Linux User Guide

ThinkStation P3 Tiny Gen 2

Second Edition (February 2026)

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About this documentation

This documentation applies to the ThinkStation® product models listed below.

Model name	Machine types (MT)
ThinkStation P3 Tiny Gen 2	30K5, 30K6, 30K7, 30K8, 30K0, 30K3, 30K4, 30K2

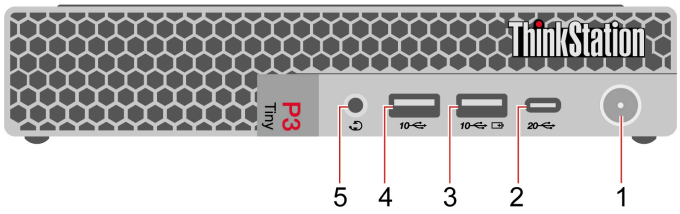
Further compliance information related to your product is available at https://www.lenovo.com/compliance.

Before using this documentation, please read the following information:

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

Chapter 1. Overview

Front



Item	Description	Item	Description
1	Power button with power indicator	2	USB-C connector (USB 20Gbps)
3	USB-A connector (USB 10Gbps, Always On USB)	4	USB-A connector (USB 10Gbps)
5	Headset connector		

* for selected models

Power indicator

Show the system status of your computer.

- **On:** The computer is starting up or working.
- **Off:** The computer is off or in hibernation mode.
- **Blinking:** The computer is in sleep mode.

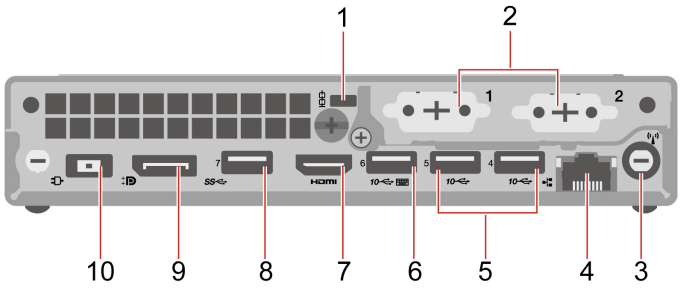
USB-A connector (USB 10Gbps, Always On USB)

With the Always On USB feature enabled, the USB-A connector (USB 10Gbps, Always On USB) can charge a USB-A compatible device when the computer is on, off, in sleep mode, or in hibernation mode.

Related topics

- “USB specifications” on page 4.

Rear



Item	Description	Item	Description
1	Security-lock slot	2	Optional connectors*
3	Wi-Fi® antenna slot*	4	Ethernet connector
5	USB-A connectors (USB 10Gbps)	6	USB-A connector (USB 10Gbps) (with smart power-on feature)
7	HDMI™ out connector	8	USB-A connector (USB 5Gbps)
9	DisplayPort™ out connector	10	Power adapter connector

* for selected models

Optional connector

Depending on the computer model, the optional connector might be one of the following:

- DisplayPort out connector
- HDMI out connector
- COM connector
- VGA out connector
- Ethernet connector
- USB-A connector
- USB-C connector (only for optional connector 1)
- USB-C connector (Thunderbolt™ 4) (only for optional connector 2)

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 in the connector name or below for each corresponding device.

USB device	Data rate (Gbit/s)
USB-C connector (Thunderbolt 3)	40
USB-C connector (Thunderbolt 4)	40

Related topics

- “Use physical locks” on page 8.
- “USB specifications” on page 4.

Specifications

Specification	Description
Dimensions	• Width: 37 mm (1.5 inches) • Height: 179 mm (7 inches) • Depth: 182.9 mm (7.2 inches)
Weight (without packaging)	Maximum configuration as shipped: 1.5 kg (3.3 lb)

Specification	Description
Hardware configuration	1. Open the system menu from the top-right corner and click ⚙. 2. Click **System → About**.
Power supply	• 170-watt automatic voltage-sensing power supply • 230-watt automatic voltage-sensing power supply • 245-watt automatic voltage-sensing power supply • 300-watt automatic voltage-sensing power supply • 330-watt automatic voltage-sensing power supply
Electrical input	• Input voltage: From 100 V ac to 240 V ac • Input frequency: 50/60 Hz
Microprocessor	To view the microprocessor information of your computer: 1. Open the system menu from the top-right corner and click ⚙. 2. Click **System → About**.
Memory	Up to two double data rate 5 (DDR5) small outline dual in-line memory modules (SODIMMs) Maximum memory capacity: 128 GB
Storage device	Up to three M.2 solid-state drives Type `Disks` in the search box and use the **Disks** application to view the storage drive capacity of your computer. **Note:** The storage drive capacity indicated by the system is less than the nominal capacity.
Video features	• The integrated graphics card supports the following: – DisplayPort out connector – HDMI out connector – VGA-out connector* – USB-C connector* (Thunderbolt 4) • The optional discrete graphics card provides an enhanced video experience and extended capabilities.
Expansion	• M.2 solid-state drive slots • Memory slots • PCI-Express slot
Network features	• Bluetooth* • Ethernet LAN • Wireless LAN*

* for selected models

Operating environment

Maximum altitude (without pressurization)

- Operating: From 0 m (0 ft) to 3048 m (10 000 ft)

- Storage: From 0 m (0 ft) to 12192 m (40 000 ft)

Temperature

- Operating: From 5°C (41°F) to 35°C (95°F)
- Storage: From -40°C (-40°F) to 60°C (140°F)

Relative humidity

- Operating: 20%-80% (non-condensing)
- Storage: 10%–90% (non-condensing)

System memory speed

The Intel Core™ microprocessor families compatible with this ThinkStation computer feature an integrated memory controller. The memory controller provides the microprocessor with direct access to the system memory. Therefore, the system memory speed will be determined by the memory module type, frequency, size (capacity), the number of memory modules installed, and the microprocessor model.

Notes:

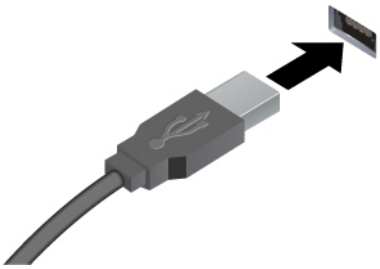
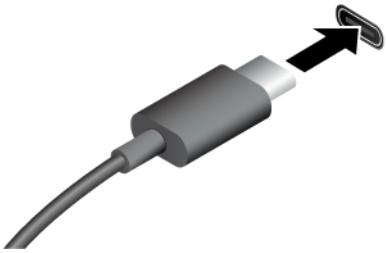
- The actual system memory speed of the memory modules varies depending on the microprocessor model. For example, your computer comes with 5600 MT/s memory modules, but the microprocessor only supports up to 5200 MT/s memory modules. Then the system memory speed will be no faster than 5200 MT/s.
- The microprocessor models supported in your computer might vary. For a list of supported microprocessor models, contact the Lenovo Customer Support Center.

Your computer can come with the following types of memory modules and will run up to the following speed:

Memory module type	Memory module speed
DDR5 non-ECC 6400 SoDIMMs	6400 MT/s
DDR5 non-ECC 5600 SoDIMMs	5600 MT/s

USB specifications

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

Connector name	Description
 • USB-A connector (USB 5Gbps) • USB-A connector (USB 10Gbps)	Connect USB-A compatible devices, such as a USB-A keyboard, USB-A mouse, USB-A storage device, or USB-A printer.
 • USB-C connector (USB 20Gbps)	• Charge USB-C compatible devices with the output voltage and current of 5 V and 3 A. • Connect to USB-C accessories to help expand your computer functionality. To purchase USB-C accessories, go to https://www.lenovo.com/accessories.

Chapter 2. Get started

Initial setup

This section helps you set up your computer.

1. Connect the cables of external displays to appropriate connectors on the graphics card installed in the computer.
2. Connect the mouse and the keyboard to the computer respectively.
3. Connect the cables of other devices according to the devices' instructions.
4. Connect the power cord to the power adapter. Then connect the power cord to the power cord connector on the computer and connect it to a properly-grounded electrical outlet.
5. Press the power button to turn on the computer.
6. Follow the on-screen instructions to complete the setup procedures.

Connect to an external display

Connect a projector or a monitor to your computer 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.
2. Connect the external display to an electrical outlet.
3. Turn on the 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 and change display settings of your preference.

Get started with Ubuntu Desktop (24.04 LTS)

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/lts/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

- Press 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 Apps** button on the lower left, and select the application you want to launch.

Launch settings

Open the system menu from the top-right corner and click ⚙.

Access networks

This section helps you access networks through connecting to a wireless or wired network.

Connect to Wi-Fi networks (for selected models)

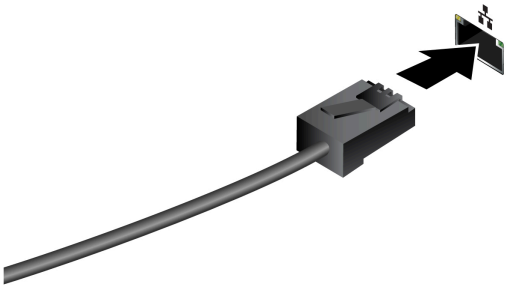
If your computer includes a wireless LAN module, you can connect your computer to Wi-Fi® networks.

1. Open the system menu from the top-right corner and turn on the Wi-Fi by clicking **Wi-Fi** button.
2. Click **>** to expand the Wi-Fi section of the menu. A list of available wireless networks is displayed. Click **All Networks** to see extra options.
3. Select an available network for connection. Provide required information if needed.

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

Connect to the wired Ethernet

Connect your computer to a local network through the Ethernet connector on your computer with an Ethernet cable.



Connect to a Bluetooth-enabled device (24.04 LTS) (for selected models)

You can connect all types of Bluetooth-enabled devices to your computer, such as a keyboard, a mouse, a smartphone, or speakers. Place the device that you are attempting to connect to less than 10 meters (33 feet) from the computer.

1. Open the system menu from the top-right corner and turn on the Bluetooth by clicking **Bluetooth** button.
2. Click **>** to expand the Bluetooth section of the menu. A list of discoverable devices is displayed.

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 the power plan

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

- Turn off the display: After 5 minutes
- Put the computer to sleep: After 20 minutes

To awaken the computer from Sleep mode, press any key on your keyboard.

To set the power plan:

1. Go to **Settings → Power**.
2. Choose or customize a power plan of your preference.

Smart power-on feature (for selected models)

The smart power-on feature helps you start up or wake up the computer from the hibernation mode simply by pressing Alt+P.

Note: Ensure that the keyboard is connected to a USB connector supporting the smart power-on feature.

Enable or disable the smart power-on feature

To enable or disable the smart power-on feature:

Step 1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.

Step 2. Select **Power → Smart Power On** and press Enter.

Step 3. Enable or disable the feature as desired.

Step 4. Press F10 or Fn+F10 to save the changes and exit.

Security solutions

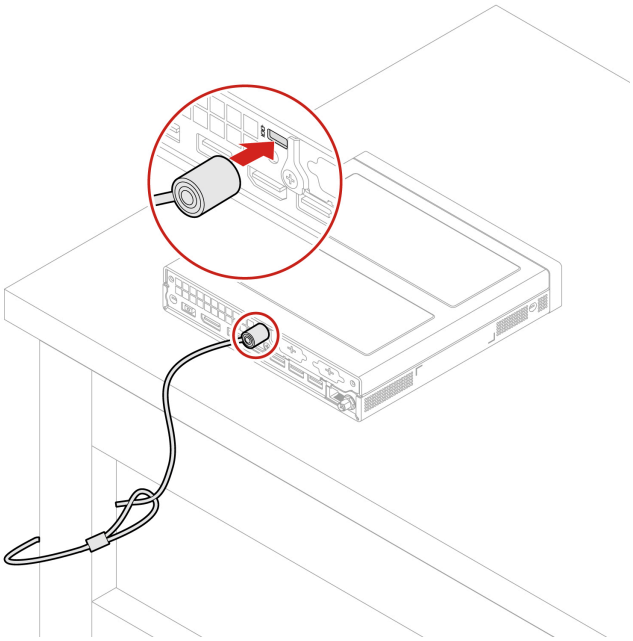
Lenovo values your information security. Your computer can be secured by physical locks, software solutions, and BIOS solutions. They can protect your computer from harm, theft, or unauthorized use.

Use physical locks

Note: Lenovo makes no comments, judgments, or warranties about the function, quality, or performance of the locking device and security feature. You can purchase computer locks from Lenovo.

Security lock

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



Use BIOS security solutions

This section provides BIOS solutions to secure your computer and information.

Wipe the storage drive data (for selected models)

It is recommended that you wipe the storage drive data before recycling the storage drive or the computer.

To wipe the storage drive data:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security → secure wipe → Enabled**.
3. Press F10 or Fn+F10 to save the changes and exit.
4. Restart the computer. When the logo screen is displayed, press F12 or Fn+F12.
5. Select **App Menu → secure wipe** and press Enter.
6. Select the storage drive you will wipe and click **NEXT**.
7. Select the entire storage drive or partition to wipe as desired.
8. Select the method as desired and click **NEXT**.
9. Click **Yes** to confirm your option when the prompting window is displayed.
10. If you have set a hard disk password for the storage drive, enter the password. Otherwise, set a temporary password following the on-screen instructions. Then, click **NEXT**. The wiping process begins.

    Note: Duration of the wiping process varies depending on the storage drive capacity.
11. Click **Reboot** when you are prompted to reset the system, and then one of the following will happen:
    - If the system storage drive data is wiped, you will be prompted that no operating system is found.
    - If the non-system storage drive data is wiped, the computer restarts automatically.

Cover presence switch

The cover presence switch prevents the computer from logging in to the operating system when the computer cover is not properly installed or closed.

To enable or disable the cover presence switch on the system board:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security → Cover Tamper Detected** and press Enter.
3. Select **Enabled** or **Disabled** and press Enter.
4. Press F10 or Fn+F10 to save the changes and exit.

If the cover presence switch is enabled and the computer cover is not correctly installed or closed, an error message will be displayed when you turn on the computer. To bypass the error message and log in to the operating system:

1. Properly install or close the computer cover.
2. Enter the BIOS menu, save and then exit.

Intel BIOS guard

The Intel® BIOS Guard module cryptographically verifies all BIOS updates. This hardware-based security helps prevent software and malware attacks on the computers BIOS.

Smart USB Protection

The Smart USB Protection function is a security function that helps prevent data from being copied from the computer to USB storage devices connected to the computer. You can set the Smart USB Protection function to one of the following modes:

- **Disabled** (default setting): You can use the USB storage devices without limitation.
- **Read Only**: You cannot copy data from the computer to the USB storage devices. However, you can access data on the USB storage devices.
- **No Access**: You cannot access the USB storage devices from the computer.

To configure the Smart USB Protection function:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security → Smart USB Protection** and press Enter.
3. Select the desired setting and press Enter.
4. Press F10 or Fn+F10 to save the changes and exit.

Absolute Persistence (for computers purchased outside mainland China)

Absolute Persistence technology is embedded in BIOS. It detects changes that happen on the hardware, software, or the call-in location. It keeps you always knowing what condition the computer is in. To activate the technology, you have to purchase a subscription to Absolute.

UEFI BIOS passwords

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

Password types

You can set a power-on password, supervisor password, system management password, or 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

  When a power-on password is set, you are prompted to enter a valid password each time the computer is turned on.

- Supervisor password

  Setting a supervisor password deters unauthorized users from changing configuration settings. If you are responsible for maintaining the configuration settings of several computers, you might want to set a supervisor password.

  When a supervisor password is set, you are prompted to enter a valid password each time you try to enter the BIOS menu.

  If both the power-on password and supervisor password are set, you can enter either password. However, you must use your supervisor password to change any configuration settings.

- Hard disk password (for selected models)

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

  Note: After you set a hard disk password, your data on the storage drive is protected even if the storage drive is removed from one computer and installed in another.

- System management password (for selected models)

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

  1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
  2. Select **Security → 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.

Set, change, and remove a password

Before you start, print these instructions.

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security**.
3. Depending on the password type, select **Set Supervisor Password**, **Set Power-On Password**, **Set System Management Password**, or **Hard Disk Password** and press Enter.
4. Follow the on-screen instructions to set, change, or remove a password.
5. Press F10 or Fn+F10 to save the changes and exit.

You should record your passwords and store them in a safe place. If you forget the passwords, contact a Lenovo-authorized service provider.

Note: If the hard disk password is forgotten, Lenovo cannot remove the password or recover data from the storage drive.

Chapter 3. UEFI BIOS

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

Enter the UEFI BIOS menu

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

Note: If you have set UEFI BIOS passwords, enter the correct passwords when prompted. You also can select **No** or press Esc to skip the password prompt and enter the UEFI BIOS menu. However, you cannot change the system configurations that are protected by passwords.

Navigate the UEFI BIOS menu

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

The table below introduces the available settings of the UEFI BIOS menu. You can follow the on-screen instruction to navigate in the UEFI BIOS menu.

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

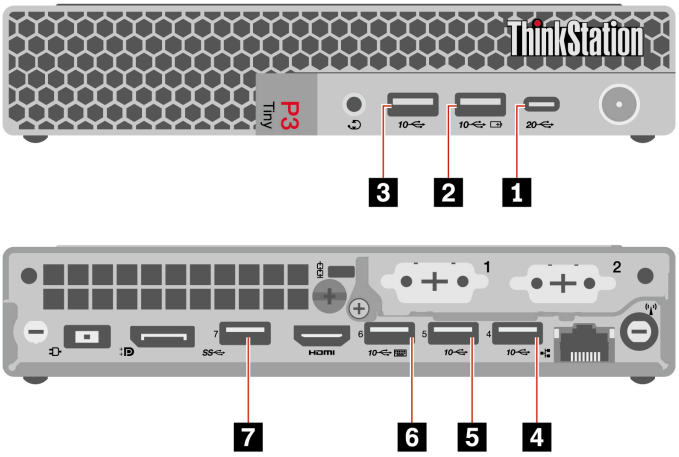
Menu	Introduction
Main	This category provides the general product-related and firmware information including system summary, machine type, product serial number, UUID number, etc.
Devices	This category introduces how to configure various devices such as USB ports and audio controllers.
Advanced	This category provides advanced information about the computer such as the CPU features.
Power	This category introduces power and thermal management solutions.
Security	This category introduces various passwords, locks, and software to protect your computer.
Startup	This category introduces how to set the boot priority order.
Exit	This category introduces how to exit as you prefer.

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

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

Map UEFI BIOS USB ports to physical connectors

If you need to enable or disable any front or rear USB port UEFI BIOS, refer to below table to locate the corresponding USB port on your computer. You can find the settings in the UEFI BIOS menu (**Devices → USB Setup**):



USB connector on computer	USB port in UEFI BIOS
1	USB Port 1
2	USB Port 2
3	USB Port 3
4	USB Port 4
5	USB Port 5
6	USB Port 6
7	USB Port 7

Update the UEFI BIOS

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

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

Using the built-in software update service

Ubuntu software update will check the LVFS site for any firmware updates and notify you when updates are available.

From the Lenovo Support Web site

Follow the instructions to update the UEFI BIOS from the Lenovo Support Web site.

Step 1. Go to https://pcsupport.lenovo.com and select the entry for your computer.

Step 2. Click **Drivers & Software → Manual Update → BIOS/UEFI**.

Step 3. Follow the on-screen instructions to download and install the latest UEFI BIOS update package.

Chapter 4. CRU replacement

Before CRU replacement

Before replacing the hardware of your computer, read this section first. You will get to know what CRU is, the CRU list, system board connectors, and prerequisites for CRU replacement.

What is CRU

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

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

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

CRU list

The following is the CRU list of your computer.

Self-service CRUs

- ac power adapter
- Bottom cover
- Dongle*
- Dust filter*
- Top cover
- I/O bracket*
- External Wi-Fi antenna*
- Four-port serial card cable*
- Keyboard*
- M.2 solid-state drive
- M.2 solid-state drive clip
- Memory module
- Mouse*
- Power cord
- Thumb screw

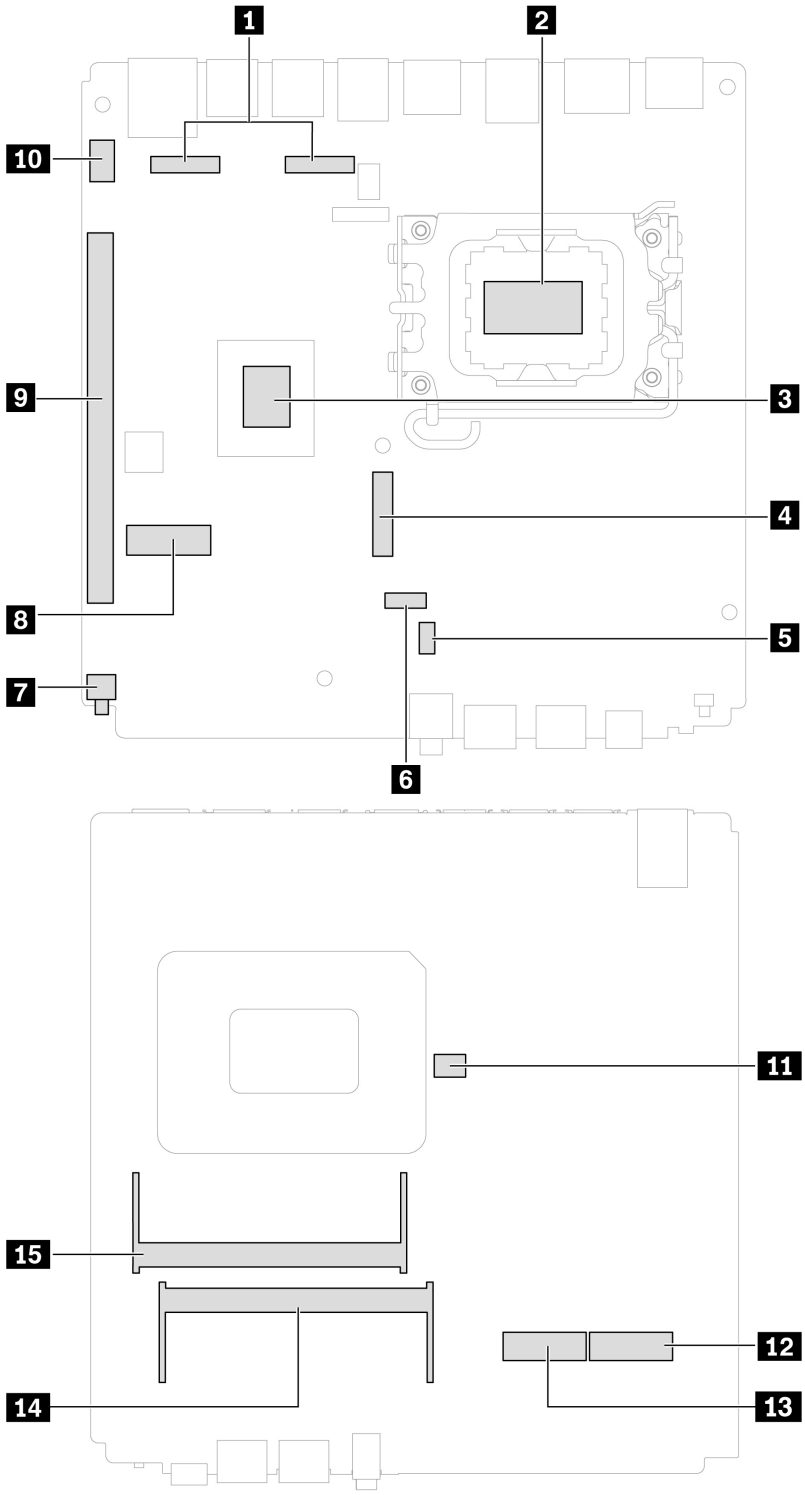
- Vertical stand*
- VESA® mount bracket*

Optional-service CRUs

- Board to board module*
- Graphics card heat sink*
- PCIe card*
- PCIe converter*
- System fan and heat sink
- Internal speaker

* for selected models

System board illustration



Connector	Connector
1 I/O board connector	2 Microprocessor socket
3 PCH	4 Gen 5 M.2 solid-state drive slot (SSD1)

Connector	Connector
5 Internal speaker connector	6 System fan connector
7 Cover presence switch connector	8 M.2 Wi-Fi card slot
9 PCIe slot	10 Clear CMOS
11 Coin-cell battery connector	12 M.2 solid-state drive slot (SSD2)
13 M.2 solid-state drive slot (SSD3)	14 Memory slot (DIMM1)
15 Memory slot (DIMM2)	

Prerequisites for hardware replacement

General prerequisites

Read *Generic Safety and Compliance Notices*.

Prerequisites for opening computer cover

During operation, some components become hot enough to burn the skin. Before you open the computer cover, do the following:

- Turn off the computer and remove all connected devices and cables.
- Disconnect the computer from ac power and all connected cables.
- Unlock any locking device that secures the cover.
- Wait approximately 10 minutes until the computer is cool.

remove any media from the drives, turn off the computer and remove all connected devices and cables., disconnect power, remove all cables and locking devices, and

Prerequisites for M.2 solid-state drive replacement

Attention: 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 touch the contact edge of the M.2 solid-state drive. Otherwise, the M.2 solid-state drive might get damaged.
- Do not apply pressure to the M.2 solid-state drive.
- 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.

Prerequisites for heat sink replacement

The heat sink might be very hot. Before you open the top cover, turn off the computer and wait several minutes until the computer is cool.

Notes:

- Carefully remove the following screws from the system board to avoid any possible damage to the system board. The screws cannot be removed from the heat sink.
- You might have to gently twist the heat sink to free it from the microprocessor.
- Do not touch the thermal grease while handling the heat sink.

Power adapter and power cord

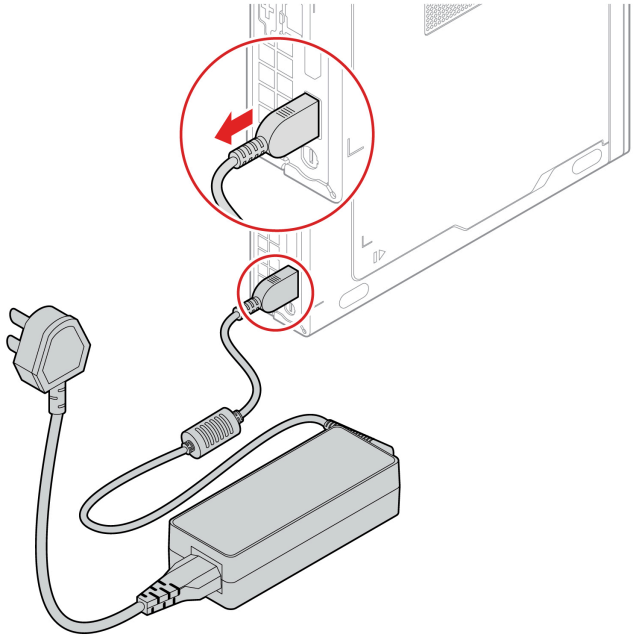
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, do the following:

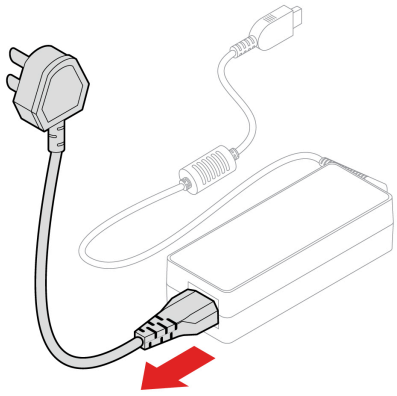
1. Turn off the computer and remove all connected devices and cables.
2. Disconnect the computer from ac power and all connected cables.

Removal steps

1. Remove the power adapter and power cord from the chassis.



2. Remove the power cord.



VESA mount bracket

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, do the following:

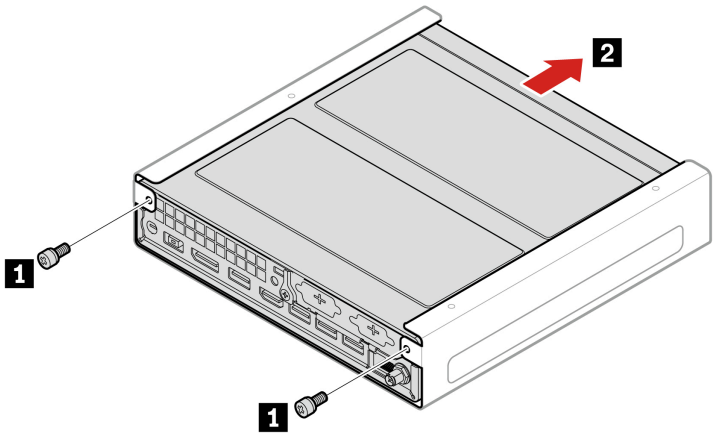
1. Turn off the computer and remove all connected devices and cables.
2. Disconnect the computer from ac power and all connected cables.

Removal steps

1. Remove the two screws which secure the VESA mount bracket to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L6, flat-head	2	5 ± 0.5 in-lb

2. Slide the VESA mount bracket to remove it.



Vertical stand

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

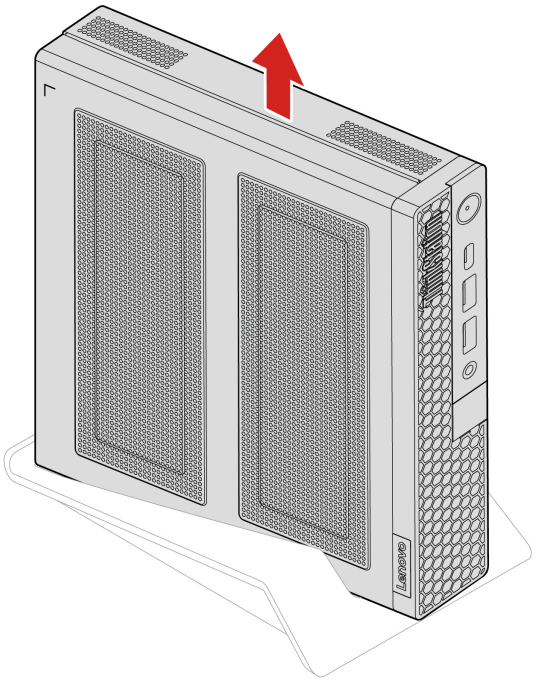
For access, do the following:

1. Turn off the computer and remove all connected devices and cables.

2. Disconnect the computer from ac power and all connected cables.

Removal steps

Lift the chassis to remove it from the vertical stand.



External Wi-Fi antenna

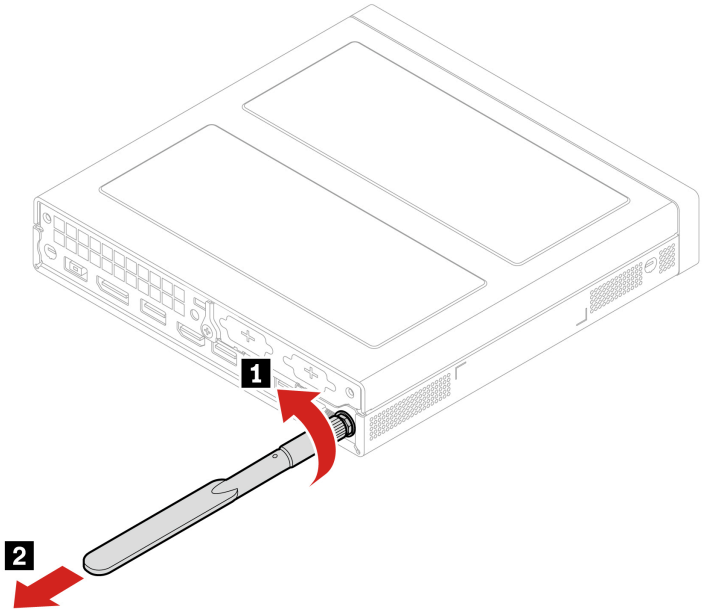
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, do the following:

1. Turn off the computer and remove all connected devices and cables.
2. Disconnect the computer from ac power and all connected cables.

Removal steps

Contrarotate the external Wi-Fi antenna until it’s released from the chassis.



Dust filter

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

Removal steps

Pull to remove the dust filter from the front cover.

Top cover and front cover

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, remove these parts, if any:

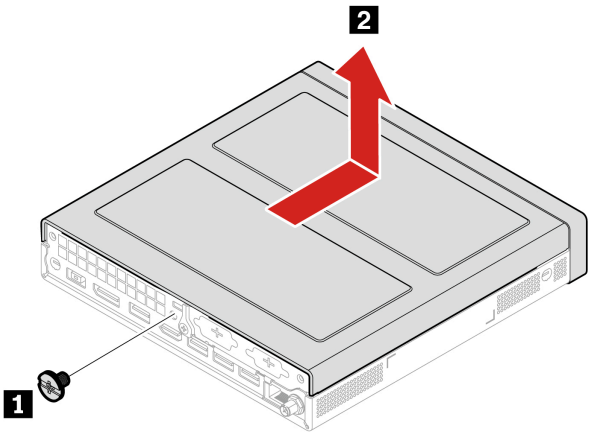
- “VESA mount bracket” on page 19
- “Vertical stand” on page 19
- “External Wi-Fi antenna” on page 20
- “Dust filter” on page 21

Removal steps

1. Remove the screw which secure the top cover to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M4 × L5, flat-head	1	3 ± 0.5 in-lb

2. Lift the top cover and front cover.



Bottom cover

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

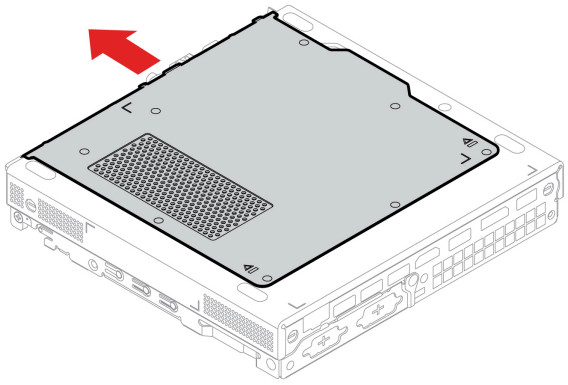
For access, do the following:

- Remove the top cover. See “Top cover” on page 22.
- Turn over the computer so that the bottom cover is facing up.

Replacement steps

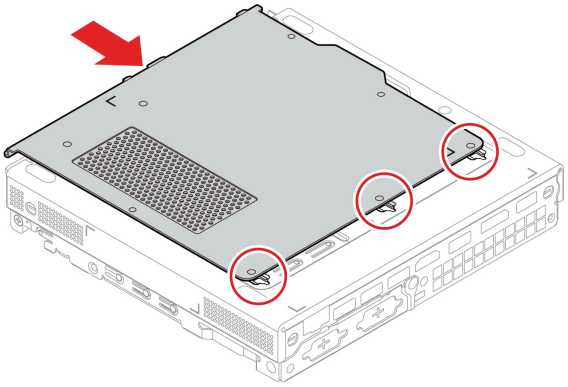
Removal steps

Slide the bottom cover towards the front panel to remove it from the chassis.



Installation steps

1. Align the three hooks on the bottom cover with the holes on the chassis.
2. Slide the bottom cover towards the rear panel until it's clicked into place.



I/O bracket

Before you start, ensure that you have read "Prerequisite for CRU replacement" on page 17.

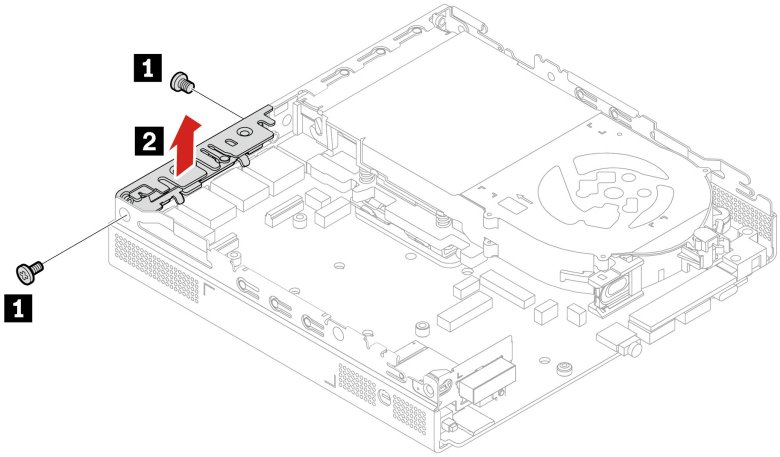
For access, remove the top cover. See "Top cover" on page 22.

Removal steps

1. Remove the two screws which secure the I/O bracket to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L4, countersunk	2	3 ± 0.5 in-lb

2. Remove the I/O bracket.



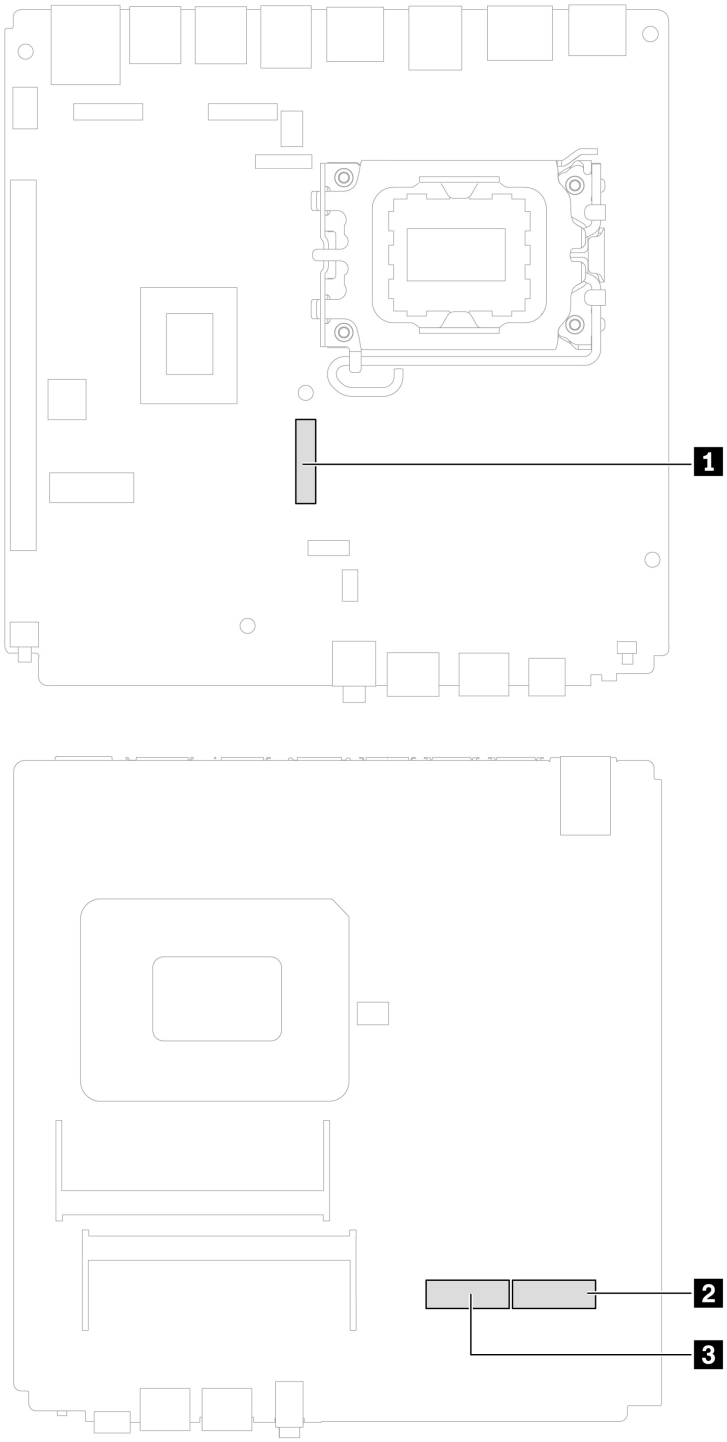
M.2 solid-state drive

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, remove the following parts:

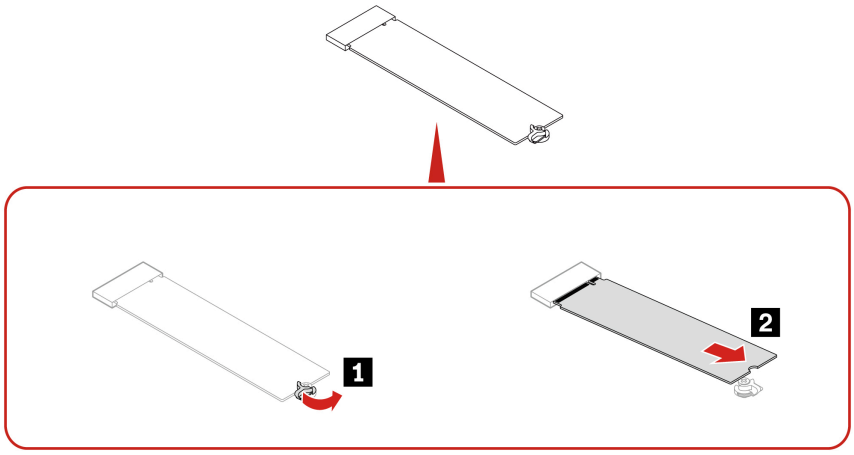
- “Top cover” on page 22
- “Bottom cover” on page 22

Note: Ensure that you follow the installation order for M.2 solid-state drives shown in the following illustration.



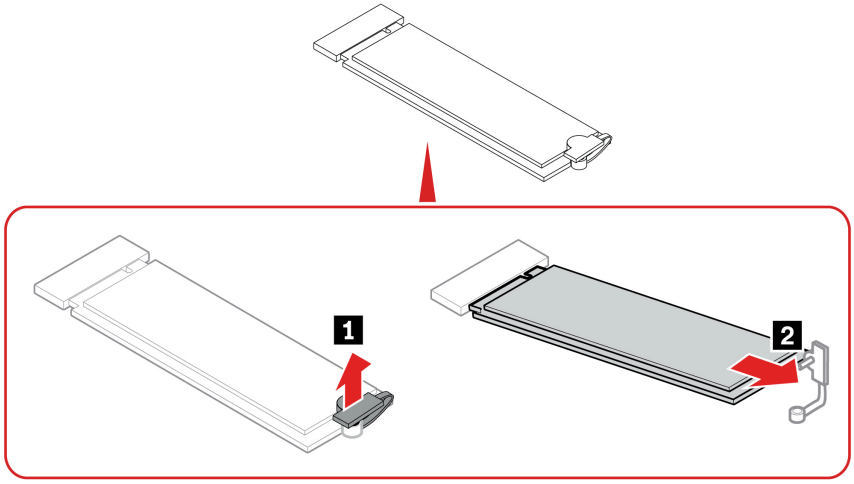
Removal steps for M.2 solid-state drive in slot 1

1. Contrarotate the clip to release the M.2 solid-state drive.
2. Pull the M.2 solid-state drive out of the slot.



Removal steps for M.2 solid-state drive in slot 2 and slot 3

Open the clip and remove the M.2 solid-state drive from the slot.

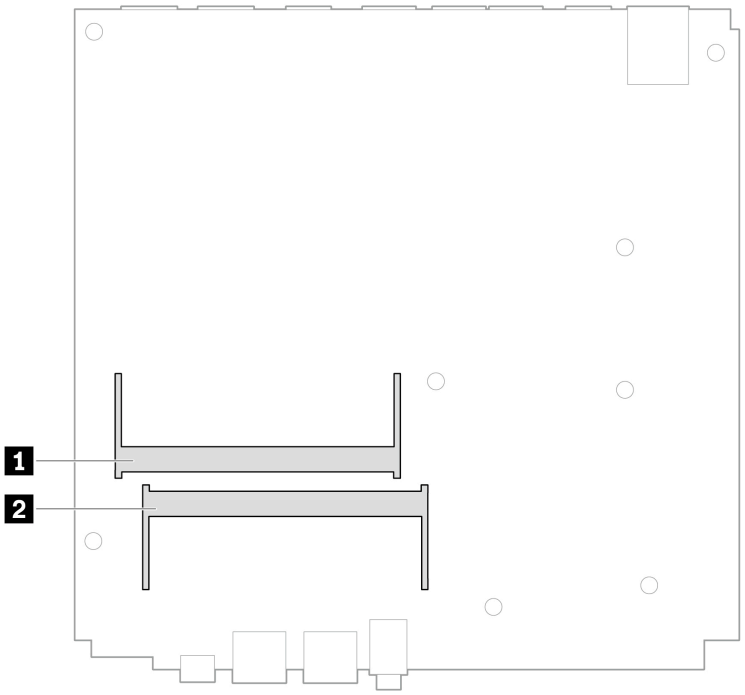


Memory module

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

Notes:

- To remove or install the memory module, wait at least 20 seconds after disconnecting power cords from the system. It allows the system to be completely discharged of electricity.
- Ensure that you follow the installation order for memory modules shown in the following illustration.

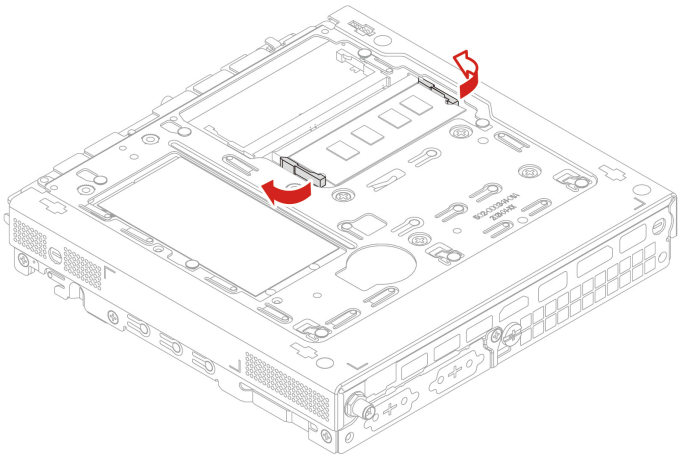


For access, remove the following parts in order:

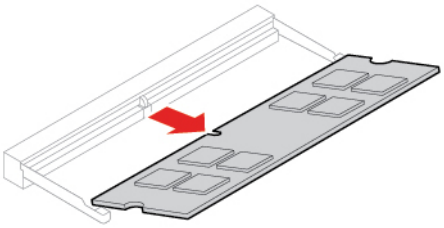
- “Top cover” on page 22
- “Bottom cover” on page 22

Removal steps

1. Open the latches on both sides to release the memory module.



2. Pull the memory module out of the slot.



Internal speaker

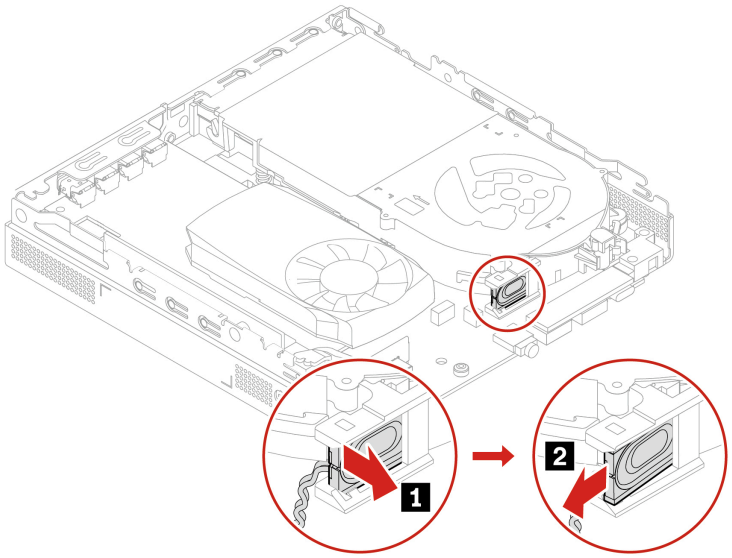
Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, do the following:

1. For access, remove the top cover. See “Top cover” on page 22.
2. Disconnect the internal speaker cable from the internal speaker connector on the system board.

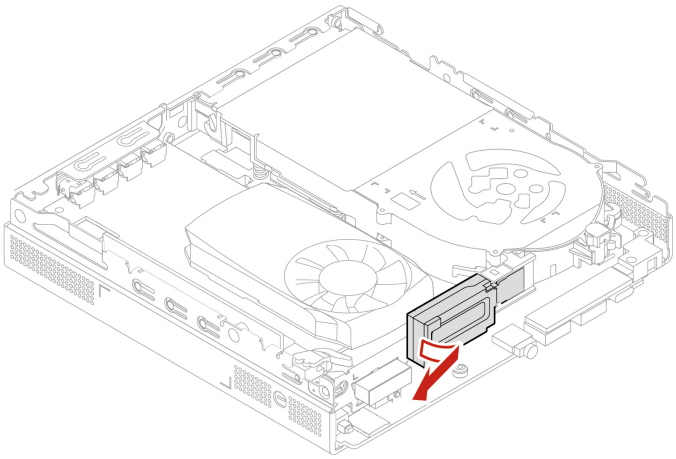
Removal steps for type 1 internal speaker

Push the internal speaker outward and pull horizontally to remove it.



Removal steps for type 2 internal speaker

Push the internal speaker outward and pull horizontally to remove it.



System fan

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

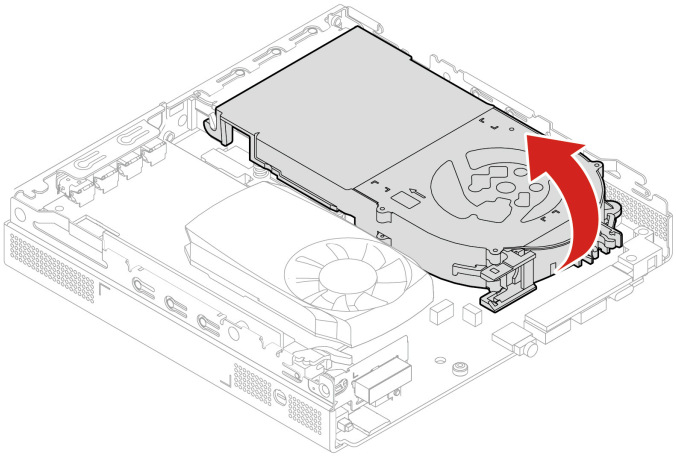
For access, do the following:

1. Remove the top cover. See “Top cover” on page 22.
2. Remove the internal speaker. See “Internal speaker” on page 28.
3. Disconnect the system fan cable from the system board.

Replacement steps

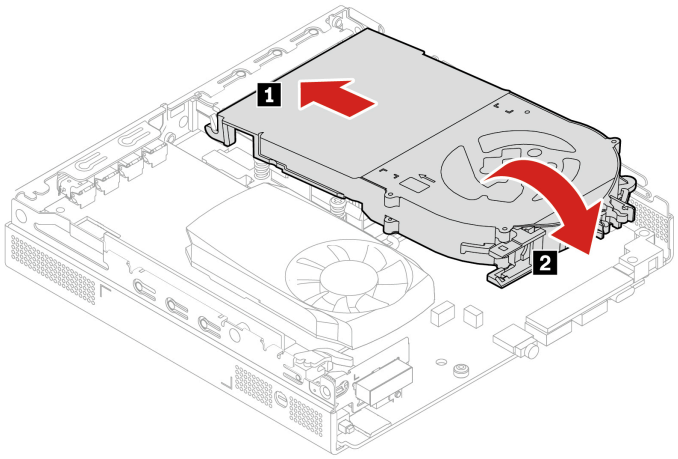
Removal steps

Lift the system fan to remove it.



Installation steps

Align the hooks of the system fan with the tabs on the heat sink and mount the system fan on the heat sink.



Heat sink

Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

For access, remove the following parts in order:

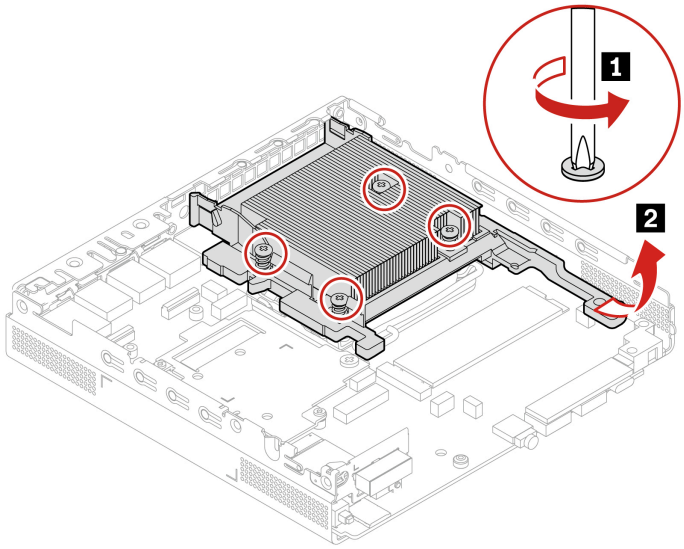
- “Top cover” on page 22
- “Internal speaker” on page 28
- “System fan” on page 29

Removal steps

1. Remove the four screws which secure the heat sink to the system board. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L7, flat-head	4	3 ± 0.5 in-lb

2. Lift the heat sink.



PCIe card and PCIe converter

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

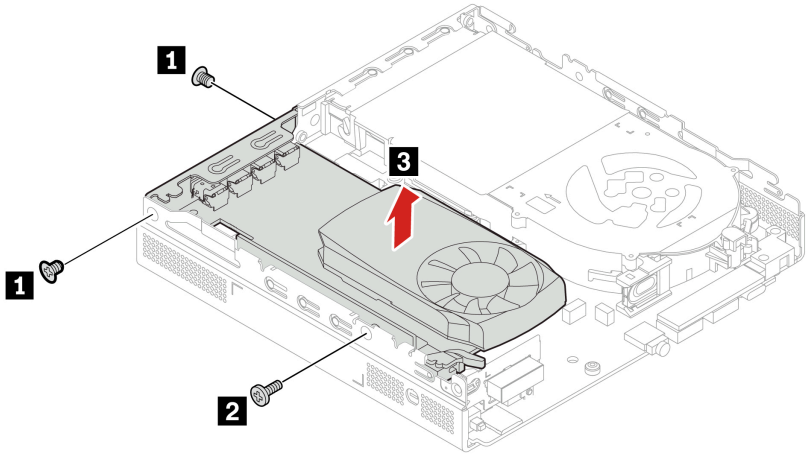
For access, remove the top cover, see “Top cover” on page 22.

Removal steps

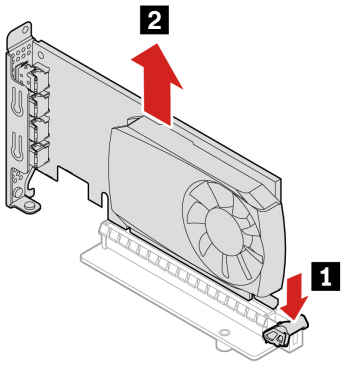
1. Remove the three screws which secure the PCIe card and PCIe converter to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L4, countersunk	2	3 ± 0.5 in-lb
M3 × L6.8, countersunk	1	3 ± 0.5 in-lb

2. Remove the PCIe card and PCIe converter.



3. Open the clip and pull the PCIe card out of the PCIe converter slot.



Graphics card heat sink

Some graphics cards include an integrated heat sink. Prior to the card replacement, you need to remove the heat sink.

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

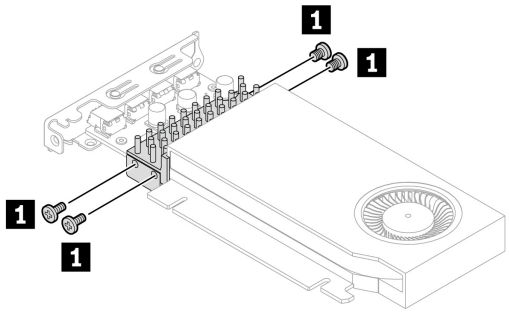
For access, remove the following parts in order:

- “Top cover” on page 22
- “PCIe card and PCIe converter” on page 31

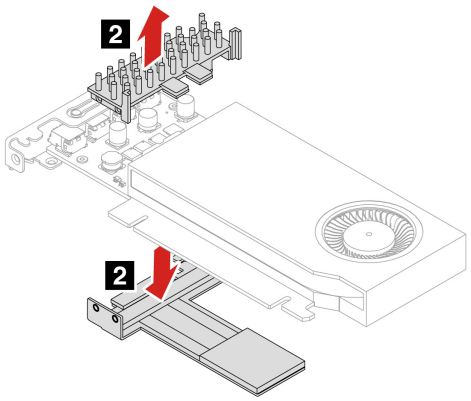
Removal steps

1. Remove the four screws which secure heat sink to the graphics card. Find screw specification in the following screw table.

Screw	Quantity	Torque
M2 × L3, flat head	4	3 ± 0.5 in-lb



2. Remove the heat sink from the graphics card.



Note: Before installing the graphics card, verify that the necessary heat sink is properly mounted.

Board to board module

Before you start, ensure that you have read “Prerequisite for CRU replacement” on page 17.

For access, do the follow

1. Remove the top cover, see “Top cover” on page 22.
2. Disconnect the board to board module cable from the system board.

Removal steps for type 1 board to board module

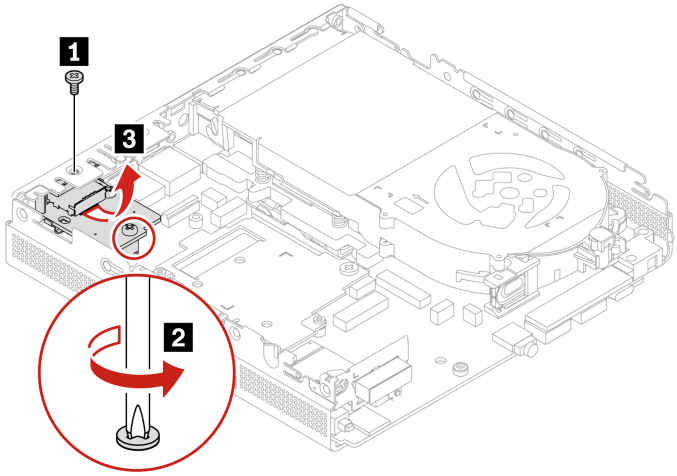
1. Remove the screw which secures the board to board module to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L4, countersunk	1	3 ± 0.5 in-lb

2. Remove the screw which secures the board to board module to the system board. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L3.2, cross round head	1	3 ± 0.5 in-lb

3. Remove the board to board module.



Removal steps for type 2 board to board module

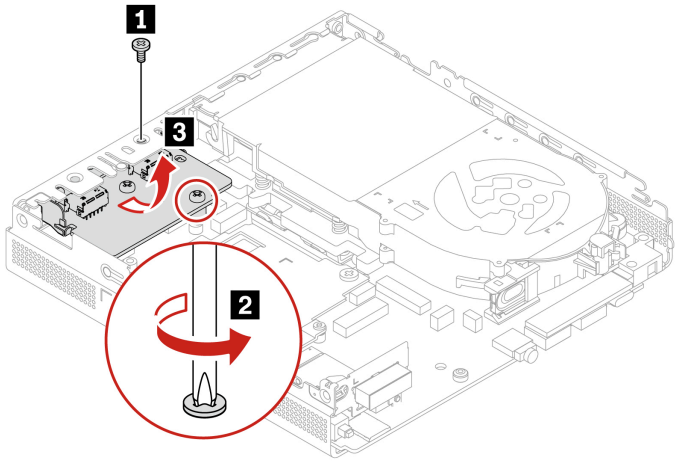
1. Remove the screw which secures the board to board module to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L4, countersunk	1	3 ± 0.5 in-lb

2. Remove the screw which secures the board to board module to the system board. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L3.2, cross round head	1	3 ± 0.5 in-lb

3. Remove the board to board module.



Removal steps for type 3 board to board module

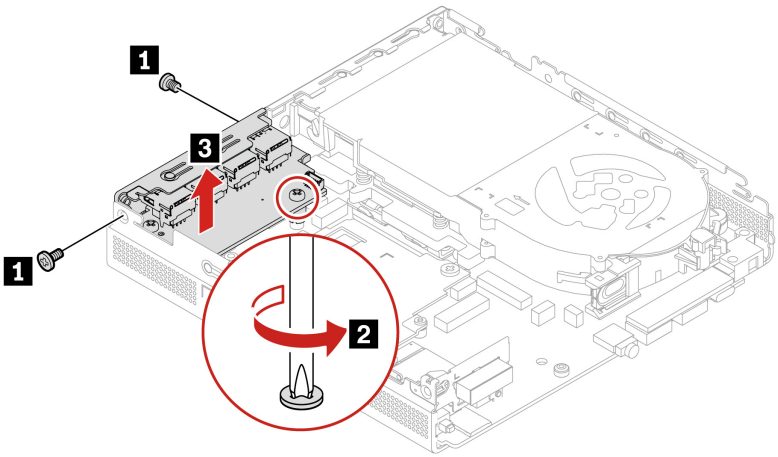
1. Remove the two screws which secure the board to board module to the chassis. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L4, countersunk	2	3 ± 0.5 in-lb

2. Remove the screw which secures the board to board module to the system board. Find screw specification in the following screw table.

Screw	Quantity	Torque
M3 × L3.2, cross round head	1	3 ± 0.5 in-lb

3. Remove the board to board module.



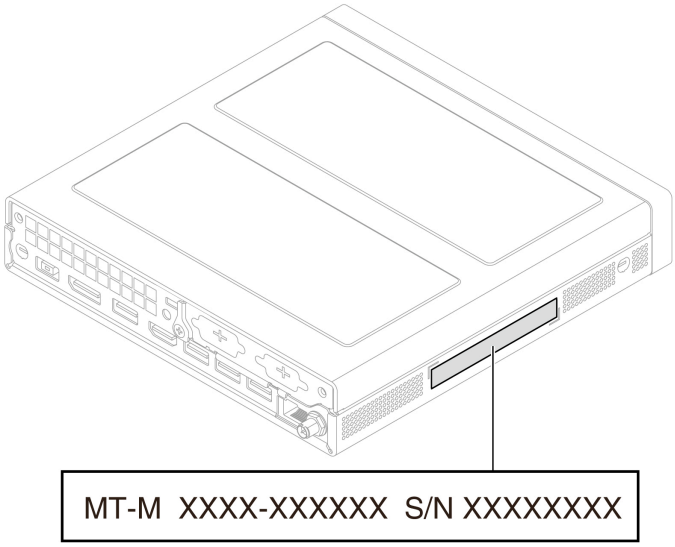
Chapter 5. Help and support

Find your serial number

This topic helps you find computer serial number.

You can find your serial number via:

- Open the Terminal and run `sudo dmidecode -t system | grep Serial`.
- Check the machine-type model and serial-number label of your computer (see illustration below).



Lenovo diagnostic tools

For information about Lenovo diagnostic tools, go to:
https://pcsupport.lenovo.com/lenovodiagnosticsolutions

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 needed information 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” on page 36.

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/supportphonelist

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, see *Safety and Warranty Guide* that comes with your computer.

Self-help resources

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

Resources	How to access?
Lenovo Support Web Site	https://pcsupport.lenovo.com
Tips	https://www.lenovo.com/tips
Lenovo Community	https://forums.lenovo.com
Accessibility information	https://www.lenovo.com/accessibility
Ubuntu help information	https://help.ubuntu.com/lts/ubuntu-help/index.html

Purchase accessories or additional services

This topic provides instructions on how to purchase accessories or additional services.

Accessories

Lenovo has a number of hardware accessories and upgrades to help expand the functionalities of your computer. Accessories include memory modules, storage devices, network cards, power adapters, keyboards, mice, and so on.

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

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 names might vary by country or region.

Accessibility features

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

Supplemental information about the Ubuntu operating system

In limited countries or regions, Lenovo offers customers an option to order computers with the preinstalled Ubuntu® operating system.

If the Ubuntu operating system is available on your computer, read the following information before you use the computer. Ignore any information related to Windows-based programs, utilities, and Lenovo preinstalled applications in this documentation.

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 the following directory:

```
/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 the Ubuntu help system

The Ubuntu help system provides information about how to use the Ubuntu operating system. To access the help system from Home Screen, move your pointer to the Launch bar, and then click the **Help** icon. If you cannot find the **Help** icon from the Launch bar, click the **Search** icon on the bottom left, and type Help to search it.

To learn more about the Ubuntu operating system, go to:
https://www.ubuntu.com

Access IGEL distributions

To learn more about the IGEL operating system, go to https://www.igel.com/support.

Get support information

If you need help, service, technical assistance, or more information about the Ubuntu operating system or other applications, contact the provider of the Ubuntu operating system or the provider of the application. If you need the service and support for hardware components shipped with your computer, contact Lenovo. For more information about how to contact Lenovo, refer to the *User Guide* and *Safety and Warranty Guide*.

To access the latest *User Guide* and *Safety and Warranty Guide*, go to:
https://pcsupport.lenovo.com

Access open-source information

This device includes software made publicly available by Lenovo, including software licensed under the General Public License and/or the Lesser General Public License (the open source software).

You may obtain a copy of the corresponding source code for any such open source software licensed under the General Public License and/or the Lesser General Public License (or any other license requiring us to make a written offer to provide corresponding source code to you) from Lenovo for a period of three years without charge except for the cost of media, shipping, and handling, upon written request to Lenovo. This offer is valid to anyone in receipt of this device.

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.

The open source software is distributed in hope it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See for example the GNU General Public License and/or the Lesser General Public License for more information.

To view additional information regarding licenses, acknowledgments and required copyright notices for the open source software shipped on your Device, go to `/usr/share/doc/*/copyright`.

Appendix A. Important notice for Quebec consumers

In regard to section 79.18 of Quebec's Regulation respecting the application of the Consumer Protection Act, Lenovo in no way guarantees the availability of (a) replacement parts; (b) repair services; and (c) information necessary to maintain or repair the goods. For up-to-date information on the technical support and parts available for your purchase, please consult **https://support.lenovo.com/ca/en**.

En ce qui concerne l'article 79.18 du Règlement d'application de la Loi sur la protection du consommateur du Québec, Lenovo ne garantit en aucune façon la disponibilité des éléments suivants :(a) les pièces de rechange; (b) les services de réparation; et (c) les renseignements nécessaires à l'entretien à la réparation du bien. Pour obtenir des renseignements à jour sur le soutien technique et les pièces disponibles pour votre achat, veuillez consulter **https://support.lenovo.com/ca/fr**.

Appendix B. Notice for USB connector name update

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

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

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