

X1 Fold 16 Gen 1
User Guide

ThinkPad



Lenovo

Read this first

Important information about OLED screen



Do not scratch the screen with glass, tweezers, or any other hard or sharp objects that are not recommended to use with the ThinkPad X1 Fold Gen 1.



Avoid splash and wipe off liquids from the screen as soon as possible. Any extended contact with the screen could result in deformations and color fading.



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

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](#)

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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

Overview



USB-C	USB-C (3.2 Gen 2) connector		Power button
	Volume button		USB-C (Thunderbolt™ 4) connector
	Nano-SIM-card tray		Infrared (IR) camera / Camera

* for selected models

Related topics

- “Log in with your face ID (for selected models)” on page 31
- “User Presence Sensing (for selected models)” on page 31
- “Use the touch screen (for selected models)” on page 8

Features and specifications

For detailed specifications of your computer, go to <https://psref.lenovo.com> and search by product.


Memory	Low Power Double Data Rate 4 (DDR5) small outline dual in-line memory module (SODIMM), up to 32 GB for each, up to 128 GB in total.
Storage device	<ul style="list-style-type: none">• One slot, 2242 M.2 solid-state drive, up to 1 TB
Audio	<ul style="list-style-type: none">• Dolby Atmos® Speaker System• Dolby Voice®
Display	<ul style="list-style-type: none">• Color display with Thin Film Transistor (TFT) technology• Display ratio: 3:4• Display resolution: 2024 x 2560 pixels• Multi-touch technology
Security features	<ul style="list-style-type: none">• Face authentication*• Human presence detection*• Fingerprint reader*• Glance Privacy Guard*• Glance Privacy Alert*• Trusted Platform Module (TPM)*
Wireless features	<ul style="list-style-type: none">• Bluetooth• GPS (on wireless WAN model)*• Wireless LAN• Wireless WAN (4G or 5G)* <p>Note: The 4G or 5G 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

Notes:

- Depending on the model, some USB connectors might not be available on your computer.
- On very rare occasions, the USB-C compatible devices connected to USB-C connector might interfere with wireless features. If your computer cannot be connected to Wi-Fi or cellular network, or if your location cannot be pinpointed through the GPS function, detach the USB-C compatible device from the USB connector.

Connector name	Description
 <ul style="list-style-type: none"> • USB 2.0 connector • USB 3.2 connector Gen 1 • USB 3.2 connector Gen 2 	<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-C (3.2 Gen 1) connector • USB-C (3.2 Gen 2) connector • USB-C (Thunderbolt 3) connector • USB-C (Thunderbolt 4) connector • USB-C (USB 4) connector 	<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 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.
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Statement on USB transfer rate

Depending on many factors such as the processing capability of the host and peripheral devices, file attributes, and other factors related to system configuration and operating environments, the actual transfer rate using the various USB connectors on this device will vary and will be slower than the data rate listed below for each corresponding device.





USB device	Data rate (Gbit/s)
3.2 Gen 1	5
3.2 Gen 2	10
3.2 Gen 2 × 2	20
4 Gen 2 × 2	20
4 Gen 3 × 2	40
Thunderbolt 3	40
Thunderbolt 4	40

Chapter 2. Get started with your computer

Work with the foldable screen

Your foldable PC features the following modes. Switch between different modes to experience the most of the 4-in-1 foldable PC.




Mode	Recommended scenario(s)
 Landscape mode	<ul style="list-style-type: none">• Giving presentations• Watching movies
 Mini clamshell mode	<ul style="list-style-type: none">• Multi-tasking• Writing e-mails
 Book mode	<ul style="list-style-type: none">• Browsing multiple web pages• Note-taking while reading
 Portrait mode	<ul style="list-style-type: none">• Browsing extra-long documents• Drawing or sketching

Split-screen function

The split-screen function allows you to handle multiple tasks simultaneously in different areas of the computer screen. Select one of following methods to switch between split-screen view and full-screen view:

For landscape mode

- Click the icon  in the toolbar and tap the splitter icon in the overflow area to launch the Lenovo Mode Switcher window (hereafter referred to as window), then choose a preferred layout in the window.



- Slightly fold the computer to launch the window, then choose a preferred layout in the window.



- Slightly open the computer flat to launch the window, then choose a preferred layout in the window.



For portrait mode

- Slightly open the computer flat in the portrait mode to launch the window, then choose a preferred layout in the window.



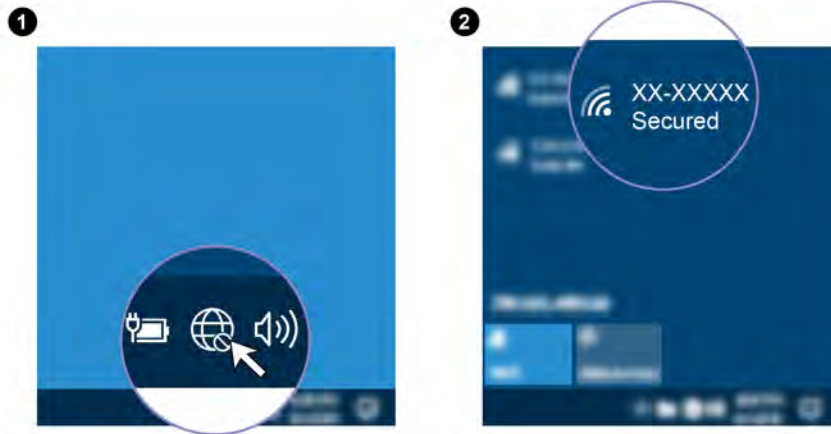
Note: You can customize screen behaviors or feedback your use experience in both landscape mode and portrait mode by long pressing the desktop splitter icon.

Access networks

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

Connect to Wi-Fi networks

Click the network icon in the Windows® notification area, and then select a network for connection. Provide required information, if needed.



Connect to the wired Ethernet

To connect your computer to a local network, you need a Lenovo USB-C to Ethernet Adapter. Lenovo USB-C to Ethernet Adapter is available as an option and shipped with some computer models. You can purchase one from Lenovo at <https://www.lenovo.com/accessories>.



Connect to a cellular network (for selected models)

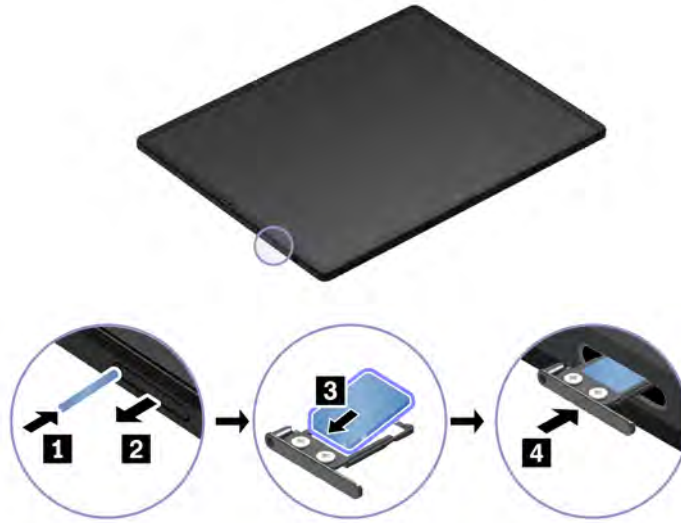
To connect a 4G or 5G cellular data network, you must have a wireless wide area network (WWAN) card and a nano-SIM card installed. The nano-SIM card might come with your computer by countries or regions. If no nano-SIM card is shipped, you will need to purchase one from authorized service carriers.


Notes:

- The 4G or 5G 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.

To establish a cellular connection:

1. Turn off the computer.
2. Locate the nano-SIM card slot and insert the nano-SIM card as shown. Note the orientation of the card and ensure that it is seated correctly.



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

Turn on the Airplane mode

When the Airplane mode is enabled, all wireless features are disabled.

1. Type Airplane mode in the Windows search box and then press Enter.
2. Turn on the Airplane mode.

Interact with your computer

Your computer provides you various ways to navigate the screen.

Use the touch screen

If your computer display supports the multi-touch function, you can navigate the screen with simple touch gestures. For more touch gestures, refer to <https://support.microsoft.com/windows>.

Note: Some gestures might not be available when you are using certain apps.



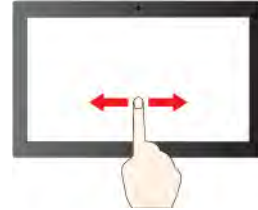
Tap once to single click



Tap twice quickly to double-click



Tap and hold to right-click



Slide to scroll through items



Zoom out



Zoom in



Swipe from the left: view all open windows (Windows 10)

Swipe from the left: open widget panel (Windows 11)



Swipe from the right: open action center (Windows 10)

Swipe from the right: open notification center (Windows 11)



Swipe downwards shortly: show title bar

Swipe downwards: close the current app



Drag

Maintenance tips:

- Turn off the computer before cleaning the touch screen.
- 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.
- The touch screen is a glass panel covered with a plastic film. Do not apply pressure or place any metallic object on the screen, which might damage the touch panel or cause it to malfunction.
- Do not use fingernails, gloved fingers, or inanimate objects for input on the screen.
- Regularly calibrate the accuracy of the finger input to avoid a discrepancy.






ThinkPad Bluetooth TrackPoint Keyboard and Stand (for selected models)

Your foldable PC might come with ThinkPad Bluetooth TrackPoint Keyboard and Stand (model: TKBBTDU811), a wireless, magnetic keyboard with touchpad, TrackPoint and stand. Use the keyboard to work more easily and effectively.

The keyboard is available as an option. You can purchase one from Lenovo at <https://www.lenovo.com/accessories>.

Keyboard overview








	Power button		USB-C connector
	Fingerprint reader		Trackpad
	TrackPoint® pointing stick		












Related topics

- “Log in with your fingerprint” on page 31
- “Use the TrackPoint pointing device” on page 15
- “Use the trackpad” on page 16

Use the keyboard shortcuts

The special keys on the keyboard help you work more effectively.

 + 	Invoke the special function printed as an icon on each key or standard function of F1–F12 function keys. FnLock indicator on: standard function FnLock indicator off: special function
	Enable / disable speakers
	Decrease volume
	Increase volume

	Enable / disable microphones
	Darken display
	Brighten display
	Manage external displays
	Enable / disable Bluetooth
	Open / collapse notification center
	Print screen
	Open the Windows snipping tool
	Customize the function of this key on the Vantage app
	Toggle keyboard backlight (for selected models)
	Fingerprint reader

Pair the keyboard

Your foldable PC may come with the keyboard pre-paired with Bluetooth, to use the pre-paired Bluetooth keyboard, do the following:

1. Ensure the Bluetooth keyboard and System are not connected via USB cable.
2. Turn on your foldable PC.
3. Turn on the keyboard.

The keyboard is paired with your foldable PC.

If you purchase the keyboard separately, to pair the keyboard, do the following:



Before pairing: Place the keyboard close to your foldable PC to establish Bluetooth connection.

1. Enable Bluetooth and Swift Pair in Windows OS settings on your foldable PC.
2. Turn on the keyboard and the LED indicator keeps in blinking blue.

3. Press and hold  or  +  for about three seconds.
4. Follow the on-screen instructions to pair your keyboard.

The keyboard is paired, then the LED indicator turns off.

Use the keyboard in different modes

The keyboard works best with your foldable PC in landscape mode, mini clamshell mode, portrait mode and carry mode.

Landscape mode



Mini clamshell mode

When placing the keyboard onto your foldable PC, ensure that the camera side is upward, otherwise the keyboard does not attach properly.



Portrait mode



Carry mode



Charge the keyboard

You can also use a 5V ac power adapter and a Micro USB cable to charge the keyboard. The keyboard is fully charged in about two hours.



The LED indicator is in solid amber during charging and is solid green when the keyboard is fully charged.

Use the TrackPoint pointing device

The TrackPoint pointing device enables you to perform all the functions of a traditional mouse, such as pointing, clicking, and scrolling.

Use the TrackPoint pointing device



TrackPoint pointing stick

Use your finger to apply pressure to the pointing-stick nonslip cap in any direction parallel to the keyboard. The pointer on the screen moves accordingly. The higher the pressure applied, the faster the pointer moves.

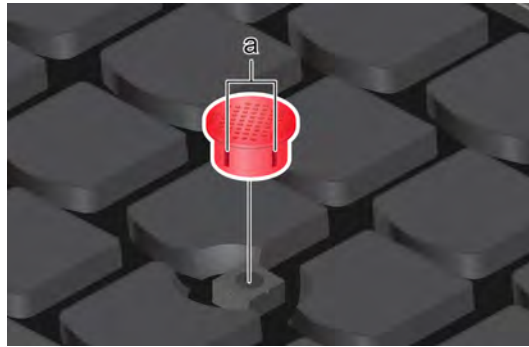
Disable the TrackPoint pointing device

The TrackPoint pointing device is active by default. To disable the device:

1. Open the **Start** menu, and then click **Settings** → **Devices** → **Mouse**.
2. Follow the on-screen instructions to disable TrackPoint.

Replace the pointing-stick nonslip cap

Note: Ensure that the new cap has grooves **a**.



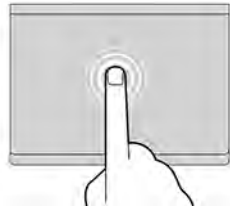
Use the trackpad

You can use the trackpad to perform all the pointing, clicking, and scrolling functions of a traditional mouse.

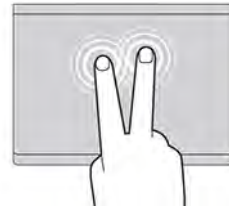
Use the trackpad



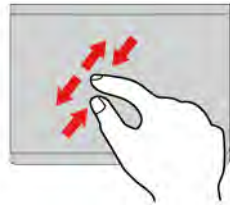
Use the touch gestures



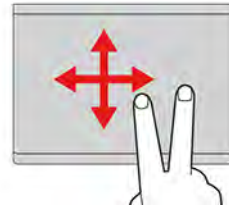
Tap once to select or open an item.



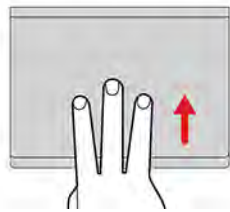
Tap twice quickly to display a shortcut menu.



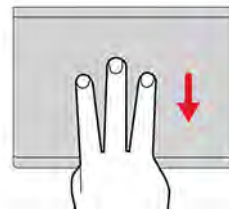
Two-finger zoom in or zoom out.



Scroll through items.



Open the task view to see all open windows.



Show the desktop.

Notes:

- When using two or more fingers, ensure that you position your fingers slightly apart.
- Some gestures are not available if the last action was done from the TrackPoint pointing device.
- Some gestures are only available when you are using certain apps.
- If the trackpad surface is stained with oil, turn off the computer first. Then, gently wipe the trackpad surface with a soft and lint-free cloth moistened with lukewarm water or computer cleaner.

For more gestures, see the help information of the pointing device.

Disable the trackpad

The trackpad is active by default. To disable the device:

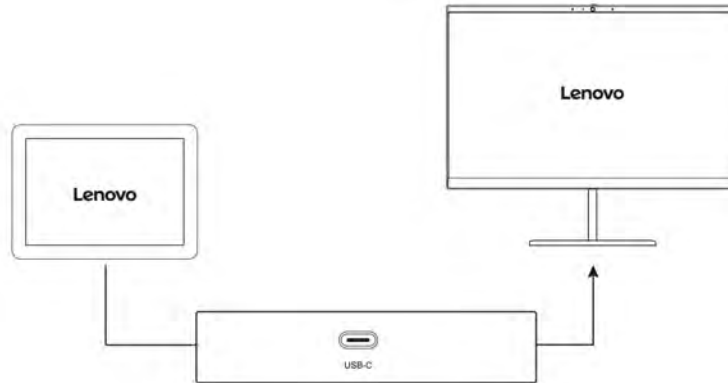
1. Open the **Start** menu, and then click **Settings** → **Devices** → **Touchpad**.
2. In the Touchpad section, turn off the **Touchpad** control.

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

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 (3.2 Gen 2) connector	Up to 5K / 60 Hz
Thunderbolt 4 connector	Up to 8K / 60 Hz




Note: The refresh rate higher than 60 Hz can also be supported. If you set the refresh rate higher than 60 Hz, the maximum resolution might be limited.

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  +  and then select a display mode of your preference.

Change display settings

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

You can change the settings for both the computer display and the external display. For example, you can define which one is the main display and which one is the secondary display. You also can change the resolution and orientation.

Use Lenovo Precision Pen (for selected models)

The Lenovo Precision Pen enables a more precise and easier way of writing and sketching.



	Eraser button		Click button
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Lenovo Precision pen is not waterproof. Keep the pen away from water and excessive moisture. To purchase Lenovo Precision Pen, go to <https://www.lenovo.com/accessories>.

Install the battery for Lenovo Precision Pen


Depending on the model, your pen might not be installed with a battery. To install an AAAA alkaline battery, do the following:



Pair Lenovo Precision Pen

1. Press and hold the Bluetooth button on the pen for at least 3 seconds until the LED indicator blinks in white.



2. Click the action center icon  and right-click the **Bluetooth** icon. Select **Go To Settings** → **Add Bluetooth or other device** → **Bluetooth**.
3. Select **Lenovo Precision Pen** and start pairing.

Store Lenovo Precision Pen

Attach the Lenovo Precision Pen to the magnetic side of your computer as shown:

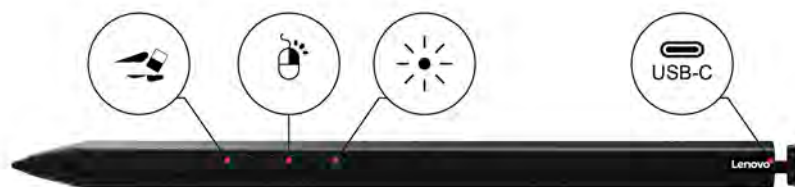


Use Lenovo Precision Pen 2 (for selected models)

The Lenovo Precision Pen 2 (a rechargeable stylus pen) enables you to write and draw in a natural manner. To purchase the pen, go to <https://www.lenovo.com/accessories>.

Note: The color of the pen might vary by country or region. Depending on the models, the pen might look slightly different from the illustrations in this topic.

Pen overview



Bottom barrel button



To erase text or drawings, hold the button to erase the object in supported apps.

Top barrel button



To right-click, hold the button and tap the screen in supported apps.

LED indicator



When the LED indicator blinks in amber, the pen battery power is low. The LED indicator is in solid amber during charging and is in solid white when the pen is fully charged. The pen is fully charged in about two hours.

USB-C connector



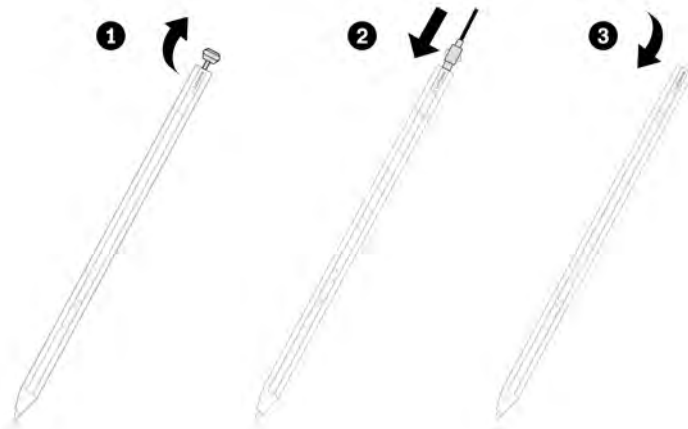
Use the ac power adapter that comes with your foldable PC to charge the pen.

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>.

Charge the pen

1. Remove the pen cap in the direction as shown.
2. Connect the pen to a charger with a USB-C cable.
3. Install the pen cap back on the pen.



Maintenance tips

- The pen is not waterproof. Keep the pen away from water and excessive moisture.
- The pen contains pressure sensors. Apply an appropriate amount of pressure when writing on the screen. Do not subject the pen to shock or vibration.
- If possible, place your pen in a well-ventilated and dry area without direct exposure to sunshine.

- Do not use or store the pen in a place where excessive changes in temperature may occur such as in a car.

Chapter 3. Explore your computer

Lenovo apps

This section provides introduction to the Vantage , Lenovo Voice, Lenovo Display Refresh and Lenovo Quick Clean / Clean Your Device apps.

The Vantage app

The preinstalled 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 Vantage in the Windows search box.

Key features

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.

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.

Lenovo Voice



<https://support.lenovo.com/us/zh/videos/vid500155>

Lenovo Voice is a voice assistant that enables you to use voice to control your computer, translate voice into on-screen text, and convert voice to text. Ensure that you sign in the app before using both translation/subtitle function and voice-to-text function.

Notes:

- The available features and languages vary depending on the computer model and delivery of countries and regions.
- Lenovo Voice makes periodic updates of the features to keep improving your experience. The description of features might be different from that on your actual user interface.

To download the latest version of Lenovo Voice, go to Microsoft Store and search for the app name.

To access Lenovo Voice, do one of the following:

- Open the **Start** menu and tap **Lenovo Voice**.
- Type *Lenovo Voice* in the search box.
- Tap Windows key + alt + V on the On-Screen Keyboard, or press Windows key + alt + V on the Lenovo Fold Mini Keyboard if available.

Voice commands

This function allows you to use voice to control certain functions of your computer, such as:

- Brighten or darken computer screen.
- Adjust the speaker volume.
- Enable or disable airplane mode.
- Put computer into hibernation mode.
- Enable or disable the Bluetooth function.
- Go to the previous or next slide in a PPT file.

Translation/Subtitles

Lenovo Voice enables you to translate voice or audio into on-screen text in one of the supported languages. During conference calls, the translation function can translate a foreign conversation into on-screen text in your preferred language in real time.

In addition, the subtitle function allows you to watch foreign videos and see the translated text in a subtitle form.

Voice-to-text

This function allows you to use voice to input text in any typable field. Select any typable field (such as document editing area, web site browser input field, and windows input bar) and use voice instead of typing. Your voice is converted to text and is inserted at the position of the cursor.

Lenovo Display Refresh

After use of two or three years, OLED displays may experience image retention if an image is continuously displayed for a long time. This is normal and it is caused by the characteristics of the OLED displays to achieve high-definition imaging.

To mitigate image retention, Lenovo Display Refresh reminds you to refresh your OLED display. During refreshment, Lenovo Display Refresh automatically adjusts the uniformity of the OLED screen.

To download the latest version of Lenovo Display Refresh, go to Microsoft Store and search by the app name.

Note: Lenovo Display Refresh makes periodic updates of the features to keep improving your experience. The description of features might be different from that on your actual user interface.

Use Lenovo Display Refresh

A pop-up window is displayed every two or three years, reminding you to refresh the OLED display. The actual interval between two prompts depends on how frequently you are using your foldable PC. When you are prompted, follow the on-screen instructions to complete the refreshment.

You also can refresh OLED display as desired:

1. Open the **Start** menu and select **Settings → System → Display**.

2. Locate the **Lenovo Display Refresh** section, and follow the on-screen instructions.

Tips on mitigating image retention

- Avoid placing one image / app to the same place on the screen over time
- Turn off your computer when not in use
- Use a screen saver

Lenovo Quick Clean / Clean Your Device



Depending on the model, your computer might support the Lenovo Quick Clean / Clean Your Device feature. The preinstalled Lenovo Quick Clean / Clean Your Device enables you to temporarily disable the keyboard, screen, trackpad, and TrackPoint pointing device for cleaning.

To access Lenovo Quick Clean / Clean Your Device, do one of the following:

- Type Lenovo Quick Clean / Clean Your Device in the Windows search box.
- Press Fn and the right Shift key at the same time.

To download the latest version of Lenovo Quick Clean / Clean Your Device, go to <https://pcsupport.lenovo.com>.

Smart features (for selected models)

Your computer might be preinstalled with Glance by Mirametrix®. Glance can capture your head movement through camera and makes your computer smarter and more efficient.

Access Glance by Mirametrix

Type Glance in the Windows search box and then press Enter.

Note: If Glance is uninstalled, you can request it through <https://support.lenovo.com/contactus>.

Explore key features

Depending on the model, some features might not be available on your computer.

- **Lower Power mode (for selected models)**

There are three modes (Standard, Snoozed or Low Power mode) available in Glance settings. If your computer is equipped with computer vision sensor board, Glance can enable Low Power mode when your computer is using the battery power. In Low Power mode, your computer will run at a minimum power consumption to save the battery life. Only the following Glance features that support user presence are available in Low Power mode.

- Privacy Alert
- Privacy Guard
- Digital Wellness 20-20-20 Alert

Notes:

- In Low Power mode, it might require more time to trigger Glance features than Standard mode.
- The feature does not work if the camera shutter is closed.

- The feature does not work if the computer is in tent, tablet, or stand mode.

- **Privacy features**

- **Presence Detection (for selected models):** Keep your computer awake when in use and automatically lock the computer when your head moves out of the camera range.
- **Privacy Alert:** When a shoulder surfer is detected, an alert icon appears on your computer screen.
- **Privacy Guard:** When a shoulder surfer is detected, your screen is blurred. Press Alt+F2 to cancel the blur effect.
- **Smart Display:** Blur screens you are not looking at. If you are not facing any screen, all screens are blurred. Press Alt+F2 to cancel the blur effect.

Note: If your computer comes with an ePrivacy screen, it can work with Glance to achieve better privacy protection. For details, go to <https://support.lenovo.com/us/en/videos/vid500144>.

- **Productivity features**

- **Snap Window:** When you select a window on one screen and turn your face to another, the window automatically snaps to the top center of the screen you are facing.
- **Smart Pointer:** Relocate the pointer to the screen you are facing. When the pointer moves from one screen to another, it is temporarily drawn large.

Note: Snap Window and Smart Pointer only work when your computer is connected to external displays. Place the external displays at the same height of your computer to get the best result.

- **Digital wellness features**

- **Posture Alert:** Remind you to adjust your posture if slouching is detected.
- **20/20/20 Alert:** Remind you to look away from the screen and relax your eyes for 20 seconds every 20 minutes.

TrackPoint Quick Menu

Double-tap the TrackPoint pointing stick to launch the TrackPoint Quick Menu.

The TrackPoint Quick Menu is enabled by default. Press Fn+G to disable or enable the double-tapping gesture. When disabled, it cannot be launched by double-tapping the TrackPoint pointing stick.



1 Camera

In section **1**, you can adjust the brightness and contrast of the camera.

2 Mute detection

In section **2**, you can mute your computer. If **Mute warning** is turned on, you will receive a notification when you mute the computer.

3 Microsoft dictation

In section **3**, you can use dictation to transcribe your speech in a notepad. Click **START DICTATION** to invoke the notepad.

4 Microphone

In section **4**, you can adjust the sound effect of your microphone.

- Privacy mode: capture the speaker's voice.
- Collaboration mode: capture the speaker's voice and the ambience.

When you select either of the two modes, AI noise suppression will be toggled on automatically to reduce unwanted sound.

Note: When internal microphone is not supported by Dolby or the Dolby driver is disabled, an input device list will be displayed instead. The list provides options and one volume bar to test your microphone.




Intelligent cooling

The Intelligent Cooling feature helps you adjust power consumption, computer temperature, and performance.

For models with Windows 10

Intelligent Cooling feature is adjusted through Windows Power Slider.

Do the following to select a preferred mode:

1. Click the battery status icon in the Windows notification area.
 2. Move the slider to the left or right to select a preferred mode.
-  Eco mode: power consumption and performance are lowered to get your computer cooler and more eco-friendly, and to get the best battery life.
 -  Auto mode: your computer is adjusted automatically to achieve the best mix of power consumption, battery life and computer performance based on the amount of system activity.
 -  Performance mode: the maximum performance is prioritized, allowing higher temperature.



on ac power



on battery power

For models with Windows 11

Intelligent Cooling feature is adjusted through Power mode or Battery saver in Windows Settings.

Do the following to select a preferred mode:

1. Right-click the battery icon in the task bar to access power, sleep and battery settings.
 2. Locate the power section and choose one of the following power modes.
- **Best Power efficiency:** power consumption and performance are lowered to get your computer cooler and more eco-friendly, and to get the best battery life.
 - **Balanced:** your computer is adjusted automatically to achieve the best mix of power consumption, battery life and computer performance based on the amount of system activity.
 - **Best Performance:** the maximum performance is prioritized, allowing higher temperature.

Manage power

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

Check the battery status

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

Charge the computer

Use ac power

Power source of the ac power adapter:

- Power: 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, 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.

Note: Some models may not ship with ac adapters or power cords. Use only the certified adapters and power cords provided by Lenovo that comply with the requirements of relevant national standards to charge the product. It is recommended to use the Lenovo qualified adapters. You can refer to <https://www.lenovo.com/us/en/compliance/eu-doc>.



Notes: To maximize the life of the battery:

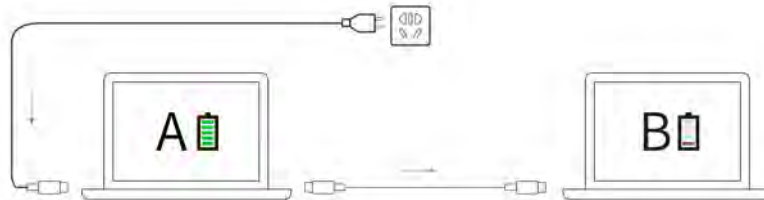
- Use the battery until the charge is depleted and recharge the battery completely before using it. Once the battery is fully charged, it must discharge to 94% or lower before it will be allowed to recharge again.
- The battery may optimize its full charge capacity based on your usage. After prolonged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

Use P-to-P 2.0 (Peer to Peer 2.0) charging function

Both USB-C (Thunderbolt 3) connectors on the computer feature the Lenovo-unique P-to-P 2.0 charging function. To use the function, ensure that **Always On USB** and **Charge in Battery Mode** are enabled in UEFI BIOS of your computers, so that the function works even when the computers are off or in hibernation mode.

To enable **Always On USB** and **Charge in Battery Mode**:

1. Press F1 to enter the UEFI BIOS menu.
2. Click **Config** → **USB**, and then to enable **Always On USB** and **Charge in Battery Mode**.



Note: The actual charging speed of your computer depends on many factors, such as the remaining battery power of the computers, the wattage of the ac power adapter, and whether you are using the computers.

Change the power settings

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

- Turn off the display: After 10 minutes
- Put the computer to sleep: After 10 minutes

To reset the power plan:

1. Go to **Control Panel** and view by Large icons or Small icons.
2. Click **Power Options**.
3. Choose or customize a power plan of your preference.

To reset the power button function:

1. Go to **Control Panel** and view by Large icons or Small icons.
2. Click **Power Options**, and then click **Choose what the power buttons do** on the left pane.
3. Change the settings as you prefer.

Transfer data

Quickly share your files using the built-in Bluetooth or NFC technology among devices with the same features. You also can insert a microSD card or smart card to transfer data.

Set up a Bluetooth connection

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.

1. Type Bluetooth in the Windows search box and then press Enter.
2. Turn on Bluetooth, if it is off.
3. Select a Bluetooth device, and then follow the on-screen instructions.

Accessories

This section provides instructions on how to use hardware accessories to expand your computer functionalities.

Purchase accessories

Lenovo has a number of hardware accessories and upgrades to help expand the functionalities of your computer. Options include memory modules, storage devices, network cards, port replicators or docking stations, batteries, power adapters, keyboards, mice, and more.

To shop at Lenovo, go to <https://www.lenovo.com/accessories>.

Chapter 4. Secure your computer and information

Log in with your fingerprint

Enroll your fingerprints and unlock computer by scanning your fingerprints on the fingerprint reader key.

1. Type Sign-in options in the Windows search box and then press Enter.
2. Select the fingerprint setting and then follow the on-screen instruction to enroll your fingerprint.

Note: It is recommended that you put your finger at the center of the fingerprint reader during enrollment and enroll more than one fingerprint in case of any injuries to your fingers. After the enrollment, the fingerprints are associated with the Windows password automatically.

3. Log in with your fingerprint.



Associate your fingerprints with UEFI BIOS passwords

You can associate your fingerprints with your power-on password and NVMe password. See “Associate your fingerprints with passwords (for selected models)” on page 35.

Maintenance tips:

- Do not scratch the surface of the reader with anything hard.
- Do not use or touch the reader with a wet, dirty, wrinkled, or injured finger.

Log in with your face ID (for selected models)

For models come with a webcam privacy shutter, slide the webcam privacy shutter to uncover the camera lens before using the Windows Hello face recognition.

Create your face ID and unlock your computer by scanning your face:

1. Type Sign-in options in the Windows search box and then press Enter.
2. Select the face ID setting and then follow the on-screen instruction to create your face ID.

User Presence Sensing (for selected models)

For some models with computer vision sensor, your device supports User Presence Sensing feature. You can customize the feature in Vantage.

1. Open the Vantage app, and then click **Device → Smart Assist**.
2. Turn on or turn off the **User Presence Sensing** switch.

3. Customize the sub-features such as **Zero Touch Login** and **Zero Touch Lock** according to your preference.

Before using this feature, ensure you create your Face ID with the IR camera. When using this feature, it provides the following functions:

- Wake up the computer when you approach it. With your Face ID, your computer can log in automatically without touching your computer.
- Lock the computer automatically when you leave.
- Track your face movement to recognize if you are attentive to the display. When you are facing away, the display will dim to save the battery power.

Notes:

- The feature does not work in the following cases:
 - the computer is in tent, tablet, or stand mode.
 - the computer is in hibernation mode or has been turned off.
 - the computer display or camera shutter is closed.
 - the computer is connected to an external display.
 - you set the power options to never turn off the display.
- The feature might not work properly in the following cases:
 - when used in bright back light or very dark environment.
 - when your face is partially hidden by your dress.
 - when the camera recognizes the face image behind you.
- The feature uses camera to detect your presence and recognize your face. Lenovo does not collect or store any personal data from the camera.
- For some countries or regions, this feature might be disabled according to local regulations.

Protect data against power loss (for selected models)

NVMe (Non-Volatile Memory express) M.2 solid-state drive features the Lenovo-unique PLP (Power Loss Protection) function to avoid data loss or damage. If your computer is not responding and you might have to shut down your computer by pressing and holding the power button for several seconds. In this case, the PLP function enables your computer data to be saved timely. However, there is no guarantee that all data is saved in any situation. To check the type of your M.2 solid-state drive:

1. Restart the computer. When the logo screen is displayed, press F10 to enter the Lenovo diagnostics window.
2. On the TOOLS tab, select **SYSTEM INFORMATION** → **STORAGE** using the arrow keys.
3. Locate the **Device Type** section to check the information

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 a power-on password, supervisor password, system management password, or NVMe password in UEFI BIOS to prevent unauthorized access to your computer. However, you are not prompted to enter any UEFI BIOS password when your computer resumes from sleep mode.

Power-on password

If you set a power-on password, a window is displayed on the screen when you turn on the computer. Enter the correct password to use the computer.

Supervisor password

The supervisor password protects the system information stored in UEFI BIOS. When entering the UEFI BIOS menu, enter the correct supervisor password in the window prompted. You also can press Enter to skip the password prompt. However, you cannot change most of the system configuration options in UEFI BIOS.

If you have set both the supervisor password and power-on password, you can use the supervisor password to access your computer when you turn it on. The supervisor password overrides the power-on password.

System management password

The system management password can also protect the system information stored in UEFI BIOS like a supervisor password, but it has lower authority by default. The system management password can be set through the UEFI BIOS menu or through Windows Management Instrumentation (WMI) with the Lenovo client-management interface.

You can enable the system management password to have the same authority as the supervisor password to control security-related features. To customize the authority of the system management password through the UEFI BIOS menu:

1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
2. Select **Security → Password → System Management Password Access Control**.
3. Follow the on-screen instructions.

If you have set both the supervisor password and the system management password, the supervisor password overrides the system management password. If you have set both the system management password and the power-on password, the system management password overrides the power-on password.

NVMe passwords

The NVMe password prevents unauthorized access to the data on the storage drive. When an NVMe password is set, you are prompted to type a correct password each time you try to access the storage drive.

- **Single Password**

When a Single NVMe password is set, the user must enter the user NVMe password to access files and applications on the storage drive.

- **Dual Password (User + Admin)**

The admin NVMe password is set and used by a system administrator. It enables the administrator to access any storage drive in a system or any computer connected in the same network. The administrator can also assign a user NVMe password for each computer in the network. The user of the computer can change the user NVMe password as desired, but only the administrator can remove the user NVMe password.

When prompted to enter an NVMe password, press F1 to switch between the admin NVMe password and user NVMe password.

Notes: The NVMe password is not available in the following situations:

- A Trusted Computing Group (TCG) Opal-compliant storage drive and a TCG Opal management software program are installed in the computer, and the TCG Opal management software program is activated.

- An eDrive storage drive is installed in the computer preinstalled with the Windows operating system.

Set, change, and remove a password

Before you start, print these instructions.

1. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
2. Select **Security → Password** by using the arrow keys.
3. Select the password type. Then, follow the on-screen instructions to set, change, or remove a password.

You should record all your passwords and store them in a safe place. If you forget any of your passwords, any potential repair actions required are not covered under warranty.

What to do if you forget your power-on password

If you forget your power-on password, do the following to remove the power-on password:

- If you have set a supervisor password and remember it:
 1. Restart the computer. When the logo screen is displayed, immediately press F1.
 2. Type the supervisor password to enter the UEFI BIOS menu.
 3. Select **Security → Password → Power-On Password** by using the arrow keys.
 4. Type the current supervisor password in the **Enter Current Password** field. Then, leave the **Enter New Password** field blank, and press Enter twice.
 5. In the Changes have been saved window, press Enter.
 6. Press F10 to save changes and exit the UEFI BIOS menu.
- If you have not set a supervisor password, contact a Lenovo authorized service provider to have the power-on password removed.

What to do if you forget your NVMe password

If you forget your NVMe password (Single password) or both user and admin NVMe passwords (Dual password), Lenovo cannot reset your passwords or recover data from the storage drive. You can contact a Lenovo authorized service provider to have the storage drive replaced. A fee will be charged for parts and service. If the storage drive is a CRU (Customer Replaceable Unit), you can also contact Lenovo to purchase a new storage drive to replace the old one by yourself. To check whether the storage drive is a CRU and the relevant replacement procedure, see “What are CRUs” on page 47.

What to do if you forget your supervisor password

If you forget your supervisor password, there is no service procedure to remove the password. You have to contact a Lenovo authorized service provider to have the system board replaced. A fee will be charged for parts and service.

What to do if you forget your system management password

If you forget your system management password, do the following to remove the system management password:

- If you have set a supervisor password and remember it:
 1. Restart the computer. When the logo screen is displayed, immediately press F1.
 2. Type the supervisor password to enter the UEFI BIOS menu.
 3. Select **Security → Password → System Management Password** by using the arrow keys.
 4. Type the current supervisor password in the **Enter Current Password** field. Then, leave the **Enter New Password** field blank, and press Enter twice.

5. In the Changes have been saved window, press Enter.
 6. Press F10 to save changes and exit the UEFI BIOS menu.
- If you have not set a supervisor password, contact a Lenovo authorized service provider to have the system management password removed.

Associate your fingerprints with passwords (for selected models)

Do the following to associate your fingerprints with the power-on password and NVMe password:

1. Turn off and then turn on the computer.
2. When prompted, scan your finger on the fingerprint reader.
3. Enter your power-on password, NVMe password, or both as required. The association is established.

When you start the computer again, you can use your fingerprints to log in to the computer without entering your Windows password, power-on password, or NVMe password. To change settings, press F1 to enter the UEFI BIOS menu, and then select **Security → Fingerprint**.

Attention: If you always use your fingerprint to log in to the computer, you might forget your passwords. Write down your passwords, and keep them in a safe place.

Certificate based BIOS management

Certificate-based BIOS authentication (also called the password-less management mode) provides more secure UEFI BIOS management with password-free solution. It is used to replace the supervisor password / system management password for authentication if you have set one.

Note: Supervisor password / system management password are disabled automatically when certificate mode is enabled. But the power-on password / hard disk password / NVMe password still can be used normally in certificate mode if you have set one.

For certificate enrollment, see *Certificate Enrollment Guide* at: https://support.lenovo.com/docs/certificate_enrollment_guide

Enter the BIOS menu with certificate

Once you have enrolled the certificate, you can enter the BIOS menu with the certificate.

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1 to enter the BIOS menu.
2. The request data is displayed. Click **Save to File** to save the request data in a USB key and send the request data to IT admin by e-mail or phone.
3. Enter the unlock code provided by IT admin and click **OK**.

Notes:

- The unlock encode is a one-time password and is valid only during logon prompt (in one power-on cycle) for up to two hours.
- If you click **Skip**, you can enter the BIOS setup menu without BIOS management authority. But certificate reset is allowed.

Reset certificate

The enrolled certificate cannot be disabled. You can reset or remove it:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Enter the BIOS menu with the certificate or skip the certification authentication process.
3. Select **Security → Reset Certificate**.

4. Follow the on-screen instructions to enter the reset code provided by IT admin.

Chapter 5. 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.

Enter the UEFI BIOS menu

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

Navigate in the UEFI BIOS interface

You can navigate in the UEFI BIOS interface by pressing the following keys:

- F1: General Help
- F9: Setup Defaults
- F10: Save and Exit
- F5 / F6: Change boot priority order
- ↑ ↓ or PgUp / PgDn: Select / Scroll page
- ← →: Move keyboard focus
- Esc: Back / Close dialog
- Enter: Select / Open submenu

Set the system date and time

1. Restart the computer. When the logo screen is displayed, press F1.
2. Select **Date/Time** and set the system date and time as desired.
3. Press F10 to save changes and exit.

Change the startup sequence

1. Restart the computer. When the logo screen is displayed, press F1.
2. Select **Startup → Boot**. Then, press Enter. The default device order list is displayed.

Note: No bootable device is displayed if the computer cannot start from any devices or the operating system cannot be found.

3. Set the startup sequence as desired.
4. Press F10 to save the changes and exit.

To change the startup sequence temporarily:

1. Restart the computer. When the logo screen is displayed, press F12.
2. Select the device that you want the computer to start from and press Enter.

View UEFI BIOS Event log

1. Restart the computer. When the logo screen is displayed, press F1.
2. Select **Main → BIOS Event log**. Then, press Enter. The BIOS Event log interface is displayed.

3. Navigate the interface by pressing the following keys, and then see details by selecting each item.

- ↑↓: Move keyboard focus
- PgUp / PgDn: Scroll page
- Enter: Select
- F3: Exit

The following BIOS event logs might be listed on your screen depending on the UEFI BIOS activities. Each log consists of date, time, and a description of the event.

- **Power On** event: this log shows Power On Self Test (POST) routine has started with power-on process. It includes power on reason, boot mode and shutdown reason.
- **Subcomponent Code Measurement** event: this log shows subcomponent code measurement has worked. It includes validation result of each component.
- **System Preboot Authentication** event: this log shows what credential was provided to gain preboot authentication. It includes installed password, password type, input device and authentication result.
- **BIOS Password Change** event: this log shows changes of the UEFI BIOS passwords. It includes password type, event type and result.
- **Subcomponent Self-healing** event: this log shows information about the subcomponent where the recovery event occurred. It includes event cause, recovered firmware version and result.
- **BIOS Setup Configuration Change** event: this log shows changes of UEFI BIOS Setup configuration. It includes item name and value.
- **Device Change** event: this log shows changes of devices. It includes event cause and event type.
- **System Boot** event: this log shows which boot device was utilized to boot the system. It includes boot option, description and file path list.
- **System Tamper** event: this log shows occurrence of system tamper events. It includes event cause and event type.
- **Runtime Intrusion Detection of SPI Flash** event: this log shows system has detected unauthorized/suspicious access to SPI Flash. It includes event cause and region.
- **On-Demand Measurement** event: this log shows On- Demand measurement has worked. It includes validation result of each component.
- **POST Error** event: this log shows occurrence of errors during POST routine. It includes the error code.
- **Flash Update** event: this log shows occurrence of flash update. It includes event cause, updated firmware version and result.
- **Set On-Premise** event: this logs shows changes of on-premise boot setting. It includes on-premise setting value and change method.
- **Capsule Update** event: this log shows occurrence of UEFI capsule firmware update. It includes event cause, updated firmware version and result.
- **Log Cleared** event: this log shows clearing BIOS event log has executed. It includes event cause and result.
- **Shutdown / Reboot** event: this log shows UEFI BIOS is successfully shut down or the system is rebooted. It includes event cause and event type.

Detect memory retraining

Memory retraining is a process to initialize the memory module and run diagnostic tests for the memory module in your computer. The memory retraining might occur during POST if any of the following situations is detected:

- Memory module replacement

- Total Memory Encryption setting change in UEFI BIOS
- UEFI BIOS update (Memory Reference Code [MRC] change)

When memory retraining occurs, the screen cannot display the progress information and might be blank. 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.

Reset system to factory defaults

This feature allows you to initialize the UEFI BIOS to the factory default state, including all UEFI BIOS settings and internal data. It helps you wipe user data in case that you want to dispose of or reuse your computer.

Note: If you permanently disable **Intel AMT control** and **Absolute Persistence(R) Module** in UEFI BIOS, you can not reset even if you reset the system to factory default.

How to reset system to factory default

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. A series of warning windows might pop up. You might be required to do the following before resetting the system to factory default.
 - a. Reset the Certificate-based BIOS Authentication. Refer to “Certificate based BIOS management” on page 35.
 - b. Deactivate the Absolute Persistence Module.
 - c. Remove the NVMe password if you have set one.
4. For computer model with RAID settings, a window pops up to remind you of data damage.
5. If you select **Yes**, a window pops up to confirm your current operation.
6. If you select **Yes**, a window pops up. Enter your supervisor password, system management password or power-on password.
7. Then, your computer will restart immediately. It takes several minutes to complete the initialization.

Note: This initialization process may require the screen to be blank. This is normal and you should not interrupt the process.

Update UEFI BIOS

When you install a new program, device driver, or hardware component, you might need to update UEFI BIOS.

Download and install the latest UEFI BIOS update package by one of the following methods:

- Open the Vantage app to check the available update packages. If the latest UEFI BIOS update package is available, follow the on-screen instructions to download and install the package.
- Go to <https://pcsupport.lenovo.com> and select the entry for your computer. Then, follow the on-screen instructions to download and install the latest UEFI BIOS update package.

Note: During the UEFI BIOS update process, Memory Reference Code (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 can't display the progress information and might be blank. 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.

To know more about UEFI BIOS, visit Knowledge Base of your computer at <https://pcsupport.lenovo.com>.

FIDO (Fast ID) Online authentication

Your computer supports FIDO (Fast ID) Online authentication, which works as an alternative to password-based authentication to help you achieve passwordless authentication. This new BIOS feature only works when a power-on password is set in UEFI BIOS and a FIDO2 USB device is registered in ThinkShield™ Passwordless Power-On Device Manager. With this feature, you can input a power-on password or use the registered USB FIDO2 device to power on your computer.

Register your FIDO2 USB device in ThinkShield Passwordless Power-On Device Manager

1. Turn on the computer.
2. Press F12 during the power-on process.
3. If you set a power-on password, a window pops up on the screen when you turn on the computer. Enter the correct password to use the computer.
4. Select **App Menu → ThinkShield Passwordless Power-On Device Manager** and press Enter.
5. Insert FIDO2 device to register the FIDO2 device by following steps:
 - a. Select the available FIDO2 device that you want to register in the **Discovered Devices** area.
 - b. The first window pops up to confirm the device you selected. Click **Yes**.
 - c. If you set a power-on password, a window pops up. Enter the correct password.
 - d. The **User operation request** window pops up. You are required to press a button on the connected FIDO2 device, and then follow the on-screen instruction to close the window.
 - e. Press ESC to exit and restart your computer.

Notes:

- If you want to unregister your devices, click the available FIDO2 device that you want to unregister in the **My Device** area and enter the correct power-on password for verification.
- If you use more than one FIDO2 devices with a common identifier for registration, only one device could be available.

Log in to the System with Passwordless Power-On Authentication

1. Restart the computer.
2. **ThinkShield Passwordless Power-On Authentication** window appears.
3. Insert your registered FIDO2 device for detection.
4. Then follow the on-screen instruction to press the button on your FIDO2 device for verification.
5. After your device is verified, the power-on process continues.

Note: You should insert the FIDO2 device or enter a power-on password within 60 seconds. Otherwise, your computer will shut down automatically.

Install a Windows operating system and drivers

This section provides instructions on installing a Windows operating system and device drivers.

Install a Windows operating system

Microsoft constantly makes updates to the Windows operating system. Before installing a particular Windows version, check the compatibility list for the Windows version. For details, go to <https://support.lenovo.com/us/en/solutions/windows-support>.

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.
1. If you are using the Windows BitLocker® Drive Encryption feature and your computer has a Trusted Platform Module, ensure that you have disabled the feature.
 2. Ensure that the security chip is set to **Active**.
 - a. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
 - b. Select **Security** → **Security Chip** and press Enter. The **Security Chip** submenu opens.
 - c. Ensure that the security chip for TPM 2.0 is set to **Active**.
 - d. Press F10 to save the settings and exit.
 3. Connect the drive that contains the operating system installation program to the computer.
 4. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
 5. Select **Startup** → **Boot** to display the **Boot Priority Order** submenu.
 6. Select the drive that contains the operating system installation program, for example, **USB HDD**. Then, press Esc.

Attention: After you change the startup sequence, ensure that you select the correct device during a copy, a save, or a format operation. If you select the wrong device, the data on that device might be erased or overwritten.
 7. Select **Restart** and ensure that **OS Optimized Defaults** is enabled. Then, press F10 to save the settings and exit.
 8. Follow the on-screen instructions to install the device drivers and necessary programs.
 9. After installing the device drivers, apply Windows Update to get the latest updates, for example the security patches.


Install device drivers

You should download the latest driver for a component when you notice poor performance from that component or when you added a component. This action might eliminate the driver as the potential cause of a problem. Download and install the latest driver by one of the following methods:

- Open the Vantage app to check the available update packages. Select the update packages you want, and then follow the on-screen instructions to download and install the packages.
- Go to <https://pcsupport.lenovo.com> and select the entry for your computer. Then, follow the on-screen instructions to download and install necessary drivers and software.

Chapter 6. Help and support

Frequently asked questions

How do I access Control Panel ?	Type Control Panel in the Windows search box and then press Enter.
How do I turn off my computer?	Open the Start menu and click  Power . Then, click Shut down .
How do I partition my storage drive?	https://support.lenovo.com/solutions/ht503851
What do I do if my computer stops responding?	<ol style="list-style-type: none">1. Press and hold the power button until the computer turns off. Then, restart the computer.2. If step 1 does not work:<ul style="list-style-type: none">• For models with an emergency reset hole: Insert a straightened paper clip into the emergency reset hole to cut off power supply temporarily. Then, restart the computer with ac power connected.• For models without an emergency reset hole:<ul style="list-style-type: none">– For models with the removable battery, remove the removable battery and disconnect all power sources. Then, reconnect to ac power and restart the computer.– For models with the built-in battery, disconnect all power sources. Press and hold the power button for about seven seconds. Then, reconnect to ac power and restart the computer.
What do I do if I spill liquid on the computer?	<ol style="list-style-type: none">1. Carefully unplug the ac power adapter and turn off the computer immediately. The more quickly you stop the current from passing through the computer the more likely you will reduce damage from short circuits. Attention: Although you might lose some data or work by turning off the computer immediately, leaving the computer on might make your computer unusable.2. Do not try to drain out the liquid by turning over the computer. If your computer has keyboard drainage holes on the bottom, the liquid will be drained out through the holes.3. Wait until you are certain that all the liquid is dry before turning on your computer.
How do I enter the UEFI BIOS menu?	Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
Where can I get the latest device drivers and UEFI BIOS?	<ul style="list-style-type: none">• From the Vantage app. See “Install a Windows operating system and drivers” on page 40 and “Update UEFI BIOS” on page 39.• Download from Lenovo Support Web site at https://pcsupport.lenovo.com.

Error messages

If you see a message that is not included in the following table, record the error message first, then shut down the computer and call Lenovo for help. See “Lenovo Customer Support Center” on page 49.

Message	Solution
0190: Critical low-battery error	The computer turned off because the battery power is low. Connect the ac power adapter to the computer and charge the batteries.
0191: System Security - Invalid remote change requested	The system configuration change has failed. Confirm the operation and try again.
0199: System Security - Security password retry count exceeded.	This message is displayed when you enter a wrong supervisor password more than three times. Confirm the supervisor password and try again.
0271: Check Date and Time settings.	The date or the time is not set in the computer. Enter the UEFI BIOS menu and set the date and time.
210x/211x: Detection/Read error on HDDx/SSDx	The storage drive is not working. Reinstall the storage drive. If the problem still exists, replace the storage drive.
Error: The non-volatile system UEFI variable storage is nearly full.	<p>Note: This error indicates that the operating system or programs cannot create, modify, or delete data in the non-volatile system UEFI variable storage due to insufficient storage space after POST.</p> <p>The non-volatile system UEFI variable storage is used by the UEFI BIOS and by the operating system or programs. This error occurs when the operating system or programs store large amounts of data in the variable storage. All data needed for POST, such as UEFI BIOS setup settings, chipset, or platform configuration data, are stored in a separate UEFI variable storage. Press F1 after the error message is displayed to enter the UEFI BIOS menu. A dialog asks for confirmation to clean up the storage. If you select “Yes”, all data that were created by the operating system or programs will be deleted except global variables defined by the Unified Extensible Firmware Interface Specification. If you select “No”, all data will be kept, but the operating system or programs will not be able to create, modify, or delete data in the storage.</p> <p>If this error happens at a service center, Lenovo authorized service personnel will clean up the non-volatile system UEFI variable storage using the preceding solution.</p>
Fan error. Press ESC to startup with limited performance.	The thermal fan might not work correctly. After the error message is displayed, press ESC within five seconds to start up the computer with limited performance. Otherwise, the computer will shut down immediately. If the problem still exists when you starts up next time, have your computer serviced.

Beep errors

Lenovo SmartBeep technology enables you to decode beep errors with your smartphone when a black screen occurs with beeps from your computer. To decode the beep error with Lenovo SmartBeep technology:

1. Go to <https://support.lenovo.com/smartbeep> or scan the following QR Code.



2. Download the proper diagnostic app and install it on your smartphone.
3. Run the diagnostic app and place the smartphone near the computer.
4. Press Fn on your computer to emit the beep again. The diagnostic app decodes the beep error and shows possible solutions on the smartphone.

Note: Do not attempt to service a product yourself unless instructed to do so by the Customer Support Center or product documentation. Only use a Lenovo-authorized service provider to repair your product.

Self-help resources

Use the following self-help resources to learn more about the computer and troubleshoot problems.

Resources	How to access?
Troubleshooting and FAQ	<ul style="list-style-type: none">• https://www.lenovo.com/tips• https://forums.lenovo.com
Accessibility information	https://www.lenovo.com/accessibility
Reset or restore Windows	<ul style="list-style-type: none">• Use Lenovo recovery options.<ol style="list-style-type: none">1. Go to https://support.lenovo.com/HowToCreateLenovoRecovery.2. Follow the on-screen instructions.• Use Windows recovery options.<ol style="list-style-type: none">1. Go to https://pcsupport.lenovo.com.2. Detect your computer or manually select your computer model.3. Navigate to the troubleshooting menu to diagnose the operating system for recovery instructions.
Use the Vantage app to: <ul style="list-style-type: none">• Configure device settings.• Download and install UEFI BIOS, drivers, and firmware updates.• Secure your computer from outside threats.• Diagnose hardware problems.• Check the computer warranty status.• Access <i>User Guide</i> and helpful articles. <p>Note: The available features vary depending on the computer model.</p>	Type Vantage in the Windows search box and then press Enter.
Product documentation: <ul style="list-style-type: none">• <i>Safety and Warranty Guide</i>• <i>Generic Safety and Compliance Notices</i>• <i>Setup Guide</i>• This <i>User Guide</i>• <i>Regulatory Notice</i>	Go to https://pcsupport.lenovo.com . Then, follow the on-screen instructions to filter out the documentation you want.

Resources	How to access?
<p>Lenovo Support Web site with the latest support information of the following:</p> <ul style="list-style-type: none"> • Drivers and software • Diagnostic solutions • Product and service warranty • Product and parts details • Knowledge base and frequently asked questions 	<p>https://pcsupport.lenovo.com</p>
<p>Windows help information</p>	<ul style="list-style-type: none"> • Open the Start menu and click Get Help or Tips. • Use Windows Search or the Cortana® personal assistant. • Microsoft support Web site: https://support.microsoft.com

Windows label

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/en-us/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/en-us/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.

What are CRUs

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

- **Self-service CRUs:** Refer to parts that can be installed or replaced easily by customer themselves or by trained service technicians at an additional cost.

- **Optional-service CRUs:** Refer to parts that can be installed or replaced by customers with a greater skill level. Trained service technicians can also provide service to install or 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.

Refer to the following CRU list for your computer.

Self-service CRUs

- ac power adapter*
- Lenovo Precision Pen*
- Lenovo Precision Pen 2*
- Power cord*
- ThinkPad Bluetooth TrackPoint Keyboard and Stand*

* for selected models

Note: Replacement of any parts not listed above, including the built-in rechargeable battery, must be done by a Lenovo-authorized repair facility or technician. Go to <https://support.lenovo.com/partnerlocator> for more information.

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/supportphonenumber> 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>

Purchase additional services

During and after the warranty period, you can purchase additional services from Lenovo at <https://pcsupport.lenovo.com/warrantyupgrade>.

Service availability and service name might vary by country or region.

Appendix A. Compliance information

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.

Certification-related information

Product name	Compliance ID	Machine type(s)
ThinkPad X1 Fold 16 Gen 1	TP00144A	21ES and 21ET
ThinkPad X1 Fold 16 Gen 1 5G ¹	TP00144A0 ²	

¹ for mainland China only / ² for India only

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

Locate the UltraConnect wireless antennas

Your computer has an UltraConnect™ wireless antenna system. You can enable wireless communication wherever you are.

The following illustration shows the antenna locations on your computer:



- ❶ Wireless WAN antenna (main)*
- ❷ Wireless WAN antenna (MIMO1)* and Wireless LAN antenna (auxiliary)
- ❸ Wireless LAN antenna (main)* / Wireless WAN antenna (MIMO2)*
- ❹ Wireless WAN antenna (auxiliary)*
- ❺ Wireless LAN antenna (main)*

* for selected models

Operating environment

Maximum altitude (without pressurization)

3048 m (10 000 ft)

Temperature

- Operating: 5°C to 35°C (41°F to 95°F)
- Storage and transportation in original shipping packaging: -20°C to 60°C (-4°F to 140°F)
- Storage without packaging: 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 and transportation: 5% to 95% at wet-bulb temperature 27°C (81°F)

Appendix B. Notices and trademarks

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