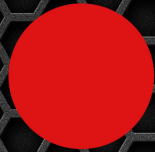


ThinkCentre X Tower User Guide

Lenovo
ThinkCentre



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*
- *Generic Safety and Compliance Notices*
- *Setup Guide*

First Edition (March 2026)

© Copyright Lenovo 2026.

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

Contents

Discover your Lenovo computer ii

Chapter 1. Meet your computer. . . . 1

Top	1
Bottom	3
Specifications	5
USB specifications	6

Chapter 2. Get started with your computer. . . . 7

Connect an external display	7
Get started with the operating system	7
Access networks	8

Chapter 3. Explore your computer . . 10

Smart power-on feature	10
Transfer data	10
Connect to a Bluetooth-enabled device.	10
Use a media card	11
Set the power plan	11

Chapter 4. Secure your computer and information 13

Lock the computer	13
UEFI BIOS passwords	13
Use BIOS security solutions	14

Chapter 5. UEFI BIOS 17

Enter the UEFI BIOS menu	17
Navigate the UEFI BIOS menu	17
Enable or disable the ErP LPS compliance mode.	17
Update UEFI BIOS.	18

Chapter 6. CRU replacement 19

What is CRU	19
CRU list	19
Sensor hub	20
Top cover	20
Dust filter	21
Side cover	22
Main bezel	23
Hard disk drive and tray	24

Side fan and side fan cage	25
Side fan duct	27
Side fan kit holder	28
Top fan	28
Bottom fan.	29
E-lock	30
Memory module	30
Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender	32
PCIe card	36
Top guide bracket for dual graphics card	37
Top graphics card support bracket	38
M.2 solid-state drive and heat sink	39
AI fusion card.	43
M.2 solid-state drive bracket.	44

Chapter 7. Help and support 46

Self-help resources	46
Lenovo diagnostic tools	46
Call Lenovo	47
Before you contact Lenovo	47
Lenovo Customer Support Center.	47
Purchase accessories or additional services	48
Accessibility features.	48

Appendix A. Supplemental information about the Ubuntu operating system 50

Appendix B. Compliance information. 52

Appendix C. Notice for USB connector name update 53

Appendix D. Important notice for Quebec consumers 54

Appendix E. Notices and trademarks. 55

Discover your Lenovo computer

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

Before starting your tour, please read the following information:

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

Chapter 1. Meet your computer

Top



Item	Description	Item	Description
1	Power button	2	Headset connector
3	USB-C® connector (USB 20Gbps)	4	USB-A connectors (USB 10Gbps)
5	USB-A connectors (USB 5Gbps)	6	SD-card slot
7	Healthy indicator		

Notes:

- Ensure that the top cover of the computer remains unobstructed and free of any items.
- For more information about the USB connector name update, see Appendix C “Notice for USB connector name update” on page 53.

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)
Thunderbolt 3	40
Thunderbolt 4	40

Power indicator

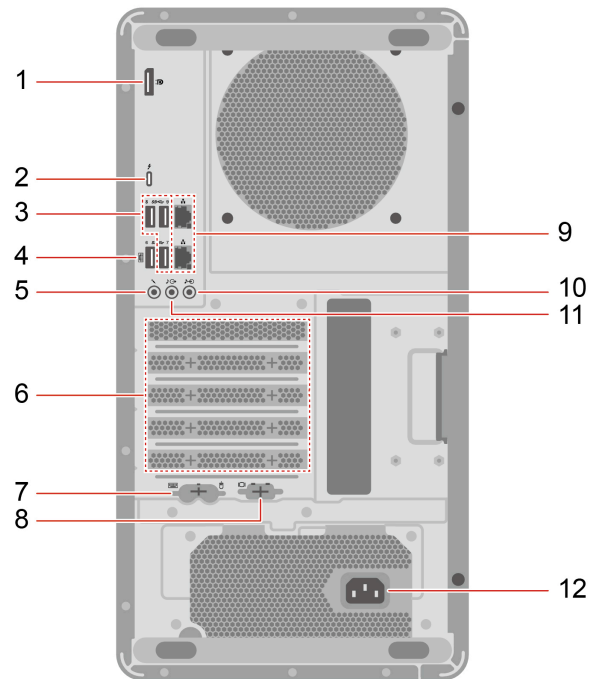
Show the system status of your computer.

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

Related topic

“USB specifications” on page 6

Bottom



Item	Description	Item	Description
1	DisplayPort™ out connector (8K/60Hz)	2	USB-C connector (Thunderbolt™ 4) (8K/30Hz)
3	USB-A connectors (USB 5Gbps)	4	USB-A connector (USB 5Gbps) with smart power-on feature
5	Microphone connector	6	PCI-Express card area
7	PS/2 connector*	8	Serial connector*
9	Ethernet connectors (1 Gbps)	10	Audio line-in connector
11	Audio line-out connector	12	Power cord connector

* for selected models

Notes:

- When installing the computer at a visual display workplace, ensure that the unpainted bottom and stand are not positioned within the direct field of view to avoid potential reflections.
- The actual resolution of external displays may vary by the connected display device and the cable being used.

Serial connector

Connect an external modem, a serial printer, or other devices that use a serial connector.

Related topics

- “USB specifications” on page 6
- “Connect an external display” on page 7
- “Smart power-on feature” on page 10

- “Lock the computer” on page 13

Specifications

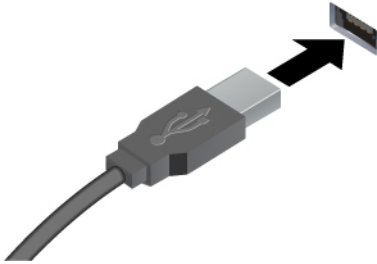
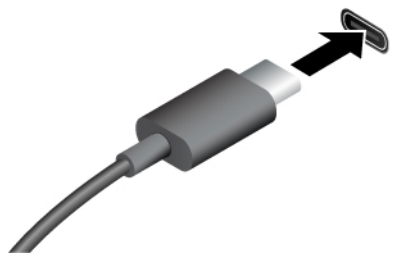
Specifications	Description
Dimensions	• Width: 220 mm (8.7 inches) • Height: 497 mm (19.6 inches) • Depth: 420 mm (16.5 inches)
Weight (without packaging)	Maximum configuration as shipped: 19.3 kg (42.5 lb)
Hardware configuration	• For Ubuntu® operating system: 1. Open the system menu from the top-right corner and click . 2. Click System → About. • For IGEL® operating system*: 1. Click the IGEL icon in the bottom-left corner to open the start menu. 2. Click the gear icon in the Quick Start Panel, then click System Information to open it.
Power supply	• 500-watt automatic voltage-sensing power supply • 850-watt automatic voltage-sensing power supply • 1200-watt automatic voltage-sensing power supply
Electrical input	• Input voltage: From 100 V ac to 240 V ac • Input frequency: 50/60 Hz
Adaptability for power supply	• Mainland China: 220 V±22 V, 50 Hz±1 Hz • Adaptive voltage positioning: 90 V to 264 V, 50/60 Hz • With voltage selection switch: 90 V to 264 V, 50 Hz±1 Hz
CPU	To view the CPU information of your computer: • For Ubuntu operating system: 1. Open the system menu from the top-right corner and click . 2. Click System → About. • For IGEL operating system*: Enter System Information and click Devices → Processor.
Memory	Double data rate 5 (DDR5) unbuffered dual in-line memory module (UDIMM) Maximum memory capacity: 64 GB
Storage device	• 3.5-inch hard disk drive* • M.2 solid-state drive To view the storage drive capacity of your computer: • For Ubuntu operating system: Type Disks in the search box and use the Disks application. • For IGEL operating system*: Type lsblk /dev/igfboot in Local Terminal. Note: The storage drive capacity indicated by the system is less than the nominal capacity.

Specifications	Description
Video features	- The integrated graphics card supports the following connectors: - DisplayPort out connector - USB-C connector - The optional discrete graphics card provides an enhanced video experience and extended capabilities.
Expansion	- Card reader - Memory slots - M.2 solid-state drive slot - Storage drive bay - PCI Express slots
Network features	- Bluetooth - Ethernet LAN - Wireless LAN

* for selected models

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 (USB4 20Gbps)  USB-C connector (Thunderbolt 4)	- 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 with your computer

Connect 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

For Ubuntu operating system

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.

For IGEL operating system (for selected models)

You can use the IGEL Display Switch tool to detect the external display and change display settings. Do the following to launch the tool:

1. Click the gear icon in the Quick Start Panel to open Setup.
2. Select **User Interface → Display Settings**.

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.

For more details on using Display Switch tool, see https://kb.igel.com/base_system/12.4/en/display-settings-122896709.html.

Set the display mode (for selected models)

Press Fn+F7 and then select a display mode of your preference.

Get started with the operating system

Ubuntu operating system

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/>.

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 .

IGEL operating system (for selected models)

For support on IGEL operating system, see the IGEL support site at <https://www.igel.com/support/> or visit the knowledge base at <https://kb.igel.com/>.

1. Open Application Launcher on the taskbar.
2. Select the application as desired.

Note: The system tools available may depend on the configuration by the company administrator.

Launch settings

1. Click the IGEL icon in the bottom-left corner to open the start menu.
2. Click the gear icon in the Quick Start Panel to display available system settings tools.

Access networks

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

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 Wi-Fi networks

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

For Ubuntu operating system

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.

For IGEL operating system (for selected models)

1. Click the Wi-Fi tray icon and select **Manage Wireless Networks** to launch the Wireless Manager tool.



2. Search for available networks and select a network for connection.

Notes: Ensure that the Wireless Manager is enabled:

1. Click the gear icon in the Quick Start Panel to open Setup.
2. Select **Network → Wireless**.

For more details on managing Wi-Fi networks, see https://kb.igel.com/base_system/12.4/en/wi-fi-networks-122896032.html.

Advanced settings are available under **Setup → Network → Wireless**. For more details, see https://kb.igel.com/base_system/12.4/en/wireless-122896021.html.

Airplane mode (for selected models)

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

To enable or disable the Airplane mode, press Fn+F8.

Chapter 3. Explore your computer

Smart power-on feature

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.

Transfer data

Quickly share your files using the built-in Bluetooth technology among devices with the same features. You also can install a disc or media card to transfer data.

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. Place the device that you are attempting to connect to less than 10 meters (33 feet) from the computer.



- To connect to a Bluetooth-enabled device in Ubuntu operating system:
 - 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.
- To connect to a Bluetooth-enabled device in IGEL operating system (for selected models):
 1. Turn on Bluetooth on the computer:
 - a. Click the gear icon in the Quick Start Panel to open Setup.
 - b. Select **Devices → Bluetooth** and enable Bluetooth.
 2. Use the Bluetooth tool to connect to a Bluetooth-enabled device:
 - a. Click the grid icon to open Application Launcher.
 - b. Click the gear icon and choose **Bluetooth Tool**.

For more details on using the Bluetooth tool, see https://kb.igel.com/base_system/12.4/en/bluetooth-122896116.html.

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.

Use a media card

If your computer has an SD-card slot, read the following information.

Install a media card

1. Locate the SD-card slot.
2. Ensure that the metal contacts on the card are facing the ones in the SD-card slot. Insert the card firmly into the SD-card slot until it is secured in place.

Remove a media card

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

1. Launch the **Files** application.
2. Select the unmount icon next to the card and unmount the card from the operating system.
3. Press the card and remove it from your computer. Store the card safely for future use.

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:
 - **For Ubuntu operating system:** After 5 minutes
 - **For IGEL operating system** (for selected models): After 20 minutes
- Put the computer to sleep: After 20 minutes

To awaken the computer from Sleep mode:

- **For Ubuntu operating system:**
Press any key on your keyboard.
- **For IGEL operating system** (for selected models):

1. Change the registry settings properly.
2. Press any key on your keyboard.

To set the power plan:

- **For Ubuntu operating system:**
 1. Go to **Settings → Power**.
 2. Choose or customize a power plan of your preference.
- **For IGEL operating system** (for selected models):
 1. Click the gear icon in the Quick Start Panel to open Setup.
 2. Select **System → Power Options → System**.
 3. Choose or customize a power plan of your preference.

Chapter 4. Secure your computer and information

Lock the computer

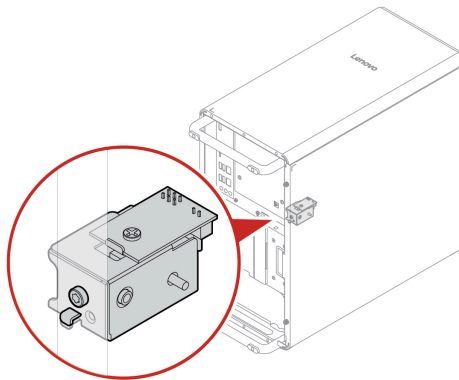
Note: Lenovo makes no comments, judgments, or warranties about the function, quality, or performance of the locking device and security feature. You can purchase computer locks from Lenovo.

E-lock

Your computer might have a security lock solution installed to protect the computer from unauthorized tampering of the internal components. Using the E-Lock, you can mechanically lock or unlock the computer cover.

To enable or disable the E-Lock:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security** → **Electronic Lock** to enable or disable the E-lock.
3. Press F10 or Fn+F10 to save the changes and exit. Your computer will restart automatically and then changes take effect.



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.

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 (for selected models)

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 computer's 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.

Chapter 5. UEFI BIOS

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 can also 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.

Enable or disable the ErP LPS compliance mode

Lenovo computers meet the eco-design requirements of the ErP Lot 3 regulation. For more information, go to:
<https://www.lenovo.com/us/en/compliance/eco-declaration>

You can enable the ErP LPS compliance mode to reduce the consumption of electricity when the computer is off or in sleep mode.

To enable or disable the ErP LPS compliance mode:

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

2. Select **Power → Enhanced Power Saving Mode** and press Enter.
3. Depending on whether you select **Enabled** or **Disabled**, do one of the following:
 - If you select **Enabled**, press Enter. Then, select **Power → Automatic Power On** and press Enter. Check whether the Wake on LAN feature is disabled automatically. If no, disable it.
 - If you select **Disabled**, press Enter. Then, go to the next step.
4. Press F10 or Fn+F10 to save the changes and exit.

When the ErP LPS compliance mode is enabled, you can wake up the computer by doing one of the following:

- Press the power button.
- Enable the Wake Up on Alarm feature to make the computer wake up at a set time.

Update UEFI BIOS

When you install a new program, device driver, or hardware component, you might need to update UEFI BIOS. You can update the BIOS from your operating system or a flash update disc (supported only on selected models).

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

- Using the built-in software update service:
 - For Ubuntu operating system, Ubuntu software update will check the LVFS site for any firmware updates and notify you when updates are available.
 - For IGEL operating system (for selected models), update, downgrade, or reinstall the UEFI BIOS using the IGEL Universal Management Suite (UMS). See [Universal Firmware Update in the IGEL UMS](#).
- From the Lenovo Support Web site:
 1. Go to <https://pcsupport.lenovo.com>.
 2. Download the flash BIOS update driver for the operating system version or the ISO image version (used to create a flash update disc). Then, download the installation instructions for the flash BIOS update driver you have downloaded.
 3. Print the installation instructions and follow the instructions to update the BIOS.

Chapter 6. CRU replacement

What is CRU

Important: For users in mainland China, the information provided in this chapter is for reference by professional maintenance service providers or technicians authorized by Lenovo only. Users shall not perform maintenance on their own. Any faults or damage due to improper operation, modification, or failure to use parts provided by Lenovo are not covered by the warranty for this product. For product warranty information, refer to the warranty document provided with the product or go to the official Lenovo website at <https://newsupport.lenovo.com.cn>.

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

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

If you intend on installing 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

- Dongles*
- Dust filter
- Memory module
- Mouse and keyboard
- Power cord
- Side cover
- Top cover

Optional-service CRUs

- AI fusion card*
- Dual graphics card bracket*
- Dual graphics card extender*
- E-lock*
- Fans

- Graphics card
- Graphics card extender assembly
- Hard disk drive*
- Hard disk drive tray
- Main bezel
- M.2 solid-state drive
- M.2 solid-state drive heat sink
- M.2 solid-state drive bracket
- PCIe card*
- Sensor hub
- Side fan cage
- Side fan duct*
- Side fan kit holder
- Top graphics card support bracket
- Top guide bracket for dual graphics card*

* for selected models

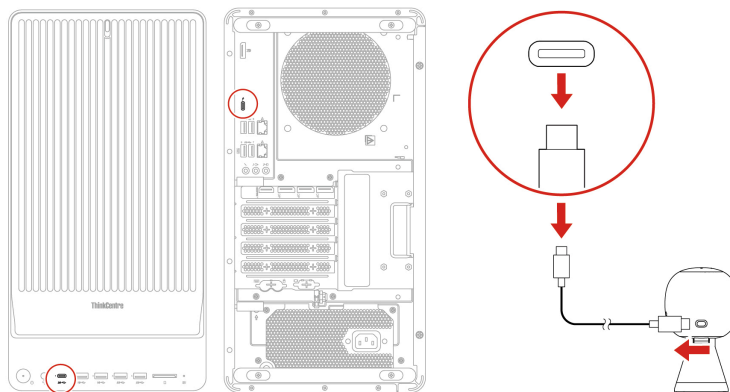
Sensor hub

Prerequisite

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

Removal step

Lay down the computer. Disconnect the USB-C cable from the computer and the sensor hub, and then remove the sensor hub.



Top cover

Prerequisite

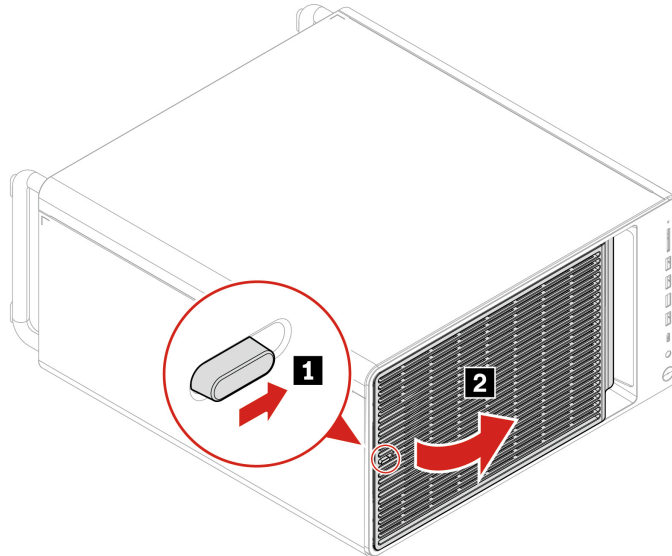
Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

For access, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer.
2. Lay down the computer. Disconnect all power cords from electrical outlets and disconnect all cables from the computer.
3. Remove the sensor hub. See “Sensor hub” on page 20.

Removal steps

1. Hold the latch on the top cover and slide it to the right.
2. Lift the left side of the top cover to remove it.



Dust filter

Prerequisite

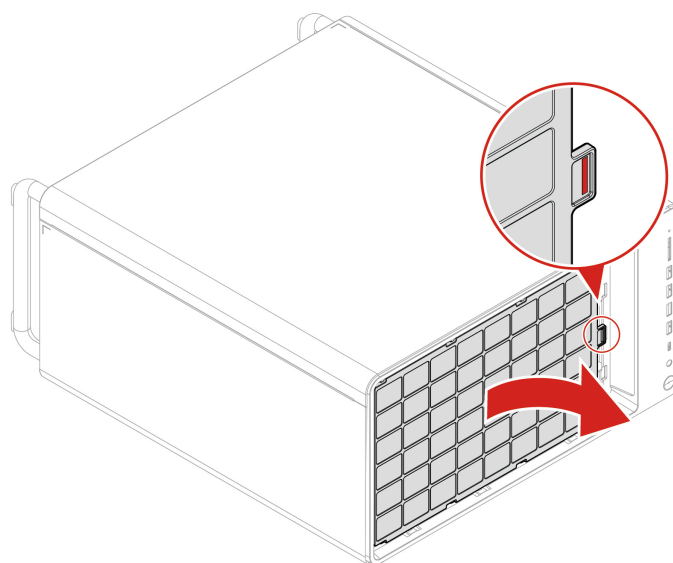
Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

For access, remove these parts in order:

- “Sensor hub” on page 20
- “Top cover” on page 20

Removal step

Pull the red tab on the right side of the dust filter diagonally upward to remove the dust filter.



Side cover

Prerequisite

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



Before you open the side cover, turn off the computer and wait several minutes until the computer is cool.

For access, do the following:

1. Remove any media from the drives and turn off all connected devices and the computer.
2. Lay down the computer. Disconnect all power cords from electrical outlets and disconnect all cables from the computer.
3. Unlock any locking device that secures the side cover.
4. Remove the sensor hub. See “Sensor hub” on page 20.

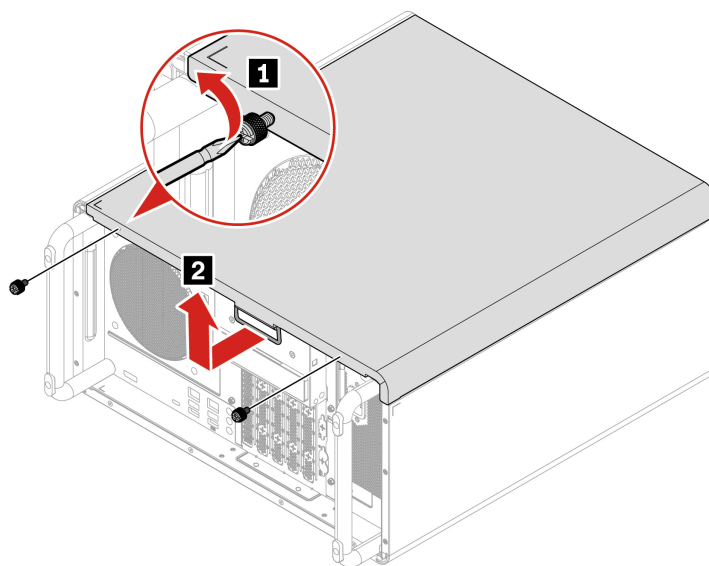
Removal steps

1. Remove the two screws which secure the side cover to the chassis, one screw at each edge of the chassis. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 6 mm (2)	Black	3 ± 0.5 lb/in

Note: The screws can be conveniently removed by hand without the need for any special tools.

2. Grab the metal handle and pull the side cover backward to remove it.



Note: If a locking device is available, use it to lock the computer after installing the side cover.

Main bezel

Prerequisite

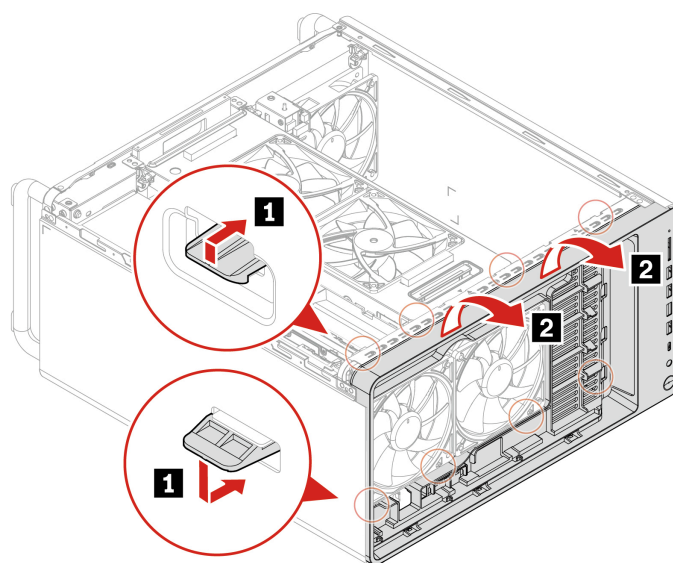
Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

For access, remove these parts in order:

- “Sensor hub” on page 20
- “Top cover” on page 20
- “Dust filter” on page 21
- “Side cover” on page 22

Removal steps

1. Unlock the two latches on the upper and lower left corners of the front bezel.
2. Pivot the main bezel outwards to remove it from the chassis.



Hard disk drive and tray

Prerequisite

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

Attention: The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:

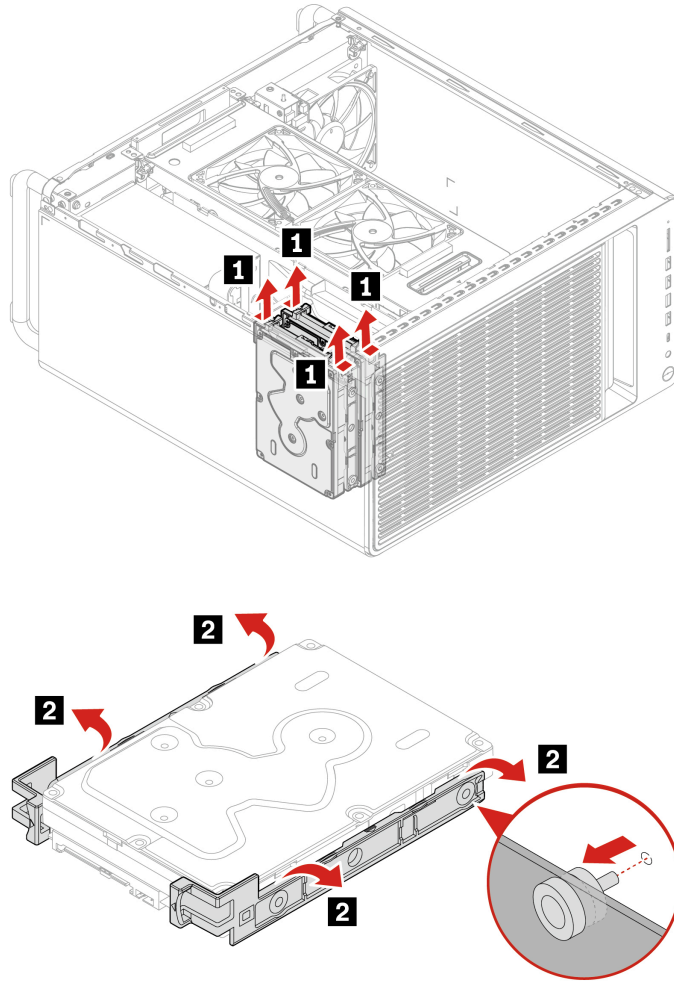
- Replace the internal storage drive only for repair. The internal storage drive is not designed for frequent changes or replacement.
- Before replacing the internal storage drive, make a backup copy of all the data that you want to keep.
- Do not touch the contact edge of the internal storage drive.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

For access, remove these parts in order:

- “Sensor hub” on page 20
- “Side cover” on page 22

Removal steps

1. Push the locking latches on both sides of the hard disk drive tray towards the center and remove the hard disk drive and tray.
2. Remove the pins of the tray from the holes on the hard disk drive to remove it.



Side fan and side fan cage

Prerequisite

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

For access, remove these parts in order:

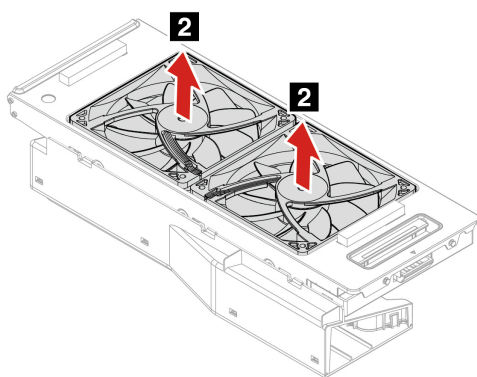
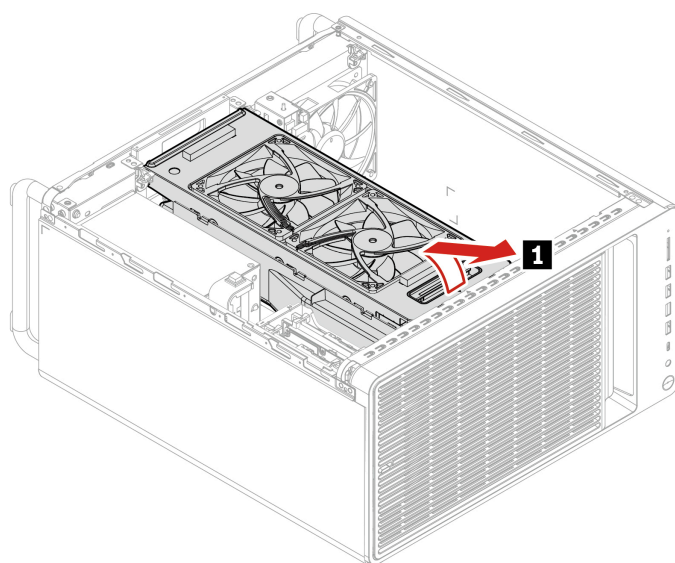
- “Sensor hub” on page 20
- “Side cover” on page 22

Removal steps

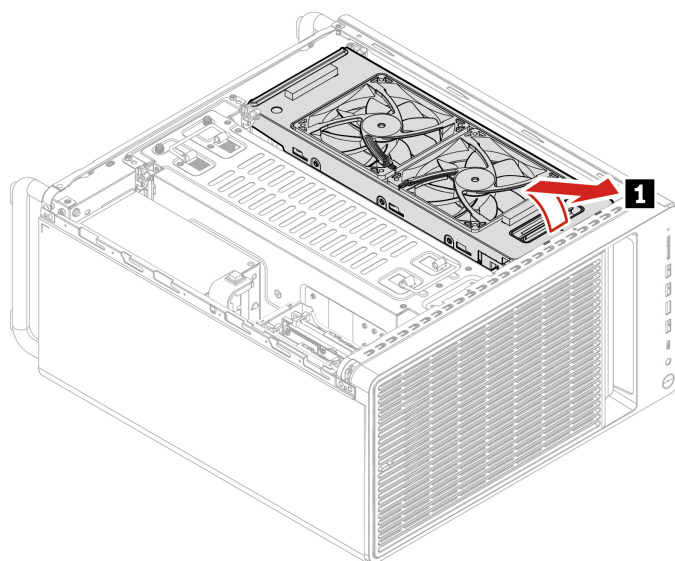
1. Release the locking latch and lift the side fan assembly upward to remove it.
2. Remove the two side fans from the side fan cage.

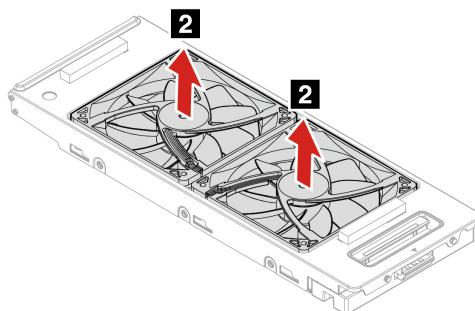
Note: The fan is attached to the chassis by four insert pins. Pull the insert pins to release the fan.

- **Location 1**



- **Location 2**





Side fan duct

Prerequisite

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

For access, remove these parts in order:

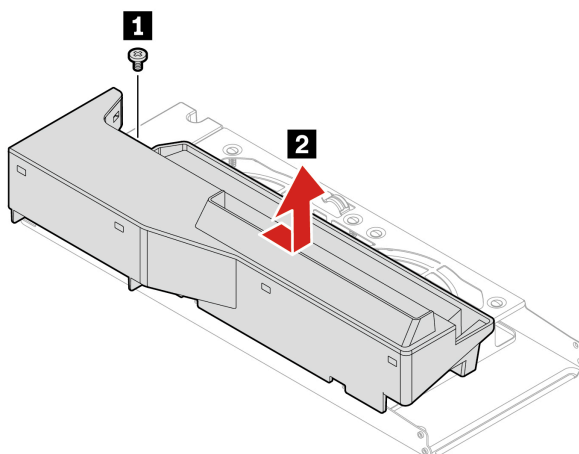
- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan and side fan cage” on page 25

Removal steps

1. Remove the one screw which secures the side fan duct to the side fan cage. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Ni coated (1)	Silver	5 ± 0.5 lb/in

2. Remove the side fan duct from the side fan cage.



Side fan kit holder

Prerequisite

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

For access, remove these parts in order:

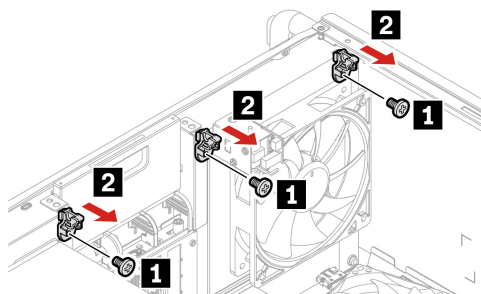
- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan and side fan cage” on page 25

Removal steps

1. Remove the three screws which secure the side fan kit holders to the chassis. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Zn coated (3)	Blue	5 ± 0.5 lb/in

2. Remove the side fan kit holders from the chassis.



Top fan

Prerequisite

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

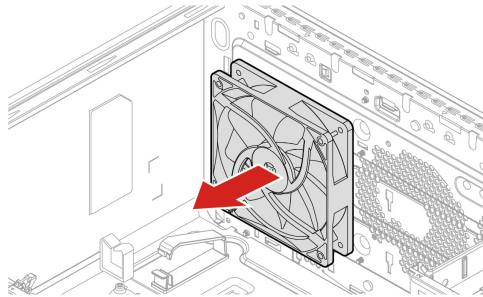
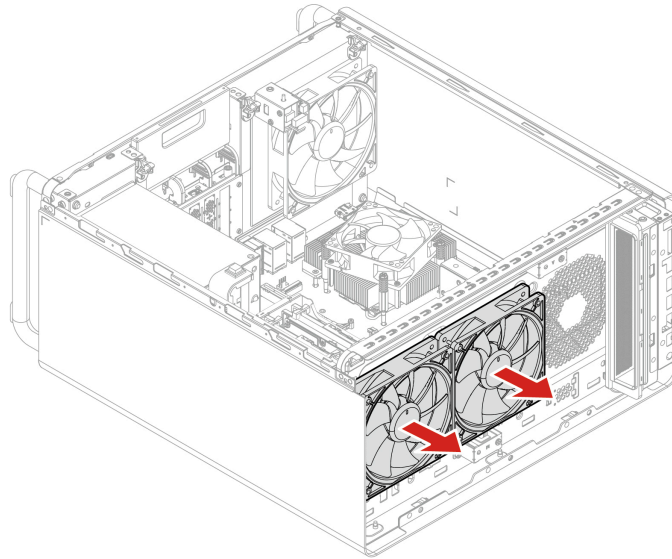
For access, do the following:

1. Remove these parts in order:
 - “Sensor hub” on page 20
 - “Top cover” on page 20
 - “Dust filter” on page 21
 - “Side cover” on page 22
 - “Main bezel” on page 23
 - “Side fan and side fan cage” on page 25
2. Disconnect the fan cables from the system board.

Removal step

Locate and remove the three top fans from the chassis.

Note: The fan is attached to the chassis by four insert pins. Pull the insert pins to release the fan.



Bottom fan

Prerequisite

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

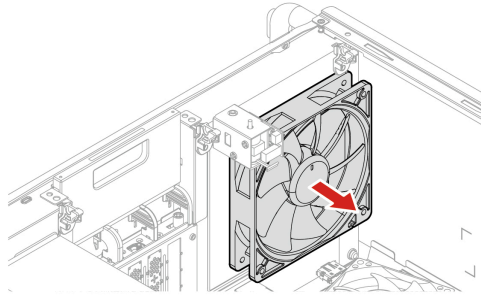
For access, do the following:

1. Remove these parts in order:
 - “Sensor hub” on page 20
 - “Side cover” on page 22
 - “Side fan and side fan cage” on page 25
2. Disconnect the fan cable from the system board.

Removal step

Locate and remove the bottom fan from the chassis.

Note: The fan is attached to the chassis by four insert pins. Pull the insert pins to release the fan.



E-lock

Prerequisite

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

For access, remove these parts in order:

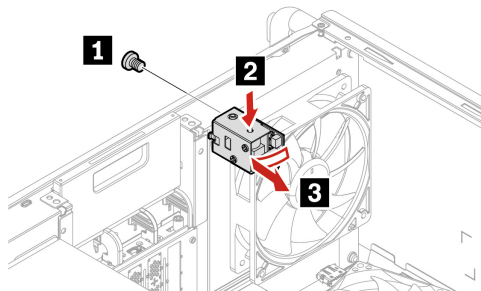
- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan kit holder” on page 28

Removal steps

1. Remove the one screw which secures the E-lock to the chassis. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M3 x 5 mm, Ni coated (1)	Silver	5 ± 0.5 lb/in

2. Slide down the E-lock and remove it from the chassis.

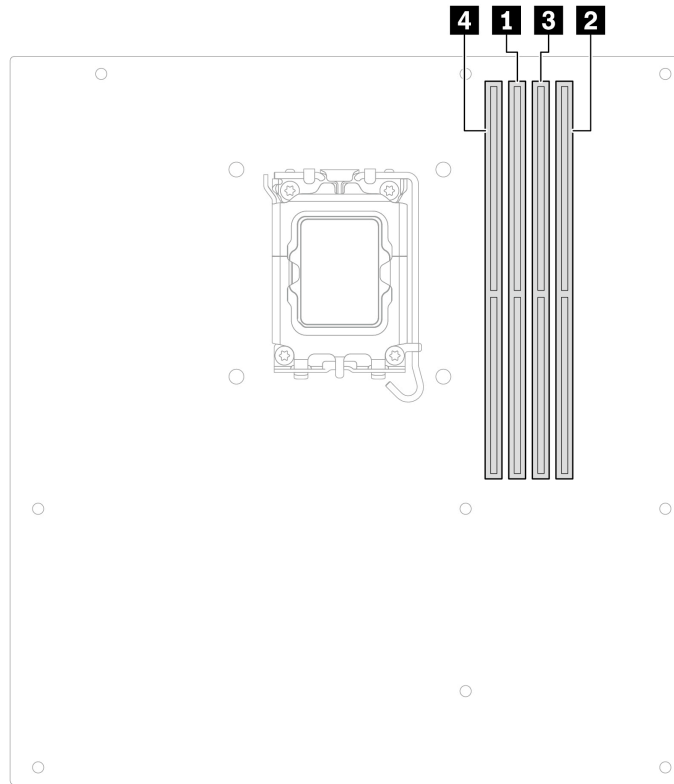


Memory module

Prerequisite

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

Ensure that you follow the installation order for memory modules shown in the following illustration.

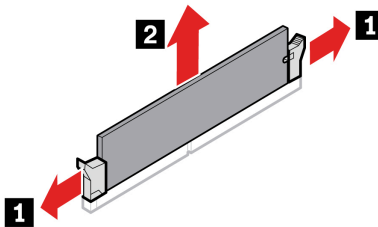


For access, remove these parts in order:

- “Sensor hub” on page 20
- “Side cover” on page 22

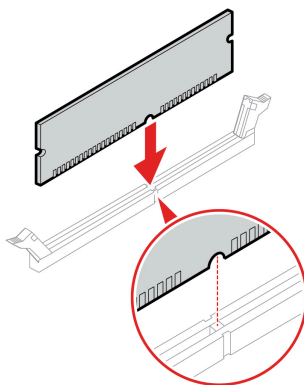
Removal steps

1. Open the two retaining clips.
2. Gently pull the memory module out of the memory slot.



Installation step

Align the memory module to the slot and press down on both ends until the latches are fully engaged with a click.



Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender

Prerequisite

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



Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

For access, do the following:

1. Remove these parts in order:
 - “Sensor hub” on page 20
 - “Side cover” on page 22
2. Disconnect the power cable from the graphics card.

Removal steps

• Type 1

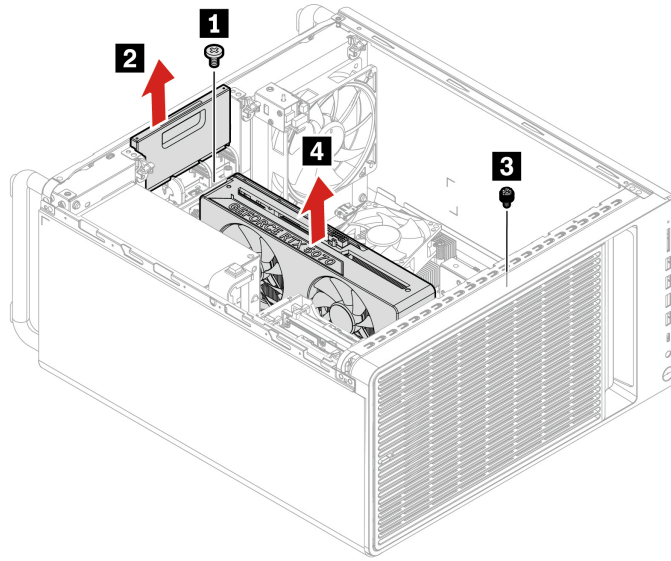
1. Remove the one screw which secures the PCIe retainer latch to the graphics card. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Zn coated (1)	Blue	5 ± 0.5 lb/in

2. Lift the PCIe latch pressure plate.
3. Remove the one screw which secures the graphics card extender assembly to the top graphics card support bracket. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 6 mm (1)	Black	3 ± 0.5 lb/in

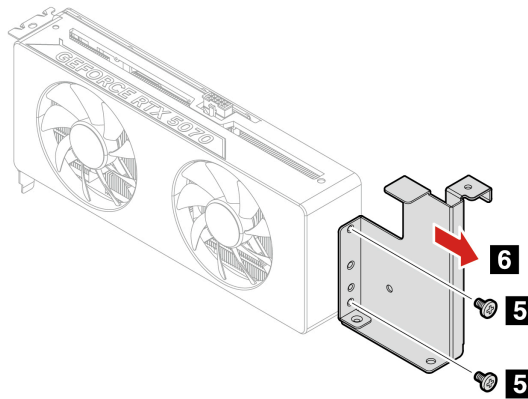
4. Gently pull the graphics card and graphics card extender assembly out of the slot.



5. Remove the two screws which secure the graphics card extender assembly to the graphics card. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M3 x 8 mm, Zn coated (2)	Blue	5 ± 0.5 lb/in

6. Remove the graphics card extender assembly.



• Type 2

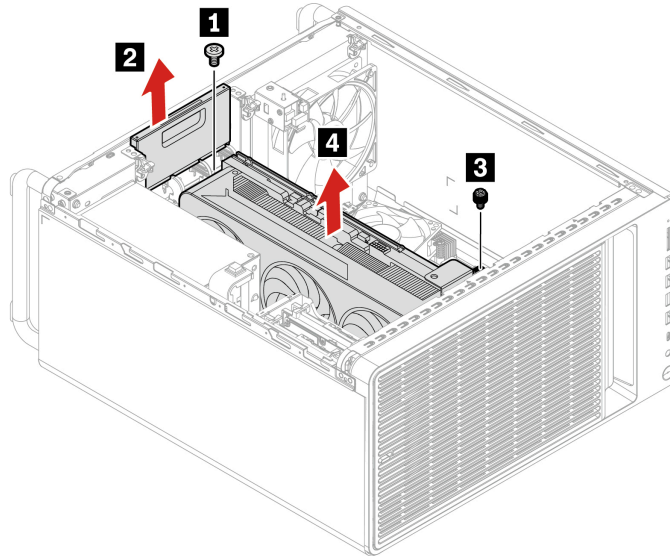
1. Remove the one screw which secures the PCIe retainer latch to the graphics card. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Zn coated (1)	Blue	5 ± 0.5 lb/in

2. Lift the PCIe latch pressure plate.
3. Remove the one screw which secures the graphics card extender assembly to the top graphics card support bracket. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 6 mm (1)	Black	3 ± 0.5 lb/in

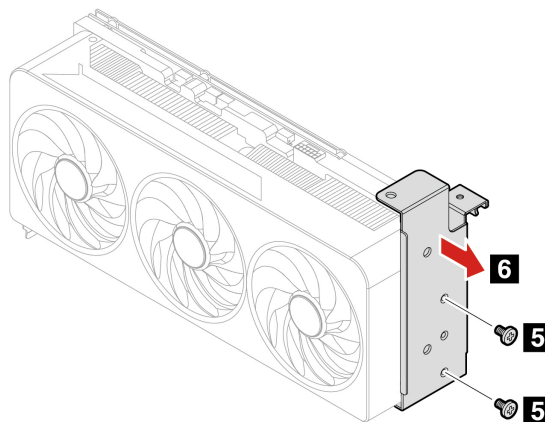
- Gently pull the graphics card and graphics card extender assembly out of the slot.



- Remove the two screws which secure the graphics card extender assembly to the graphics card. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M3 x 8 mm, Zn coated (2)	Blue	5 ± 0.5 lb/in

- Remove the graphics card extender assembly.

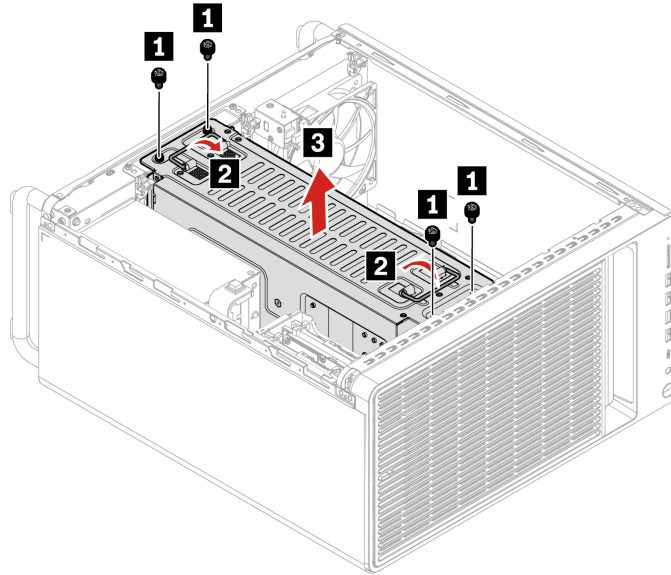


• Type 3

- Remove the four screws which secure the dual graphics card bracket to the chassis. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 6 mm (4)	Black	3 ± 0.5 lb/in

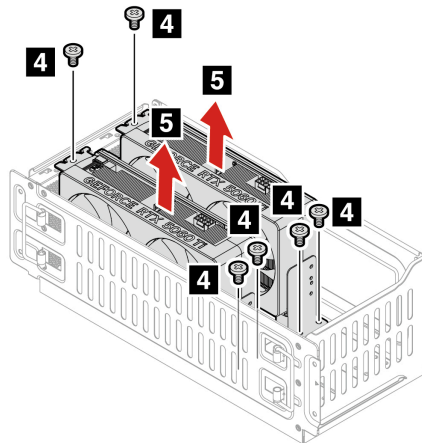
2. Lift the two handles on the dual graphics card bracket.
3. Gently pull the dual graphics card bracket out of the chassis.



4. Remove the six screws which secure the graphics cards and dual graphics card extenders to the dual graphics card bracket. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Ni coated (6)	Silver	5 ± 0.5 lb/in

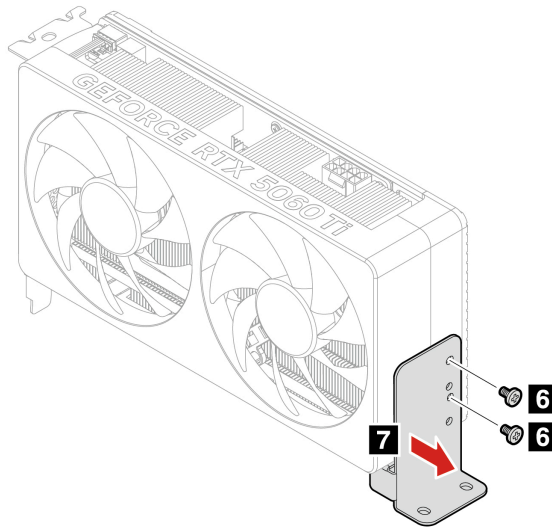
5. Remove the two graphics cards from the dual graphics card bracket.



6. Remove the two screws on each graphics card, which secure the dual graphics card extender to the graphics card. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M3 x 8 mm, Zn coated (4)	Blue	5 ± 0.5 lb/in

7. Remove the dual graphics card extenders.



PCIe card

Prerequisite

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



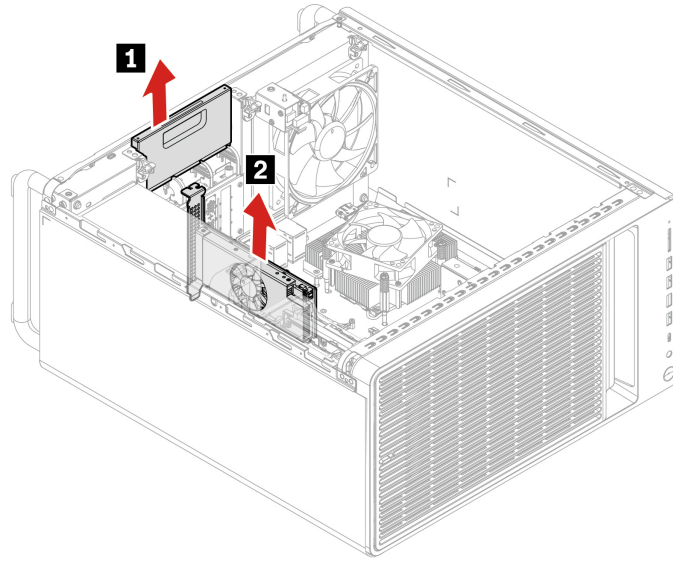
Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

For access, remove these parts in order:

- “Sensor hub” on page 20
- “Side cover” on page 22
- “Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender” on page 32

Removal steps

1. Lift the PCIe latch pressure plate.
2. Gently pull the PCIe card out of the slot.



Top guide bracket for dual graphics card

Prerequisite

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



Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

For access, remove these parts in order:

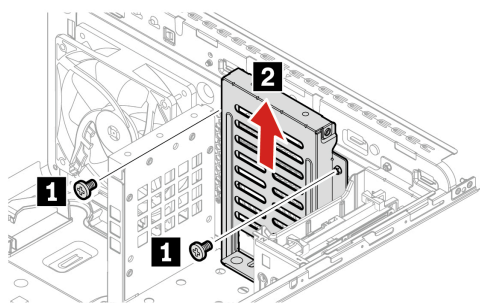
- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan and side fan cage” on page 25
- “Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender” on page 32

Removal steps

1. Remove the two screws which secure the top guide bracket for dual graphics card to the chassis. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Ni coated (2)	Silver	5 ± 0.5 lb/in

2. Pull the top guide bracket for dual graphics card out of the chassis.



Top graphics card support bracket

Prerequisite

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



Before you open the computer cover, turn off the computer and wait several minutes until the computer is cool.

For access, remove these parts in order:

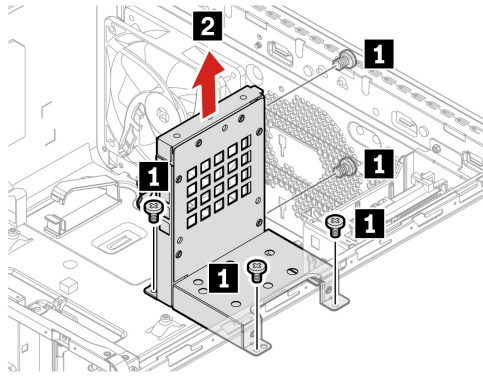
- “Sensor hub” on page 20
- “Top cover” on page 20
- “Dust filter” on page 21
- “Side cover” on page 22
- “Main bezel” on page 23
- “Side fan and side fan cage” on page 25
- “Top fan (the two located beneath the main bezel)” on page 28
- “Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender” on page 32

Removal steps

1. Remove the five screws which secure the top graphics card support bracket to the chassis. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
6-32 x 8 mm, Ni coated (5)	Silver	5 ± 0.5 lb/in

2. Pull the top graphics card support bracket out of the chassis.



M.2 solid-state drive and heat sink

Prerequisite

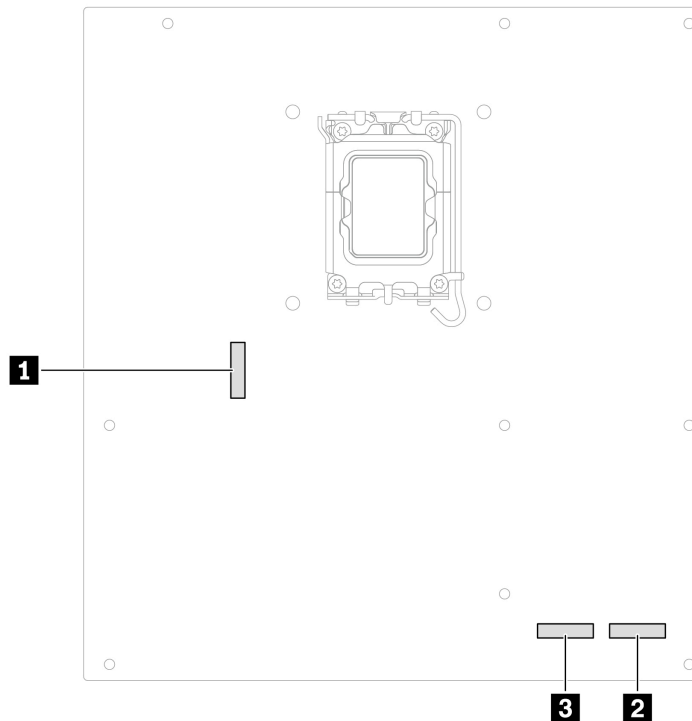
Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.



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

Important notice for installing the M.2 solid-state drive

For better performance, it's recommended that you follow the installation order for M.2 solid-state drives shown in the following illustration.



Attention:

- The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:
 - Replace the internal storage drive only for repair. The internal storage drive is not designed for frequent changes or replacement.
 - Before replacing the internal storage drive, make a backup copy of all the data that you want to keep.
 - Do not touch the contact edge of the internal storage drive. Otherwise, the internal storage drive might get damaged.
 - Do not apply pressure to the internal storage drive.
 - Do not make the internal storage drive subject to physical shocks or vibration. Put the internal storage drive on a soft material, such as cloth, to absorb physical shocks.

For access, remove these parts in order:

- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan and side fan cage” on page 25
- “Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender” on page 32

Removal steps for M.2 solid-state drive without heat sink

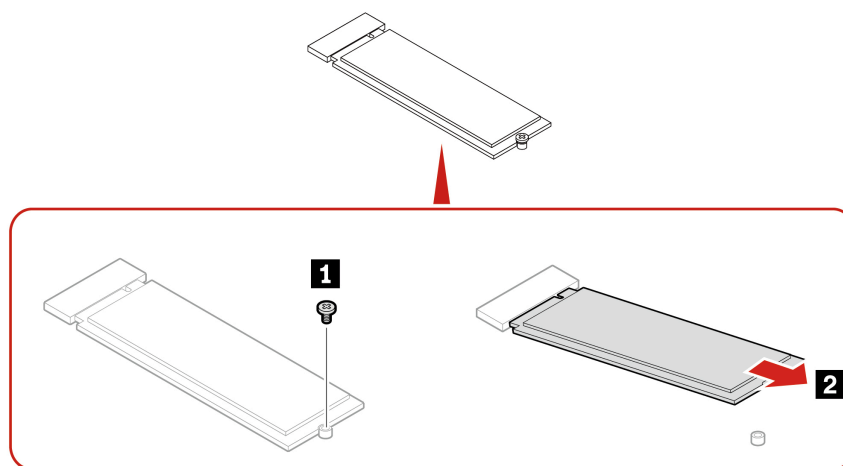
The M.2 solid-state drive is installed on the system board.

- **Type 1**

1. Remove the screw which secures the M.2 solid-state drive to the system board. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M2 x 4 mm, Ni coated (1)	Silver	1.5 ± 0.5 lb/in

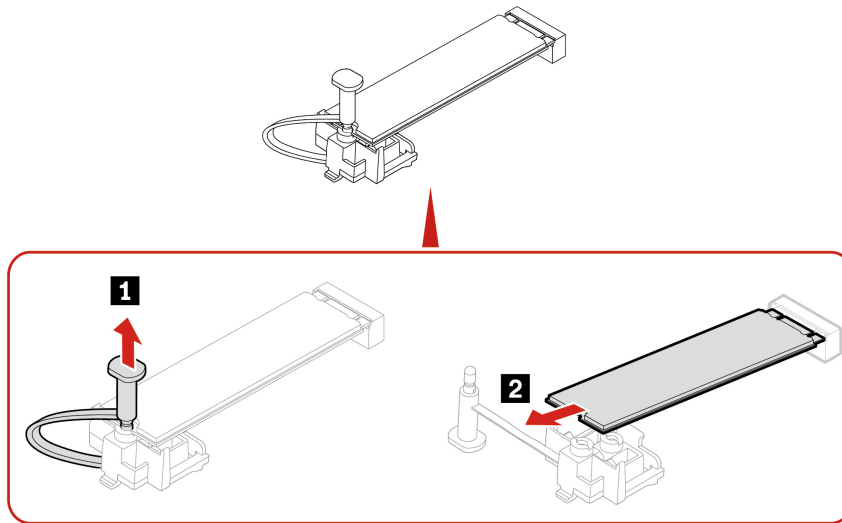
2. Remove the M.2 solid-state drive.



- **Type 2**

1. Pull the locking latch upward to release the M.2 solid-state drive from the M.2 solid-state drive bracket.

2. Remove the M.2 solid-state drive.



Removal steps for M.2 solid-state drive with heat sink

The M.2 solid-state drive is installed on the system board with its heat sink.

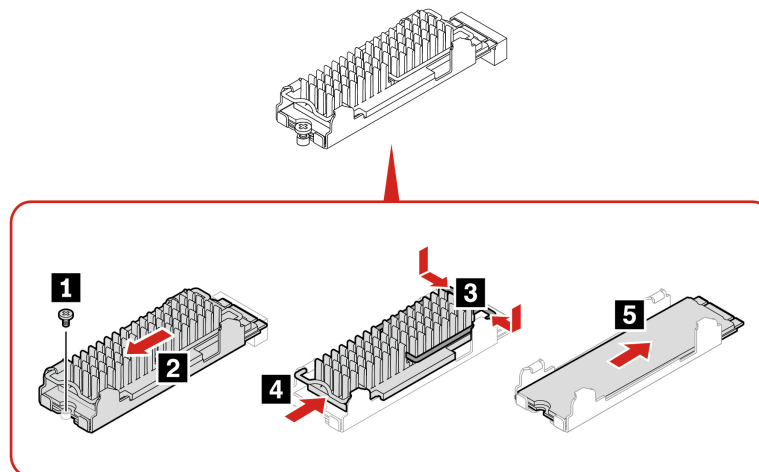
- **Type 1**

The M.2 solid-state drive with heat sink is secured with one screw.

1. Remove the screw which secures the M.2 solid-state drive with heat sink to the system board. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M2 x 4 mm, Ni coated (1)	Silver	1.5 ± 0.5 lb/in

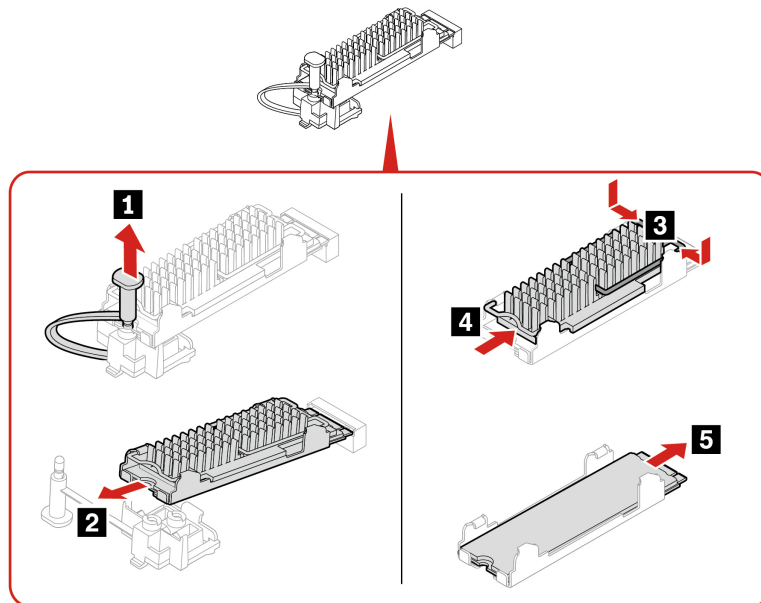
2. Remove the M.2 solid-state drive with heat sink.
3. Pinch the two latches on top of the heat sink to release the heat sink cover.
4. Remove the heat sink cover.
5. Remove the M.2 solid-state drive.



- **Type 2**

The M.2 solid-state drive with heat sink is secured with the bracket.

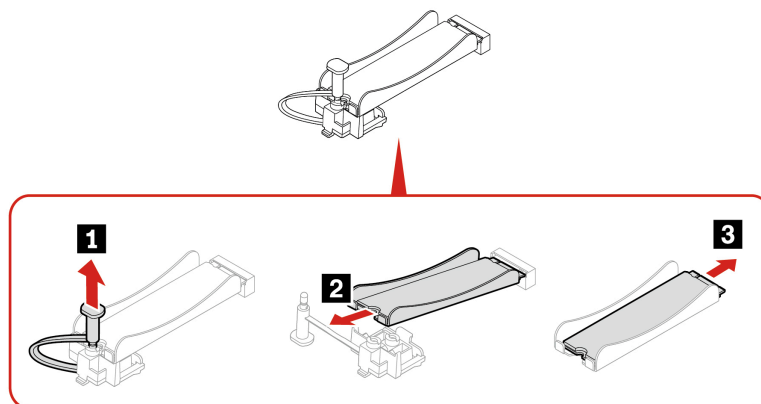
1. Pull the locking latch upward to release the M.2 solid-state drive with heat sink from the M.2 solid-state drive bracket.
2. Remove the M.2 solid-state drive with heat sink.
3. Pinch the two latches on top of the heat sink to release the heat sink cover.
4. Remove the heat sink cover.
5. Remove the M.2 solid-state drive.



- **Type 3**

The M.2 solid-state drive with heat sink is secured with the bracket.

1. Pull the locking latch upward to release the M.2 solid-state drive with heat sink from the M.2 solid-state drive bracket.
2. Remove the M.2 solid-state drive with heat sink.
3. Remove the M.2 solid-state drive from the heat sink.



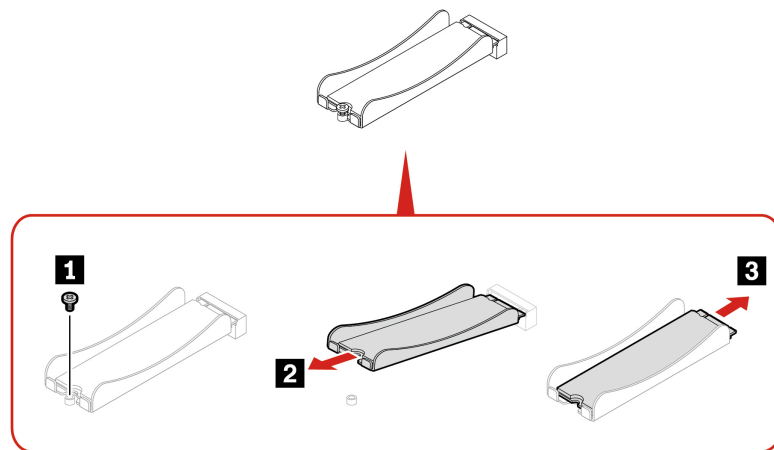
- **Type 4**

The M.2 solid-state drive with heat sink is secured with one screw.

1. Remove the screw which secures the M.2 solid-state drive with heat sink to the system board. Find screw specification like torque in the following screw table.

Screw (quantity)	Color	Torque
M2 x 4 mm, Ni coated (1)	Silver	1.5 ± 0.5 lb/in

2. Remove the M.2 solid-state drive with heat sink.
3. Remove the M.2 solid-state drive from the heat sink.



AI fusion card

Prerequisite

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



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

Attention:

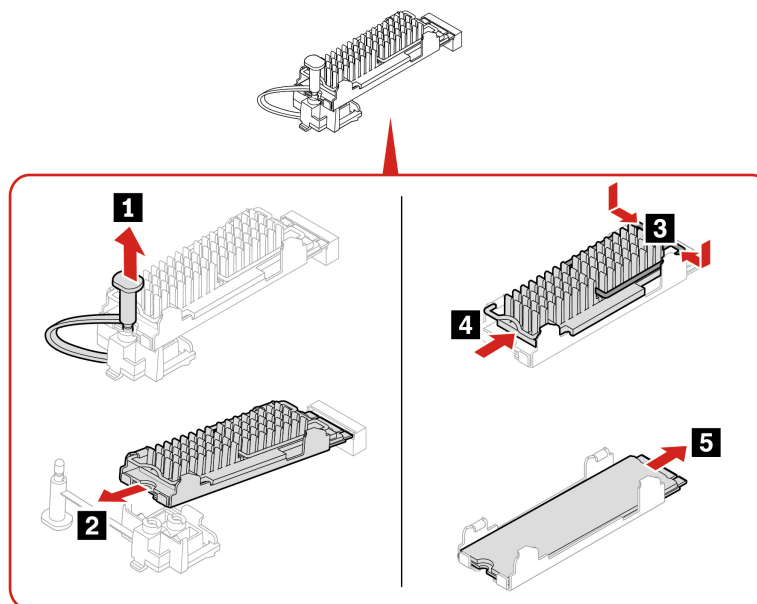
- The internal storage drive is sensitive. Inappropriate handling might cause damage and permanent loss of data. When handling the internal storage drive, observe the following guidelines:
 - Replace the internal storage drive only for repair. The internal storage drive is not designed for frequent changes or replacement.
 - Before replacing the internal storage drive, make a backup copy of all the data that you want to keep.
 - Do not touch the contact edge of the internal storage drive. Otherwise, the internal storage drive might get damaged.
 - Do not apply pressure to the internal storage drive.
 - Do not make the internal storage drive subject to physical shocks or vibration. Put the internal storage drive on a soft material, such as cloth, to absorb physical shocks.

For access, remove these parts in order:

- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan and side fan cage” on page 25
- “Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender” on page 32

Removal steps

1. Pull the locking latch upward to release the AI fusion card with heat sink from the M.2 solid-state drive bracket.
2. Remove the AI fusion card with heat sink.
3. Pinch the two latches on top of the heat sink to release the heat sink cover.
4. Remove the heat sink cover.
5. Remove the AI fusion card.



M.2 solid-state drive bracket

Prerequisite

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

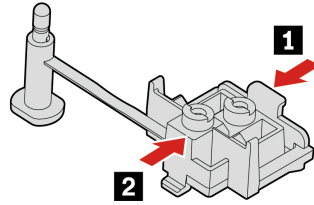
For access, remove these parts in order:

- “Sensor hub” on page 20
- “Side cover” on page 22
- “Side fan and side fan cage” on page 25
- “Graphics card, graphics card extender assembly, dual graphics card bracket, and dual graphics card extender” on page 32

- “M.2 solid-state drive and heat sink” on page 39

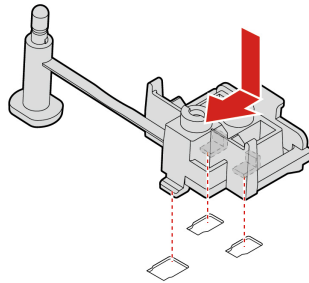
Removal steps

Release the M.2 solid-state drive bracket from the chassis by pushing its retaining clip toward the center.



Installation step

Align the M.2 solid-state drive bracket with the three holes on the chassis.



Chapter 7. Help and support

Self-help resources

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

Resources	How to access?
Product documentation: • <i>Safety and Warranty Guide</i> • <i>Generic Safety and Compliance Notices</i> • <i>Setup Guide</i> • <i>This User Guide</i> • <i>Regulatory Notice</i>	Go to https://support.lenovo.com/documentation and search by product.
Lenovo Support Web site with the latest support information of the following: • Drivers and software • Diagnostic solutions • Product and service warranty • Product and parts details • Knowledge base and frequently asked questions	https://pcsupport.lenovo.com
Ubuntu help information	https://help.ubuntu.com/its/ubuntu-help/index.html
IGEL support information	https://support.igel.com/

Lenovo diagnostic tools

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

Call Lenovo

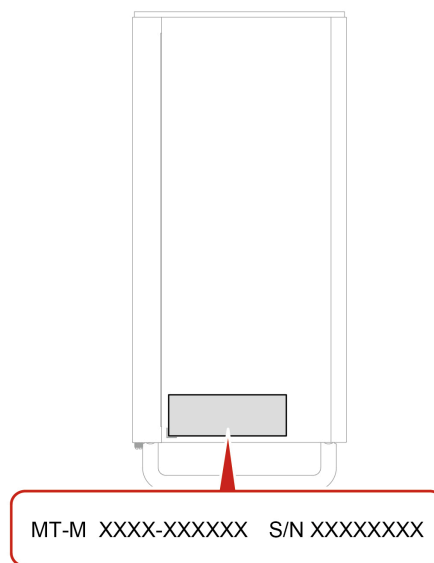
If you have tried to correct the problem yourself and still need help, you can call Lenovo Customer Support Center.

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>

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.

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 those with hearing, vision, or mobility limitations. Lenovo supports accessibility features in the following ways to help all users better engage with Lenovo products.

Accessible documentation

Lenovo documentation is designed to meet users' accessibility needs. Users can read the documentation with assistance as needed. For example:

- Text and images are in high contrast. Color contrast can enhance the visual experience. In this mode, all contents are highlighted to be more visible.
- Text is logical and readable. Images are also readable with alternative text provided. A screen reader can enhance the hearing or listening experience. In this mode, all contents are clearer and easier to understand.

- Text is large and clear, making it easier to read. A magnifier can enlarge the text to improve readability.

For more information, watch the video at:

https://support.lenovo.com/docs/pc_pub_accessibility

Accessible product design

Lenovo product design also supports accessibility features.

Note: The accessibility features vary by product. Depending on the product model, some accessibility features listed below might not be applicable to the product. To get the most up-to-date accessibility information for the product, go to <https://www.lenovo.com/accessibility>. For additional support from Lenovo, users can find phone numbers for their country or region from <https://support.lenovo.com/supportphonenumberlist>.

- **Keyboards**

Lenovo keyboards support various accessibility features. For example:

- Consistent layout of keyboards for easier use
- Tactile markings on some keys for easier identification
- Appropriate spacing between keys for typing efficiency
- Sufficient contrast of keys, controls, and labels for better visibility
- On-screen notification or lighted notification for some keys for ease of use
- Keys and controls that can be reached and operated using one hand and require minimal dexterity for ease of use

- **Industry-standard connectors**

The industry-standard connectors on Lenovo products enable better compatibility with peripheral devices.

- **Operating systems**

The accessibility features of the operating systems can be configured to assist users in the following ways:

- Vision features make the screen contents easier to see.
- Hearing features make the screen contents easier to hear.
- Interaction features make the product easier to control.

To access the accessibility features of the Ubuntu or Fedora operating system, go to **Settings → Accessibility**.

Appendix A. 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 B. Compliance information

Note: For more compliance information, refer to *Generic Safety and Compliance Notices* at https://pcsupport.lenovo.com/docs/generic_notices.

Certification-related information

Product name: ThinkCentre X Tower

Machine types: 13K4, 13LD, 13LE, 13LF, 13ME, 13MF, 13MG, and 91EA

The latest compliance information is available at:
<https://www.lenovo.com/us/en/compliance>

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)

Appendix C. Notice for USB connector name update

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

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

Appendix D. 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 E. Notices and trademarks

Notices

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

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

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

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

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

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

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

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

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

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

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

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

<https://pcsupport.lenovo.com>

Trademarks

Lenovo, the Lenovo logo, ThinkCentre, and the ThinkCentre logo are trademarks of Lenovo. Intel and Thunderbolt are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. DisplayPort is a trademark of the Video Electronics Standards Association. The terms HDMI and HDMI High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries. USB-C is a registered trademark of USB Implementers Forum. Wi-Fi and Miracast are registered trademarks of Wi-Fi Alliance. All other trademarks are the property of their respective owners.

Lenovo