tab. Select and download the update package as desired.
 3. Follow the instruction at <https://support.lenovo.com/solutions/HT074189> to manually install the driver.

- From the Windows Update:
 1. Type **Windows Update** in the Windows search box and press Enter.
 2. Click **Check for Updates**. If an update package is available, it will be automatically downloaded and installed.
- From the Vantage app:

Note: Ensure that the Vantage app is up to date for the best features and performance.

1. Open the Vantage app and then click **Device → System Update → CHECK FOR UPDATES**.
2. If an update package is available, follow the on-screen instructions to download and install the package.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Driver installation error

Problem: What should I do if I encounter driver installation errors?

Solution: If you encounter driver installation errors, try the following solutions to troubleshoot and fix the issue according to your case:

Cases	Solutions
The device cannot be recognized by the system.	Try the following solutions one by one: <ol style="list-style-type: none"> 1. Ensure that the driver you just installed matches your computer and system version in Lenovo Support Web site. 2. Restart your computer. 3. Reinstall the driver. Take the following steps: <ol style="list-style-type: none"> a. Type device manager in the Windows search box. b. Click Device Manager from the list of results. The Device Manager window opens. c. Right-click the device that cannot be recognized. Then, select Uninstall device. d. After the driver is uninstalled, restart your computer. Windows will automatically install the latest driver.
An error message is displayed.	Take the following steps: <ol style="list-style-type: none"> 1. Read the error message to figure out the specific cause. 2. Download the appropriate driver version from Lenovo support Web site according to the error message. 3. Reinstall the driver.
There is an exception in Device Manager.	Try the following solutions one by one: <ol style="list-style-type: none"> 1. Reinstall the driver. 2. Roll back to the previously installed driver.

Cases	Solutions
There are some system stability issues, for example: <ul style="list-style-type: none"> The system frequently crashes. Blue Screen of Death occurs. 	For detailed operations, refer to the “Display problems” in this <i>User Guide</i> .
Performance degradation	For detailed operations, refer to the “Performance problems” in this <i>User Guide</i> .
The installation progress is stuck.	Try the following solutions one by one: <ol style="list-style-type: none"> Restart your computer. Reinstall the driver.

Find general solutions, go to <https://support.lenovo.com/solutions/HT105331>

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

UEFI BIOS problems

Update the UEFI BIOS

Problem: How to update the UEFI BIOS?

Solution: To update the UEFI BIOS, choose one of the following solutions:

Note: During the UEFI BIOS update process, MRC change might cause memory retraining. Memory retraining is a process to initialize the memory module and run diagnostic tests for the memory module in your computer. When memory retraining occurs, the screen might be blank. For some computer models, you might see the LED indicators on Esc, F1, and F4 blinking sequentially to indicate the progress. **Do not press the power button to interrupt the process.** Wait a few minutes until the logo screen is displayed.

- From the Lenovo Support Web site:
 - Go to <https://pcsupport.lenovo.com> and search by your product name.
 - Click **Drivers & Software** → **Select Drivers** under **Manual Update** tab **BIOS/UEFI**.
 - Follow the on-screen instructions to download and install the latest UEFI BIOS update package.
- From the Windows Update:
 - Type **Windows update** in the Windows search box and press Enter.
 - Click **Check for updates**.
 - If a UEFI BIOS update package is available, it will be automatically downloaded and installed.
- From the Vantage app (for some computer models):
 - Open the Vantage app, and then click **Device** → **System Update** → **CHECK FOR UPDATES**.
 - If the latest UEFI BIOS update package is available, follow the on-screen instructions to download and install the package.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Recover the UEFI BIOS

Problem: How to recover the UEFI BIOS?

Solution: If the UEFI BIOS is corrupted or maliciously attacked, the UEFI BIOS will automatically recover from the last uncorrupted and secure backup to protect your computer data.

During the UEFI BIOS auto-recovery, the screen will go blank. Do not press the power button to interrupt the progress. Wait a few minutes until the logo screen is displayed.

Note: For some computer models, you can check the progress based on blinking modes of the LED indicators on Esc, F1, and F4. For details, refer to the following table.

Blinking modes	Self-recovery progress
LED indicator on Esc blinks	0% to 32%
LED indicators on Esc and F1 blink simultaneously	33% to 65%
LED indicators on Esc, F1 and F4 blink simultaneously	66% to 100%

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Reset system to factory defaults

Problem: How to reset system to factory defaults?

Solution: For some computer models, you can reset the UEFI BIOS to the factory default settings, including all UEFI BIOS settings and internal system data. It helps you wipe user data in case that you want to dispose of or reuse your computer.

User data erasure is performed on the following components (if available):

- UEFI BIOS
- Security Engine
- Embedded Controller
- Fingerprint Reader
- TPM

To reset system to factory defaults, take the following steps:

1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
2. Select **Security** → **Reset System to Factory Defaults** and press Enter.
3. Several warning windows might be displayed. Follow the instructions to prepare for the reset.
4. Select **Reset System to Factory Defaults** again and select **Yes** to reset.

If the problem persists, do not hesitate to call Lenovo Customer Center. For the latest Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Self-help resource

Find more information about your device through the following self-help resources.

Product information

- Product specifications: <https://psref.lenovo.com>
- Technical specifications for Lenovo workstations: <https://thinkstation-specs.com>


Lenovo Support resource

- Lenovo PC Technical Support web site: <https://pcsupport.lenovo.com>. You can obtain the following information and resources:
 - Drivers and software
 - Troubleshoot and diagnose
 - How to's
 - Guides and manuals
 - Warranty lookup
 - Parts lookup
 - Accessories
 - Contact us
 - Repair status check
 - Imaging and security resources
 - Glossary
- Lenovo Support phone numbers: <https://pcsupport.lenovo.com/supportphonenumberlist>
- Vantage app: Type **vantage** in the Windows search box. You can use the app to:
 - Configure device settings
 - Download and install UEFI BIOS, drivers, and firmware updates
 - Secure your device from outside threats
 - Diagnose hardware problems
 - Check the warranty status of your device
 - Access *User Guide* and helpful articles
- Lenovo communities:
 - Forums: <https://forums.lenovo.com>
 - Legion Gaming Community: <https://gaming.lenovo.com>
 - Lenovo EDU Community: <https://education.lenovo.com>
 - Lenovo Pro Community: <https://smbcommunity.lenovo.com>
- Troubleshooting tips: <https://www.lenovo.com/tips>

Service information

- Warranty lookup: <https://support.lenovo.com/warranty-lookup>. You can check the warranty status of your device.
- Repair status check: <https://support.lenovo.com/track-repair-status>. You can check the repair status of your device by repair ticket, serial number, or IMEI number.
- Parts lookup and purchase: <https://support.lenovo.com/parts-lookup>. You can find service parts by serial number or machine type.
- Lenovo BIOS Simulation Center: <https://download.lenovo.com/bsco/index.html>. You can explore the BIOS settings of your device.
- Additional services purchase: <https://pcsupport.lenovo.com/warrantyupgrade>. You can protect your device with extended warranty, Accidental Damage Protection, Premium Care & Support, and Vantage Smart Performance.

Product documentation

Documentation title	Information included	How to Access
<i>Setup Guide</i>	Initial setup and overview information	<ul style="list-style-type: none">• Access the printed version from the product package.• Go to https://pcsupport.lenovo.com and search by the product name or serial number. Then, click Guides & Manuals.
<i>User Guide</i>	Instructions, guidance, resources, and contact information	<ul style="list-style-type: none">• Scan the QR code in <i>Setup Guide</i>.• In Windows Start menu, click User Guide  .• Type vantage in the Windows search box and press Enter. Then, find the <i>User Guide</i> in the app.• Go to https://pcsupport.lenovo.com and search by the product name or serial number. Then, click Guides & Manuals.
<i>Hardware Maintenance Manual</i>	Hardware diagnostic and replacement information for technicians	Go to https://pcsupport.lenovo.com and Search by the product name or serial number. Then, click Guides & Manuals .

Operating system support resource

- Windows help information
 - Type **get help** in the Windows search box
 - Use Windows Search
 - Microsoft Support Web site: <https://support.microsoft.com>
- Reset or restore Windows
 - Use Lenovo recovery options: <https://support.lenovo.com/HowToCreateLenovoRecovery>
 - Use Windows recovery options: Go to <https://pcsupport.lenovo.com> and search by the product name or serial number. Then, navigate to the troubleshooting menu to diagnose the operating system for recovery instructions.

Accessory information

- Purchase accessories: <https://www.lenovo.com/accessories>
- Service recommendation and accessory configurator: <https://smartfind.lenovo.com>
- Accessories and option compatibility matrix: <https://www.lenovo.com/accessoriesguide>

Legal and compliance information

- Product compliance: <https://www.lenovo.com/compliance>
- Legal information: <https://www.lenovo.com/us/en/legal>
- Regulatory documentation: Go to <https://pcsupport.lenovo.com> and search by the product name or serial number. Then, click **Guides & Manuals**.
 - *Safety and Warranty Guide*: Safety, warranty, recycling, and other information
 - *Generic Safety and Compliance Notices*: Compliance, accessibility, RoHS, and other information
 - *Regulatory Notice*: Regulatory notices for wireless modules

Lenovo responsibility

- Accessibility information: <https://www.lenovo.com/accessibility>

- Environment information: <https://www.lenovo.com/us/en/sustainability-operational-impact>
- Product security: <https://www.lenovo.com/us/en/product-security/landing/>

Chapter 6. Help and support

Windows label

Windows Genuine Microsoft label indicates the edition of Windows preinstalled on your computer and whether the device is preinstalled with or licensed for genuine Windows.

Your computer might have a Windows Genuine Microsoft label affixed to its cover depending on the following factors:

- Your geographic location
- Edition of Windows that is preinstalled

Go to <https://www.microsoft.com/howtotell/Hardware.aspx> for illustrations of the various types of Genuine Microsoft labels.

- In the People's Republic of China, the Genuine Microsoft label is required on all computer models preinstalled with any edition of the Windows operating system.
- In other countries and regions, the Genuine Microsoft label is required only on computer models licensed for Windows Pro editions.

The absence of a Genuine Microsoft label does not indicate that the preinstalled Windows version is not genuine. For details on how to tell whether your preinstalled Windows product is genuine, refer to the information provided by Microsoft at <https://www.microsoft.com/howtotell/default.aspx>.

There are no external, visual indicators of the Product ID or Windows version for which the computer is licensed. Instead, the Product ID is recorded in the computer firmware. Whenever a Windows product is installed, the installation program checks the computer firmware for a valid, matching Product ID to complete the activation.

In some cases, an earlier Windows version might be preinstalled under the terms of the Windows Pro edition license downgrade rights.

Call Lenovo

If you have tried to correct the problem yourself and still need help, you can call Lenovo Customer Support Center.

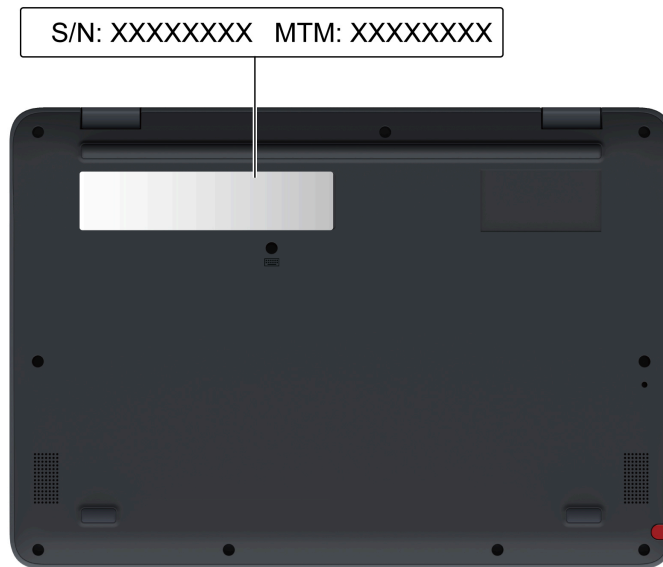
Before you contact Lenovo

Prepare the following before you contact Lenovo:

1. Record the problem symptoms and details:
 - What is the problem? Is it continuous or intermittent?
 - Any error message or error code?
 - What operating system are you using? Which version?
 - Which software applications were running at the time of the problem?
 - Can the problem be reproduced? If so, how?
2. Record the system information:
 - Product name

- Machine type and serial number

The following illustration shows where to find the machine type and serial number of your computer.



Lenovo Customer Support Center

During the warranty period, you can call Lenovo Customer Support Center for help.

Telephone numbers

For a list of the Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumberlist> for the latest phone numbers.

Note: Phone numbers are subject to change without notice. If the number for your country or region is not provided, contact your Lenovo reseller or Lenovo marketing representative.

Services available during the warranty period

- Problem determination - Trained personnel are available to assist you with determining if you have a hardware problem and deciding what action is necessary to fix the problem.
- Lenovo hardware repair - If the problem is determined to be caused by Lenovo hardware under warranty, trained service personnel are available to provide the applicable level of service.
- Engineering change management - Occasionally, there might be changes that are required after a product has been sold. Lenovo or your reseller, if authorized by Lenovo, will make selected Engineering Changes (ECs) that apply to your hardware available.

Services not covered

- Replacement or use of parts not manufactured for or by Lenovo or nonwarranted parts
- Identification of software problem sources
- Configuration of UEFI BIOS as part of an installation or upgrade
- Changes, modifications, or upgrades to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of programs

For the terms and conditions of the Lenovo Limited Warranty that apply to your Lenovo hardware product, go to:

- https://www.lenovo.com/warranty/llw_02
- <https://pcsupport.lenovo.com/warrantylookup>

Chapter 7. CRU replacement

This section provides instructions on how to replace Customer Replaceable Units (CRUs).

What are CRUs

Customer Replaceable Units (CRUs) are parts that can be replaced by the customer. The computers contain the following types of CRUs:

- **Self-service CRUs:** Refer to parts that can be replaced easily by customer themselves or by trained service technicians at an additional cost.
- **Optional-service CRUs:** Refer to parts that can be replaced by customers with a greater skill level. Trained service technicians can also provide service to replace the parts under the type of warranty designated for the customer's machine.

If you intend on installing a CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You might be required to return the defective part that is replaced by the CRU. When return is required: (1) return instructions, a prepaid shipping label, and a container will be included with the replacement CRU; and (2) you might be charged for the replacement CRU if Lenovo does not receive the defective CRU within thirty (30) days of your receipt of the replacement CRU. For full details, see the Lenovo Limited Warranty documentation at https://www.lenovo.com/warranty/llw_02.

CRU list

This topic provides the CRU list of your computer.

Self-service CRUs

- ac power adapter
- Lenovo Integrated Pen (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)
- Pen dummy (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5 only)
- Power cord

Optional-service CRUs

- Base cover assembly
- Built-in battery
- Coin-cell battery
- Daughter board cable
- Keyboard
- M.2 solid-state drive (for selected models)
- M.2 solid-state drive AL foil (for selected models of Lenovo 300w 2-in-1 Gen 5 only)
- M.2 solid-state drive bracket (for selected models)
- Wireless WAN module (for selected models of Lenovo 300w 2-in-1 Gen 5 only)
- Wireless WAN module bracket (for selected models of Lenovo 300w 2-in-1 Gen 5 only)

Note: Replacement of any parts that are not listed above should be done by a qualified repair technician or by ensuring that you carefully follow all instructions provided by Lenovo. You can also find Lenovo-authorized repair facilities by going to <https://support.lenovo.com/partnerlocator> for more information.

Before you replace any CRU

Before replacing any CRU, ensure that you disable Fast Startup first and then disable the built-in battery.

Disable Fast Startup

Follow the instructions to disable Fast Startup.

- Step 1. Go to **Control Panel** and view by Large icons or Small icons.
- Step 2. Click **Power Options**, and then click **Choose what the power buttons do** on the left pane.
- Step 3. Click **Change settings that are currently unavailable** at the top.
- Step 4. If prompted by User Account Control (UAC), click **Yes**.
- Step 5. Clear the **Turn on fast startup** check box, and then click **Save changes**.

Disable the built-in battery

Follow the instructions to disable the built-in battery.

- Step 1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
- Step 2. Select **Config → Disable Built-in Battery** and press Enter.
- Step 3. Select **Yes** in the window prompted.

The built-in battery is disabled and the computer turns off automatically.

Wait three to five minutes to let the computer cool.

Note: If your computer cannot enter the UEFI BIOS menu, you cannot disable the built-in battery. To ensure safety when you replace a CRU, it is recommended to do the following:

- For the built-in battery connected to the system board with cables: Disconnect the battery cables.
- For the CRUable built-in battery connected to the system board with comb connectors: Remove the battery. For the removal procedure, refer to the built-in battery replacement instructions in this documentation.
- For the non-CRUable built-in battery connected to the system board with comb connectors: Call Lenovo Customer Support Center for help.

To check whether the built-in battery on your computer is a CRU, see the CRU list in Chapter 7 “CRU replacement” on page 67.

Replace a CRU

Follow the instructions to replace a CRU.

Pen dummy (for selected models of Lenovo 300w 2-in-1 Gen 5 and Lenovo 500w 2-in-1 Gen 5)

Follow the instructions to replace the pen dummy.

Prerequisite

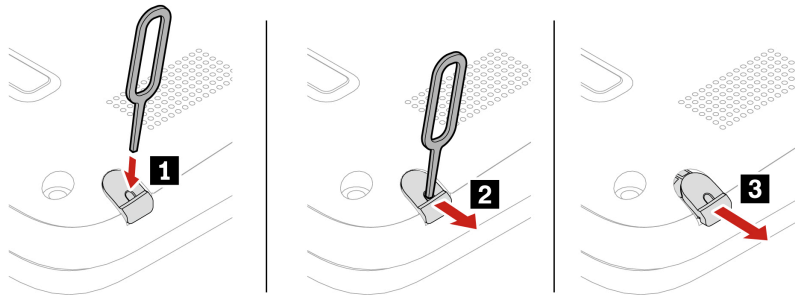
Before you start, read [Generic Safety and Compliance Notices](#).

For access, do the following:

1. Ensure that your computer is off or in sleep mode. Disconnect the computer from ac power and all connected cables.
2. Close the computer display and turn the computer over.

Removal procedure

Prepare a tool as shown to remove the pen dummy.



Base cover assembly

Follow the instructions to replace the base cover assembly.

Before you start, read [Generic Safety and Compliance Notices](#).

Note: Do not remove the base cover assembly when your computer is connected to ac power. Otherwise, there might be a risk of short circuits.

For access, do the following:

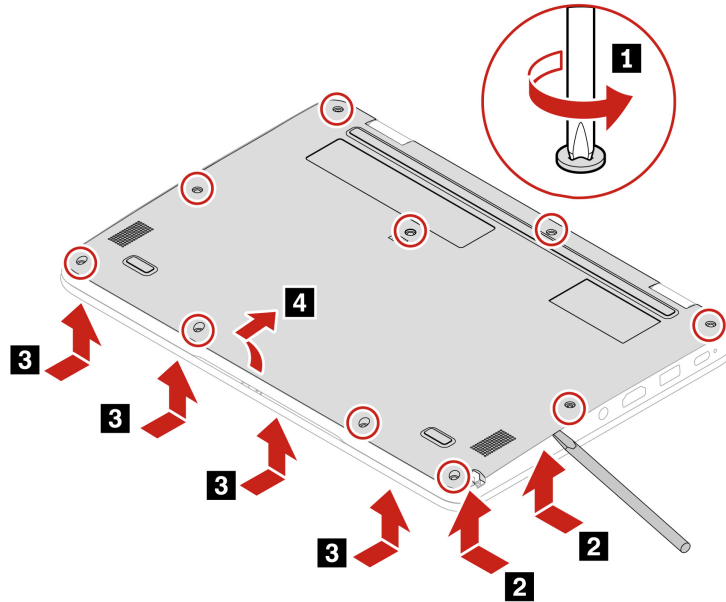
1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.

Tools needed:

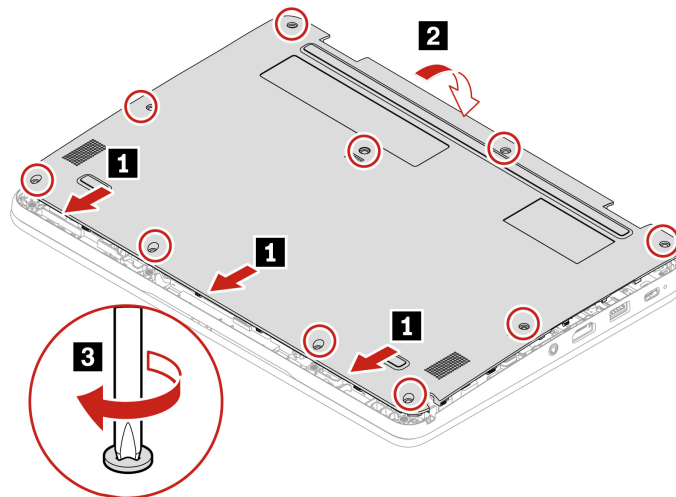
- Phillips head screwdriver
- Pry tool

Step 1. Remove the base cover assembly as shown below.

Note: Prepare a pry tool to release the hooks.



Step 2. Install the base cover assembly as shown below.



If the computer does not start up after you reinstall the base cover assembly, disconnect the ac power adapter and then reconnect it to the computer.

Built-in battery

Follow the instructions to replace the built-in battery.

Before you start, read [Generic Safety and Compliance Notices](#).

CAUTION:

Use only the Lenovo-authorized battery specified for the computer. Any other battery could ignite or explode.

Batteries that are supplied by Lenovo for use with your product have been tested for compatibility and should only be replaced with approved parts. A battery other than the one specified by Lenovo, or a disassembled or modified battery may not be covered by warranty.

Battery abuse or mishandling can cause overheating, liquid leakage, or an explosion. To avoid possible injury:

- **Do not open, disassemble or service any battery unless you are competent to do so and ensure that you carefully follow all instructions provided by Lenovo.**
- **Do not crush or puncture the battery.**
- **Do not short-circuit the battery, or expose it to water or other liquids.**
- **Keep the battery away from children.**
- **Keep the battery away from fire.**
- **Stop using the battery if it is damaged, or if you notice any discharge or the buildup of foreign materials on the battery leads.**
- **Store the rechargeable batteries or products containing the rechargeable batteries at room temperature, charged to approximately 30 to 50% of capacity. We recommend that the batteries be charged about once per year to prevent overdischarge.**
- **Do not put the battery in trash that is disposed of in landfills. When disposing of the battery, comply with local ordinances or regulations.**
- **If the battery is incorrectly replaced, there is danger of an explosion. The battery contains a small amount of harmful substances.**

Lenovo recommends you use a qualified repair technician or ensure that you carefully follow all instructions provided by Lenovo. The Lenovo-authorized repair facilities or technicians recycle Lenovo batteries according to local laws and regulations. Please do not dispose of your battery with your household waste. For recycling information go to <https://www.lenovo.com/recycling>.

Attention: Lenovo has no responsibility for the performance or safety of unauthorized batteries, and provides no warranties for failures or damage arising out of their use.

The Vantage app provides an automatic battery diagnostic test that determines if the built-in battery is defective. A built-in battery should not be replaced unless this diagnostic test shows that the battery is defective. The only exception to this is if the built-in battery is physically damaged or a customer is reporting a possible safety issue.

If the Vantage app is not installed on the computer, the customer should download and install the program to diagnose the built-in battery, before replacing a non-physically damaged built-in battery. Note that the replacement of a physically damaged built-in battery is not covered by the warranty.

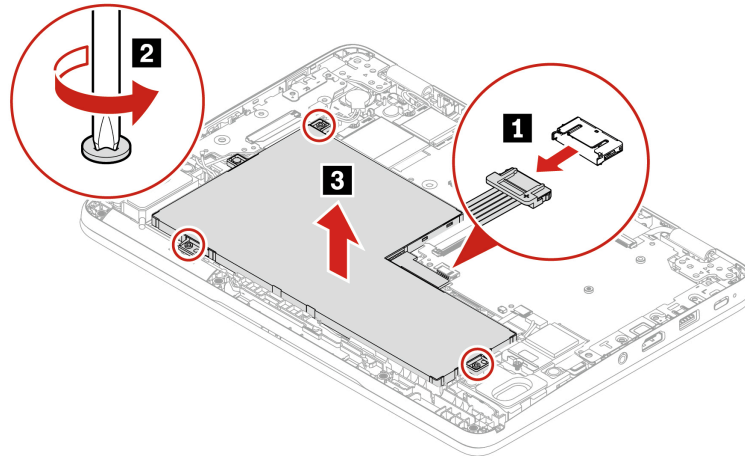
For access, do the following:

1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 69.

Tools needed:

- Phillips head screwdriver
- Pry tool

Step 1. Disconnect the connector and loosen the three captive screws as shown below. Remove the battery as shown below.



Step 2. Before installing the built-in battery, thoroughly check the battery compartment and ensure that there are no foreign or sharp objects that could cause damage to the battery.

Step 3. Install the built-in battery in reverse order.

Ensure that the base cover assembly is secured in place. Otherwise, the battery connection might fail.

Coin-cell battery

Follow the instructions to replace the coin-cell battery.

Before you start, read [Generic Safety and Compliance Notices](#).



DANGER

Use only the Lenovo authorized battery specified for the computer. Any other battery could ignite or explode.

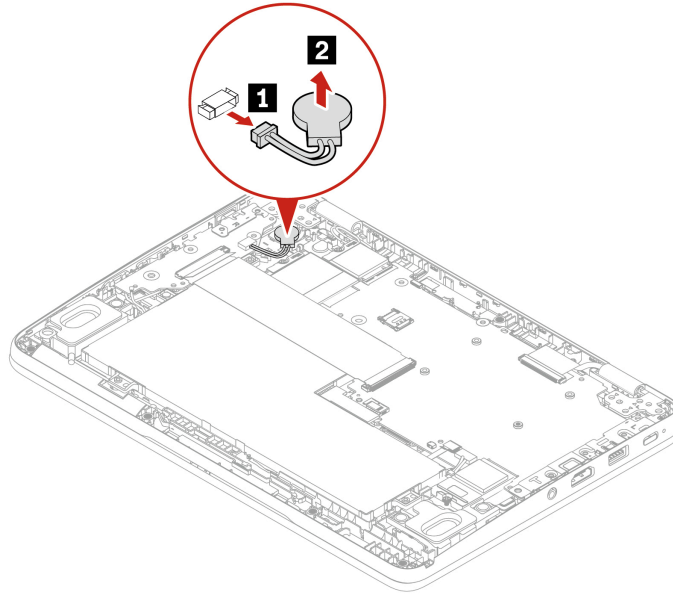
For access, do the following:

1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 69.

Tools needed:

- Phillips head screwdriver
- Pry tool

Step 1. Remove the coin-cell battery as shown below.



Step 2. Install the coin-cell battery in reverse order.

When installing:

- Ensure that the connector is attached firmly.
- Reset the system date and time in the UEFI BIOS menu.

Daughter board cable

Follow the instructions to replace the daughter board cable.

Before you start, read [Generic Safety and Compliance Notices](#).

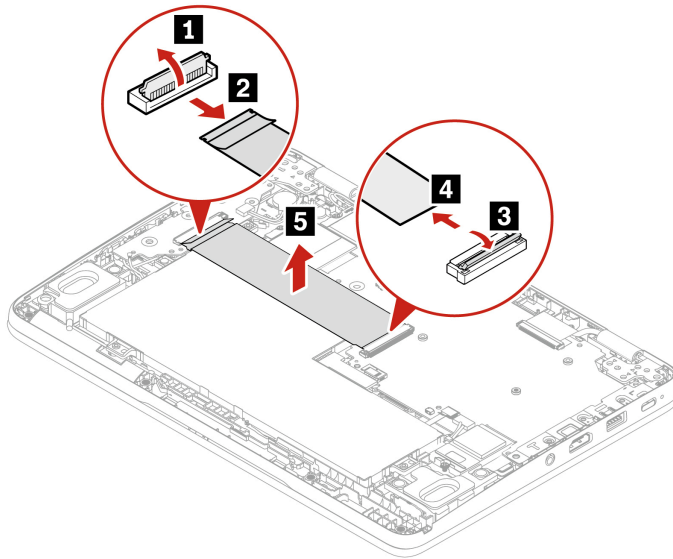
For access, do the following:

1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 69.

Tools needed:

- Phillips head screwdriver
- Pry tool

Step 1. Remove the daughter board cable as shown below.



Step 2. Install the daughter board cable in reverse order.

Keyboard

Follow the instructions to replace the keyboard.

Before you start, read [Generic Safety and Compliance Notices](#).

For access, do the following:

1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.

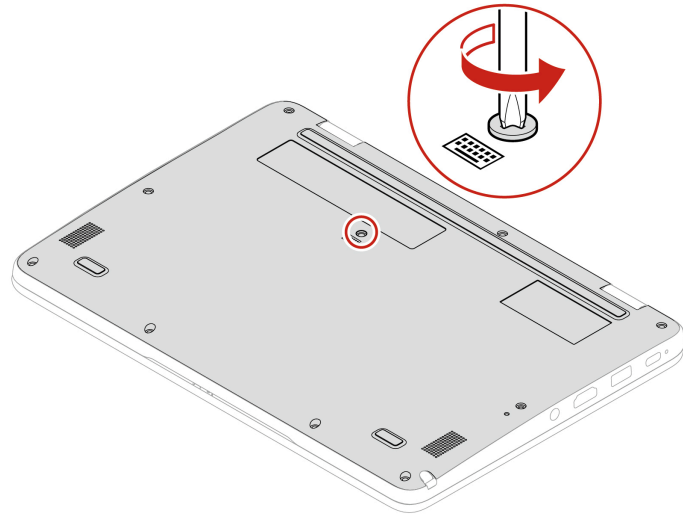
Remove the keyboard

Follow the instructions to remove the keyboard.

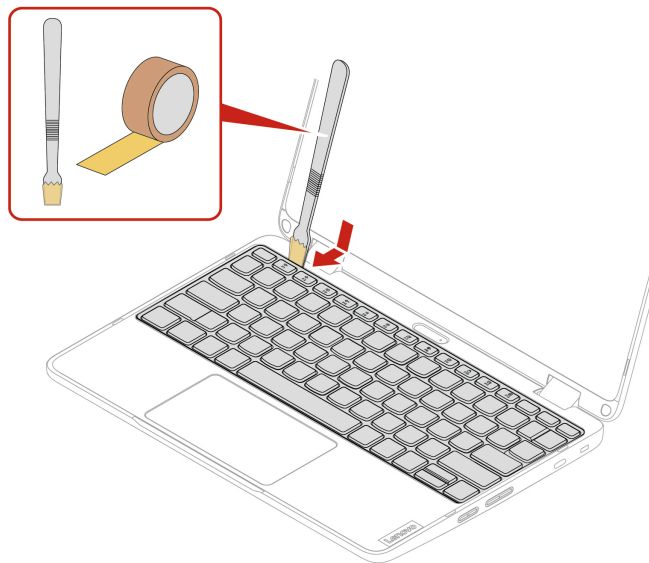
Tools needed:

- Phillips head screwdriver
- Metal pry tool

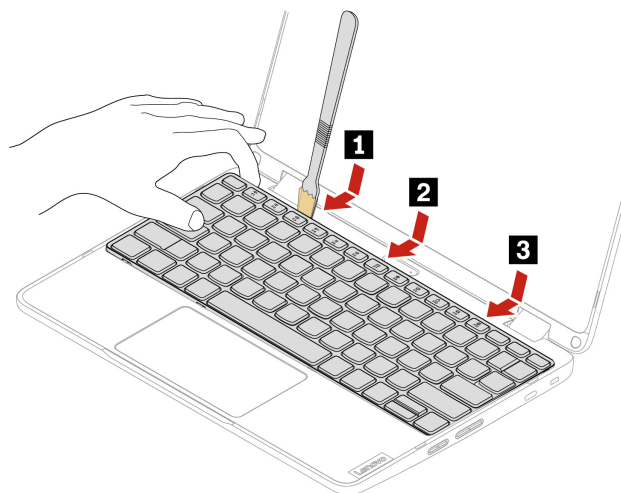
Step 1. Loosen the screw that secures the keyboard.



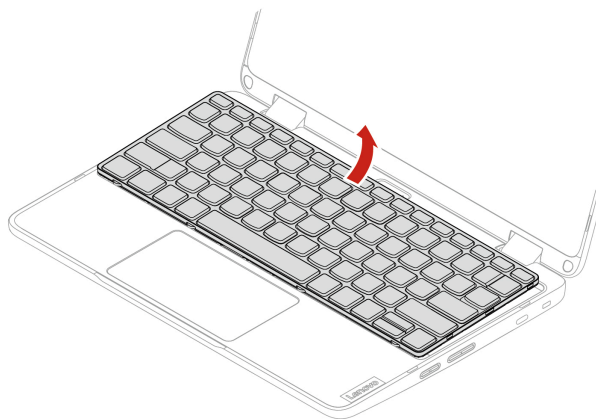
Step 2. Use a metal pry tool (with adhesive tape attached to the tip) to release the top left corner of the keyboard from the keyboard bezel assembly. Ensure you attach new adhesive tape if it is broken.



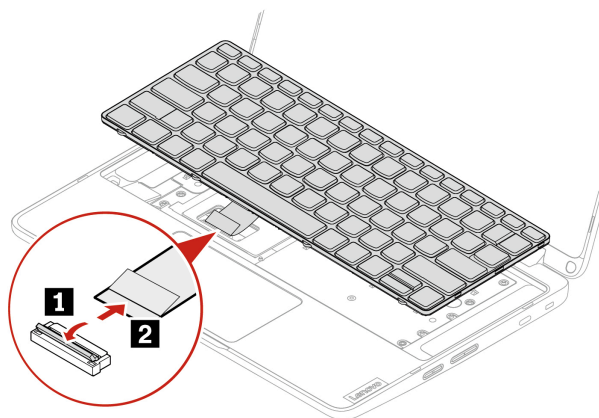
Step 3. Release the latches from the keyboard bezel assembly one by one in the direction as shown by arrows **1**, **2**, and **3**, keep the top left corner of the keyboard in released position during the whole process.



Step 4. Pivot the keyboard slightly upward.



Step 5. Detach the connector and remove the keyboard.

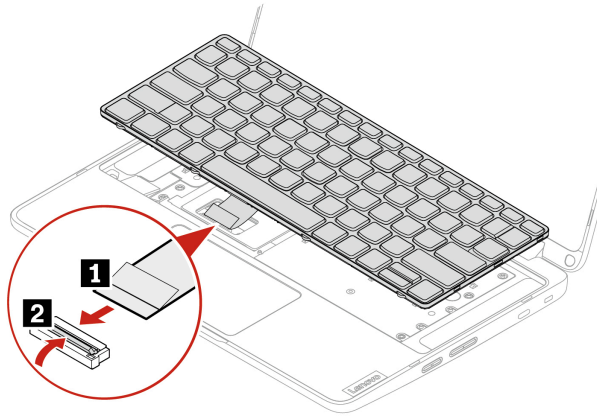


Install the keyboard

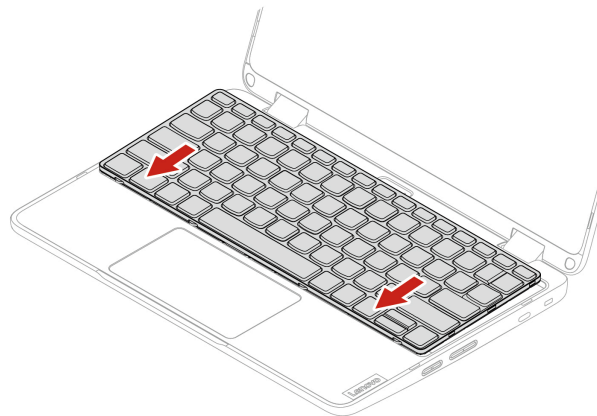
Follow the instructions to install the keyboard.

Tool needed: Phillips-head screwdriver

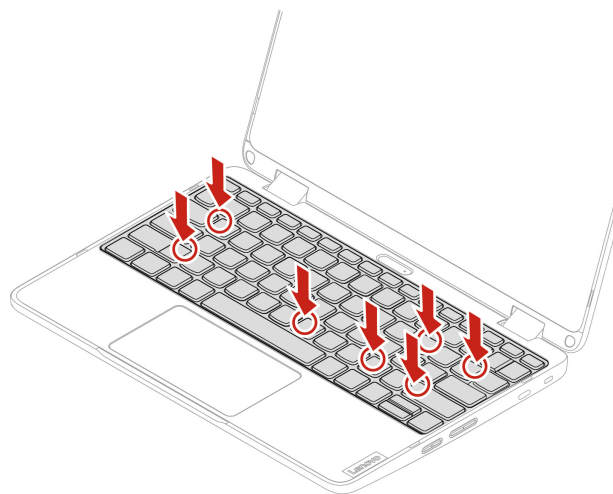
Step 1. Attach the connector.



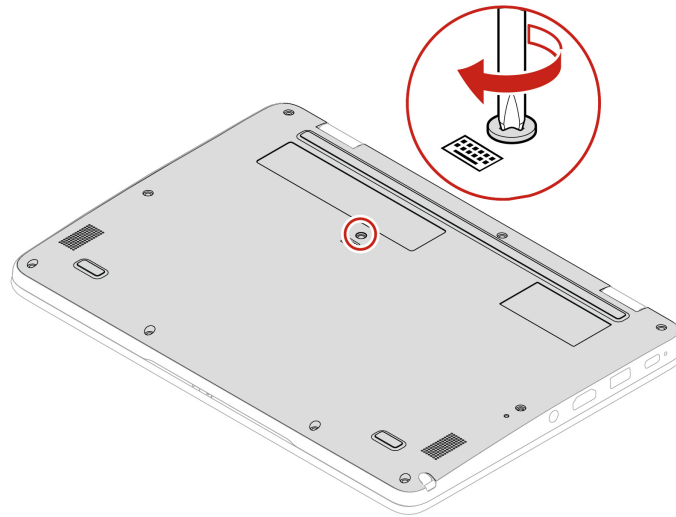
Step 2. Insert the keyboard into the keyboard bezel as shown. Ensure that the bottom edge of the keyboard (the edge that is close to the trackpad) is under the keyboard bezel.



Step 3. Slightly push the keyboard as shown and ensure that it is seated correctly.



Step 4. Tighten the screw to secure the keyboard.



Step 5. Connect the ac power adapter and all disconnected cables to the computer.

M.2 solid-state drive and M.2 solid-state drive bracket (for selected models)

Follow the instructions to replace the M.2 solid-state drive and and M.2 solid-state drive bracket.

Before you start, read [Generic Safety and Compliance Notices](#).

Attention: If you replace a M.2 solid-state drive, you might need to install a new operating system. For details on how to install a new operating system, see “Install a Windows operating system and drivers” on page 52.

The M.2 solid-state drive is sensitive. Inappropriate handling might cause damage and permanent loss of data.

When handling the M.2 solid-state drive, observe the following guidelines:

- Replace the M.2 solid-state drive only for repair. The M.2 solid-state drive is not designed for frequent changes or replacement.
- Before replacing the M.2 solid-state drive, make a backup copy of all the data that you want to keep.
- Do not apply pressure to the M.2 solid-state drive.
- Do not touch the contact edge or circuit board of the M.2 solid-state drive. Otherwise, the M.2 solid-state drive might get damaged.
- Do not subject the M.2 solid-state drive to physical shocks or vibration. Put the M.2 solid-state drive on a soft material, such as cloth, to absorb physical shocks.

For access, do the following:

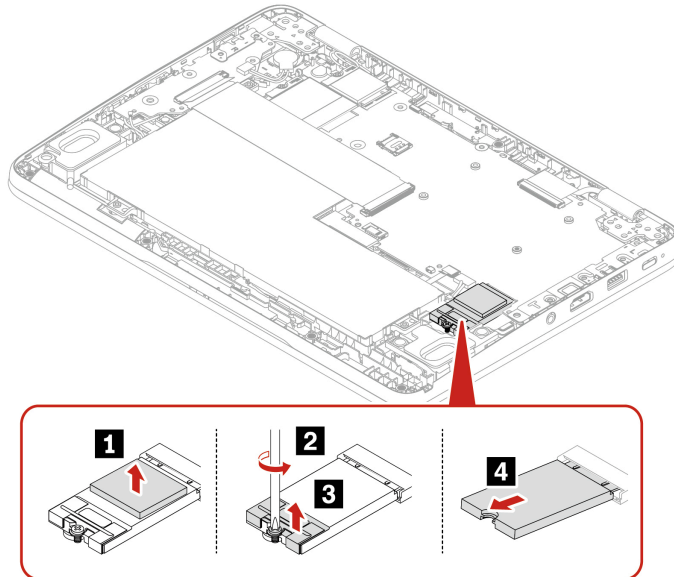
1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 69.

Tools needed:

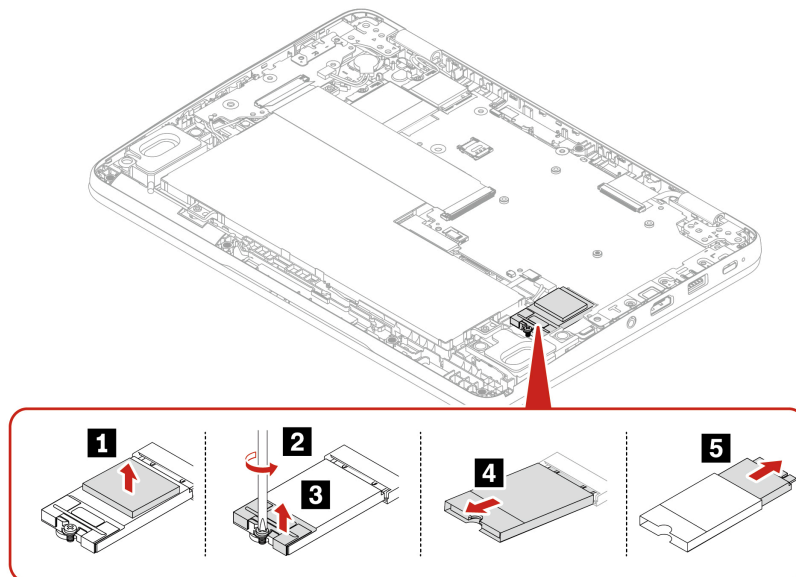
- Phillips head screwdriver
- Pry tool

Step 1. Remove the M.2 solid-state drive and its bracket as shown below.

a. For wireless LAN model:



b. For wireless WAN model:



Step 2. Install the M.2 solid-state drive and its bracket in reverse order.

Wireless WAN module and wireless WAN module bracket (for selected models of Lenovo 300w 2-in-1 Gen 5 only)

Follow the instructions to replace the Wireless WAN module and Wireless WAN module bracket.

The following information is only for the computer with user-installable modules. Ensure that you use only a Lenovo-authorized wireless module specifically tested for this computer model. Otherwise, the computer will generate an error-code beep sequence when you turn on the computer.

Before you start, read [Generic Safety and Compliance Notices](#).

Note: Only wireless WAN model is allowed to install the optional Lenovo wireless WAN module.

Attention: Do not touch the contact edge of the wireless WAN module. Otherwise, the wireless WAN module might get damaged.

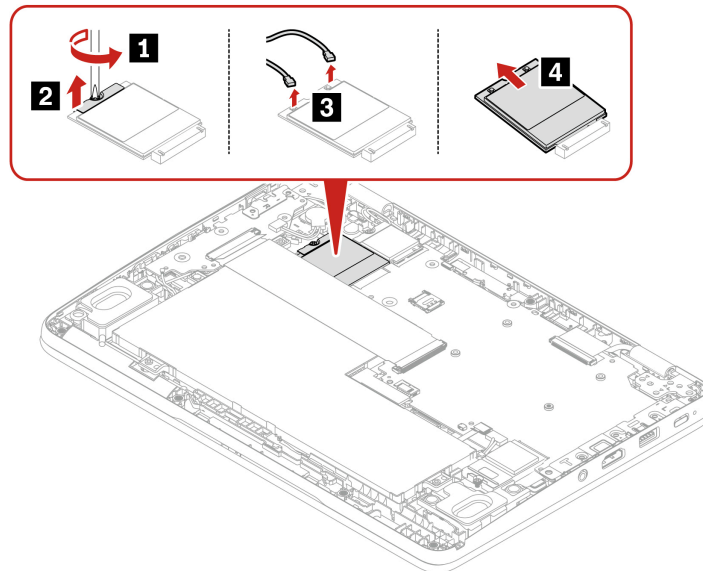
For access, do the following:

1. Disable Fast Start up and the built-in battery. See “Before you replace any CRU” on page 68.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 69.

Tools needed:

- Phillips head screwdriver
- Pry tool

Step 1. Remove the wireless WAN module and its bracket as shown below.



Step 2. Install the wireless WAN module and its bracket in reverse order.

Appendix A. Compliance information

This chapter provides the compliance information of your computer.

For compliance information, refer to *Regulatory Notice* at <https://pcsupport.lenovo.com> and *Generic Safety and Compliance Notices* at https://pcsupport.lenovo.com/docs/generic_notices.

Locate the wireless antennas

Your computer has a wireless antenna system. You can enable wireless communication wherever you are.

The following illustration shows the antenna locations on your computer:

Lenovo 100w Gen 5 / Lenovo 500w 2-in-1 Gen 5 / wireless LAN model of Lenovo 300w 2-in-1 Gen 5



- 1** Wireless-LAN antenna (auxiliary)
- 2** Wireless-LAN antenna (main)

Wireless WAN model of Lenovo 300w 2-in-1 Gen 5



- 1 Wireless-WAN antenna (auxiliary)
- 2 Wireless-LAN antenna (main)
- 3 Wireless-WAN antenna (main)
- 4 Wireless-LAN antenna (auxiliary)

Certification-related information

This section provides certification-related information, such as product name and machine type.

Product name	Machine type(s)
Lenovo 100w Gen 5	83LD and 83LE
Lenovo 300w 2-in-1 Gen 5	83LF and 83LG
Lenovo 500w 2-in-1 Gen 5	83LH and 83LJ

Table 1. Korean Minimum Energy Performance Standard (MEPS) value

Energy efficiency labeling	Energy efficiency information
Computer type	<ul style="list-style-type: none"> • Lenovo 100w Gen 5: A • Lenovo 300w 2-in-1 Gen 5: A • Lenovo 500w 2-in-1 Gen 5: A
Annual power consumption (kWh)	<ul style="list-style-type: none"> • Lenovo 100w Gen 5: 5.3 • Lenovo 300w 2-in-1 Gen 5: 5.2 • Lenovo 500w 2-in-1 Gen 5: 5
Power consumption in sleep mode (W)	<ul style="list-style-type: none"> • Lenovo 100w Gen 5: 0.64 • Lenovo 300w 2-in-1 Gen 5: 0.65 • Lenovo 500w 2-in-1 Gen 5: 0.56
Power consumption in off mode (W)	<ul style="list-style-type: none"> • Lenovo 100w Gen 5: 0.4 • Lenovo 300w 2-in-1 Gen 5: 0.39 • Lenovo 500w 2-in-1 Gen 5: 0.33

Further compliance information related to your product is available at <https://www.lenovo.com/compliance>.

Safety instructions for teachers, parents and adult supervisors

This computer is intended for use as a child development tool primarily by children, 6 years of age or above. There must be supervision by an adult. It is a must to have a thorough explanation to children on safe and proper handling of the computer, battery pack, and ac power adapter.

- For ITE with power supplies not intended to be handled by children: As with all electrical products, precautions should be observed handling and use to prevent electric shock. The ac power adapter should not be handled by children.
- The computer should not be placed on the bare skin (lap) of the child for long periods. The computer should be placed on a flat surface, like desktop, if your child intends to use it for more than a few minutes.
- The computer (including the ac power adapter and the battery pack, as applicable) should not be left in the rain or subjected to exposure to water. If cleaning is necessary do not immerse it in water; wipe clean with damp cloth.
- The computer (including the ac power adapter and the battery pack, as applicable) should not be dropped, crushed (stepped on) or otherwise abused.
- An adult should caution his or her child about the potential trip hazard as posed by the cable between a power source and the computer. An adult should inspect the computer (including the ac power adapter and the battery pack, as applicable) periodically for damage. Similarly, if a child notices damaged/broken parts, this should be reported to the teacher/parents/adult supervisors immediately. Damaged parts may be replaced through service provided by Lenovo.

Chocking Hazard – Small parts. Not suitable for children under age 3.



ELECTRICALLY OPERATED PRODUCT. Not recommended for children under 3 years of age (or other intended age range). As with all electrical products, precautions should be observed during handling and use of electrical products to reduce the risk of electric shock.

Operating environment

Maximum altitude (without pressurization)

3048 m (10 000 ft)

Temperature

- Operating: 5°C to 35°C (41°F to 95°F)
- Storage: 5°C to 43°C (41°F to 109°F)

Note: When you charge the battery, its temperature must be no lower than 10°C (50°F).

Relative humidity

- Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)
- Storage: 5% to 95% at wet-bulb temperature 27°C (81°F)

Appendix B. Accessibility features

Lenovo is committed to making information technology accessible to everyone, including individuals with hearing, vision, mobility, cognitive, or speech disabilities. To get the most up-to-date and detailed accessibility features information for the product, go to https://support.lenovo.com/docs/product_accessibility_features.

Appendix C. Notice for USB connector name update

The USB Implementers Forum published a revision of the guideline for USB connector names in September, 2022. Lenovo follows the revised guideline and updates USB connector names accordingly. You can refer to the table below for naming update details.

Current name	Previous name
USB-A connector (Hi-Speed USB)	USB-A 2.0 connector
USB-A connector (USB 5Gbps)	USB-A 3.2 Gen 1 connector
USB-A connector (USB 10Gbps)	USB-A 3.2 Gen 2 connector
USB-A connector (USB 5Gbps, Always On USB)	Always on USB-A 3.2 Gen 1 connector
USB-A connector (USB 10Gbps, Always On USB)	Always on USB-A 3.2 Gen 2 connector
USB-C connector (USB 5Gbps)	USB-C (3.2 Gen 1) connector
USB-C connector (USB 10Gbps)	USB-C (3.2 Gen 2) connector
USB-C connector (USB 20Gbps)	USB 3.2 Gen 2x2
USB-C connector (USB4 20Gbps)	USB 4 Gen 2x2
USB-C connector (USB4 40Gbps)	USB-C (USB 4) connector
USB-C connector (Thunderbolt 3)	USB-C (Thunderbolt 3) connector
USB-C connector (Thunderbolt 4)	USB-C (Thunderbolt 4) connector

Appendix D. Notices and trademarks

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service.

Lenovo may have patents or pending patent programs covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

*Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing*

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

Changes are made periodically to the information herein; these changes will be incorporated in new editions of the publication. To provide better service, Lenovo reserves the right to improve and/or modify the products and software programs described in the manuals included with your computer, and the content of the manual, at any time without additional notice.

The software interface and function and hardware configuration described in the manuals included with your computer might not match exactly the actual configuration of the computer that you purchase. For the configuration of the product, refer to the related contract (if any) or product packing list, or consult the distributor for the product sales. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary.

Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk.


Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

This document is copyrighted by Lenovo and is not covered by any open source license, including any Linux® agreement(s) which may accompany software included with this product. Lenovo may update this document at any time without notice.

For the latest information or any questions or comments, contact or visit the Lenovo Web site:

<https://pcsupport.lenovo.com>

Trademarks

Lenovo and Lenovo logo are trademarks of Lenovo. Thunderbolt is a trademark of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Microsoft, Windows, BitLocker, and  are trademarks of the Microsoft group of companies. Dolby Audio is a trademark of Dolby Laboratories Licensing Corporation. The terms HDMI and HDMI High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries. USB-C® is a registered trademarks of USB Implementers Forum. Wi-Fi and Miracast are registered trademarks of Wi-Fi Alliance. All other trademarks are the property of their respective owners.

Lenovo