

ThinkPad X1

X1 Yoga Gen 5 and X1 Carbon Gen 8 User Guide



Lenovo

Read this first

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

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

Second Edition (June 2021)

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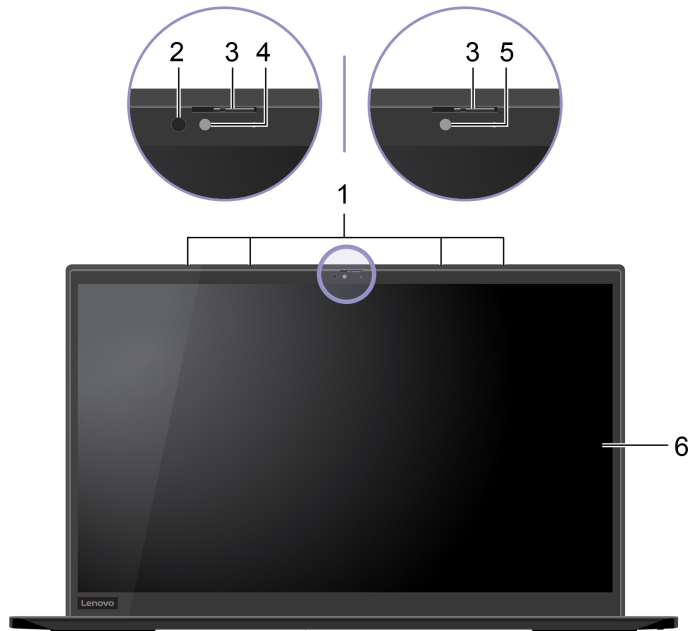
About this documentation

- 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 and programs, 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*.

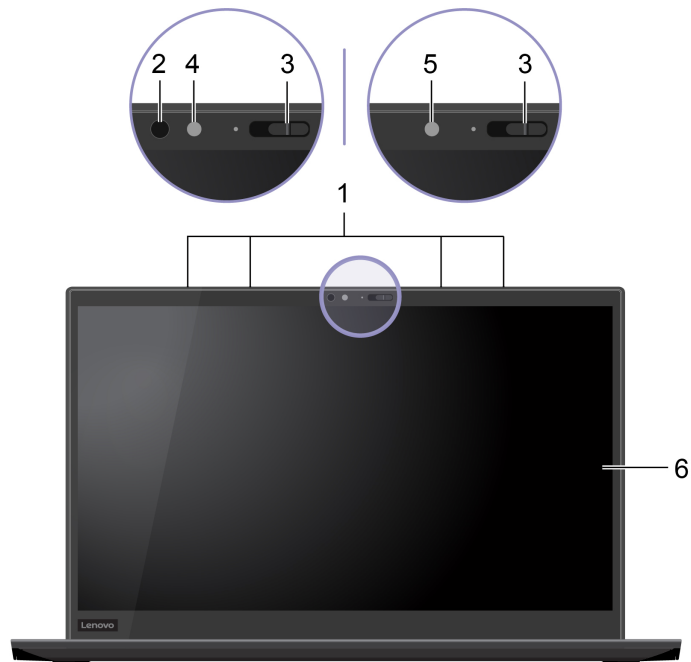
Chapter 1. Meet your computer

Front

X1 Yoga Gen 5



X1 Carbon Gen 8

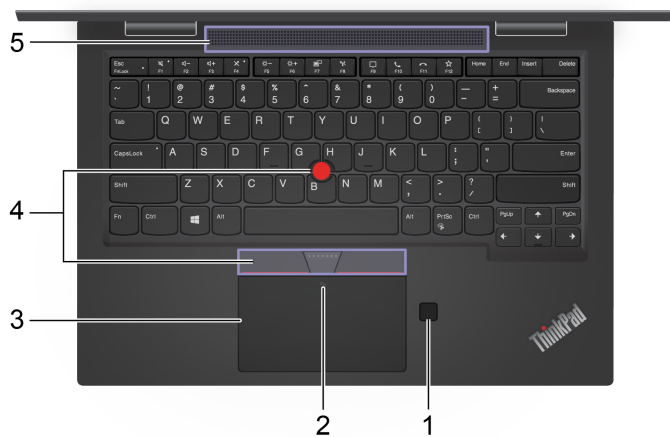


1. Microphones	Capture or record sound.
2. Infrared LED*	Emit infrared (IR) light. Note: Do not block the IR light-emitting diode (LED). Otherwise, the IR function might not work.
3. ThinkShutter	Slide ThinkShutter to cover or uncover the camera lens. It is designed to protect your privacy.
4. Camera with IR function*	• Take pictures or record videos by using the Cheese application. The indicator next to the camera is on when the camera is in use. • IR camera support is currently limited in Linux. Make sure the regular camera is selected if you see gray lines. • 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.
5. Camera*	• Take pictures or record videos by using the Cheese application. 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 18.

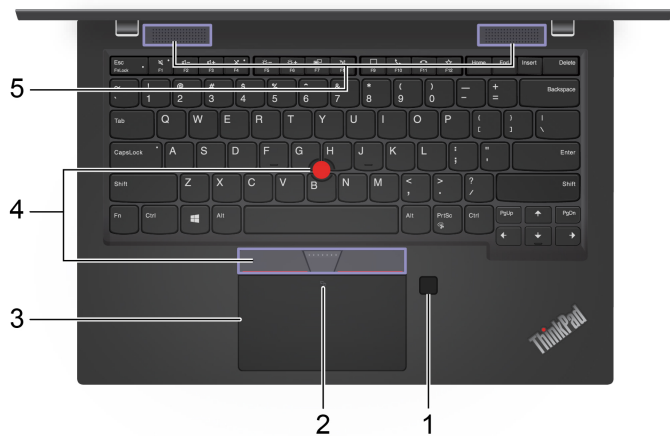
* for selected models

Base

X1 Yoga Gen 5



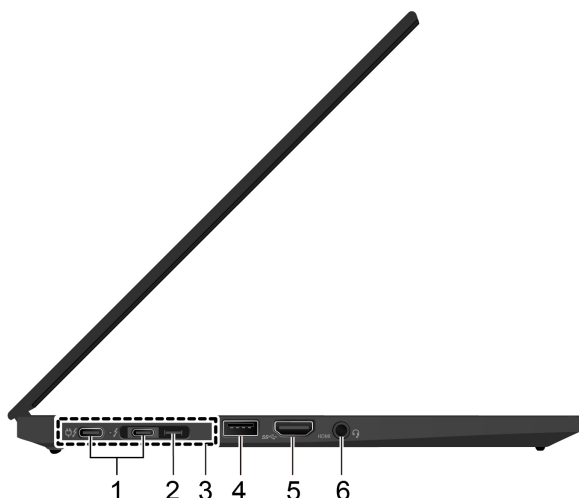
X1 Carbon Gen 8



1. Fingerprint reader	Log in to your computer with enrolled fingerprints. See “Use the fingerprint reader” on page 38.
2. NFC mark*	Your computer supports NFC (near field communication). You can share information with another NFC-enabled device. Note: This functionality is not supported in Linux.
3. Trackpad	Perform finger touch and all the functions of a traditional mouse. See “Use the trackpad” on page 17.
4. TrackPoint® pointing device	Perform all the functions of a traditional mouse. See “Use the TrackPoint pointing device” on page 16.
5. Speakers	Enable you to experience high-quality sound.

* for selected models

Left



1. Thunderbolt™ 3 connectors (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:
 - Thunderbolt 3 speed, up to 40 Gbps (when the device connected is Thunderbolt 3 compatible)
 - USB 3.2 Gen 2 speed, up to 10 Gbps (when the device connected is not Thunderbolt 3 compatible)
- 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 Charge the computer.

Notes:

- When the battery power is below 10%, the connected USB-C accessories might not work correctly.
- If your computer supports wireless wide area network (WAN) and Global Positioning System (GPS) functions, the USB device or Thunderbolt 3 device connected to the Thunderbolt 3 connectors might influence these functions. If your computer cannot establish wireless WAN communications, or if your location cannot be pinpointed through the GPS function of your computer, detach the device from the Thunderbolt 3 connectors.

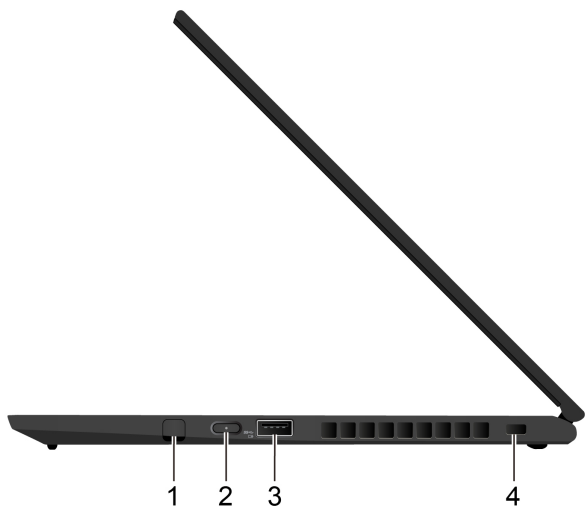
2. Ethernet extension connector Gen 2

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>.

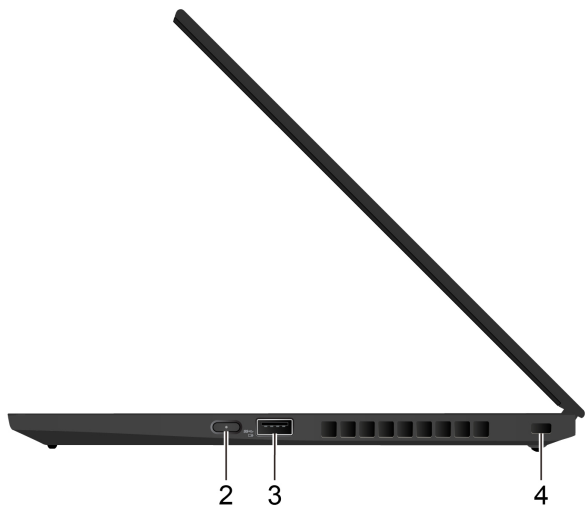
3. Docking-station connector	Connect the computer to one of the following supported docks to extend the computer capabilities: • ThinkPad Basic Docking Station • ThinkPad Pro Docking Station • ThinkPad Ultra Docking Station
4. USB 3.2 connector Gen 1	Connect a USB-compatible device, such as a USB keyboard, USB mouse, USB storage device, or USB printer. Note: If your computer supports wireless wide area network (WAN) and Global Positioning System (GPS) functions, the USB device connected to the USB 3.2 connector Gen 1 might influence these functions. If your computer cannot establish wireless WAN communications, or if your location cannot be pinpointed through the GPS function of your computer, detach the device from the USB 3.2 connector Gen 1.
5. HDMI™ connector	Connect to a compatible digital audio device or video monitor, such as an HDTV.
6. Audio connector	• Connect headphones with a 3.5-mm (0.14-inch) and 4-pole plug to listen to the sound from the computer. • Connect a headset with a 3.5-mm (0.14-inch) and 4-pole plug to listen to the sound from the computer or talk with others. Note: This connector does not support standalone external microphones.

Right

X1 Yoga Gen 5



X1 Carbon Gen 8



1. ThinkPad Pen Pro	See “Use ThinkPad Pen Pro (for X1 Yoga Gen 5 only)” on page 23.
2. Power button	Press to turn on the computer or put the computer to sleep mode. To turn off the computer, select the system menu drop down in the top right, click Power / Log Out, and then select Power off. 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. Always On USB 3.2 connector Gen 1

With the Always On USB feature enabled, the Always On USB 3.2 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:

1. Enter the UEFI BIOS menu. See “Enter the UEFI BIOS menu” on page 39.
2. Click **Config → USB → Always On USB** to enable the Always On USB feature.

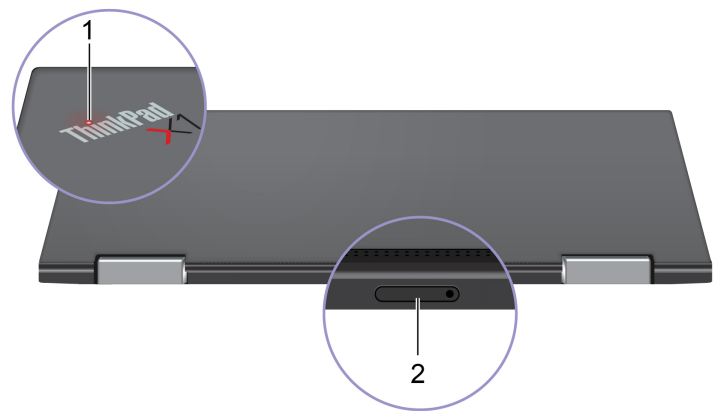
Note: If your computer supports wireless wide area network (WAN) and Global Positioning System (GPS) functions, the USB device connected to the Always On USB 3.2 connector Gen 1 might influence these functions. If your computer cannot establish wireless WAN communications, or if your location cannot be pinpointed through the GPS function of your computer, detach the device from the Always On USB 3.2 connector Gen 1.

4. Mini security-lock slot

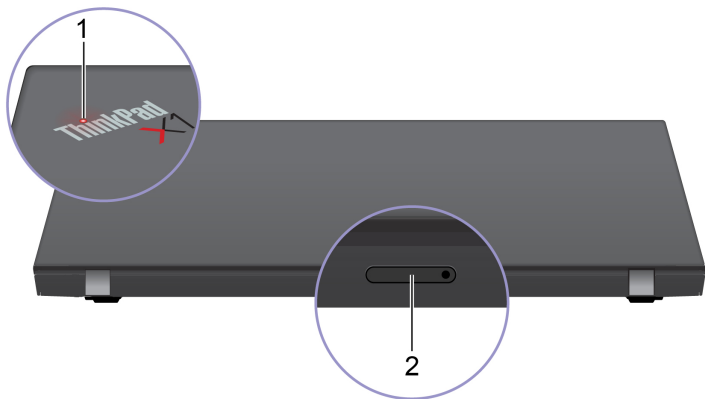
Lock your computer to a desk, table, or other fixtures through a compatible security cable lock. See “Lock the computer” on page 35 .

Rear

X1 Yoga Gen 5



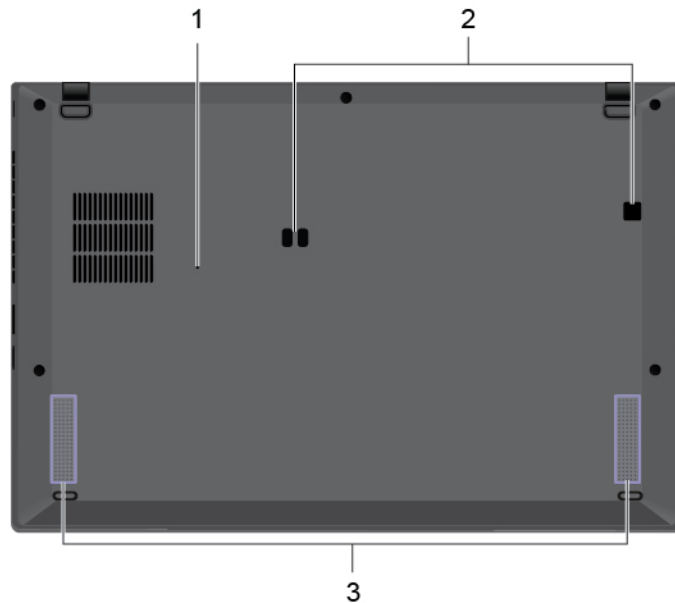
X1 Carbon Gen 8



1. System status indicator	The indicator in the ThinkPad logo on the computer lid 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.
2. Nano-SIM-card tray*	Use the Nano Subscriber Identity Module (SIM) card to connect to a wireless-WAN network.

* for selected models

Bottom



	If the computer stops responding and you cannot turn it off by pressing the power button, reset your computer:
1. Emergency-reset hole	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.
2. Docking-station hook holes	Use the docking-station hook holes to secure a supported docking station.
3. Speakers	Enable you to experience high-quality sound.

Features and specifications

Dimensions	• X1 Yoga Gen 5: – Width: 322.9 mm (12.7 inches) – Depth: 218.1 mm (8.6 inches) – Thickness: 15.5 mm (0.61 inches) • X1 Carbon Gen 8: – Width: 323.5 mm (12.7 inches) – Depth: 217.1 mm (8.5 inches) – Thickness: 14.9 mm (0.59 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, enter settings and click About .
Memory	Low power double data rate 3 (LPDDR3) onboard memory module, up to 16 GB
Storage device	• M.2 solid-state drive* • Hybrid solid-state drive* (with Intel® Optane™ memory)
Display	• Brightness control • Color display with In-Plane Switching (IPS) technology • Display size: 355.6 mm (14 inches) • Display resolution: 1920 x 1080 pixels, 2560 x 1440 pixels, or 3840 x 2160 pixels • Intel UHD Graphics • Multi-touch technology* • PrivacyGuard feature*
Keyboard	• Function keys • Six-row keyboard with backlight • Trackpad • TrackPoint pointing device
Connectors and slots	• Audio connector • Ethernet extension connector Gen 2 • HDMI connector • Nano-SIM-card tray* • Two USB 3.2 connectors Gen 1 (including one Always On USB 3.2 connector Gen 1) • Two Thunderbolt 3 connectors (USB-C)

Security features	• Fingerprint reader • Mini security-lock slot • Password • Trusted Platform Module (TPM)
Wireless features	• Bluetooth • Global Positioning System (GPS) satellite receiver (available on models with wireless WAN)* • Near field communication (NFC)* • Proximity sensor* • Wireless LAN • Wireless WAN*
Others	• Camera* • Microphones

* for selected models

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.

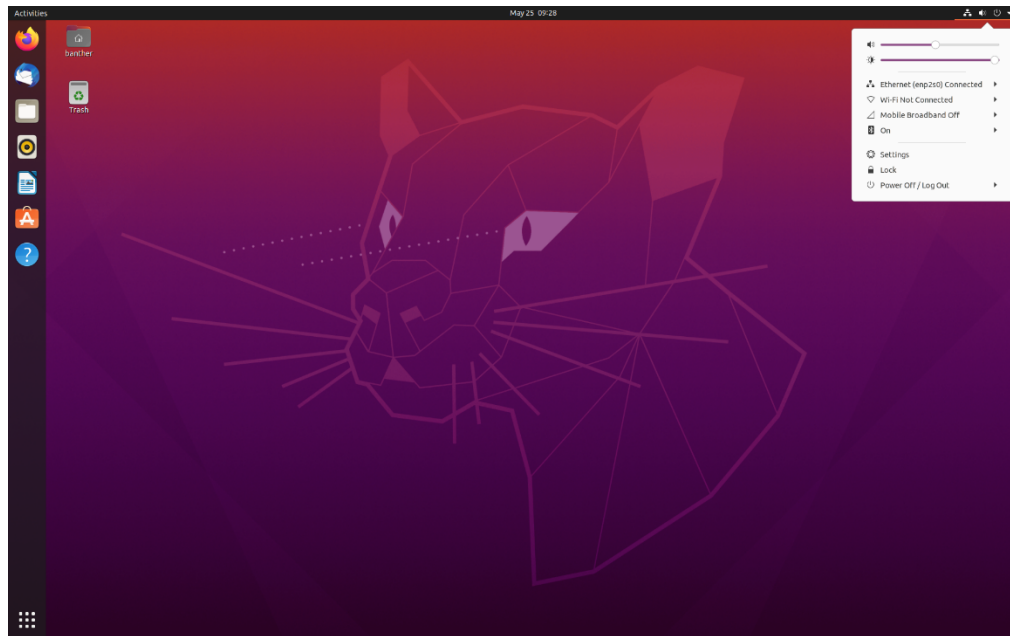
USB device	Data rate (Gbit/s)
3.2 Gen 1 / 3.1 Gen 1	5
3.2 Gen 2 / 3.1 Gen 2	10
3.2 Gen 2 × 2	20
Thunderbolt 3	40
Thunderbolt 4	40

Chapter 2. Get started with your computer

Get started with Ubuntu desktop

Learn the basics of Ubuntu and start working with it right away. For more information about Ubuntu, see the Ubuntu documentation site at <https://help.ubuntu.com/its/ubuntu-help/index.html>.

The Gnome desktop is installed by default and is designed to be simple and easy to use. Details on using Gnome are available by launching the Help application or online at <https://help.gnome.org/users/>.



Launch an app

- Use the super key (with the Windows logo) or open the Activities menu on the top left and type in the name of the application you want to launch.
- Click the “show application” menu on the lower left and type in the name of the application you want to launch.

Launch settings

Select the system menu arrow on the top right and click on **Settings**.

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 mini Ethernet connector on your computer with an Ethernet cable.

To attach an Ethernet cable to your computer, you need an Ethernet extension adapter. 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

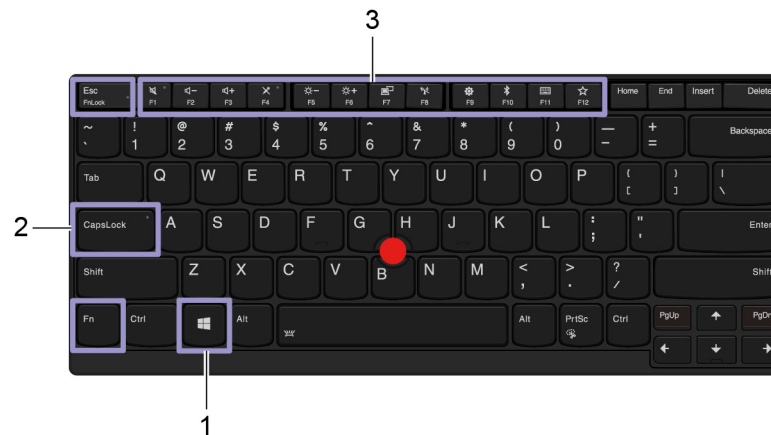
1. Click the system menu arrow on the top right. A list of available wireless networks is displayed.
2. Select a network available for connection. Provide required information, if needed.

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. Super key	Open overview mode. For information about using this key with other keys, see the Gnome 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. Note: Not all function keys are supported in Linux.
 + 	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.
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.
Fn+D	Toggle e-privacy mode on supported platforms
Fn+L	Quiet mode: low power usage, temperature and fan speed
Fn+M	Balance mode: default power usage. This mode is active on reboot
Fn+H	Performance mode (Not available on lap): higher power usage and temperatures.

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

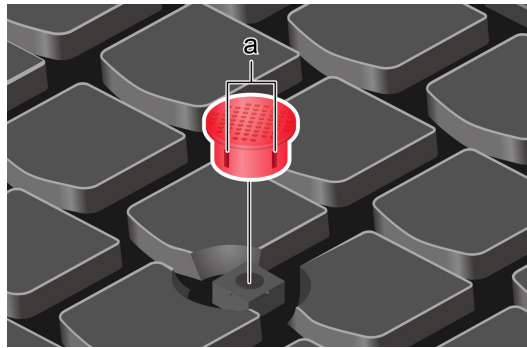
Press to display a shortcut menu.

4. Middle button

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

Replace the pointing-stick nonslip cap

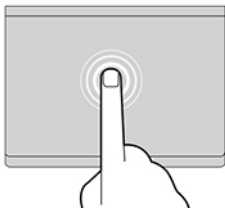
Note: Ensure that the new cap has grooves **a**.



Use the trackpad

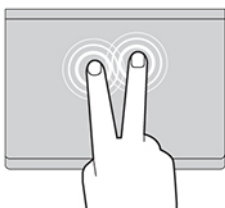
The entire trackpad surface is sensitive to finger touch and movement. You can use the trackpad to perform all the pointing, clicking, and scrolling functions of a traditional mouse.

Use the touch gestures



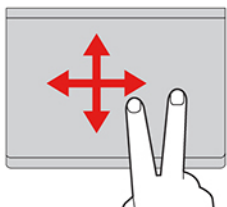
Tap

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



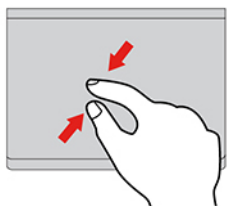
Two-finger tap

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



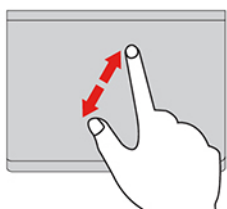
Two-finger scroll

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.

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.

Use the multi-touch screen

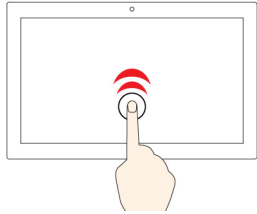
If your computer display supports the multi-touch function, you can navigate the screen with simple touch gestures.

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



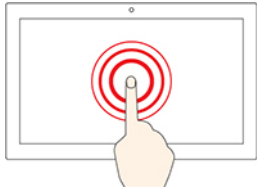
Tap once

- 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.



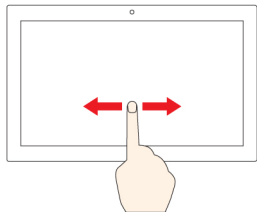
Tap twice quickly

Open an app or item from the desktop.



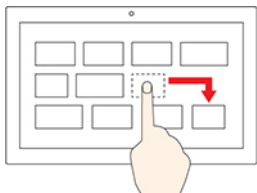
Tap and hold

Open a shortcut menu.



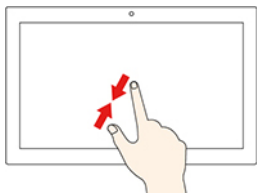
Slide

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



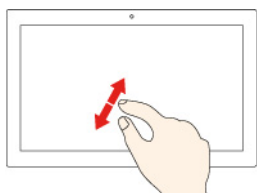
Drag an item to the location you want

Move an object.



Move two fingers closer together

Zoom out.



Move two fingers farther apart

Zoom in.

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 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.

Use privacy protection (for selected models)

Depending on the model, your computer might support the PrivacyGuard which keeps you secure without compromising your viewing experience.



<https://support.lenovo.com/solutions/featurevideo>

Use the PrivacyGuard feature

When the feature is enabled, it darkens screen and reduces visibility from side angles to protect screen content against visual hacking. By default, the PrivacyGuard feature is disabled. You can press Fn+D to enable it.

The privacy level of this feature varies depending on the screen brightness level, the contrast ratio, and the physical environment where you are using this feature.

- Press  to increase the privacy level.
- Press  to decrease the privacy level.

Use the Intelligent Cooling feature

The Intelligent Cooling feature helps you adjust fan speed, computer temperature and performance.

Manual mode

- Quiet mode: the least fan noise
- Balanced mode: balanced performance and noise
- Performance mode: the highest performance and normal noise

Your computer starts up in balanced mode by default. Do the following to switch to the preferred mode:

- Press Fn+L to switch to quiet mode.
- Press Fn+M to switch to balanced mode.
- Press Fn+H to switch to performance mode.

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 audio 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 the system menu drop down box on the top right and select settings.
2. Click **Sound**.
3. Change the settings as you prefer.

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 or either of the Thunderbolt 3 connectors (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**.

Supported resolution

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

Connect the external display to	Supported resolution
the Thunderbolt 3 connector (USB-C)	Up to 5120 x 2880 pixels / 60 Hz
the HDMI connector	Up to 4096 x 2160 pixels / 24 Hz

Set the display mode

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

- **Built-in Only:** Displays the video output only on your computer screen.
- **Mirror:** Displays the same video output on both your computer screen and an external display.
- **Join Displays:** Extends the video output from your computer display to an external display. You can drag and move items between the two displays.
- **External Only:** Displays the video output only on an external display.

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 (for X1 Yoga Gen 5 only)

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 (for X1 Yoga Gen 5 only)

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

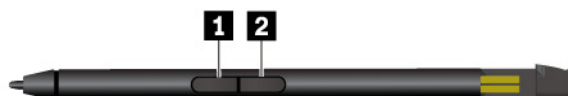


<https://support.lenovo.com/solutions/featurevideo>

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 (default function)

2 Click button (default function)

Note: The default function of buttons might vary depending on the app you use.

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

Check the battery status

The battery status icon  or  is in the system menu notification area. You can click the icon to check the battery status, view the current power plan, change the power mode, and access battery settings quickly.

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

The USB-C connector on the computer features the Lenovo-unique P-to-P 2.0 charging function. When no ac power is available, this feature enables one computer to supply power to another computer through a USB-C to USB-C cable. When ac power is available for only one computer, this feature enables both computers to get charged by ac power.

Before using the function, ensure that:

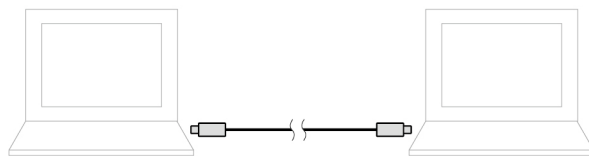
- The selected connectors support the P-to-P 2.0 charging function and power delivery function.
- **Always On USB** and **Charge in Battery Mode** are enabled in UEFI BIOS of both computers, so that the function works even when the computers are off or in hibernation mode. To enable **Always On USB** and **Charge in Battery Mode**:
 1. Enter the UEFI BIOS menu. See “Enter the UEFI BIOS menu” on page 39.
 2. Click **Config** → **USB** to enable **Always On USB** and **Charge in Battery Mode**.

To use the function:

- **When no ac power is available:**

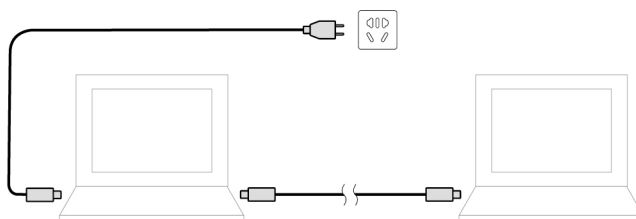
The remaining battery power of computer A should be at least 30% and be 3% higher than that of computer B. To check the battery status, see “Check the battery status” on page 25. Connect the computers to each other with a USB-C to USB-C cable. In this situation, computer A works as the power

supply. Once the remaining battery power of computer A is lower than 30%, computer A stops supplying power to computer B.



- **When ac power is available:**

Connect the computers to each other with a USB-C to USB-C cable. Connect one computer to ac power. In this situation, ac power works as the power supply and both computers get charged.



Note: The actual charging speed using the Lenovo-unique P-to-P 2.0 charging function varies depending 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.

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. Click on the battery symbol in the system menu drop down box and select **Power Settings**.
2. Under **Suspend & Power Button** use the **Power Button Action** 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 5 minutes• Put the computer to sleep: After 1 hour |
|---|

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

1. Click on the battery symbol in the system menu drop down box and select **Power Settings**.
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.

Connect to a Bluetooth-enabled device

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

1. Turn on Bluetooth on the computer.
 - Click the system menu drop down (top right) and choose **Settings**.
 - Choose the Bluetooth menu and enable Bluetooth with the toggle button at the top.
2. Any discoverable devices will be shown in the **Devices** list.
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.

Airplane mode

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

To enable or disable the Airplane mode:

1. Use the system menu drop down (top right) and choose **Settings**.
2. Click the Wi-Fi option.
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>.

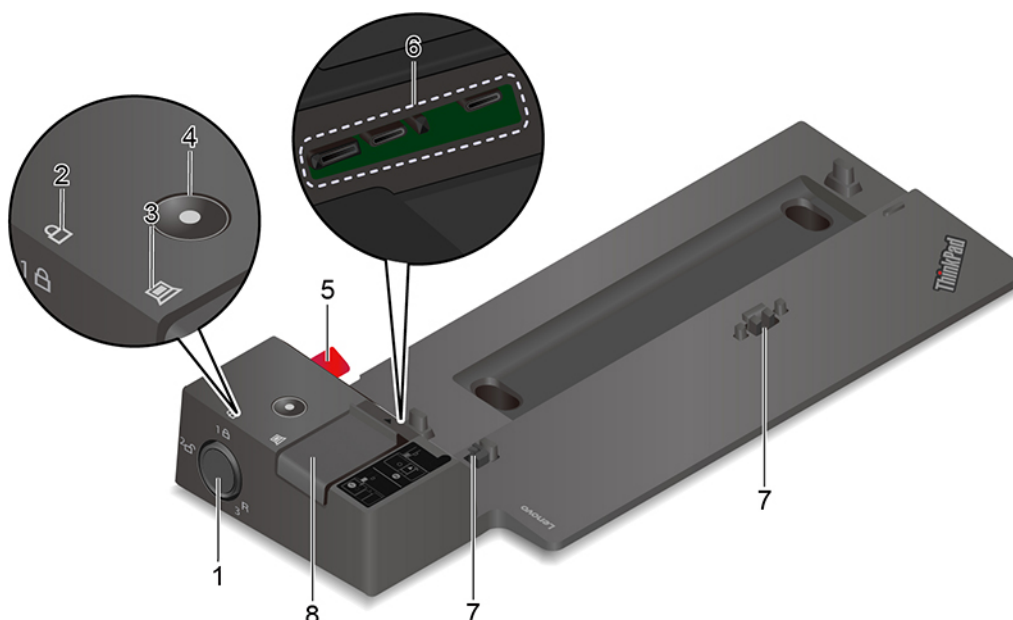
Docking station

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

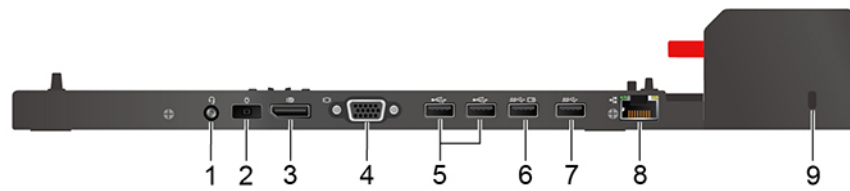


Figure 1. ThinkPad Basic Docking Station

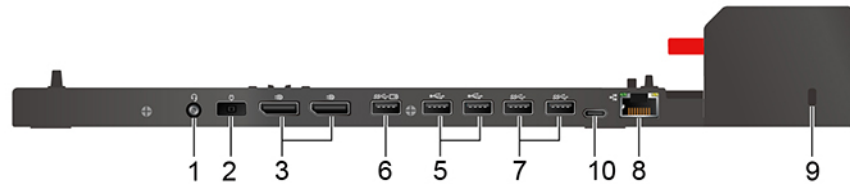


Figure 2. ThinkPad Pro Docking Station

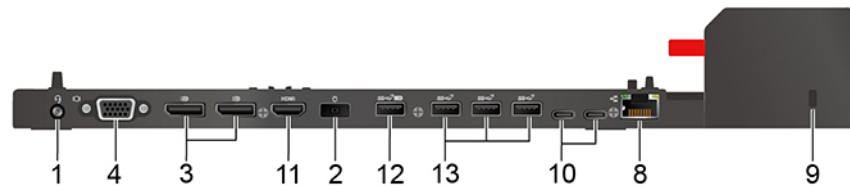


Figure 3. ThinkPad Ultra Docking Station

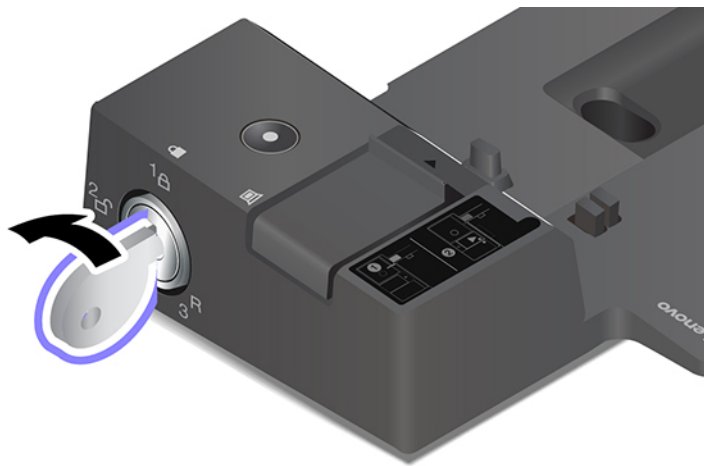
Connectors	ThinkPad Basic Docking Station	ThinkPad Pro Docking Station	ThinkPad Ultra Docking Station
1. Audio connector	√	√	√
2. ac power connector	√	√	√
3. DisplayPort® connector	√	√	√
4. VGA connector	√		√
5. USB 2.0 connector	√	√	
6. Always On USB 3.2 connector Gen 1	√	√	
7. USB 3.2 connector Gen 1	√	√	
8. Ethernet connector	√	√	√
9. Security-lock slot	√	√	√
10. USB-C connector		√	√
11. HDMI connector			√
12. Always On USB 3.2 connector Gen 2			√
13. USB 3.2 connector Gen 2			√

Note: The security-lock slot supports cable locks that conform to the Kensington MicroSaver lock standards (using T-bar locking technology) or MiniSaver lock standards (using Cleat locking technology).

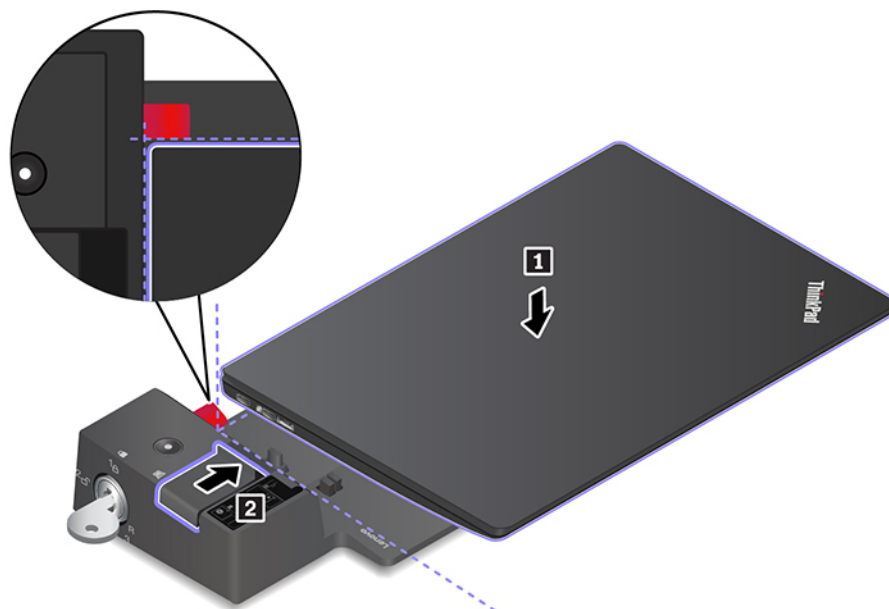
Attach a docking station

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 (🔓).



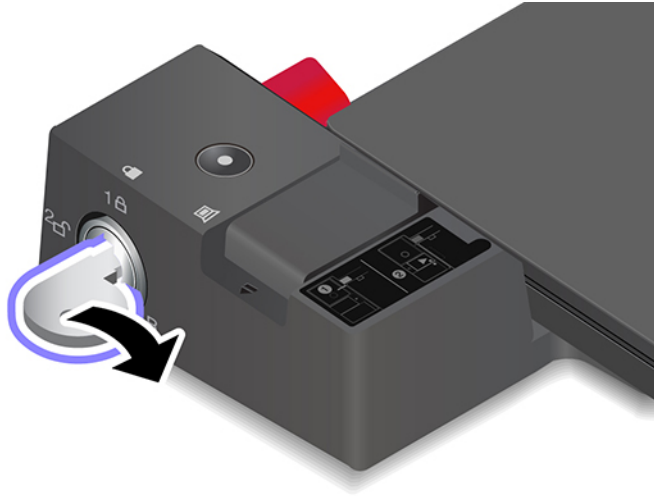
4. Align the top-left corner of the computer with the guide post of the docking station. Attach your computer to the docking station as shown **1** until you hear a click. Slide the latch in the direction as shown **2**.



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 )

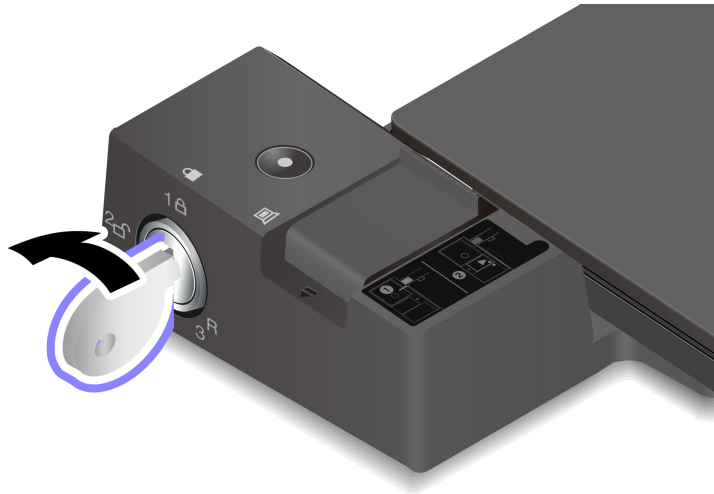


Attention: When the computer is attached to a docking station, always hold the whole assembly when you need to move your computer. Otherwise, the docking station might drop down.

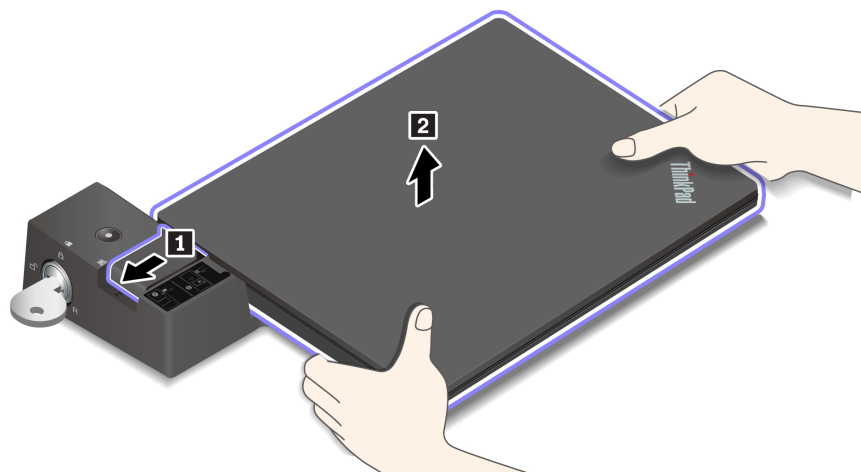
Detach a docking station

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.

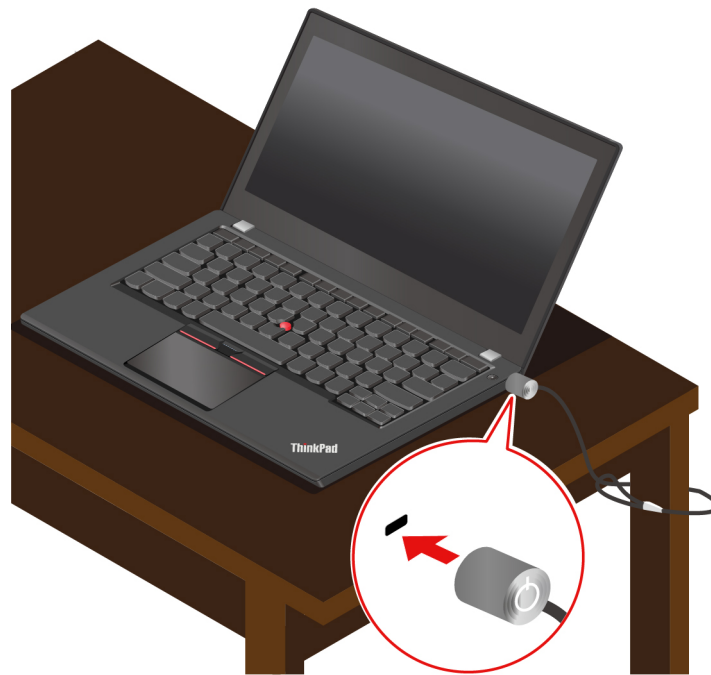
Docking station	Supported external displays	Video connectors
ThinkPad Basic Docking Station	Up to two	DisplayPort VGA
ThinkPad Pro Docking Station	Up to two	DisplayPort (x2)
ThinkPad Ultra Docking Station	Up to three	DisplayPort (x2) HDMI VGA

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: The slot supports cable locks that conform to the Kensington MiniSaver® lock standards using Cleat™ locking technology. Do not attempt to use other types of cable locks that use a rotating T-bar™ locking mechanism. 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, system management 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, 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. Enter the UEFI BIOS menu. See “Enter the UEFI BIOS menu” on page 39.

Note: When you are prompted to enter the password, enter the correct supervisor password if a supervisor password has been set, or enter the correct system management password if no supervisor password has been set. Otherwise, you cannot change the configurations in the following steps.

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.

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.

Note: The hard disk password is not available when 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.

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 hard disk password

If you forget your user hard disk password or both user and master hard disk passwords, 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 Chapter 7 “CRU replacement” on page 41.

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.

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:

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.

Use the fingerprint reader

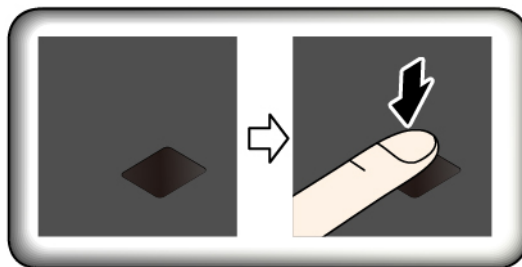
If your computer comes with a fingerprint reader, you can use it to enroll your fingerprints. After enrollment, you can tap your finger on the fingerprint reader to log in to Ubuntu.

Enroll your fingerprints

Open the system menu and then click **Settings → Users → Fingerprint Login**. Then, follow the on-screen instructions to finish the enrollment.

During the enrollment, the fingerprints are associated with the user 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



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.

Chapter 6. Configure advanced settings

This chapter provides information about UEFI BIOS.

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: 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.

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:

- Use the fwupdmgr or software utility to check LVFS for firmware updates.
- 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.

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
- Base cover assembly
- Nano-SIM-card tray*
- Pen charger (for X1 Yoga Gen 5 only)
- Power cord
- ThinkPad Pen Pro (for X1 Yoga Gen 5 only)
- Wireless WAN card*

Optional-service CRU

- M.2 solid-state drive*

* 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/partnerlocation> for more information.

Disable the built-in battery

Before replacing any CRU, ensure that you disable the built-in battery.

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

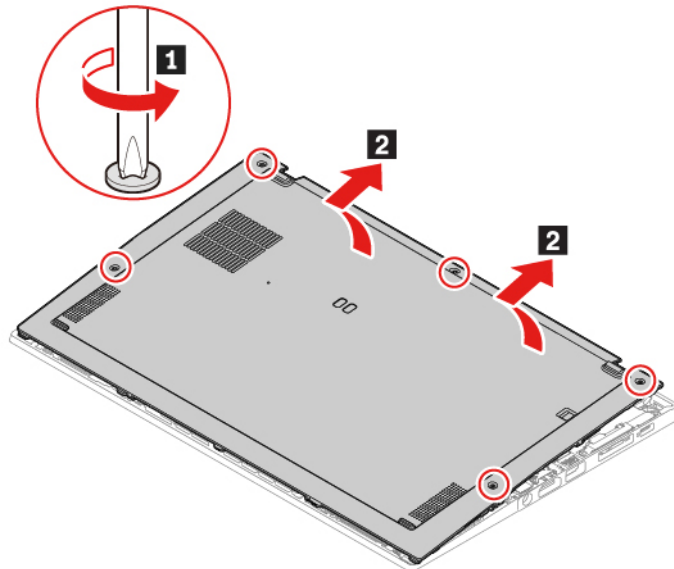
Prerequisite

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

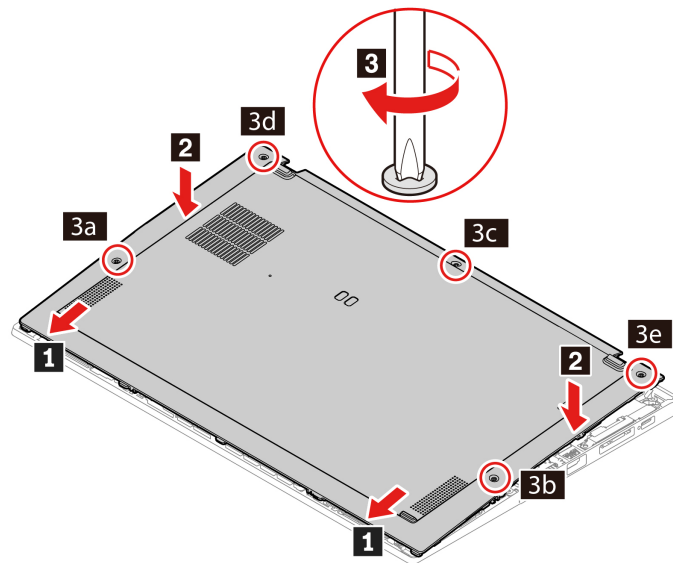
Note: Do not remove the base cover assembly when your computer is connected to ac power. Otherwise, there might be a risk of short circuits.

Replacement procedure

1. Disable the built-in battery. See “Disable the built-in battery” on page 41.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Loosen the screws that secure the base cover assembly **1**. Then, pry up the latches and remove the base cover assembly **2**.



5. Install the new base cover assembly in place **1** **2**. Ensure that the latches of the base cover assembly are secured under the base cover assembly. Then, tighten the screws in ascending alphabetical order (a to e) to secure the base cover assembly **3**.



6. Turn over the computer. Connect the ac power adapter and all disconnected cables to the computer.

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.

Wireless-WAN card (for selected models)

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.

Prerequisite

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

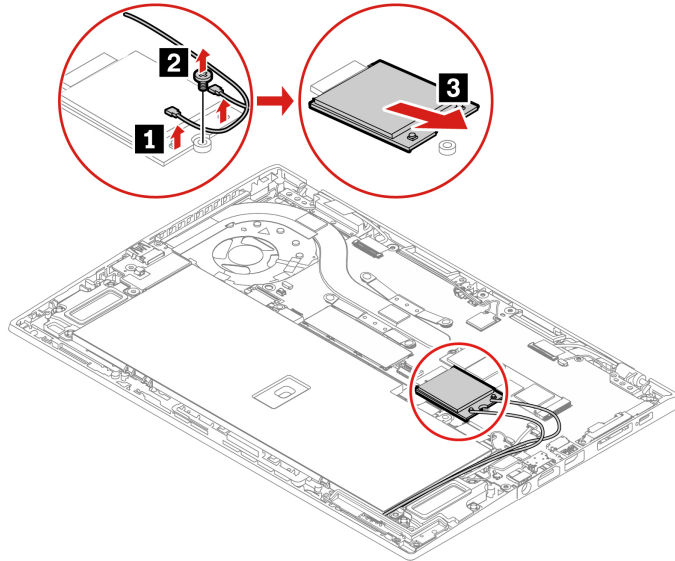
Attention: Do not touch the contact edge of the wireless-WAN card. Otherwise, the wireless-WAN card might get damaged.

Replacement procedure

1. Disable the built-in battery. See “Disable the built-in battery” on page 41.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close the computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 42.

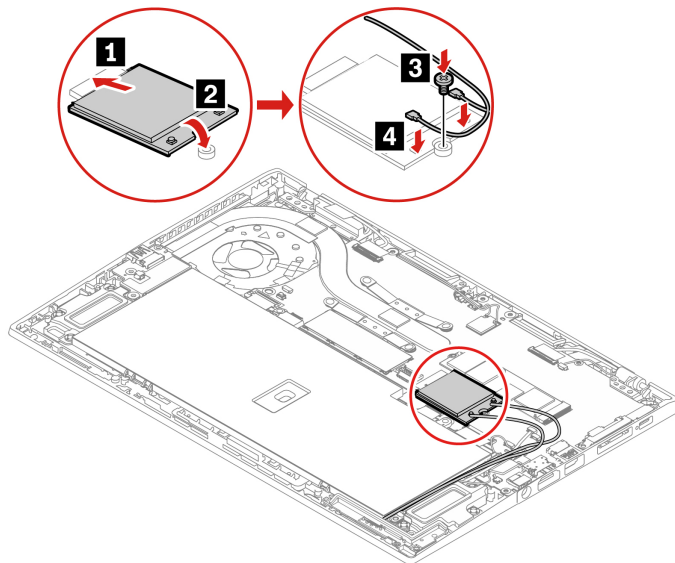
5. Remove the wireless-WAN card:

- a. Gently disconnect the wireless cable connectors with your fingers **1**. Then, remove the screw that secures the wireless-WAN card **2** and the card pops up.
- b. Carefully remove the wireless-WAN card out of the slot **3**.



6. Install a new wireless-WAN card:

- a. Align the contact edge of the new wireless-WAN card with the key in the slot. Then, carefully insert the card into the slot at an angle of about 20 degrees **1** and pivot the card downward **2**.
- b. Install the screw to secure the wireless-WAN card in place **3**. Connect the wireless cable connectors to the card **4**. Ensure that you connect the orange cable to the main connector on the card, and the blue cable to the auxiliary connector on the card.



7. Reinstall the base cover assembly.

8. Turn over the computer. Connect the ac power adapter and all disconnected cables to the computer.

M.2 solid-state drive

Prerequisite

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

Attention: If your computer is installed with hybrid solid-state drive (with Intel Optane memory), go to https://support.lenovo.com/docs/tg_ssd to know the details on how to replace it.

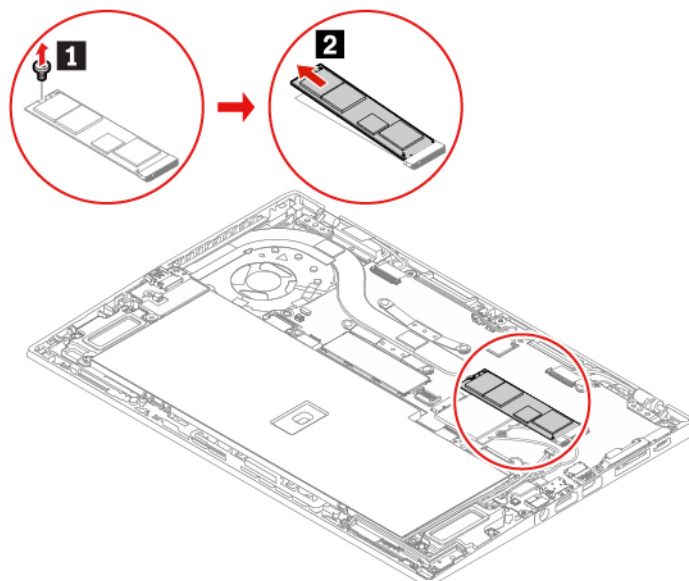
The M.2 solid-state drive is sensitive. Inappropriate handling might cause damage and permanent loss of data.

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

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

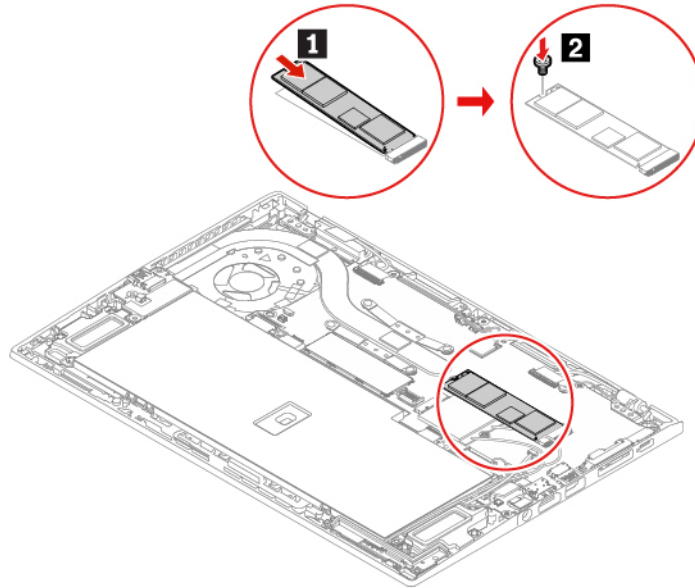
Replacement procedure

1. Disable the built-in battery. See “Disable the built-in battery” on page 41.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close and computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 42.
5. Remove the M.2 solid-state drive
 - a. Remove the screw that secures the M.2 solid-state drive **1**. The M.2 solid-state drive is released from the secured position and pivots upward.
 - b. Carefully remove the drive out of the slot **2**.



6. Install a new M.2 solid-state drive

- a. Align the contact edge of the M.2 solid-state drive with the key in the slot. Then, carefully insert the drive into the slot at an angle of about 20 degrees and pivot the M.2 solid-state drive downward **1**.
- b. Install the screw to secure the M.2 solid-state drive **2**.



7. Reinstall the base cover assembly.

8. Turn over the computer. Connect the ac power adapter and all disconnected cables to the computer.

Pen charger (for X1 Yoga Gen 5 only)

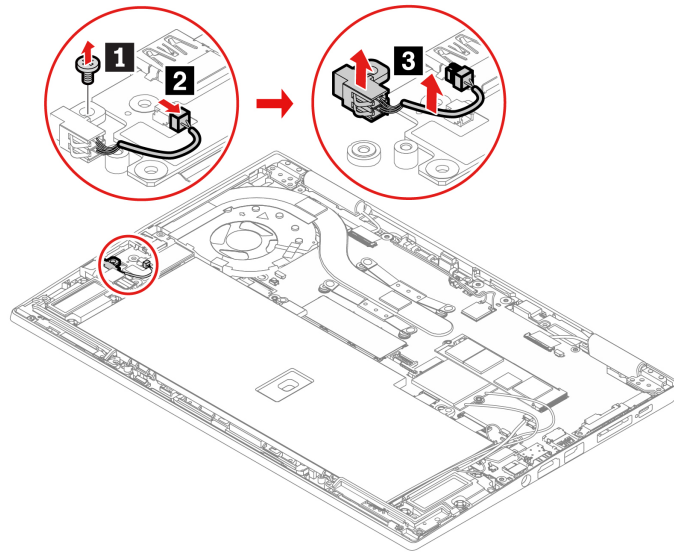
Prerequisite

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

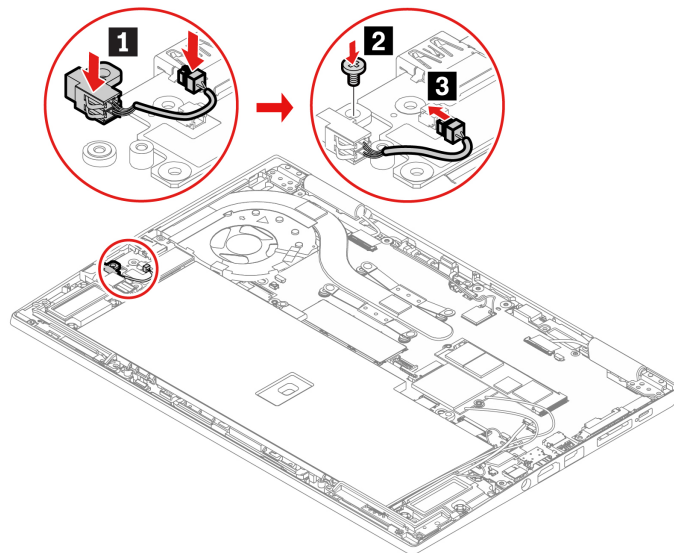
Replacement procedure

1. Disable the built-in battery. See “Disable the built-in battery” on page 41.
2. Turn off the computer and disconnect the computer from ac power and all connected cables.
3. Close and computer display and turn over the computer.
4. Remove the base cover assembly. See “Base cover assembly” on page 42.

5. Remove the screw that secures the pen charger **1** and detach the connector **2**. Then, remove the pen charger **3**.



6. Install a new pen charger in place **1**. Install the screw to secure the pen charger **2** and attach the connector **3**.



7. Reinstall the base cover assembly.
8. Turn over the computer. Connect the ac power adapter and all disconnected cables to the computer.

Chapter 8. Help and support

Frequently asked questions

How do I access Settings ?	Open the system menu drop down (top right) and click Settings .
How do I turn off my computer?	From the system menu (top right) click  , and then click Power Off .
What do I do if my computer stops responding.	1. Press and hold the power button until the computer turns off. Then, restart the computer. 2. If step 1 does not work: • 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: – 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?	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.
How do I disable my trackpad?	1. Open the system menu, and then click Settings → Mouse & Touchpad. 2. In the Touchpad section, turn off the Touchpad control.
Where can I get the latest device drivers and UEFI BIOS?	Use the Software application to check for updates. It should notify when new firmware is available on LVFS (https://fwupd.org/).

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 54.

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.	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. 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. 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.
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.

Access product documentation

- *Safety and Warranty Guide*
- *Setup Guide*
- *This User Guide*
- *Regulatory Notice*

Visit the Lenovo support Web site

<https://pcsupport.lenovo.com>

- Drivers and software
- Diagnostic solutions
- Product and service warranty
- Product and parts details
- Knowledge base and frequently asked questions

Access the Lenovo Limited Warranty

This product is covered by the terms of the Lenovo Limited Warranty (LLW), version L505-0010-02 08/2011. You can view the LLW in a number of languages from the following Web site. Read the Lenovo Limited Warranty at:

https://www.lenovo.com/warranty/llw_02

The LLW also is preinstalled on the computer. To access the LLW, go to /opt/Lenovo

If you cannot view the LLW either from the Web site or from your computer, contact your local Lenovo office or reseller to obtain a printed version of the LLW.

Access Linux distributions

Linux is an open-source operating system, and popular Linux distributions include Ubuntu and Fedora.

To learn more about the Ubuntu operating system, go to:

<https://www.ubuntu.com>

To learn more about the Fedora operating system, go to:

<https://getfedora.org/>

Get support information

If you need help, service, technical assistance, or more information about the Linux operating system or other applications, contact the provider of the Linux operating system or the provider of the application. If you need the service and support for hardware components shipped with your computer, contact Lenovo.

To access the latest *User Guide* and *Safety and Warranty Guide*, go to:

<https://pcsupport.lenovo.com>

Access open-source information

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You may send your request in writing to the address below accompanied by a check or money order for \$15 to:

*Lenovo Legal Department
Attn: Open Source Team / Source Code Requests
8001 Development Dr.
Morrisville, NC 27560*

Please include the version of the OS and the version of the Linux Kernel pre-shipped on this Device as part of your request. Be sure to provide a return address.

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Call Lenovo

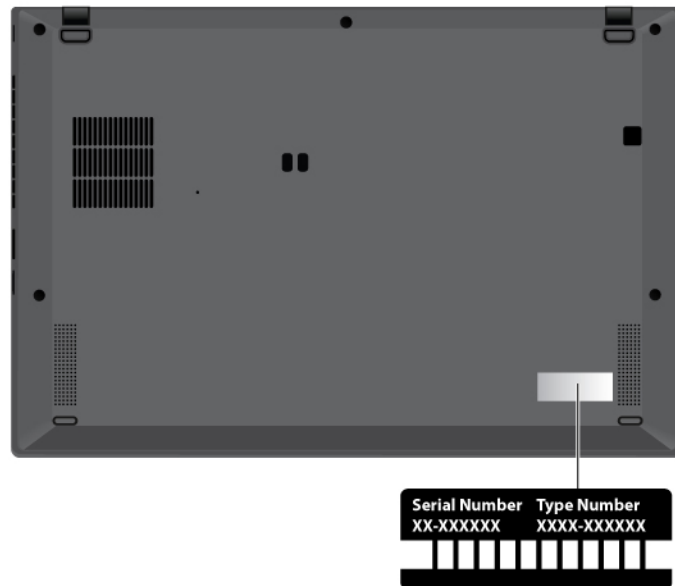
If you have tried to correct the problem yourself and still need help, you can call Lenovo Customer Support Center.

Before you contact Lenovo

Prepare the following before you contact Lenovo:

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

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



Lenovo Customer Support Center

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

Telephone numbers

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

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

Services available during the warranty period

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

Services not covered

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

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

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

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 types
ThinkPad X1 Yoga Gen 5 ThinkPad X1 Yoga Gen 5 LTE (for mainland China only)	TP00110B	20UB and 20UC
ThinkPad X1 Carbon Gen 8 ThinkPad X1 Carbon Gen 8 LTE (for mainland China only)	TP00109B	20U9 and 20UA

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:

X1 Yoga Gen 5



X1 Carbon Gen 8



1. Wireless-LAN antenna (auxiliary)
2. Wireless-LAN antenna (main)
3. Wireless-WAN antenna (auxiliary, for selected models)
4. Wireless-WAN 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 package: -20°C to 60°C (-4°F to 140°F)
- Storage without package: 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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