

X390 Yoga User Guide

ThinkPad



Lenovo

Read this first

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

- Appendix A “Important safety information” on page 65
- *Safety and Warranty Guide*
- *Setup Guide*

First Edition (April 2019)

© Copyright Lenovo 2019.

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

About this documentation iii

Chapter 1. Meet your computer. 1

Front	1
Base	2
Left	3
Right	5
Bottom	7
Features and specifications	8

Chapter 2. Get started with your computer. 11

Get started with Windows 10	11
Windows account	11
Windows user interface	12
Windows label	13
Connect to networks	13
Connect to the wired Ethernet	13
Connect to Wi-Fi networks.	13
Connect to a cellular network.	13
Use Lenovo Vantage	14
Interact with your computer	15
Use the keyboard shortcuts	16
Use the TrackPoint pointing device	17
Use the trackpad	19
Use the multi-touch screen	20
Use multimedia	22
Use audio	22
Use the camera	22
Connect to an external display	23
Get to know YOGA modes	24
Use ThinkPad Pen Pro	26

Chapter 3. Explore your computer . . 29

Manage power	29
Check the battery status	29
Charge the computer	29
Check the battery temperature	30
Maximize the battery life	30
Set power button behaviors	30
Set the power plan	30
Transfer data	30
Connect to a Bluetooth-enabled device.	30
Set up a NFC connection (for selected models)	31
Use a microSD card or a smart card	31
Airplane mode	32

Chapter 4. Accessories 33

Purchase options	33
Docking station	33
Front view	34
Rear view	35
Attach a docking station.	36
Detach a docking station	37
Connect multiple external displays	38

Chapter 5. Secure your computer and information 39

Lock the computer	39
Use passwords	39
Password types	39
Set, change, and remove a password	40
Use Power Loss Protection function (for selected models)	41
Use the fingerprint reader	41
Use face authentication (for selected models)	42
Use firewalls and antivirus programs.	42

Chapter 6. Configure advanced settings. 43

UEFI BIOS	43
What is UEFI BIOS	43
Enter the UEFI BIOS menu.	43
Navigate in the UEFI BIOS interface	43
Change the startup sequence	43
Set the system date and time.	44
Update UEFI BIOS	44
Recovery information	44
Restore system files and settings to an earlier point	44
Restore your files from a backup	44
Reset your computer	44
Use advanced options	45
Windows automatic recovery.	45
Create and use a recovery USB device	45
Install Windows 10 and drivers	46

Chapter 7. CRU replacement 49

What are CRUs	49
Disable Fast Startup and the built-in battery.	49
Replace a CRU	50
Base cover assembly	50
WWAN card (for selected models)	52
M.2 solid-state drive	54

Chapter 8. Help and support	59
Frequently asked questions	59
Error messages	60
Beep errors	61
Self-help resources	62
Call Lenovo	63
Before you contact Lenovo	63
Lenovo Customer Support Center	63
Purchase additional services.	64
Appendix A. Important safety information.	65

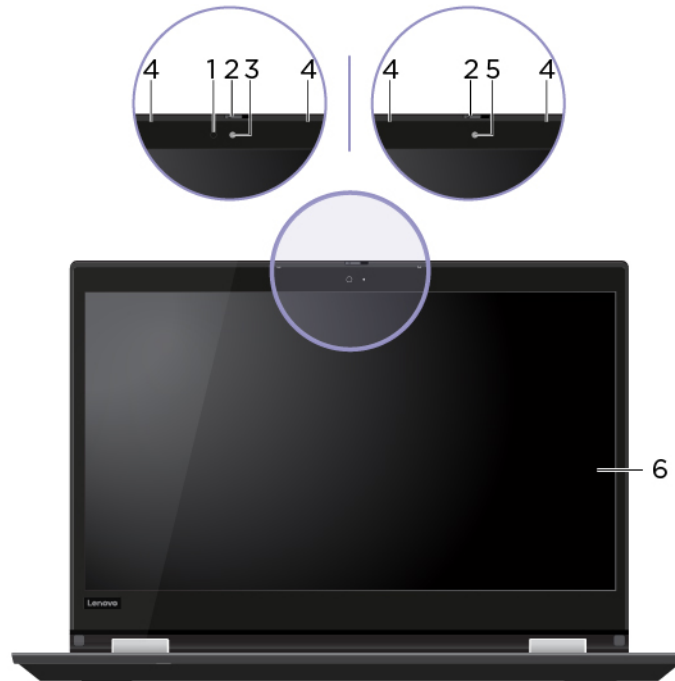
Appendix B. Accessibility and ergonomic information.	79
Appendix C. Supplemental information about the Ubuntu operating system	83
Appendix D. Compliance information.	85
Appendix E. Notices and trademarks.	99

About this documentation

- Illustrations in this documentation might look different from your product.
- Depending on the model, some optional accessories, features, and software programs might not be available on your computer.
- Depending on the version of operating systems, some user interface instructions might not be applicable to your computer.
- Documentation content is subject to change without notice. Lenovo makes constant improvements on the documentation of your computer, including this *User Guide*. To get the latest documentation, go to <https://support.lenovo.com>.
- Microsoft® makes periodic feature changes to the Windows® operating system through Windows Update. As a result, some information in this documentation might become outdated. Refer to Microsoft resources for the latest information.

Chapter 1. Meet your computer

Front



1. Infrared LED*	Emit infrared (IR) light. Normally the infrared light is invisible to the naked eyes. Note: Do not block the IR light-emitting diode (LED). Otherwise, the IR function might not work.
2. ThinkShutter	Slide ThinkShutter to cover or uncover the camera lens. It is designed to protect your privacy.
3. Camera with IR function*	Log in to your computer with face authentication. See “Use face authentication (for selected models)” on page 42.
4. Microphones	Capture or record sound.
5. Camera	Take pictures or record videos by clicking Camera from the Start menu. The indicator next to the camera is on when the camera is in use. If you use other apps that support photographing, video chatting, and video conference, the camera starts automatically when you enable the camera-required feature from the app.
6. Multi-touch screen	Enable you to use your computer with simple touch gestures. See “Use the multi-touch screen” on page 20.

* for selected models

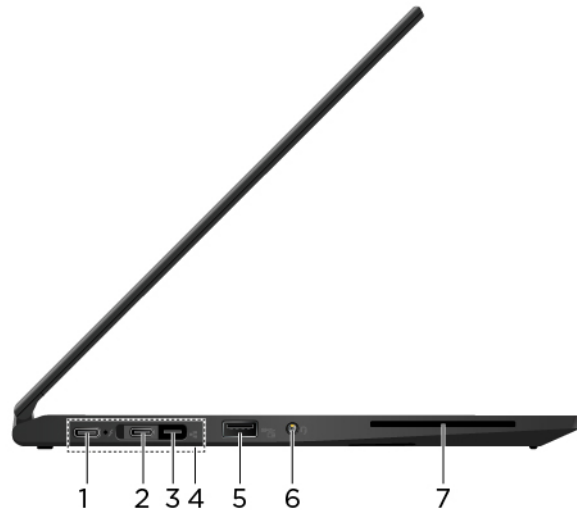
Base



1. Fingerprint reader	Log in to your computer with enrolled fingerprints. See “Use the fingerprint reader” on page 41.
2. Trackpad	Perform finger touch and all the functions of a traditional mouse. See “Use the trackpad” on page 19.
3. NFC mark*	Your computer supports NFC (near field communication). You can share information with another NFC-enabled device. See “Set up a NFC connection (for selected models)” on page 31.
4. TrackPoint® pointing device	Perform all the functions of a traditional mouse. See “Use the TrackPoint pointing device” on page 17.

* for selected models

Left



1. USB-C™ connector (USB 3.1 Gen 1)

- Charge your computer.
- Charge USB-C compatible devices with the output voltage and current of 5 V and 1.5 A.
- Transfer data at USB 3.1 speed, up to 5 Gbps.
- Connect to an external display:
 - USB-C to VGA: 1920 x 1200 pixels, 60 Hz
 - USB-C to DP: 3840 x 2160 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>.
- Supply power to another computer using P-to-P (Peer to Peer) 2.0 charging function. See “Use P-to-P 2.0 charging function” on page 29.

Note: When the battery power is below 10%, the connected USB-C accessories might not work correctly.

2. Thunderbolt™ 3 connector (USB-C)

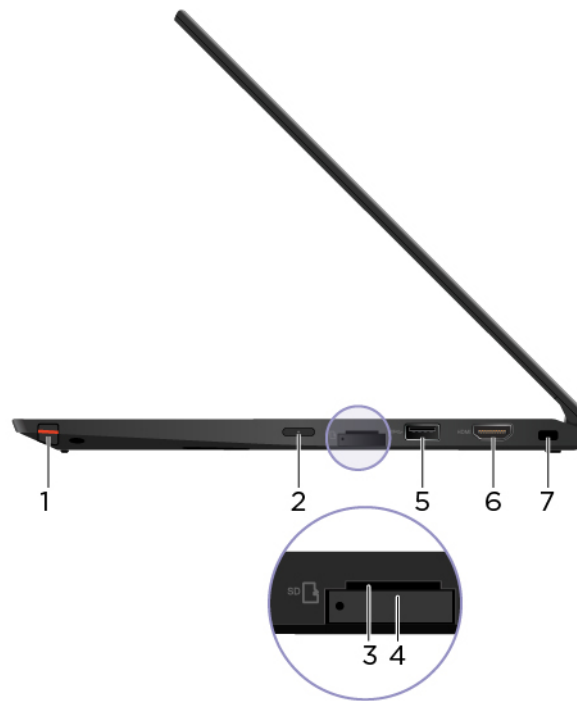
- Charge your computer.
- Charge USB-C compatible devices with the output voltage and current of 5 V and 1.5 A.
- Transfer data at Thunderbolt 3 speed, up to 40 Gbps.
- Connect to an external display:
 - USB-C to VGA: 1920 x 1200 pixels, 60 Hz
 - USB-C to DP: 3840 x 2160 pixels, 60 Hz
- Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to <https://www.lenovo.com/accessories>.
- Supply power to another computer using P-to-P (Peer to Peer) 2.0 charging function. See “Use P-to-P 2.0 charging function” on page 29.

Note: When the battery power is below 10%, the connected USB-C accessories might not work correctly.

3. Ethernet extension connector Gen 2	Make your computer thinner than the ones with a standard Ethernet connector. Use a ThinkPad Ethernet Extension Adapter Gen 2 to connect your computer to a local area network (LAN) through this connector. The ThinkPad Ethernet Extension Adapter Gen 2 is available as an option and shipped with some computer models only. You can purchase a ThinkPad Ethernet Extension Adapter Gen 2 from Lenovo at: https://www.lenovo.com/accessories.
4. Docking-station connector	Connect the computer to one of the following supported docks to extend the computer capabilities: • ThinkPad Basic Docking Station • ThinkPad Pro Docking Station • ThinkPad Ultra Docking Station
5. Always On USB 3.1 connector Gen 1	With the Always On USB feature enabled, the Always On USB 3.1 connector Gen 1 can charge a USB-compatible device when the computer is on, off, in sleep mode, or in hibernation mode. Notes: • By default, Always On USB is enabled and Charge in Battery Mode is disabled in UEFI BIOS. • When the computer is off or in hibernation mode, and Charge in Battery Mode is disabled in UEFI BIOS, ensure that you have connected the computer to ac power. To enable the Always On USB feature, do the following: 1. Enter the UEFI BIOS menu. See “Enter the UEFI BIOS menu” on page 43. 2. Click Config → USB → Always On USB to enable the Always On USB feature.
6. Audio connector	Connect headphones or a headset with a 3.5-mm (0.14-inch) and 4-pole plug to listen to the sound from the computer. Note: The conventional microphone is not supported.
7. Smart-card slot*	Use smart cards for authentication, data storage, and application processing. Within large organizations, you might also use smart cards for strong security authentication of single sign-on (SSO). See “Use a microSD card or a smart card ” on page 31.

* for selected models

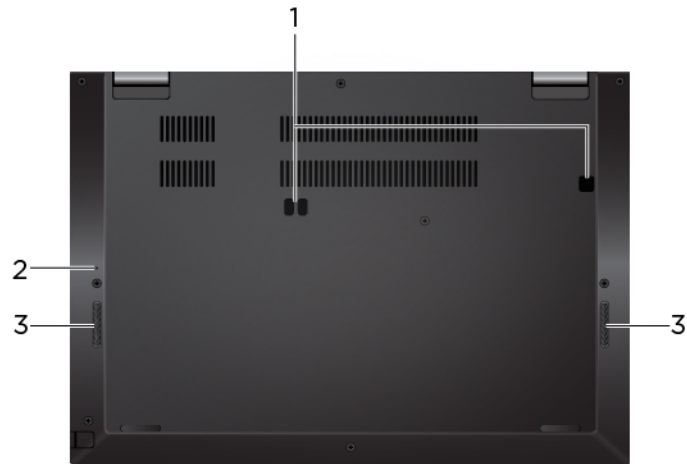
Right



1. ThinkPad Pen Pro	See “Use ThinkPad Pen Pro ” on page 26.
2. Power button	Press to turn on the computer or put the computer to sleep mode. To turn off the computer, open the Start menu, click  Power, and then select Shut down. The indicator in the power button shows the system status of your computer. • Blinking for three times: The computer is initially connected to power. • On: The computer is on. • Off: The computer is off or in hibernation mode. • Blinking rapidly: The computer is entering sleep or hibernation mode. • Blinking slowly: The computer is in sleep mode.
3. microSD card slot	Insert a microSD card for data access or storage. See “Use a microSD card or a smart card ” on page 31.
4. Nano-SIM card slot*	Use the Nano Subscriber Identity Module (SIM) card to connect to a wireless-WAN network. See “Connect to a cellular network” on page 13.
5. USB 3.1 connector Gen 1	Connect a USB-compatible device, such as a USB keyboard, USB mouse, USB storage device, or USB printer.
6. HDMI™ connector	Connect to a compatible digital audio device or video monitor, such as an HDTV.
7. Security-lock slot	Lock your computer to a desk, table, or other fixtures through a compatible security cable lock. See “Lock the computer” on page 39.

* for selected models

Bottom



1. Docking-station hook holes	Use the docking-station hook holes to secure a supported docking station.
2. Emergency-reset hole	If the computer stops responding and you cannot turn it off by pressing the power button, reset your computer: 1. Disconnect your computer from ac power. 2. Insert a straightened paper clip into the hole to cut off power supply temporarily. 3. Connect your computer to ac power and then turn on your computer.
3. Speakers	Enable you to experience high-quality sound.

Features and specifications

Dimensions	• Width: 310.4 mm (12.22 inches) • Depth: 219 mm (8.62 inches) • Thickness: 15.95 mm (0.63 inches)
Maximum heat output (depending on the model)	• 45 W (154 Btu/hr) • 65 W (222 Btu/hr)
Power source (ac power adapter)	• 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
Microprocessor	To view the microprocessor information of your computer, right-click the Start button and then click System .
Memory	Double data rate 4 (DDR4) onboard memory module
Storage device	• Hybrid solid-state drive (with Intel® Optane™ memory)* • M.2 solid-state drive (without Intel Optane memory)*
Display	• Brightness control • Color display with In-Plane Switching (IPS) technology • Display size: 337.82 mm (13.3 inches) • Display resolution: 1920 x 1080 pixels • Multi-touch technology
Keyboard	• Function keys • Six-row keyboard or six-row keyboard with backlight • Trackpad • TrackPoint pointing device
Connectors and slots	• Audio connector • Ethernet extension connector Gen 2 • Two USB 3.1 connectors Gen 1 (including one Always On USB 3.1 connector Gen 1) • HDMI connector • microSD card slot • Nano-SIM-card slot* • Smart card slot* • Thunderbolt 3 connector (USB-C) • USB-C connectors (USB 3.1 Gen 1)
Security features	• Face authentication* • Fingerprint reader • Password • Security-lock slot • Trusted Platform Module (TPM)*

Wireless features	• Bluetooth • Global Positioning System (GPS) satellite receiver (available on models with wireless WAN)* • Wireless LAN • Wireless WAN* • Near field communication (NFC)*
Others	• Camera • Microphones

* for selected models

Chapter 2. Get started with your computer

Get started with Windows 10

Learn the basics of Windows 10 and start working with it right away. For more information about Windows 10, see the Windows help information.

Windows account

To use the Windows operating system, a user account is required. It can either be a Windows user account or a Microsoft account.

Windows user account

When you start Windows for the first time, you are prompted to create a Windows user account. This first account you created is of the “Administrator” type. With an Administrator account, you can create additional user accounts or change account types by doing the following:

1. Open the Start menu and select **Settings → Accounts → Other people**.
2. Follow the on-screen instructions.

Microsoft account

You can also log in to the Windows operating system with a Microsoft account.

To create a Microsoft account, go to the Microsoft sign-up page at <https://signup.live.com> and follow the on-screen instructions.

With a Microsoft account, you can:

- Enjoy one-time signing in if you are using other Microsoft services, such as OneDrive, Skype, and Outlook.com.
- Sync personalized settings across other Windows-based devices.

Windows user interface



1. Account 	Change account settings, lock the computer, or sign out from the current account.
2. Settings 	Launch Settings.
3. Power 	Shut down, restart, or put the computer into sleep.
4. Start button 	Open the Start menu.
5. Windows Search 	Type what you are looking for in the search box and get search results from your computer and the Web.
6. Task View 	Display all opened apps and switch among them.
7. Windows notification area	Display notifications and status of some features.
8. Battery status icon	Display power status and change battery or power settings. When your computer is not connected to ac power, the icon changes to  .
9. Network icon	Connect to an available wireless network and display the network status. When connected to a wired network, the icon changes to  .
10. Action center 	Display the latest notifications from apps and provide quick access to some features.

Open the Start menu

- Click the **Start** button.
- Press the Windows logo key on the keyboard.

Access Control Panel

- Open the Start menu and click **Windows System → Control Panel**.
- Use Windows Search.

Launch an app

- Open the Start menu and select the app you want to launch.
- Use Windows Search.

Windows label

Your computer might have a Windows 10 Genuine Microsoft label affixed to its cover depending on the following factors:

- Your geographic location
- Edition of Windows 10 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 version of Windows 10.
- In other countries and regions, the Genuine Microsoft label is required only on computer models licensed for Windows 10 Pro.

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 10 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 10 Pro license downgrade rights.

Connect to networks

Your computer helps you connect to the world through a wired or wireless network.

Connect to the wired Ethernet

Connect your computer to a local network through the Ethernet extension connector Gen 2 on your computer with a ThinkPad Ethernet Extension Adapter Gen 2.

The Ethernet extension 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 Wi-Fi networks

1. Click the network icon in the Windows notification area. A list of available wireless networks is displayed.
2. Select a network to connect to. Provide required information if needed.

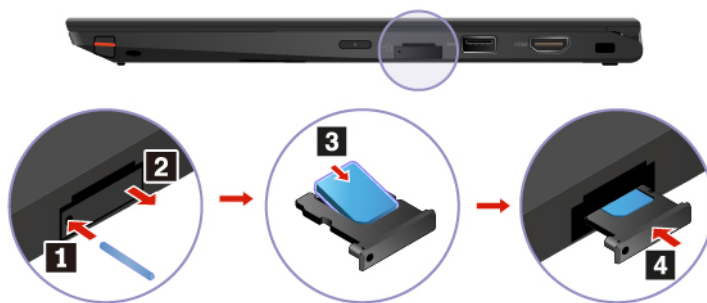
Connect to a cellular network

If your computer has a wireless wide area network (WAN) card and a nano-SIM card installed, you can connect to a cellular data network and get online using the cellular signal.

Note: The 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.

To establish cellular connection:

1. Locate the nano-SIM card slot.
2. Insert a straightened paper clip into the hole in the tray. The tray ejects. Install a new nano-SIM card into the tray with the metal contacts facing upward. Insert the tray into the nano-SIM-card slot until you hear a click. If your computer has a nano-SIM card installed, skip this step.



3. Click the network icon in the Windows notification area, and then select the cellular network icon  from the list.
4. Provide required information if needed.

Use Lenovo Vantage



The preinstalled Lenovo Vantage is a customized one-stop solution to help you maintain your computer with automated updates and fixes, configure hardware settings, and get personalized support.

Access Lenovo Vantage

Open the Start menu and click **Lenovo Vantage**. You also can type **Lenovo Vantage** in the search box.

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

Key features

Lenovo Vantage makes periodic updates of the features to keep improving your experience with your computer.

Note: The available features vary depending on the computer model.

- **System Update**

Download and install firmware and driver updates to keep your computer up-to-date. You can configure the options to install updates automatically when available.

- **Hardware Settings**

Configure intelligent settings of the following hardware to make your computer smarter to use:

- Always On USB
- Battery

- Camera
 - Computer display
 - Keyboard
 - Microphone
 - Speakers
 - Trackpad
 - TrackPoint
 - **Health & Support**

Monitor your computer health and get personalized support of your computer. You can:

 - Scan the computer hardware and diagnose hardware problems.
 - Look up computer warranty status (online).
 - Access *User Guide*.
 - Read tips and tricks articles customized for your computer.
 - **Lenovo Wi-Fi Security**

Protect your computer from malicious Wi-Fi networks.
-

Interact with your computer

Your computer provides you various ways to navigate the screen.

Use the keyboard shortcuts

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



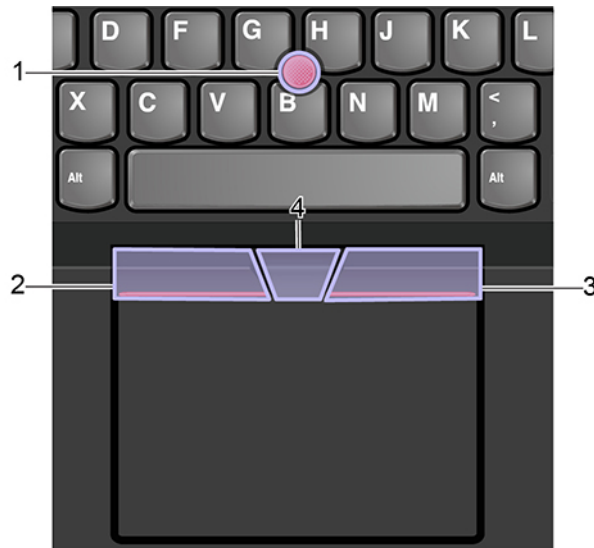
1. Windows logo key	Open the Start menu. For information about using this key with other keys, see the Windows help information.
2. Caps Lock key	Switch the letter case between the upper case and lower case. When the key indicator is on, you can type uppercase letters.
3. F1–F12 function keys	Invoke the special function printed as an icon on each key or standard function. To choose whether to invoke the special function or standard function: - Go to Control Panel and view by Large icons or Small icons. - Click Keyboard or Lenovo - Keyboard Manager and select the option of your preference.
 + 	Switch the function of the F1–F12 keys between the standard function and special function printed as an icon on each key. When the Fn Lock indicator is on: - Press F1-F12 to use the standard function. - Press Fn+F1-F12 to use the special function. When the Fn Lock indicator is off: - Press Fn+F1-F12 to use the standard function. - Press F1-F12 to use the special function.
	Mute or unmute the speakers. When the key indicator is on, the speakers are muted. If you mute the speakers and turn off your computer, the speakers remain muted when you turn on your computer.
	Decrease the speaker volume.
	Increase the speaker volume.

	Mute or unmute the microphones. When the key indicator is on, the microphones are muted.
	Darken the computer display.
	Brighten the computer display.
	Manage external displays.
	Enable or disable the built-in wireless features.
	Open the Settings window.
	Enable or disable the built-in Bluetooth features.
	Open a keyboard setting page.
	Invoke the function defined by yourself: 1. Open the Start menu and click Lenovo Vantage. 2. Click Hardware Settings and then click Input. 3. Locate the Keyboard: User-defined Key section and follow the on-screen instructions to complete the setting. On this setting page, you can also define different functions for the key combinations with F12, such as Shift+F12, Alt+F12, or Ctrl+F12.
	Put your computer to sleep mode.
	Open the Snipping Tool program.
Fn+Spacebar	Switch between different keyboard backlight statuses if your computer supports keyboard backlight.
Fn+B	Equal the Break key on a conventional external keyboard.
Fn+K	Equal the ScrLK or Scroll Lock key on a conventional external keyboard.
Fn+P	Equal the Pause key on a conventional external keyboard.
Fn+S	Equal the SysRq key on a conventional external keyboard.
Fn+4	Put the computer to sleep mode. To wake up the computer, press Fn or the power button.
Fn+Left arrow key	Equal the Home key.
Fn+Right arrow key	Equal the End key.

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



1. Pointing stick

Use your index finger or middle finger to apply pressure to the pointing-stick nonslip cap in any direction parallel to the keyboard. The pointer on the screen moves accordingly but the pointing stick itself does not move. The higher the pressure applied, the faster the pointer moves.

2. Left-click button

Press to select or open an item.

3. Right-click button

Press to display a shortcut menu.

4. Scroll bar

Press and hold the dotted scroll bar while applying pressure to the pointing stick in the vertical or horizontal direction. Then, you can scroll through the document, Web site, or apps.

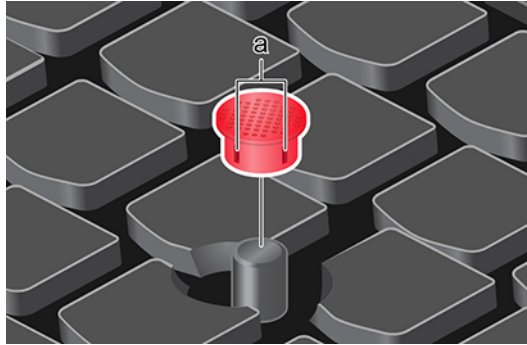
Disable the TrackPoint pointing device

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

1. Go to Control Panel and view by Large icons or Small icons.
2. Click **Mouse**. Then, follow the on-screen instructions to complete the setting.

Replace the pointing-stick nonslip cap

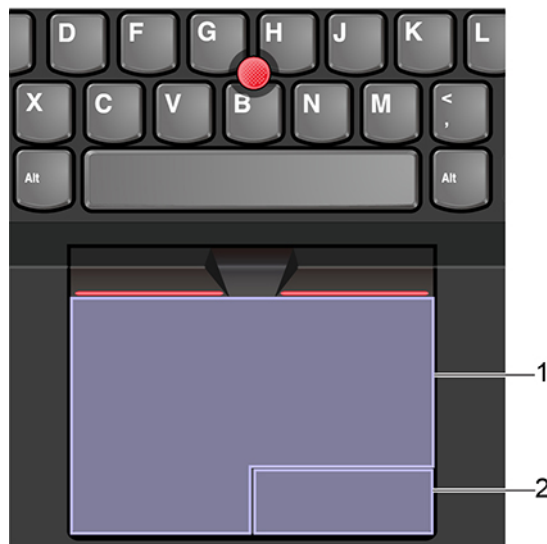
Note: Ensure that the new cap has grooves **a**.



Use the trackpad

The entire trackpad surface is sensitive to finger touch and movement. You can use the trackpad to perform all the pointing, clicking, and scrolling functions of a traditional mouse.

Use the trackpad



1. Left-click zone

Press to select or open an item.

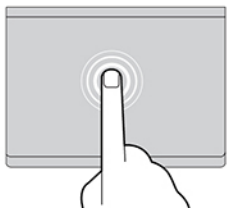
You also can tap anywhere on the surface of the trackpad with one finger to perform the left-click action.

2. Right-click zone

Press to display a shortcut menu.

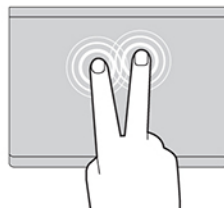
You also can tap anywhere on the surface of the trackpad with two fingers to perform the right-click action.

Use the touch gestures



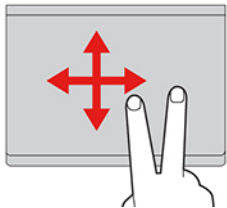
Tap

Tap anywhere on the trackpad with one finger to select or open an item.



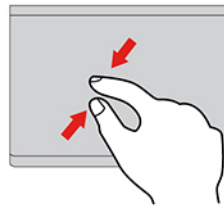
Two-finger tap

Tap anywhere on the trackpad with two fingers to display a shortcut menu.



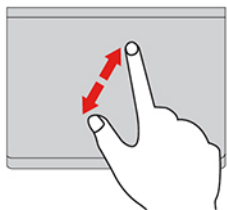
Two-finger scroll

Put two fingers on the trackpad and move them in the vertical or horizontal direction. This action enables you to scroll through the document, Web site, or apps.



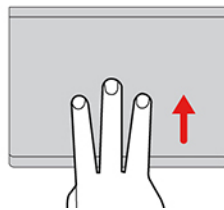
Two-finger zoom out

Put two fingers on the trackpad and move them closer together to zoom out.



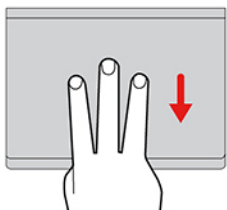
Two-finger zoom in

Put two fingers on the trackpad and move them farther apart to zoom in.



Swipe three fingers up

Put three fingers on the trackpad and move them up to open the task view to see all your open windows.



Swipe three fingers down

Put three fingers on the trackpad and move them down to 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. Go to Control Panel and view by Large icons or Small icons.
2. Click **Mouse**. Then, follow the on-screen instructions to complete the setting.

Use the multi-touch screen

If your computer display supports the multi-touch function, you can navigate the screen with simple touch gestures.

Note: Some gestures might not be available depending on the app you use.



Tap once

- From the Start menu: Open an app or item.
- From the desktop: Select an app or item.
- In an open app: Perform an action such as **Copy**, **Save**, and **Delete**, depending on the app.



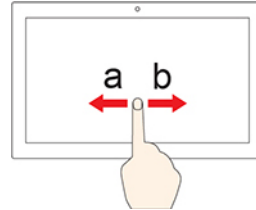
Tap twice quickly

Open an app or item from the desktop.



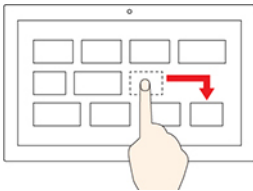
Tap and hold

Open a shortcut menu.



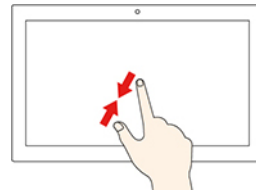
Slide

Scroll through items, such as lists, pages, and photos.



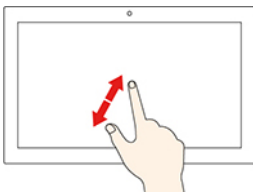
Drag an item to the location you want

Move an object.



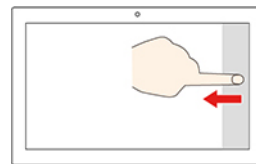
Move two fingers closer together

Zoom out.



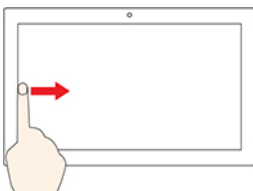
Move two fingers farther apart

Zoom in.



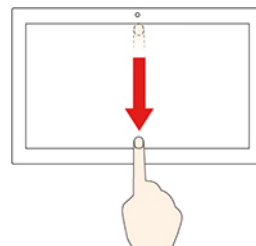
Swipe in from the right edge

Open the action center to see your notifications and quick actions.



Swipe in from the left edge

View all your open windows in task view.



- **Swipe downwards shortly from the top edge (for full-screened app or when your computer is in the tablet mode)**

Show a hidden title bar.

- **Swipe in from the top edge to the bottom edge (when your computer is in the tablet mode)**

Close the current app.

Tips

- Turn off the computer before cleaning the multi-touch screen.
- Use a dry, soft, and lint-free cloth or a piece of absorbent cotton to remove fingerprints or dust from the multi-touch screen. Do not apply solvents to the cloth.

- The multi-touch screen is a glass panel covered with surface coating. 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.

Use multimedia

Use your computer for business or entertainment with the built-in components (camera, speakers, and audio features) or connected external devices (an external projector, monitor, and HDTV).

Use audio

To enhance your listening experience, connect speakers, headphones, or a headset with a 3.5-mm (0.14-inch), 4-pole plug to the audio connector.

Adjust the speaker volume

Press  to increase the speaker volume or press  to decrease the speaker volume.

Change the sound settings

1. Go to Control Panel and view by category.
2. Click **Hardware and Sound → Sound**.
3. Change the settings as you prefer.

Protect your hearing

Smart audio helps protect against hearing loss. The feature limits the computer's maximum volume to 130 mV when a headset or headphone is connected. To change the setting:

1. Go to Control Panel and view by large icons.
2. Click **SmartAudio**. In the window displayed, click the **Disable Headphone Limiter** icon. Then, follow the on-screen instructions.

Use the camera

You can use the built-in camera to take photos or record videos. The indicator next to the camera turns on when the camera is in use.

To take photos or record a video:

1. Slide the ThinkShutter to unveil the camera.
2. Open the Start menu and click **Camera**.
3. To take a photo, click the camera icon. If you want to record video, click the video icon to switch to video mode.

If you use other programs that provide features such as photographing, video capturing, and video conference, the camera starts automatically when you enable the camera-required feature.

To configure the camera settings:

1. Open the Start menu and click **Lenovo Vantage → Hardware Settings → Audio/Visual**.
2. Locate the **Camera** section and then follow the on-screen instructions.

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

1. Connect the external display to an appropriate video connector on your computer, such as the HDMI connector, USB-C connector (USB 3.1 Gen 1), or Thunderbolt 3 connector (USB-C).
2. Connect the external display to an electrical outlet.
3. Turn on the external display.

If your computer cannot detect the external display, right-click a blank area on the desktop, and then click **Display settings → Detect**.

Do not connect external displays to the USB-C connector (USB 3.1 Gen 1) **1** and the HDMI connector **2** at the same time. Otherwise, only the external display connected to the USB-C connector (USB 3.1 Gen 1) **1** will work by default. You can change the priority between the USB-C connector (USB 3.1 Gen 1) and the HDMI connector from the UEFI BIOS menu. To enter the UEFI BIOS menu, see “Enter the UEFI BIOS menu” on page 43, and then select **Display → Shared Display Priority**. Then, follow the instructions on the screen.



Supported resolution

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

Connect the external display to	Supported resolution
the USB-C connector (USB 3.1 Gen 1)	Up to 4096 x 2304 pixels / 60 Hz
Thunderbolt 3 connector (USB-C)	Up to 4096 x 2304 pixels / 60 Hz
the HDMI connector	Up to 4096 x 2160 pixels / 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.

- Open the Start menu, and then click **Settings → Devices → Bluetooth & other devices → Add Bluetooth or other device**. In the Add a device window, click **Wireless display or dock**. Then, follow the instructions on the screen.
- Click the action center icon  in the Windows notification area and click **Connect**. Select the wireless display and follow the on-screen instructions.

Set the display mode

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

- **PC screen only:** Displays the video output only on your computer screen.

Note: Depending on the situation, you might see **Disconnect**, **PC screen only**, **Computer only**, or **Disconnect projector**.

- **Duplicate:** Displays the same video output on both your computer screen and an external display.
- **Extend:** Extends the video output from your computer display to an external display. You can drag and move items between the two displays.
- **Second screen only:** Displays the video output only on an external display.

Note: Depending on the situation, you might see **Projector only** or **Second screen only**.

If you show programs using DirectDraw or Direct3D® in full-screen mode, only the main display shows the video output.

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.
3. 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.

Note: If you set a higher resolution for the computer display than the external display, only part of the screen can be displayed on the external display.

Get to know YOGA modes

Your computer display can be rotated to any angle up to 360 degrees.

Attention: Do not rotate the computer display with too much force, or apply too much force to the upper-right or upper-left corner of the computer display. Otherwise the computer display or hinges might get damaged.



Your computer features the following four YOGA modes. You can switch among different modes according to your preference.

Note: The keyboard and the pointing devices are automatically disabled in the stand mode, tent mode, and tablet mode. Use the touch screen to control your computer instead.



Notebook mode



Stand mode



Tent mode



Tablet mode

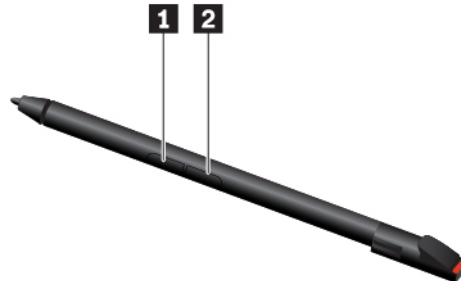
Use ThinkPad Pen Pro

The ThinkPad Pen Pro is an electronic pen stored in the pen slot. To use the pen, slide it out of the slot.



Notes:

- The ThinkPad Pen Pro is not waterproof. Keep the pen away from water and excessive moisture.
- To purchase the ThinkPad Pen Pro, go to <https://www.lenovo.com/accessories>.

Use the ThinkPad Pen Pro

1 Eraser button

2 Click button

You can perform the following operations with the ThinkPad Pen Pro:

- To click or make a selection, tap the display once.
- To double-click, tap twice without pausing.
- To right-click, tap the display and hold the pen there for one second. Alternatively, you can press and hold the click button **2** and tap the display.
- To erase ink, press and hold the eraser button **1**, tap the display, and drag the pen across the ink you want to erase.

Charge the ThinkPad Pen Pro

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.

Chapter 3. Explore your computer

Manage power

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

Check the battery status

The battery status icon  or  is in the Windows notification area. You can check the battery status, view the current power plan, and access battery settings quickly.

Click the battery status icon to display the percentage of battery power remaining and change the power mode. A warning message is displayed when the battery is low.

Charge the computer

Use ac power

When the battery power is low, charge your battery by connecting your computer to ac power.

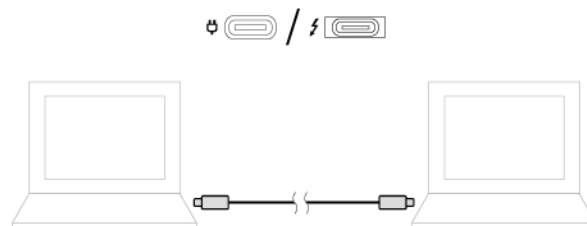
The battery is fully charged in about four to eight hours. If the power adapter shipped with your computer supports the rapid charge function, the battery is 80% charged in about one hour when the computer is turned off. The actual charging time depends on the battery size, the physical environment, and whether you are using the computer.

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

Note: To maximize the life of the battery, the computer does not recharge the battery if the remaining power is greater than 95%.

Use P-to-P 2.0 charging function

Both the USB-C connector (USB 3.1 Gen 1) and the Thunderbolt 3 connector (USB-C) on the computer feature the Lenovo-unique P-to-P 2.0 charging function, which enables one computer (A) to supply power to another computer (B) through a USB-C to USB-C cable when no ac power is available.



To use the function, ensure that:

- The selected connectors support the P-to-P 2.0 charging function and power delivery function.
- The battery power remaining of computer A is at least 30% and is 3% higher than that of computer B. In this situation, computer A works as the power supply. Once the battery power remaining of computer A is lower than 30%, it stops supplying power to computer B. To check the battery status, see “Check the battery status” on page 29.

Check the battery temperature

1. Open the Start menu and click **Lenovo Vantage**.
2. Click **Hardware Settings → Power**.
3. Locate the **Power Status** section and then click **Show Details** to view the battery temperature.

Maximize the battery life

- Lower the brightness of the computer display.
- Turn off the wireless features when not in use.
- Use the battery until the charge is depleted.
- Recharge the battery completely before using it.

Set power button behaviors

You can define what the power button does according to your preference. For example, by pressing the power button, you can turn off the computer or put the computer to sleep or hibernation mode.

To change what the power button does:

1. Right-click the battery status icon in the Windows notification area.
2. Click **Power Options → Choose what the power button does**.
3. Change the settings as you prefer.

Set the power plan

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

Table 1. Default power plan (when plugged into ac power)

- | |
|--|
| <ul style="list-style-type: none">• Turn off the display: After 10 minutes• Put the computer to sleep: After 30 minutes |
|--|

To reset the power plan to achieve the best balance between performance and power saving:

1. Right-click the battery status icon and select **Power Options**.
2. Choose or customize a power plan of your preference.

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 media card or smart card to transfer data.

Connect to a Bluetooth-enabled device

You can connect all types of Bluetooth-enabled device to your computer, such as a keyboard, a mouse, a smartphone, or speakers. The devices must be within a short distance, usually 10 meters (33 feet), from the computer.

1. Turn on Bluetooth on the computer.

- Press  or  + .

- Open the Start menu, and then click **Settings → Devices → Bluetooth & other devices**. Turn on the **Bluetooth** switch.
2. Click **Add Bluetooth or other device → Bluetooth**.
 3. Select a Bluetooth device, and then follow the on-screen instructions.

Your Bluetooth-enabled device and computer will automatically connect the next time if the two devices are in range of each other with Bluetooth turned on. You can use Bluetooth for data transfer or remote control and communication.

Set up a NFC connection (for selected models)

If your computer supports NFC, you will see an NFC mark or label  around the trackpad area.

NFC is a high-frequency and short-range wireless communication technology. By using NFC, you can simply tap and connect your computer and another NFC-enabled device over a few centimeters or inches.

Turn on NFC

1. Open the Start menu and click **Settings → Network & Internet → Airplane mode**.
2. Turn off the Airplane mode.
3. Turn on the NFC function.

Pair with an NFC card or NFC-enabled smartphone

Before you start, ensure that:

- The card is in NFC Data Exchange Format (NDEF), otherwise the card cannot be detected.
- The smartphone screen is facing upward.

To pair with an NFC card or smartphone:

1. Tap the card or smartphone closely above the NFC mark or label on your computer.
2. Slowly move the card or smartphone around the NFC mark or label until you are prompted that the device has been successfully detected.

Attention: During the data transfer, do not put your computer to sleep mode or lock the smartphone; otherwise, your data might get damaged.

Use a microSD card or a smart card

If your computer has a microSD card or a smart-card slot, read the following information.

Supported microSD card

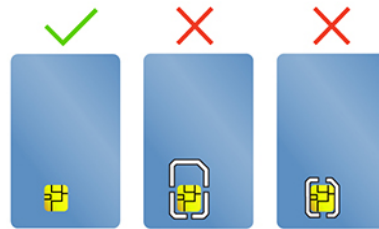
Note: Your computer does not support the content protection for recordable media (CPRM) feature for the microSD card.

- Secure Digital (SD) card
- Secure Digital eXtended-Capacity (SDXC) card
- Secure Digital High-Capacity (SDHC) card

Supported smart card

Supported smart card specifications: 85.60 mm (3.37 inches) x 53.98 mm (2.13 inches)

Attention: Smart cards with slits are not supported. Do not insert such a smart card into the smart-card reader of your computer. Otherwise the reader might get damaged.



Install the card

1. Locate the card slot. See “Left” on page 3.
2. Insert the card firmly into the card slot until it is secured in place.

Notes:

- For the microSD card, ensure that the metal contacts are facing down and pointing toward the card slot.
- For the smart card, ensure that the metal contacts are facing upward and pointing toward the card slot.

Remove the card

Attention: Before removing a card, eject the card from the Windows operating system first. Otherwise, data on the card might get corrupted or lost.

1. Click the triangular icon in the Windows notification area to show hidden icons. Then, right-click the **Safely Remove Hardware and Eject Media** icon.
2. Select the corresponding item to eject the card from the Windows operating system.
3. Press the card and remove it from your computer. Store the card safely for future use.

Airplane mode

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

To enable or disable the Airplane mode:

1. Open the Start menu.
2. Click **Settings → Network & Internet → Airplane mode**.
3. Turn on or turn off the **Airplane mode** switch.

Chapter 4. Accessories

This chapter provides instructions on how to use hardware accessories to expand your computer capabilities.

Purchase options

Lenovo has a number of hardware accessories and upgrades to help expand the capabilities 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>.

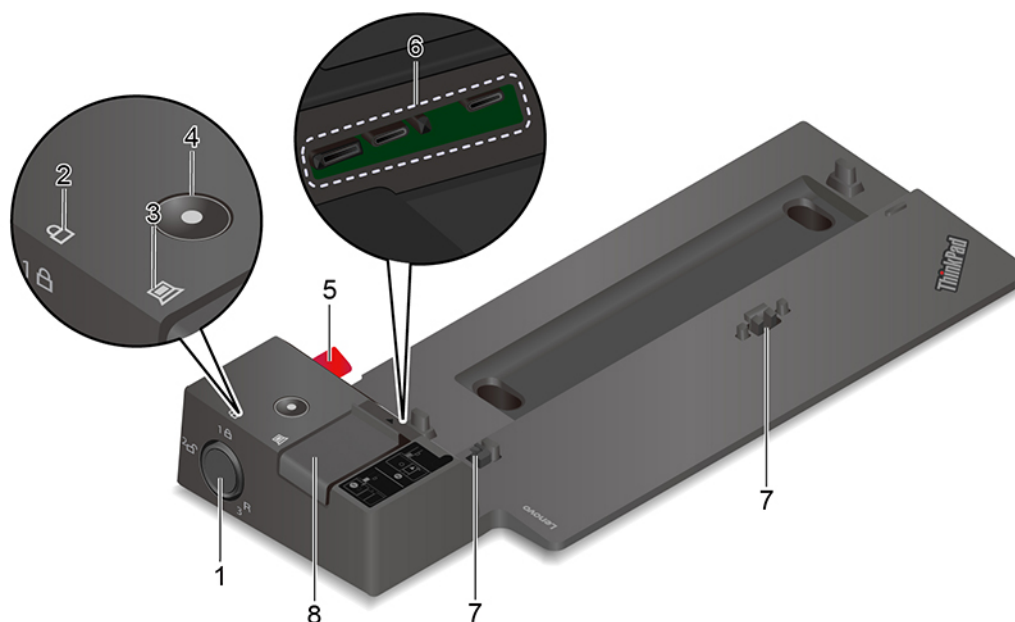
Docking station

You can use the following docking stations to extend the capacity of your computer:

- ThinkPad Basic Docking Station
- ThinkPad Pro Docking Station
- ThinkPad Ultra Docking Station

Front view

Note: The following illustration is based on ThinkPad Basic Docking Station. The ThinkPad Pro Docking Station and ThinkPad Ultra Docking Station might look slightly different.



Use the system lock in the following ways:

1. System lock

- Locked position **1A**: The latch is locked, and you cannot attach or detach your computer.
- Unlocked position **2**: The latch is unlocked, and you can attach or detach your computer.
- Removal position **3R**: You can remove the system lock from the system-lock slot.

Note: The ThinkPad Basic Docking Station does not ship with a system lock installed. You can contact Lenovo sales to purchase a system lock with the option part number 4XE0Q56388.

2. Key lock indicator	This indicator turns on when the system lock key is in the locked position.
3. Docking status indicator	This indicator turns on when your computer is successfully connected to the docking station.
4. Power button	Press the power button to turn on or turn off the computer attached to the docking station.
5. Guide post	Use the guide post to help you position your computer properly when you attach the computer to the docking station.
6. Docking-station connector	Connect the computer to the docking station.
7. Hooks	Hold and secure the computer to the docking station.
8. Latch	Slide the latch to attach or detach the computer.

Rear view

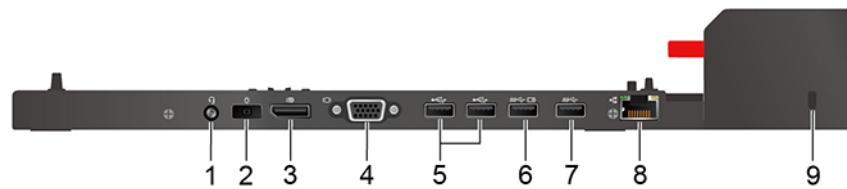


Figure 1. ThinkPad Basic Docking Station

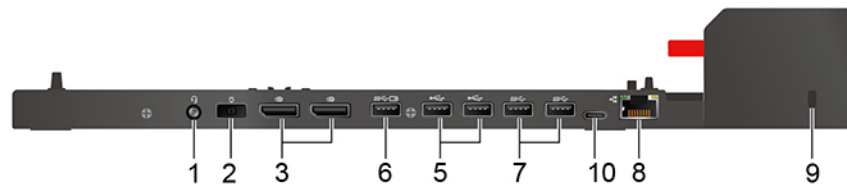


Figure 2. ThinkPad Pro Docking Station

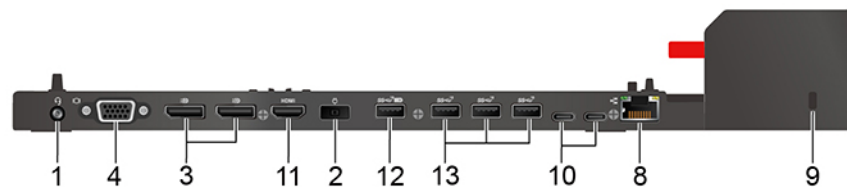


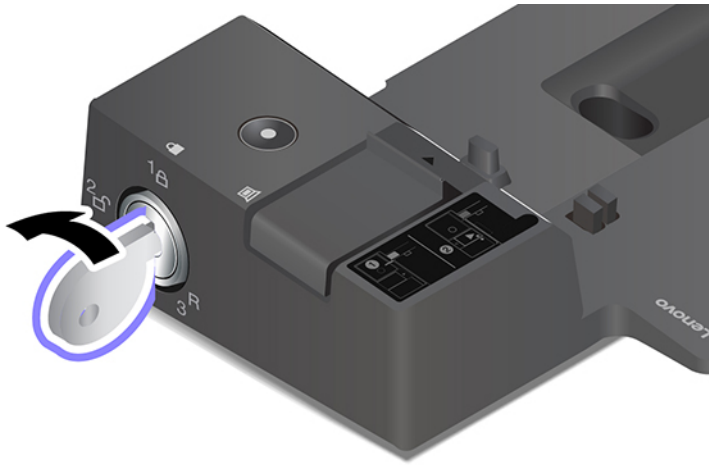
Figure 3. ThinkPad Ultra Docking Station

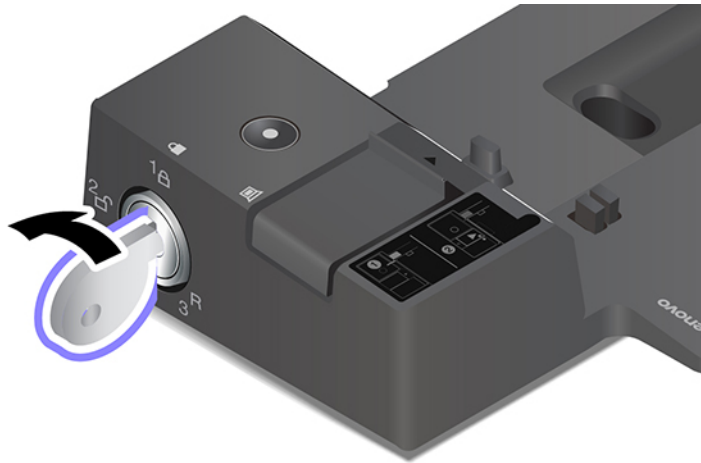
Connectors	ThinkPad Basic Docking Station	ThinkPad Pro Docking Station	ThinkPad Ultra Docking Station
1. Audio connector	√	√	√
2. ac power connector	√	√	√
3. DisplayPort® connector	√	√	√
4. VGA connector	√		√
5. USB 2.0 connector	√	√	
6. Always On USB 3.1 connector Gen 1	√	√	
7. USB 3.1 connector Gen 1	√	√	
8. Ethernet connector	√	√	√
9. Security-lock slot	√	√	√
10. USB-C connector		√	√
11. HDMI connector			√
12. Always On USB 3.1 connector Gen 2			√
13. USB 3.1 connector Gen 2			√

Attach a docking station

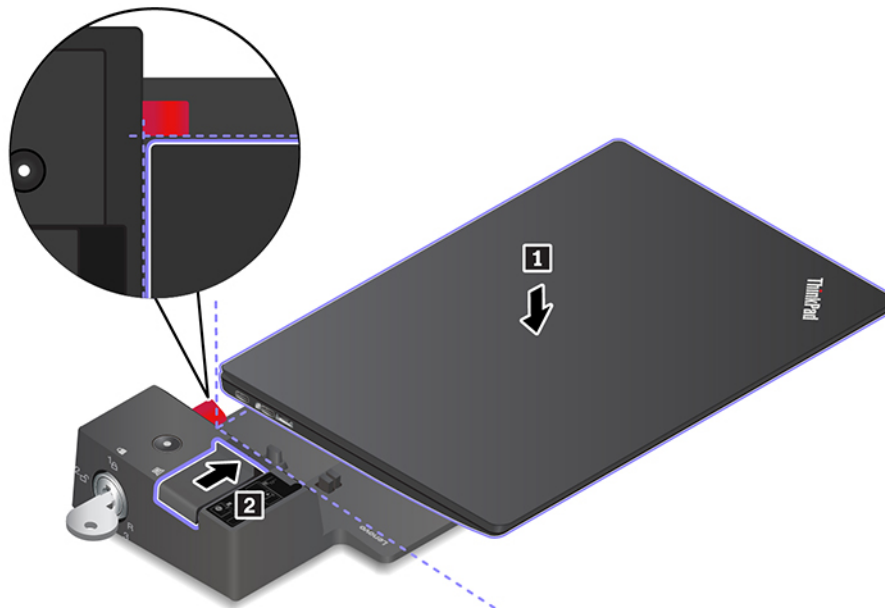
Notes:

- The ThinkPad Basic Docking Station does not ship with a system lock installed. If you do not purchase and install a system lock, skip step 4 and step 7 in the following instruction.
- If you do not connect the docking station to ac power, the computer attached runs on battery power.

1. Connect the docking station to ac power.
2. Disconnect the cables and devices from the left side of the computer.
3. Turn the system lock key to the unlocked position (2).



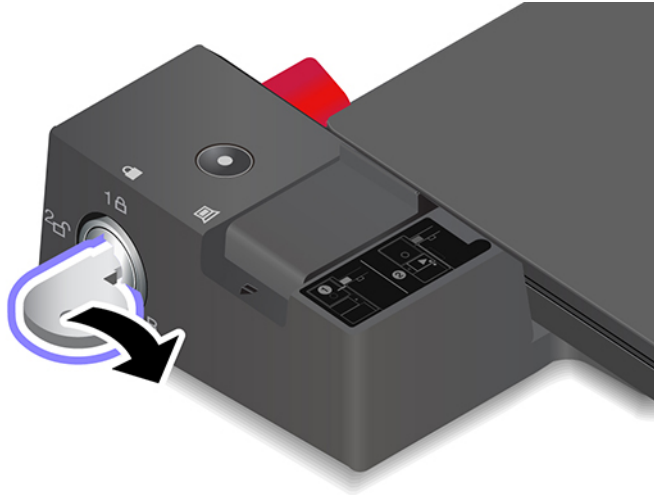
4. Align the top-left corner of the computer with the guide post of the docking station. Attach your computer to the docking station as shown **1** until you hear a click. Slide the latch in the direction as shown **2**.



5. Check the docking status indicator. The docking status indicator turns on when the computer is successfully docked.

Note: If the indicator is off, your computer is not attached to the docking station successfully. To solve the problem, detach and reattach the computer.

6. Turn the system lock key to the locked position (1 )

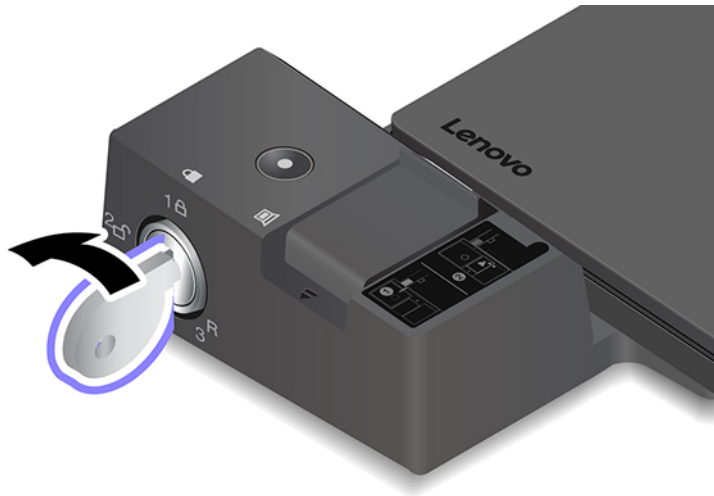


Attention: When the computer is attached to a docking station, always hold the whole assembly when you need to move your computer. Otherwise the docking station might drop down.

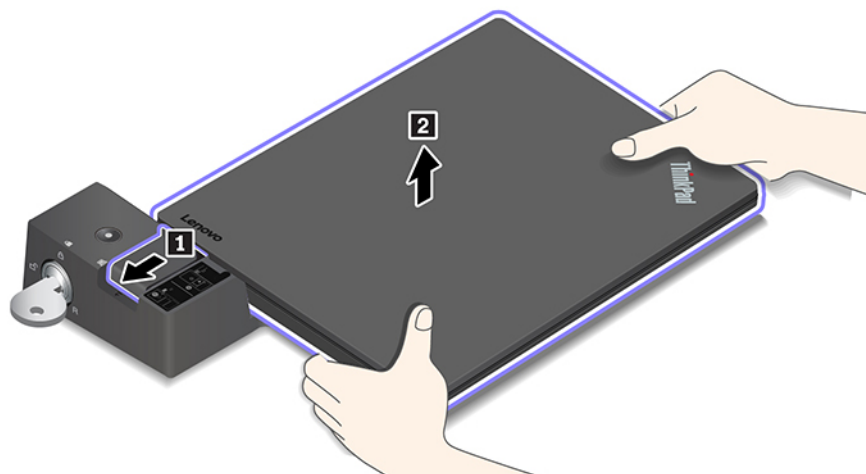
Detach a docking station

Note: The ThinkPad Basic Docking Station does not ship with a system lock installed. If you do not purchase and install a system lock, skip step 1 in the following instruction.

1. Turn the system lock key to the unlocked position (2 )



2. Slide the latch in the direction as shown **1** to release the computer, and then grasp both sides of the computer to remove it **2**.



Connect multiple external displays

You can connect multiple external displays to a supported docking station. To ensure that the multiple displays work correctly, observe the following guidelines and connect the external displays to the appropriate connectors.

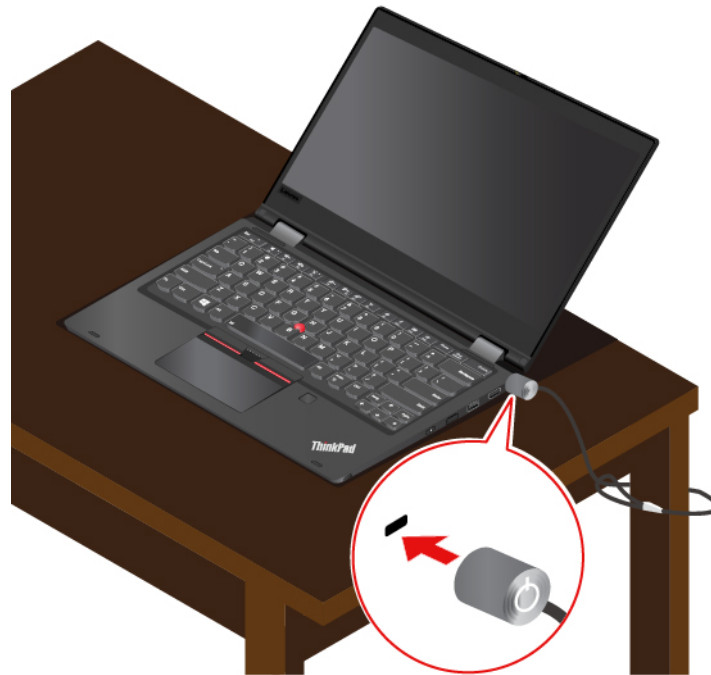
Docking station	Supported external displays	Video connectors
ThinkPad Basic Docking Station	Up to two	DisplayPort VGA
ThinkPad Pro Docking Station	Up to two	DisplayPort (x2)
ThinkPad Ultra Docking Station	Up to three	DisplayPort (x2) HDMI VGA

Chapter 5. Secure your computer and information

Lock the computer

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

Note: You are responsible for evaluating, selecting, and implementing the locking device and security feature. Lenovo makes no comments, judgments, or warranties about the function, quality, or performance of the locking device and security feature. Cable locks for your product are available from Lenovo at <https://www.lenovoquickpick.com>.



Use passwords

This section introduces types of passwords in UEFI (Unified Extensible Firmware Interface) BIOS (Basic Input/Output System) and how to set, change, and remove a password.

Password types

You can set a power-on password, supervisor password, or hard disk 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, the icon  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 when you are prompted by the icon . 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.

Hard disk passwords

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

To set the hard disk password, select one of the following types:

- **User hard disk password only**

When a user hard disk password is set without a master hard disk password, the user must enter the user hard disk password to access files and applications on the storage drive.

- **Master hard disk password + User hard disk password**

The master hard disk 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 hard disk password for each computer in the network. The user of the computer can change the user hard disk password as desired, but only the administrator can remove the user hard disk password.

When prompted to enter a hard disk password, press F1 to switch between the master hard disk password



and user hard disk password



Attention: Record your hard disk password and store it in a safe place. If you forget the hard disk password, Lenovo cannot reset your passwords or recover data from the storage drive. You must take your computer to a Lenovo reseller or a marketing representative to have the storage drive replaced. Proof of purchase is required, and a fee will be charged for parts and service.

Note: The hard disk 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 10 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 might want to record your password and store it in a safe place. Otherwise, if you forget the password, you have to take your computer to a Lenovo reseller or a marketing representative to have the password

canceled. However, if you forget the hard disk password, Lenovo cannot reset your passwords or recover data from the storage drive.

Use Power Loss Protection function (for selected models)

For models shipped with an NVMe (Non-Volatile Memory express) M.2 solid-state drive, the M.2 solid-state drive features the Lenovo-unique PLP (Power Loss Protection) function to avoid data loss or damage. On very rare occasions, your computer is not responding and you might have to shut down your computer by pressing and holding the power button for about seven seconds. In this case, the PLP function enables key data of your computer 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, do the following:

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** by using the arrow keys.
3. Locate the **Device Type** section to check the information.

Use the fingerprint reader

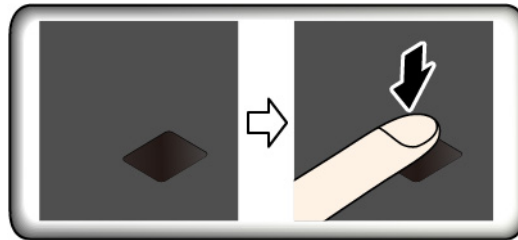
If your computer comes with a fingerprint reader, you can use it to enroll your fingerprints. After enrollment, you can tap your finger on the fingerprint reader to log in to Windows.

Enroll your fingerprints

Open the Start menu and then click **Settings → Accounts → Sign-in options**. Then, follow the on-screen instructions to finish the enrollment.

During the enrollment, the fingerprints are associated with the Windows password automatically. It is recommended that you enroll more than one fingerprint in case of any injuries to your fingers.

Log in with your fingerprint



If the fingerprint reader indicator blinks in amber, the authentication is not successful.

Associate your fingerprints with your power-on password and hard disk 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, hard disk password, or both as required. The connection is created.

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 hard disk password. To change the settings, go to the UEFI BIOS menu.

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.

- If you forget your power-on password, take your computer to a Lenovo-authorized servicer or a marketing representative to have the password canceled.
- If you forget your hard disk password, Lenovo cannot reset your password or recover data from the storage drive. Take your computer to a Lenovo-authorized servicer or a marketing representative to have the storage drive replaced. Proof of purchase is required, and a fee will be charged for parts and service.

Maintain the fingerprint reader

To ensure that the fingerprint reader works correctly, do not:

- Scratch the surface of the reader with anything hard.
- Use or touch the reader with a wet, dirty, wrinkled, or injured finger.

Use face authentication (for selected models)

If your computer comes with a Windows Hello-compatible infrared camera, you can unlock your computer by scanning your face instead of using a password.

Create face ID

1. Open the Start menu and click **Settings → Accounts → Sign-in options**.
2. Scroll down to the **Password** section and click **Add** to create a password.
3. Follow the on-screen instructions to create a Personal Identification Number (PIN).
4. Locate the **Windows Hello** section and click **Set up** under **Face Recognition**. Then, click **Get Started**.
5. Enter the PIN you have set earlier. The camera preview starts.
6. Follow the on-screen instructions to complete the setup.
7. Click **Improve Recognition** to improve the image so that **Windows Hello** can recognize you in different light conditions or when your appearance changes.

Log in with face authentication

1. On the Windows lock screen, select the smiling face icon 😊 from the sign-in options.
2. Follow the on-screen instructions and ensure that you are centered and looking directly at the camera. When the program recognizes your face, it automatically unlocks the screen and signs you in to the Windows operating system.

Use firewalls and antivirus programs

Your computer might be preinstalled with a firewall program. The firewall protects against computer Internet security threats, unauthorized access, intrusions, and Internet attacks. It also protects your privacy.

A full version of antivirus program is provided with a free 30-day subscription. After 30 days, you must renew the license to continue receiving the antivirus program updates.

For more information, see the help system of the program.

Chapter 6. Configure advanced settings

This chapter provides information about UEFI BIOS, RAID, recovery, operating system installation, and system management.

UEFI BIOS

This section introduces what is UEFI BIOS and the operations you can perform in UEFI BIOS.

What is UEFI BIOS

UEFI BIOS is the first program that the computer runs when the computer is turned on. UEFI BIOS initializes the hardware components and loads the operating system and other programs. Your computer comes with a setup program with which you can change UEFI BIOS settings.

Enter the UEFI BIOS menu

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

Note: If you have set the supervisor password, enter the correct password when prompted. You also can press Enter to skip the password prompt and enter the UEFI BIOS menu. However, you cannot change the system configurations that are protected by the supervisor password.

Navigate in the UEFI BIOS interface

Attention: The default configurations are already optimized for you in **boldface**. Improper change of the configurations might cause unexpected results.

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

F1	Display the General Help screen.
F9	Restore to the default settings.
F10	Save your configuration and exit.
F5	Change to a lower value.
F6	Change to a higher value.
↑ ↓	Locate an item.
← →	Select a tab.
Esc	Exit the submenu and return to the parent menu.
Enter	Enter the selected tab or submenu.

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: The **Boot** menu 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.

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.

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:

- From Lenovo Vantage:
 1. Open the Start menu and click **Lenovo Vantage**.
 2. Click **System Update**. In the **Lenovo System Update** section, click **Check For Updates**. The available update packages are displayed and categorized by critical, recommended, or optional.
 3. If the latest UEFI BIOS update package is available, select the package and click **Install selected**. Then, the update package will be downloaded and installed automatically.
- From the Lenovo Support Web site:

Go to <https://support.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.

Recovery information

This section introduces the recovery information of the Windows 10 operating system. Ensure that you read and follow the on-screen recovery instructions. The data on your computer might be deleted during the recovery process. To avoid data loss, make a backup copy of all the data that you want to keep.

Restore system files and settings to an earlier point

1. Go to Control Panel and view by Large icons or Small icons.
2. Click **Recovery** → **Open System Restore**. Then, follow the on-screen instructions.

Restore your files from a backup

Note: If you use the File History tool to restore your files from a backup, ensure that you backed up your data earlier with the tool.

1. Go to Control Panel and view by Large icons or Small icons.
2. Click **File History** → **Restore personal files**. Then, follow the on-screen instructions.

Reset your computer

In the resetting process, you can choose to keep your files or remove them when you reinstall the operating system.

Note: The items in the graphical user interface (GUI) might change without notice.

1. Open the Start menu, and then click **Settings → Update & Security → Recovery**.
2. In the **Reset this PC** section, click **Get started**.
3. Follow the on-screen instructions to reset your computer.

Use advanced options

Note: The items in the graphical user interface (GUI) might change without notice.

1. Open the Start menu, and then click **Settings → Update & security → Recovery**.
2. In the **Advanced startup** section, click **Restart now → Troubleshoot → Advanced options**.
3. Select a preferred option from the following list, and then follow the on-screen instructions.
 - Restore the Windows operating system from a restore point recorded on your computer
 - Restore the Windows operating system from a specific system image
 - Fix problems that prevent the Windows operating system from loading
 - Use the Command Prompt for advanced troubleshooting
 - Change the UEFI firmware settings on your computer
 - Change the startup settings of the Windows operating system
 - Go back to the previous build

Windows automatic recovery

Note: Ensure that your computer is connected to ac power during the recovery process.

The Windows recovery environment on your computer operates independently from the Windows 10 operating system. It enables you to recover or repair the operating system even if the Windows 10 operating system fails to start.

After two consecutive failed boot attempts, the Windows recovery environment starts automatically. Then you can choose repair and recovery options by following the on-screen instructions.

Create and use a recovery USB device

It is recommended that you create a recovery USB drive as early as possible as a backup for the Windows recovery programs. With the recovery USB drive, you can troubleshoot and fix the problems even if the preinstalled Windows recovery programs are damaged. If you did not create a recovery USB drive as a precautionary measure, you can contact Lenovo Customer Support Center and purchase one from Lenovo. For a list of the Lenovo Support phone numbers for your country or region, go to:

<https://pcsupport.lenovo.com/supportphonenumberlist>

Create a recovery USB drive

Attention: The creation process deletes anything stored on the USB drive. To avoid data loss, make a backup copy of all the data that you want to keep.

1. Ensure that your computer is connected to ac power.
2. Prepare a USB drive with at least 16 GB of storage capacity. The actual USB capacity required depends on the size of the recovery image.
3. Connect the prepared USB drive to the computer.
4. Type **recovery** in the search box. Then, click **Create a recovery drive**.

5. Click **Yes** in the User Account Control window to allow the Recovery Media Creator program to start.
6. In the Recovery Drive window, follow the on-screen instructions to create a recovery USB drive.

Use the recovery USB drive

1. Ensure that your computer is connected to ac power.
2. Connect the recovery USB drive to the computer.
3. Turn on or restart the computer. When the logo screen is displayed, press F12. The Boot Menu window opens.
4. Select the recovery USB drive as the boot device.
5. Click **Troubleshoot** to display optional recovery solutions.
6. Select a recovery solution as desired. Then, follow the on-screen instructions to complete the process.

Install Windows 10 and drivers

This section provides instructions on installing a Windows 10 operating system and device drivers.

Install a Windows 10 operating system

Microsoft constantly makes updates to the Windows 10 operating system. Before installing a particular Windows 10 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. For computer models that support the Intel Optane memory, enter the UEFI BIOS menu and select **Config** → **Storage** → **Controller mode**. Ensure that **RST mode** is selected.
 4. Connect the drive that contains the operating system installation program to the computer.
 5. Restart the computer. When the logo screen is displayed, press F1 to enter the UEFI BIOS menu.
 6. Select **Startup** → **Boot** to display the **Boot Priority Order** submenu.
 7. 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.
 8. Select **Restart** and ensure that **OS Optimized Defaults** is enabled. Then, press F10 to save the settings and exit.

9. Follow the on-screen instructions to install the device drivers and necessary programs.
10. After installing the device drivers, apply Windows Update to get the latest updates, for example the security patches.
11. Go to Microsoft Store to download and install the latest version of Lenovo Vantage.

Note: After installing the operating system, do not change the initial **UEFI/Legacy Boot** setting in the UEFI BIOS menu. Otherwise, the operating system will not start correctly.

For computer models that support Intel Optane memory, continue to enable the Intel Optane memory by doing the following:

1. Go to <https://support.lenovo.com>. Download and install the Intel Rapid Storage Technology (IRST) Console with Device Driver on your computer.
2. Run the iRST Console with Device Driver.
3. Click **Intel Optane Memory** and then follow the instructions on the screen to enable it.

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:

- From Lenovo Vantage:
 1. Open the Start menu and click **Lenovo Vantage**.
 2. Click **System Update**. In the **Lenovo System Update** section, click **Check For Updates**. The available update packages are displayed and categorized by critical, recommended, or optional.
 3. Select the update packages you want and click **Install selected**. Then, the update packages will be downloaded and installed automatically.
- From the Lenovo Support Web site:

Go to <https://support.lenovo.com> and select the entry for your computer. Then, follow the on-screen instructions to download and install necessary drivers and software.

Chapter 7. CRU replacement

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
- Power cord
- Nano-SIM card tray*
- ThinkPad Pen Pro
- TrackPoint pointing-stick nonslip cap

Optional-service CRUs

- Base cover assembly
- M.2 solid-state drive
- M.2 solid-state drive bracket*
- Wireless WAN card*
- Wireless LAN card

Note: The wireless LAN card in your computer is preinstalled by Lenovo, and you are prohibited from replacing it with another wireless module or removing it. If the device requires replacement due to some problem during warranty, it must be serviced by a Lenovo authorized service personnel.

* for selected models

Disable Fast Startup and the built-in battery

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

To disable Fast Startup:

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. Click **Change settings that are currently unavailable** at the top.
4. If prompted by User Account Control (UAC), click **Yes**.
5. Clear the **Turn on fast startup** check box, and then click **Save changes**.

To disable the built-in battery:

1. Restart your computer. When the logo screen is displayed, immediately press F1 to enter the UEFI BIOS menu.
2. Select **Config → Power**. The **Power** submenu is displayed.
3. Select **Disable Built-in Battery** and press Enter.
4. Select **Yes** in the Setup Confirmation window. The built-in battery is disabled and the computer turns off automatically. Wait three to five minutes to let the computer cool.

Replace a CRU

Follow the replacement procedure to replace a CRU.

Base cover assembly

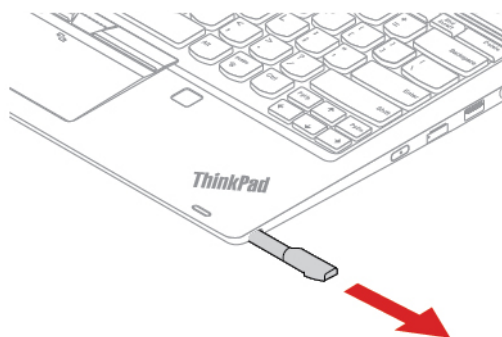
Prerequisite

Before you start, read Appendix A “Important safety information” on page 65 and print the following instructions.

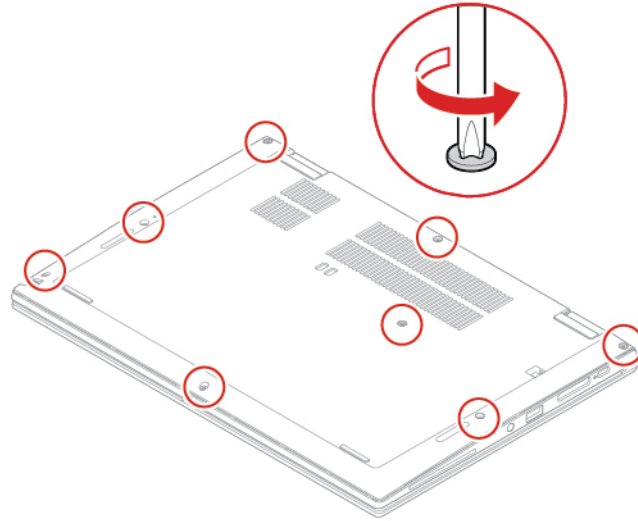
Note: Do not remove the base cover assembly when your computer is connected to ac power. Otherwise, there might be a risk of short circuits.

Replacement procedure

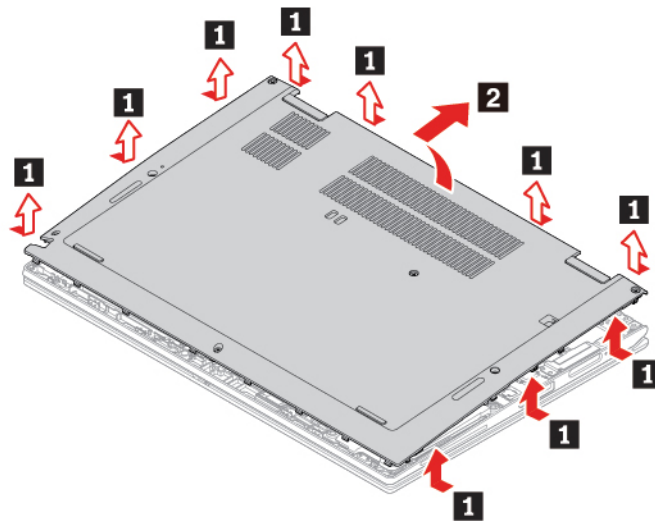
1. Disable the built-in battery. See “Disable Fast Startup and the built-in battery” on page 49.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Remove the pen from the pen slot.



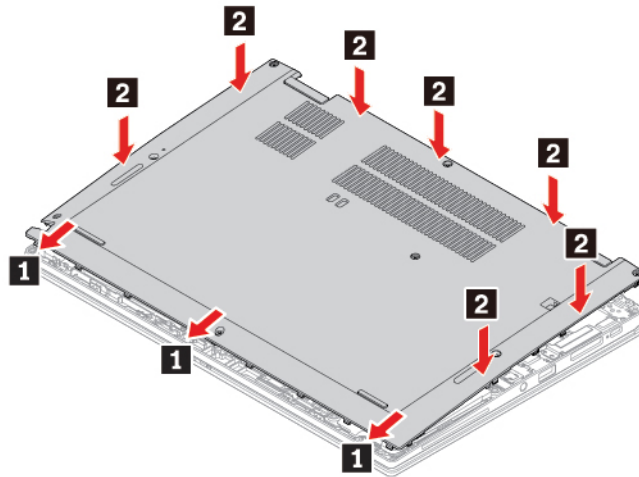
4. Loosen the screws that secure the base cover assembly.



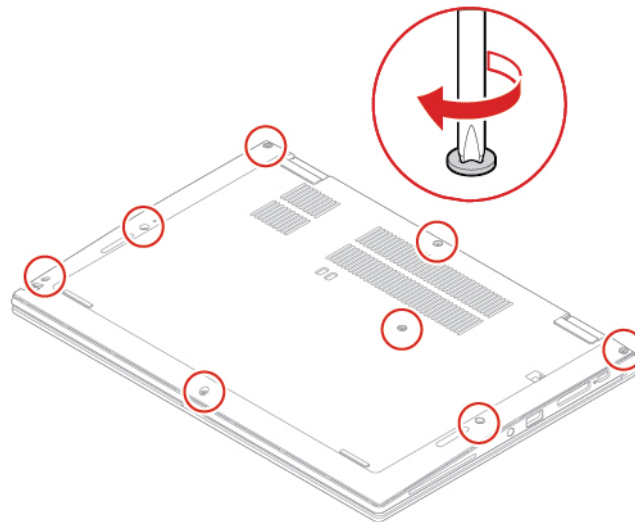
5. Pry up the latches and remove the base cover assembly.



6. Install the new base cover assembly in place. Ensure that the latches of the base cover assembly are secured under the base cover assembly.



7. Tighten the screws to secure the base cover assembly.



8. Turn the computer over. Connect the ac power adapter and all disconnected cables to the computer.
9. Install the pen back into the pen slot.

Troubleshooting

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.

WWAN card (for selected models)

The following information is only for the computer with user-installable modules.

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.