

lenovo

ThinkCentre
Hardware Installation and Replacement
Guide

Note

Before using this information and the product it supports, be sure to read and understand the *ThinkCentre Safety and Warranty Guide* for this product and "Notices," on page 39.

First Edition (November 2008)

© Copyright Lenovo 2008. All rights reserved.

LENOVO products, data, computer software, and services have been developed exclusively at private expense and are sold to governmental entities as commercial items as defined by 48 C.F.R. 2.101 with limited and restricted rights to use, reproduction and disclosure.

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

Contents

Figures	v	Replacing the heat sink and fan assembly	23
Chapter 1. Important safety information	1	Replacing a hard disk drive	25
Chapter 2. Overview	3	Replacing an optical drive	26
Additional information resources	3	Replacing a memory module	28
Handling static-sensitive devices.	4	Replacing an adapter card	30
Locations	5	Replacing the card reader.	31
Locating controls and connectors on the front of your computer.	5	Replacing the keyboard	33
Locating connectors on the rear of your computer	6	Replacing the mouse	33
Locating components	8	Chapter 4. Completing the parts replacement	35
Identifying parts on the system board	9	Obtaining device drivers	36
Chapter 3. Installing options and replacing hardware	11	Chapter 5. Security features	37
Installing external options	11	Integrated cable lock	37
Installing internal options	12	Password protection	38
Opening the cover	12	Erasing a lost or forgotten password (clearing CMOS).	38
Accessing system board components and drives	13	Appendix. Notices	39
Installing a memory module.	13	Television output notice	40
Installing an adapter card	15	Trademarks	40
Installing internal drives	16	Index	41
Replacing the battery	20		
Replacing the power supply.	21		

Figures

1. Controls and connectors	5	17. Removing the power supply	22
2. Connector locations	6	18. Accessing the heat sink	23
3. Component locations	8	19. Removing the heat sink and fan assembly	24
4. System board parts locations	9	20. Removing the hard disk drive	25
5. Opening the cover	12	21. Removing the hard disk drive from the bracket	26
6. Pivoting the drive bay	13	22. Accessing the optical drive	27
7. Retaining clips	14	23. Removing the optical drive	27
8. Positioning the memory module	14	24. Installing the optical drive	28
9. Installing the adapter card	15	25. Accessing the system board	29
10. Drive bay locations	17	26. Removing the memory module	29
11. Installing a drive in bay 2.	18	27. Installing the memory module	30
12. Connecting the five-wire power cable and signal cable to the drive	19	28. Installing an adapter card	31
13. Removing the old battery	20	29. Removing the card reader.	32
14. Installing a new battery	20	30. Keyboard connectors	33
15. Power-supply-retaining screws	21	31. Mouse connectors	34
16. Power connectors on the system board	22	32. Cable routing	35
		33. Integrated cable lock	37

Chapter 1. Important safety information

CAUTION:

Before using this manual, it is important that you read and understand all the related safety information for this product. Refer to the *ThinkCentre Safety and Warranty Guide* that you received with this product for the latest safety information. Reading and understanding the safety information reduces the risk of personal injury and or damage to your product.

If you no longer have a copy of the *ThinkCentre Safety and Warranty Guide*, you can obtain one online from the Lenovo® Support Web site at:
<http://www.lenovo.com/support>

Chapter 2. Overview

This guide provides information about installing and or replacing Customer Replaceable Units (CRUs). However, this guide does not include procedures for all parts. It is expected that cables, switches, and certain mechanical parts be replaced by trained service personnel without the need for step-by-step procedures.

Note: Use only parts provided by Lenovo.

This guide contains instructions for installing and or replacing the following parts:

- Battery
- Power supply
- Heat sink and fan assembly
- Hard disk drive
- Optical drive
- Memory module
- Adapter card
- Card reader
- Keyboard
- Mouse

Additional information resources

If you have Internet access, the most up-to-date information for your computer is available at:

<http://www.lenovo.com/support>

You can find:

- CRU removal and installation information
- CRU removal and installation videos
- Publications
- Troubleshooting information
- Parts information
- Downloads and drivers
- Links to other useful sources of information
- Support phone list

Handling static-sensitive devices

Do not open the static-protective package containing the new part until the defective part has been removed from the computer and you are ready to install the new part. Static electricity, although harmless to you, can seriously damage computer components and parts.

When you handle parts and other computer components, take these precautions to avoid static-electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle parts and other computer components carefully. Handle adapter cards, memory modules, system boards, and microprocessors by the edges. Never touch any exposed circuitry.
- Prevent others from touching the parts and other computer components.
- Before you replace a new part, touch the static-protective package containing the part to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity in the package and your body.
- When possible, remove the new part from the static-protective packaging, and install it directly in the computer without setting the part down. When this is not possible, place the static-protective package that the part came in on a smooth, level surface and place the part on it.
- Do not place the part on the computer cover or other metal surface.

Locations

This section provides illustrations to help locate the various connectors, controls, and components of the computer.

Locating controls and connectors on the front of your computer

Figure 1 shows the location of the controls and connectors on the front of your computer.

Note: Not all computer models have the following controls and connectors.

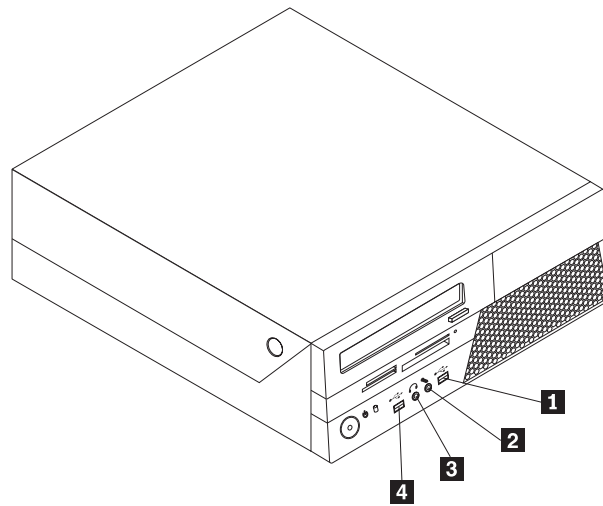


Figure 1. Controls and connectors

- | | | | |
|----------|----------------------|----------|---------------------|
| 1 | USB connector | 3 | Headphone connector |
| 2 | Microphone connector | 4 | USB connector |

Locating connectors on the rear of your computer

Figure 2 shows the location of connectors on the rear of your computer. Some connectors on the rear of your computer are color-coded to help you determine where to connect the cables on your computer.

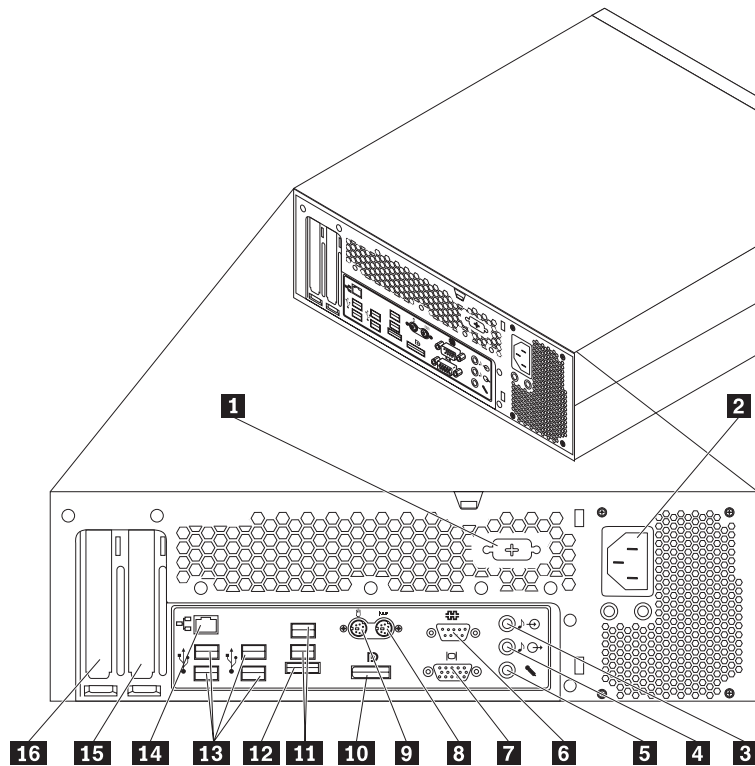


Figure 2. Connector locations

- | | | | |
|----------|---|-----------|--|
| 1 | Serial port (some models) | 9 | Standard mouse connector (some models) |
| 2 | Power cord connector | 10 | DisplayPort connector |
| 3 | Audio line-in connector | 11 | USB connectors (2) |
| 4 | Audio line-out connector | 12 | eSATA connector |
| 5 | Microphone connector | 13 | USB connectors (4) |
| 6 | Serial port | 14 | Ethernet connector |
| 7 | VGA monitor connector | 15 | PCI Express x16 graphics adapter card slot |
| 8 | Standard keyboard connector (some models) | 16 | Adapter card slot |

Connector	Description
USB connector	Used to attach a device that requires a Universal Serial Bus (USB) connector, such as a USB keyboard, a USB mouse, a USB scanner, or a USB printer. If you have more than eight USB devices, you can purchase a USB hub, which you can use to connect additional USB devices.
Ethernet connector	Used to attach an Ethernet cable for a local area network (LAN). Note: To operate the computer within FCC Class B limits, use a Category 5 Ethernet cable.
Serial port	Used to attach an external modem, a serial printer, or other devices that use a 9-pin serial port.
Audio line-in connector	Used to receive audio signals from an external audio device, such as a stereo system. When you attach an external audio device, a cable is connected between the audio line-out connector of the device and the audio line-in connector of the computer.
Audio line-out connector	Used to send audio signals from the computer to external devices, such as powered stereo speakers (speakers with built-in amplifiers), headphones, multimedia keyboards, or the audio line-in connector on a stereo system or other external recording devices.
eSATA connector	Use this external Serial Advanced Technology Attachment (eSATA) connector to attach an external hard disk drive.
DisplayPort connector	Used to attach a high-performance monitor, a direct-drive monitor, or other devices that use a DisplayPort connector.
Standard mouse connector	Used to attach a mouse, a trackball, or other pointing devices that use a standard mouse connector.
Standard keyboard connector	Used to attach a keyboard that uses a standard keyboard connector.

Locating components

To open the computer cover, see “Opening the cover” on page 12.

Figure 3 shows the location of the various components in your computer.

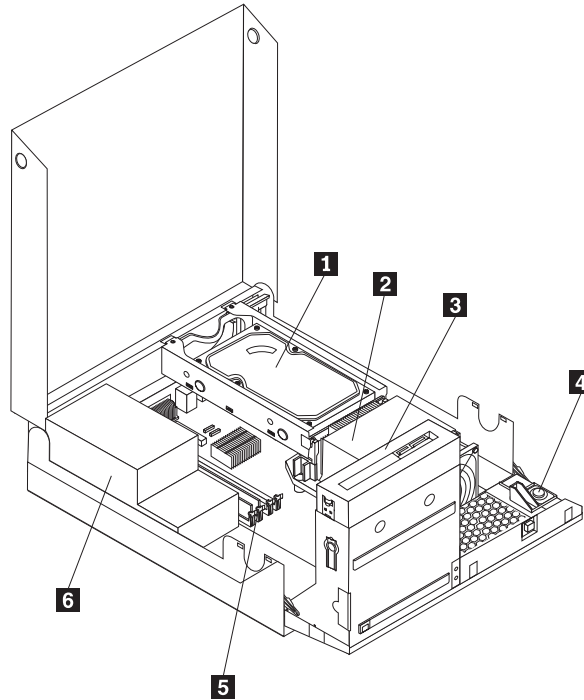


Figure 3. Component locations

- | | | | |
|----------|--|----------|------------------|
| 1 | Hard disk drive | 4 | Internal speaker |
| 2 | Microprocessor, heat sink and fan assembly | 5 | Memory slots (4) |
| 3 | Optical drive | 6 | Power supply |

Identifying parts on the system board

Figure 4 shows the location of parts on the system board.

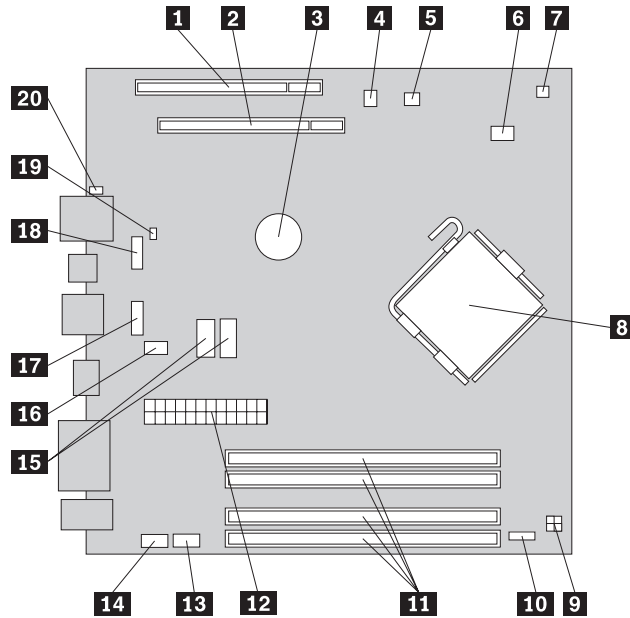


Figure 4. System board parts locations

1	PCI adapter card slot	11	Memory slots (4)
2	PCI Express x16 adapter card slot	12	24-pin power connector
3	Battery	13	Serial (COM 2) connector
4	Internal speaker connector	14	Front audio connector
5	Cover presence (Intrusion) switch connector	15	SATA connectors (2)
6	Microprocessor fan connector	16	System fan connector
7	Thermal sensor connector	17	Front USB connector 1
8	Microprocessor	18	Front USB connector 2
9	4-pin power connector	19	Clear CMOS/Recovery jumper
10	Front panel connector	20	Power fan connector

Chapter 3. Installing options and replacing hardware

This chapter provides an introduction to the features and options that are available for your computer. You can expand the capabilities of your computer by adding memory modules, adapter cards, or drives. When installing an option, use these instructions along with the instructions that come with the option.

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to:
<http://www.lenovo.com/support>

Note: Use only parts provided by Lenovo.

Installing external options

External speakers, a printer, or a scanner can be connected to your computer. For some external options, you must install additional software in addition to making the physical connection. When adding an external option, see “Locating connectors on the rear of your computer” on page 6 and “Locating controls and connectors on the front of your computer” on page 5 to identify the required connector, and then use the instructions that are included with the option to help you make the connection and install any software or device drivers that are required for the option.

Installing internal options

Important

Read “Handling static-sensitive devices” on page 4 before opening the computer cover.

Opening the cover

Important



Turn off the computer and wait three to five minutes to let the computer cool before opening the computer cover.

To open the computer cover:

1. Remove any media from the drives, shut down your operating system, and turn off all attached devices and the computer.
2. Unplug all power cords from electrical outlets.
3. Disconnect the cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. See “Locating controls and connectors on the front of your computer” on page 5 and “Locating connectors on the rear of your computer” on page 6.
4. Remove any locking devices, such as a cable lock that secures the computer cover.
5. Press the buttons on the sides of the computer and pivot the cover upward to open the computer.

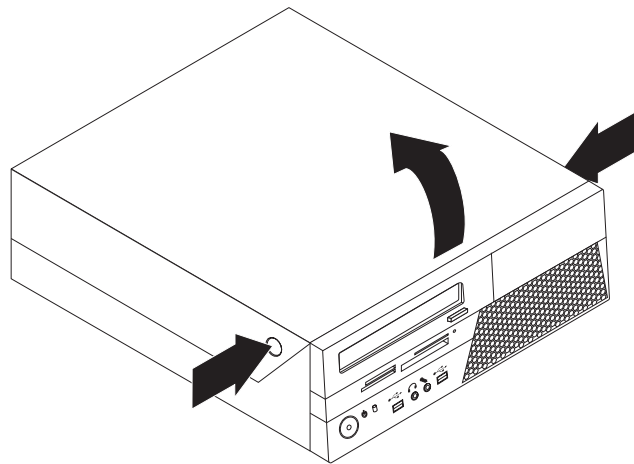


Figure 5. Opening the cover

Accessing system board components and drives

To access system board components and the drives:

1. Open the computer cover. See “Opening the cover” on page 12.
2. On some models, you might need to pivot the drive bay assembly upward and remove the hard disk drive to access the internal components. See “Replacing a hard disk drive” on page 25.

Note: Make sure you note the location of any cables that you disconnect from the drives or the system board.

Attention: You must return the hard disk drive assembly to the latched position before you close the cover to prevent damage to the hard disk drive assembly.

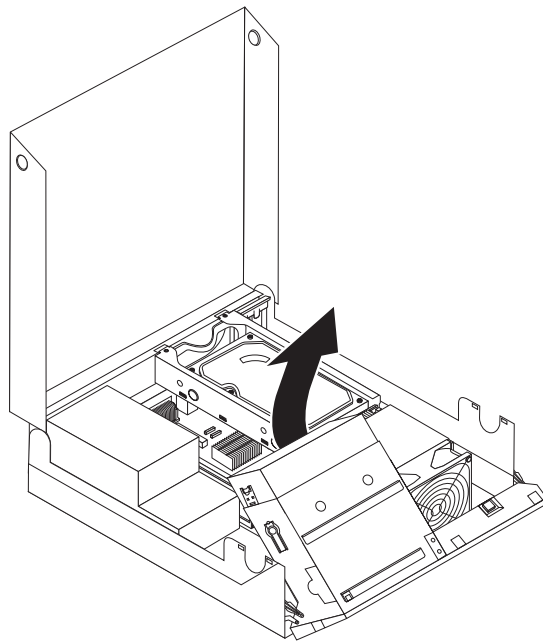


Figure 6. Pivoting the drive bay

Installing a memory module

Your computer has four slots for installing DDR3 DIMMs (double data rate 3 dual inline memory modules) that provide up to a maximum of 8 GB of system memory.

When installing memory modules, use the following guidelines:

- Use 1.8 V, 240-pin DDR3 SDRAM (double data rate 3 synchronous dynamic random access memory).
- Use 1 GB or 2 GB memory modules in any combination up to a maximum of 8 GB.

To install a memory module:

1. Open the computer cover. See “Opening the cover” on page 12.
2. You might have to pivot the drive bay assembly upward to access the memory slots. See “Accessing system board components and drives.”
3. Remove any parts that might prevent access to the memory slots.
4. Locate the memory slots.

5. Open the retaining clips.

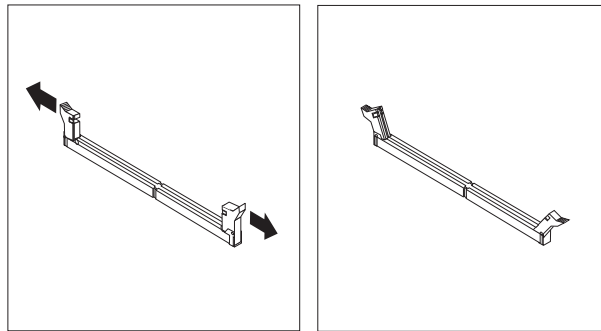


Figure 7. Retaining clips

6. Position the memory module over the memory slot. Make sure that the notch **1** on the memory module aligns correctly with the slot key **2** on the system board. Push the memory module straight down into the slot until the retaining clips close.

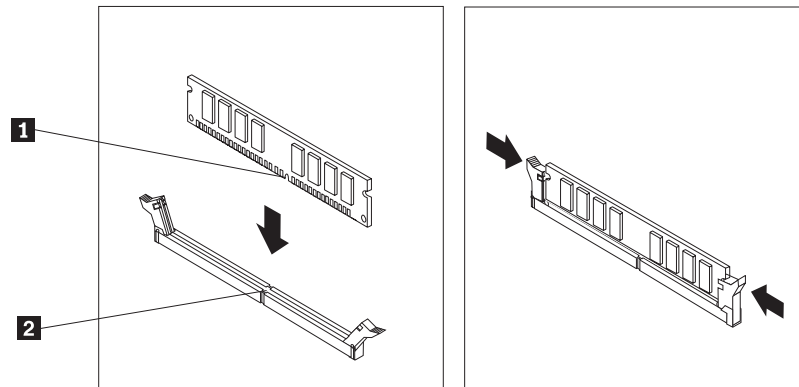


Figure 8. Positioning the memory module

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to Chapter 4, "Completing the parts replacement," on page 35.

Installing an adapter card

This section provides information and instructions for installing adapter cards. Your computer has one PCI adapter card slot and one PCI Express x16 adapter card slot.

To install an adapter card:

1. Open the computer cover. See “Opening the cover” on page 12.
2. Rotate the adapter card retainer **1** to the open position.
3. Remove the new adapter card from its static-protective package.
4. Install the adapter card **2** into the appropriate adapter card slot on the system board.

Note: The white slot is for the PCI adapter card and the black slot is for the PCI Express x16 adapter card.

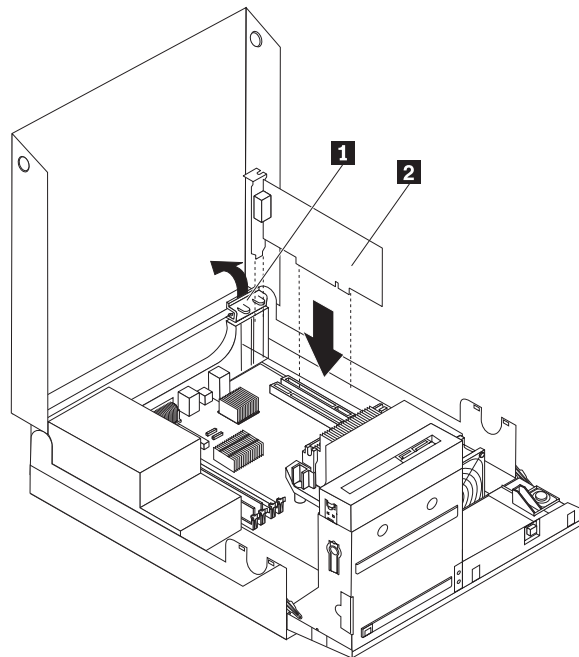


Figure 9. Installing the adapter card

5. Rotate the adapter card retainer to the closed position.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to Chapter 4, “Completing the parts replacement,” on page 35.

Installing internal drives

This section provides information and instructions for installing internal drives.

Internal drives are devices that your computer uses to read and store data. You can add drives to your computer to increase storage capacity and to enable your computer to read other types of media. Some of the types of drives that are available for your computer are:

- Serial Advanced Technology Attachment (SATA) hard disk drives
- SATA optical drives, such as CD drives or DVD drives
- Removable media drives

Note: These types of drives are also referred to as integrated drive electronics (IDE) drives.

Internal drives are installed in bays. In this book, the bays are referred to as bay 1 and bay 2.

When you install an internal drive, it is important to note the type and size of the drive that you can install in each bay. Also, it is important to correctly connect the internal drive cables to the installed drive.

Drive specifications

Your computer comes with the following factory-installed drives:

- A 3.5-inch hard disk drive in bay 1
- An optical drive in bay 2 (some models)

Any bay that does not have a drive installed has a static shield and bay panel installed.

Figure 10 shows the location of the drive bays.

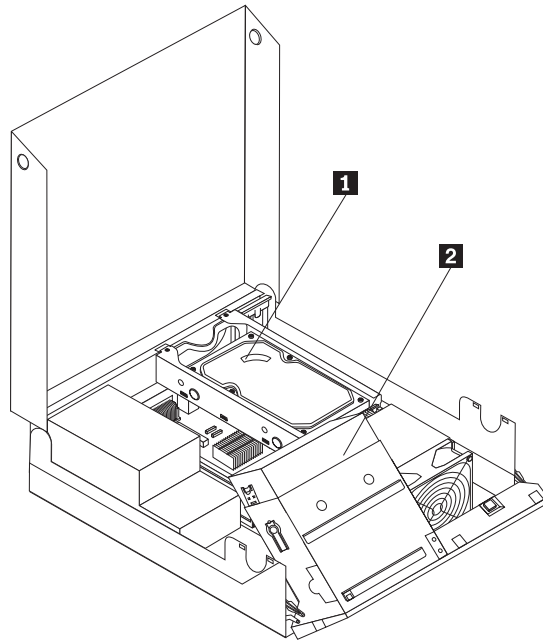


Figure 10. Drive bay locations

The following list describes the types and size of drives that you can install in each bay:

1 Bay 1

Internal hard disk drive
1.8-inch Solid State Drive (requires a
Universal Adapter Bracket, 3.5 to
1.8-inch)

2 Bay 2 - Maximum height: 43.0 mm (1.7 inch)

Optical drive, such as CD drive or DVD
drive (preinstalled in some models)
3.5-inch hard disk drive (requires a
Universal Adapter Bracket, 5.25 to
3.5-inch)*
5.25-inch hard disk drive

* You can obtain a Universal Adapter Bracket, 5.25 to 3.5-inch from a local computer retailer or by contacting the Customer Support Center.

Installing a drive in bay 2

To install an optical drive or an additional hard disk drive in bay 2:

1. Open the computer cover. See “Opening the cover” on page 12.
2. Remove the metal shield from the drive bay by using a flat-blade screwdriver to gently pry it loose.
3. If you are installing a drive with accessible media, such as an optical drive, remove the plastic panel in the bezel by squeezing the plastic tabs that secure the panel on the inside of the bezel.

Note: If you are installing a 3.5-inch hard disk drive you must use a Universal Adapter Bracket, 5.25 to 3.5-inch. You can obtain this bracket from a local computer retailer or by contacting the Customer Support Center.

4. Slide the drive into the bay until it locks into position.

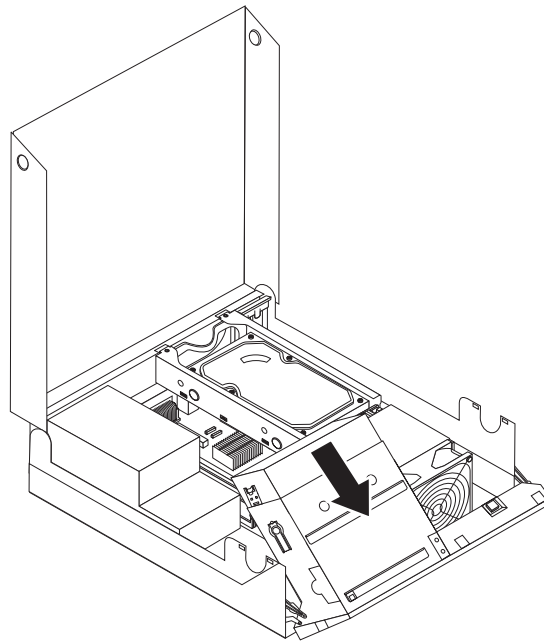


Figure 11. Installing a drive in bay 2

5. Pivot the drive bay assembly upward to gain access to the cable connections and connect the drive signal and power cables.
6. Continue at “Connecting a Serial ATA drive.”

Connecting a Serial ATA drive

A serial optical drive or an additional hard disk drive can be connected to any available SATA connector.

1. Locate the available SATA connector on the system board. See “Identifying parts on the system board” on page 9.
2. Using the signal cable that came with the new drive, connect one end of the signal cable to the drive and the other to the available SATA connector on the system board.

3. Locate one of the extra five-wire power cables and connect it to the drive.

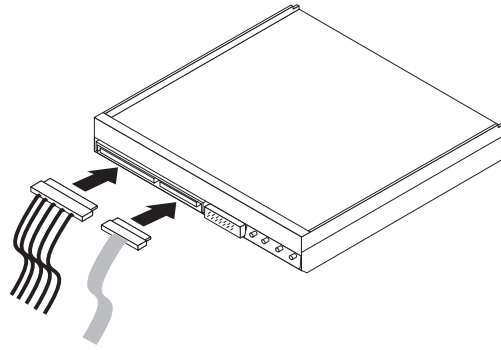


Figure 12. Connecting the five-wire power cable and signal cable to the drive

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing the battery

Your computer has a special type of memory that maintains the date, time, and settings for built-in features, such as parallel-port assignments (configuration). A battery keeps this information active when you turn off the computer.

The battery normally requires no charging or maintenance throughout its life; however, no battery lasts forever. If the battery fails, the date, time, and configuration information (including passwords) are lost. An error message is displayed when you turn on the computer.

Refer to the “Lithium battery notice” in the *ThinkCentre Safety and Warranty Guide* for information about replacing and disposing of the battery.

To replace the battery:

1. Open the computer cover. See “Opening the cover” on page 12.
2. Access the system board. See “Accessing system board components and drives” on page 13.
3. Locate the battery. See “Identifying parts on the system board” on page 9.
4. Remove the old battery.

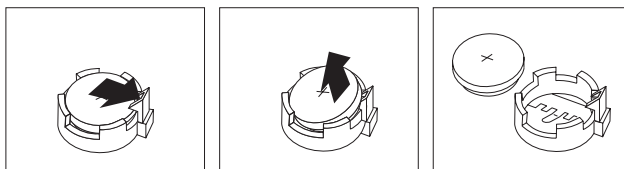


Figure 13. Removing the old battery

5. Install the new battery.

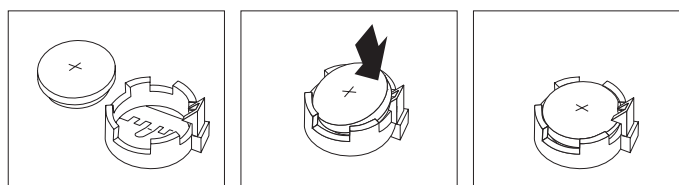


Figure 14. Installing a new battery

6. Close the computer cover and connect the cables. See Chapter 4, “Completing the parts replacement,” on page 35.

Note: When the computer is turned on for the first time after battery replacement, an error message might be displayed. This is normal after replacing the battery.

7. Turn on the computer and all attached devices.
8. Use the Setup Utility program to set the date, time, and any passwords. See “Using the Setup Utility” in the *ThinkCentre User Guide*.

Replacing the power supply

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to: <http://www.lenovo.com/support>

To replace the power supply:

1. Remove the four screws at the rear of the chassis that secure the power supply.

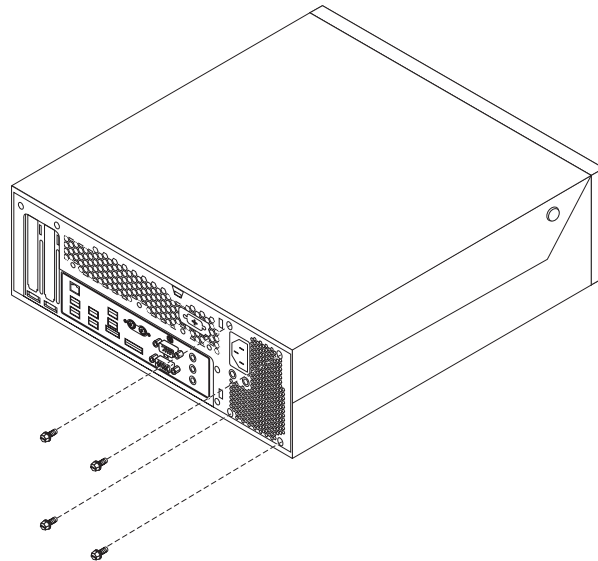


Figure 15. Power-supply-retaining screws

2. Open the computer cover. See “Opening the cover” on page 12.
3. Pivot the drive bay assembly upward to gain access to the power supply.
4. Locate the power supply. See “Locating components” on page 8.

5. Disconnect the power supply cables from the power connectors **1** and **2** and from all drives.

Note: You might need to remove the hard disk drive to gain easy access to the power connector **2**. See “Replacing a hard disk drive” on page 25.

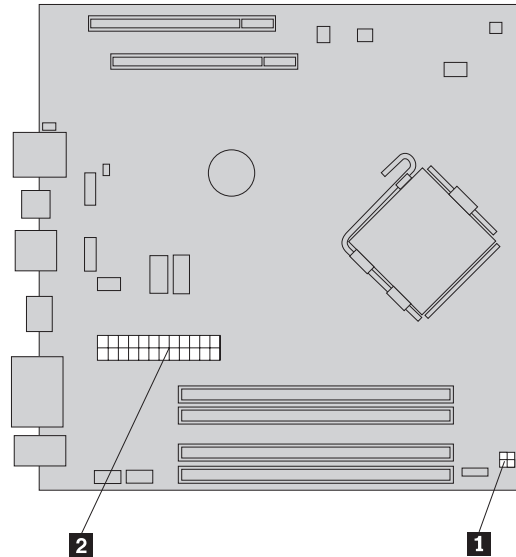


Figure 16. Power connectors on the system board

6. Remove the power supply cables from the cable clips and ties.
7. Slide the power supply away from the chassis and remove it from the computer.

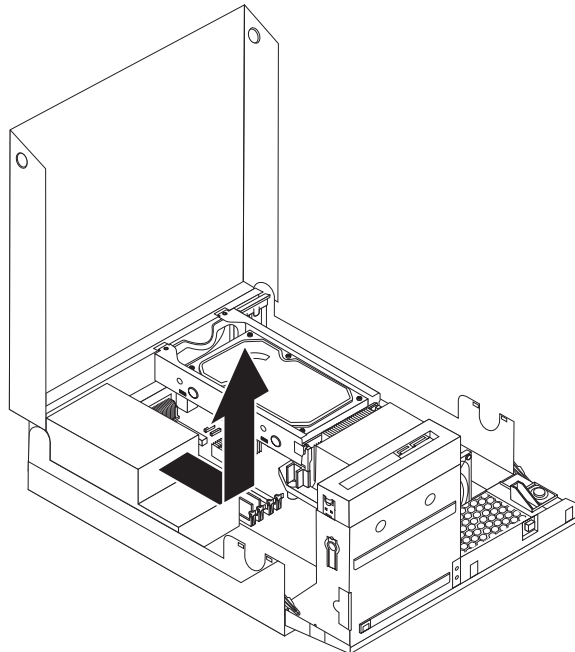


Figure 17. Removing the power supply

8. Install the new power supply into the chassis so that the screw holes in the power supply align with those in the chassis.

Note: Use only the screws provided by Lenovo.

9. Install and tighten the four screws at the rear of the chassis to secure the power supply.
10. Check the position of the voltage-selection switch on the rear of the computer. Use a ballpoint pen to slide the switch, if necessary.

Note: Some computers do not have a voltage-selection switch. These computers automatically control the voltage.

- If the voltage supply range is 100–127 V AC, set the switch to 115 V.
 - If the voltage supply range is 200–240 V AC, set the switch to 230 V.
11. Reconnect all the power supply cables to the drives and the system board.
 12. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing the heat sink and fan assembly

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to: <http://www.lenovo.com/support>

This section provides instructions on how to replace the heat sink and fan assembly.

To replace the heat sink and fan assembly:

1. Open the computer cover. See “Opening the cover” on page 12.
2. Pivot the drive bay assembly upward to gain access to the heat sink and fan assembly.

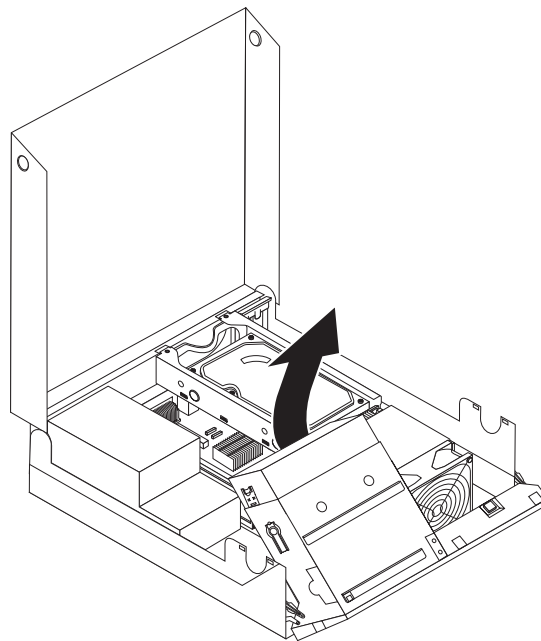


Figure 18. Accessing the heat sink

3. Disconnect the heat sink and fan assembly cable from the system board. See “Identifying parts on the system board” on page 9.
4. Remove the heat sink and fan assembly from the system board by pivoting the lever **1** securing the heat sink and fan assembly until it is fully in the up position. Carefully lift the heat sink and fan assembly off the system board.

Note: It helps to remove the hard disk drive before this step. See “Replacing a hard disk drive” on page 25.

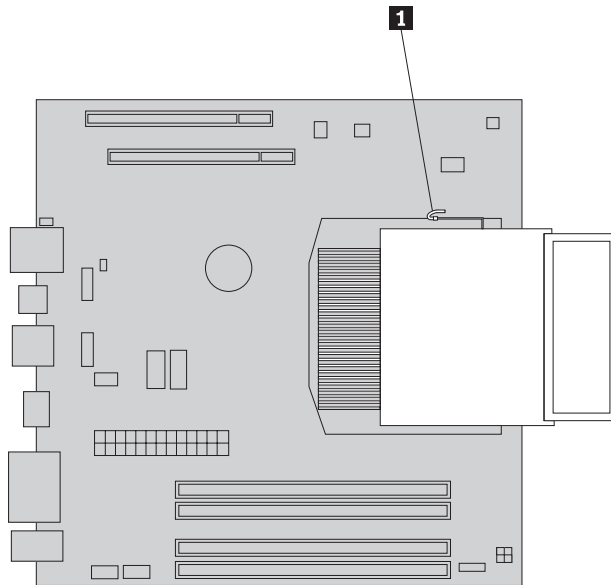


Figure 19. Removing the heat sink and fan assembly

5. Place the new heat sink and fan assembly into position and lower the lever to secure the heat sink and fan assembly.
6. Connect the heat sink and fan assembly cable to the microprocessor fan connector on the system board.
7. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing a hard disk drive

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to: <http://www.lenovo.com/support>

This section provides instructions on how to replace the hard disk drive.

Important

When you receive a new hard disk drive, you also receive a set of *Product Recovery discs*. The set of *Product Recovery discs* will enable you to restore the contents of the hard disk drive to the same state as when your computer was originally shipped from the factory. For more information on recovering factory-installed software, refer to “Recovering software” in your *ThinkCentre User Guide*.

To replace the hard disk drive:

1. Open the computer cover. See “Opening the cover” on page 12.
2. You might need to pivot the drive bay assembly upward to gain easy access to the hard disk drive.
3. Locate the hard disk drive.
4. Push the blue handle of the hard disk drive bracket inwards to release the two clips **1** that secure the hard disk drive to the chassis. Rotate the hard disk drive upwards and lift up to remove the hard disk drive from the computer.

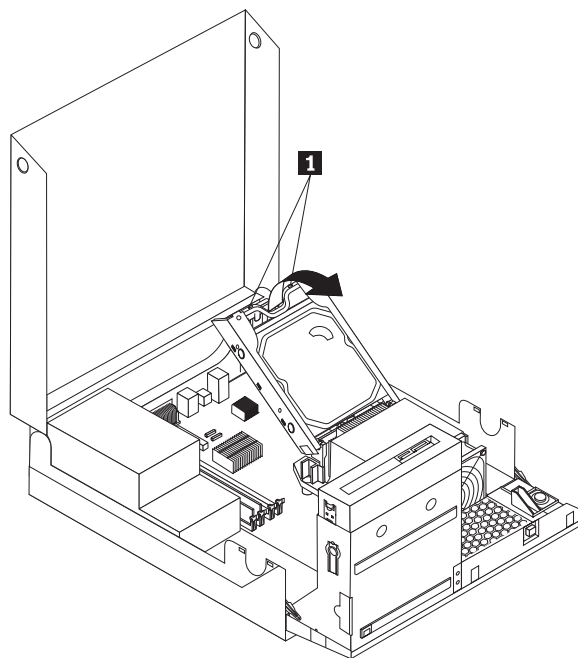


Figure 20. Removing the hard disk drive

5. Disconnect the signal and power cables from the hard disk drive.

6. Remove the failing hard disk drive from the bracket by flexing the bracket.
7. To install the new drive into the bracket, flex the bracket and align pin **1**, pin **2**, pin **3**, and pin **4** on the bracket with the holes in the hard disk drive.

Important

Do not touch the circuit board on the bottom of the hard disk drive.

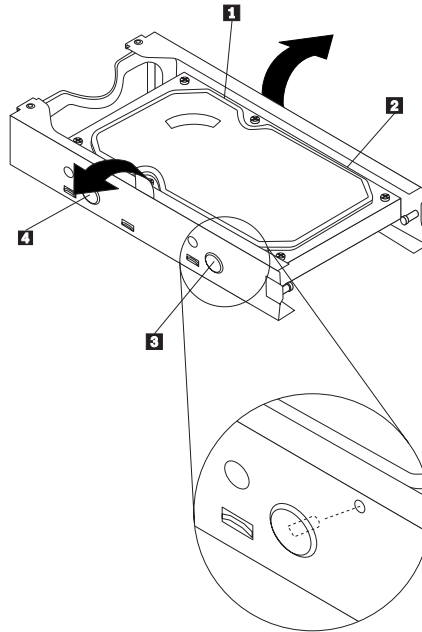


Figure 21. Removing the hard disk drive from the bracket

8. Connect the signal and power cables to the new hard disk drive.
9. Install the hard disk drive and bracket into the rear retainer and rotate down until the two clips on the blue handle of the hard disk drive bracket snap into place.
10. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing an optical drive

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to: <http://www.lenovo.com/support>

To replace an optical drive:

1. Open the computer cover. See “Opening the cover” on page 12.

2. Pivot the drive bay assembly upward to gain access to the optical drive.

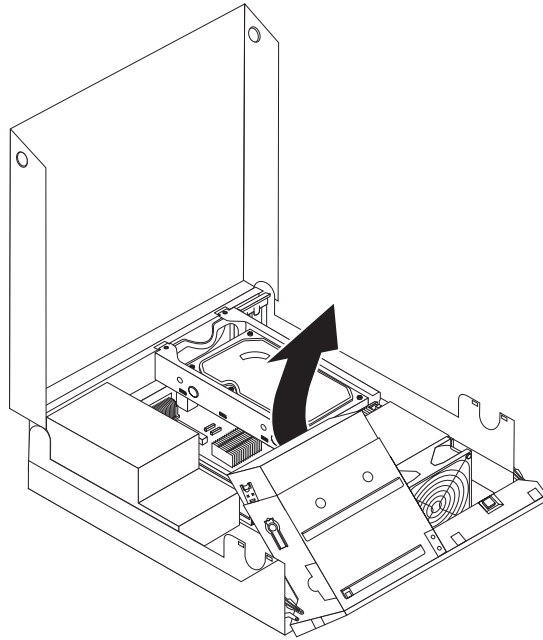


Figure 22. Accessing the optical drive

3. Disconnect the signal and power cables from the rear of the optical drive.
4. Press the optical drive lock **1**.
5. Slide the optical drive out the rear of the drive bay assembly.

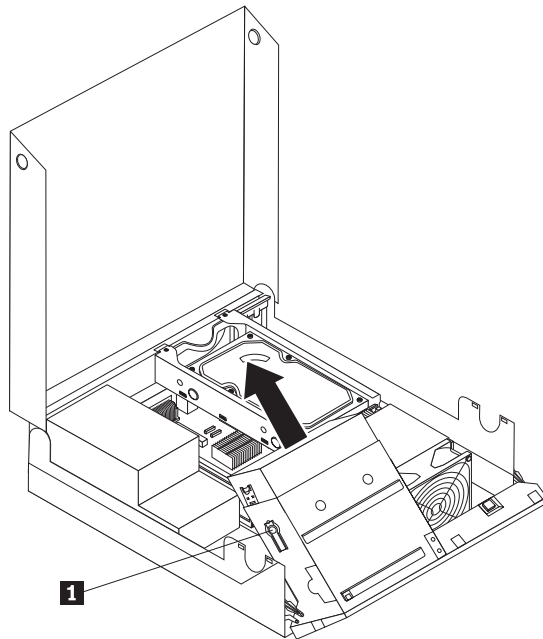


Figure 23. Removing the optical drive

6. Install the new optical drive into the bay until it snaps into position.

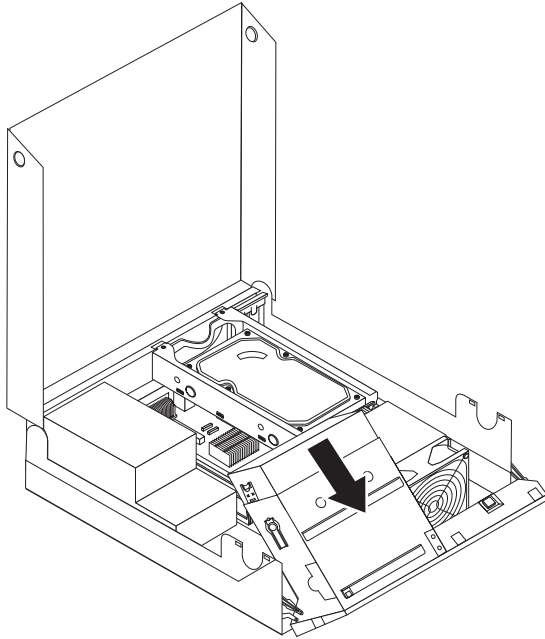


Figure 24. Installing the optical drive

7. Connect the signal and power cables to the rear of the optical drive.
8. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing a memory module

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to:
<http://www.lenovo.com/support>

This section provides instructions on how to replace a memory module. Your computer can support a maximum of four memory modules.

1. Open the computer cover. See “Opening the cover” on page 12.

2. Pivot the drive bay assembly upward to gain access to the system board. See “Accessing system board components and drives” on page 13.

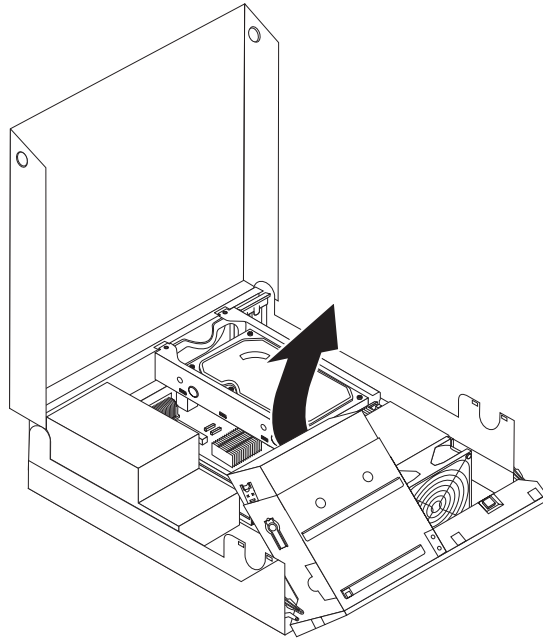


Figure 25. Accessing the system board

3. Locate the memory slots. See “Identifying parts on the system board” on page 9.
4. Remove the memory module being replaced by opening the retaining clips as shown.

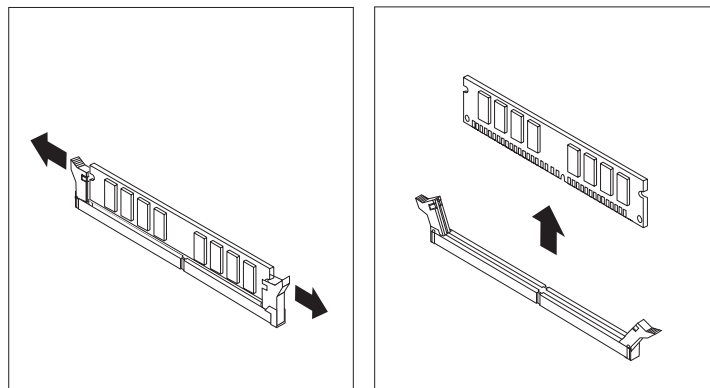


Figure 26. Removing the memory module

5. Position the replacement memory module over the memory slot. Make sure the notch **1** on the memory module aligns correctly with the slot key **2** on the system board. Push the memory module straight down into the slot until the retaining clips close.

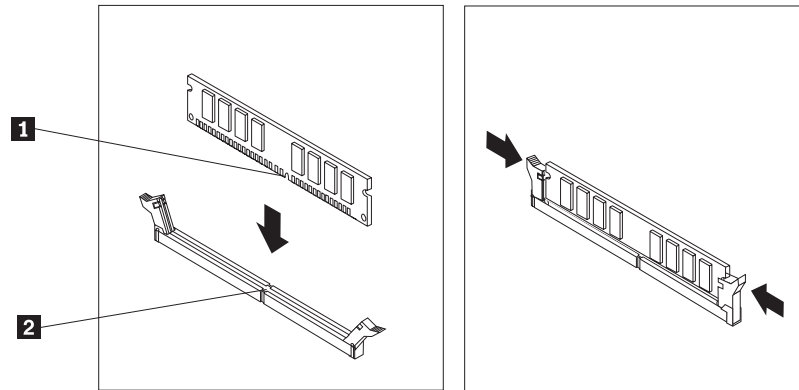


Figure 27. Installing the memory module

6. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing an adapter card

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to:
<http://www.lenovo.com/support>

This section provides instructions on how to replace an adapter card.

1. Open the computer cover. See “Opening the cover” on page 12.

2. Rotate the adapter card retainer **1** to the open position to remove the failing adapter card.
3. Remove the failing adapter card out of the chassis.
4. Remove the new adapter card from its static-protective package.
5. Install the new adapter card **2** into the adapter card slot.

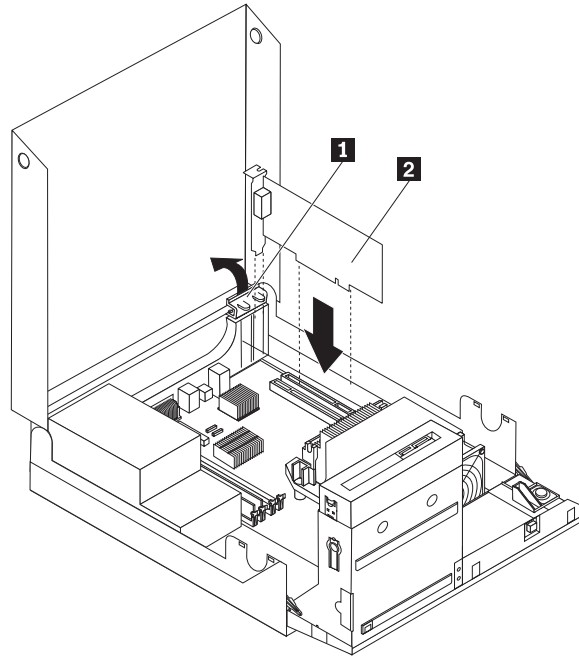


Figure 28. Installing an adapter card

6. Ensure the adapter card is fully seated into the adapter card slot.
7. Close the adapter card retainer.
8. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing the card reader

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to:
<http://www.lenovo.com/support>

This section provides instructions on how to replace the card reader.

1. Open the computer cover. See “Opening the cover” on page 12.
2. Pivot the drive bay assembly upward to gain access to the card reader.
3. Locate the card reader.
4. Disconnect the card reader cable from the front USB connector on the system board. See “Identifying parts on the system board” on page 9.

Note: Make sure you note the location of the cable when you disconnect the cable from the system board.

5. Remove the screw that secures the card reader to the chassis.

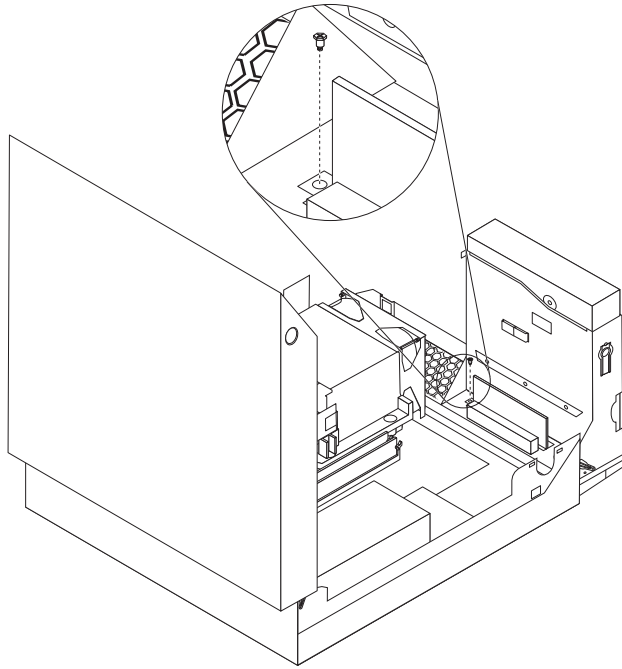


Figure 29. Removing the card reader

6. Remove the card reader from the chassis.
7. Install the new card reader into the chassis and align the screw hole in the card reader with the hole in the chassis.
8. Install the screw to secure the card reader to the chassis.
9. Connect the card reader cable to the system board.
10. Go to Chapter 4, "Completing the parts replacement," on page 35.

Replacing the keyboard

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to:
<http://www.lenovo.com/support>

This section provides instructions on how to replace a keyboard.

1. Remove any media from the drives, shut down your operating system, and turn off all attached devices and the computer.
2. Unplug all power cords from electrical outlets.
3. Locate the keyboard connector.

Note: Your keyboard might be connected to a standard keyboard connector **1** or a USB connector **2**. Depending on where your keyboard is connected, see “Locating connectors on the rear of your computer” on page 6 or “Locating controls and connectors on the front of your computer” on page 5.

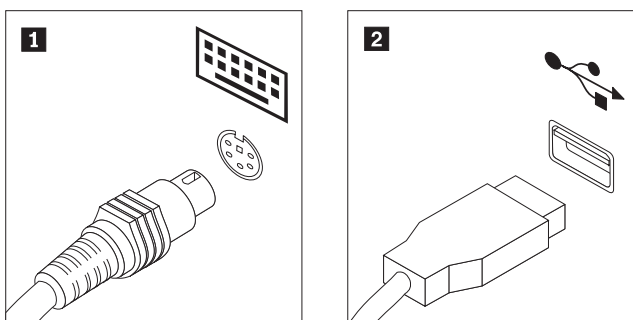


Figure 30. Keyboard connectors

4. Disconnect the failing keyboard cable from the computer.
5. Connect the new keyboard to the appropriate connector on the computer.
6. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Replacing the mouse

Attention

Do not open your computer or attempt any repair before reading the “Important safety information” in the *ThinkCentre Safety and Warranty Guide* that came with your computer. To obtain a copy of the *ThinkCentre Safety and Warranty Guide*, go to:
<http://www.lenovo.com/support>

This section provides instructions on how to replace a mouse.

1. Remove any media from the drives, shut down your operating system, and turn off all attached devices and the computer.
2. Unplug all power cords from electrical outlets.
3. Locate the connector for the mouse.

Note: Your mouse might be connected to a standard mouse connector **1** or a USB connector **2**. Depending on where your mouse is connected, see “Locating connectors on the rear of your computer” on page 6 or “Locating controls and connectors on the front of your computer” on page 5.

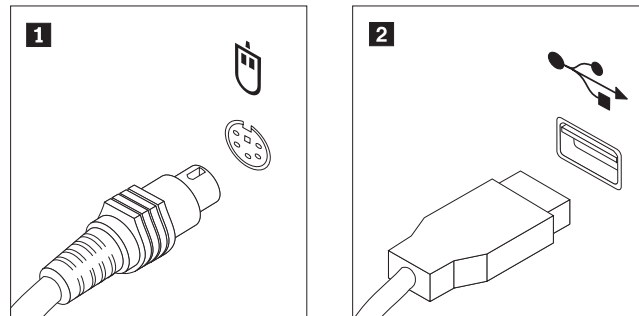


Figure 31. Mouse connectors

4. Disconnect the failing mouse cable from the computer.
5. Connect the new mouse cable to the appropriate connector on the computer.
6. Go to Chapter 4, “Completing the parts replacement,” on page 35.

Chapter 4. Completing the parts replacement

After completing all parts replacements, you need to close the cover and reconnect cables, such as power cords. Depending on the parts replaced, you might need to confirm the updated information in the Setup Utility program. Refer to “Using the Setup Utility” in the *ThinkCentre User Guide* for this product.

To complete the parts replacement:

1. Ensure that all components have been reassembled correctly and that no tools or loose screws are left inside your computer. See “Locating components” on page 8 for the location of various components.
2. Make sure that the cables are routed correctly before lowering the drive bay assembly.

Important

Correctly route all power supply cables to avoid interference with the drive bay assembly. Keep cables clear of the hinges and sides of the computer chassis.

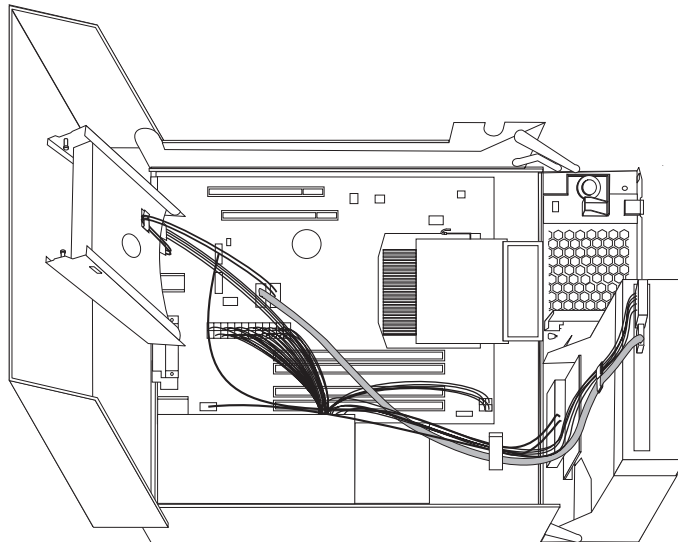


Figure 32. Cable routing

3. Lower the drive bay assembly and position the drive locks to the locked position. Otherwise, you cannot close the computer cover.
4. Close the computer cover.
5. If a cover lock is installed, lock the cover.
6. Reconnect the external cables and power cords to the computer. See “Locating connectors on the rear of your computer” on page 6.
7. To update your configuration, see “Using the Setup Utility” in the *ThinkCentre User Guide*.

Note: In most areas of the world, Lenovo requires the return of the defective CRU. Information about this will come with the CRU or will come a few days after the CRU arrives.

Obtaining device drivers

You can obtain device drivers for operating systems that are not preinstalled at <http://www.lenovo.com/support>. Installation instructions are provided in readme files with the device-driver files.

Chapter 5. Security features

To help prevent hardware theft and unauthorized access to your computer, several security lock options are available. In addition to a physical lock, unauthorized use of your computer can be prevented by a software lock that locks the keyboard until a correct password is typed in.

Make sure that any security cables that you install do not interfere with other computer cables.

Integrated cable lock

An integrated cable lock (sometimes referred to as the Kensington lock) can be used to secure your computer to a desk, table, or other non-permanent fixture. The cable lock attaches to a security slot at the rear of your computer and is operated with a key. The cable lock also locks the buttons used to open the computer cover. This is the same type of lock used with many laptop computers. You can order a security cable directly from Lenovo. You can order a security cable directly from Lenovo by searching on *Kensington* at: <http://www.lenovo.com/support>

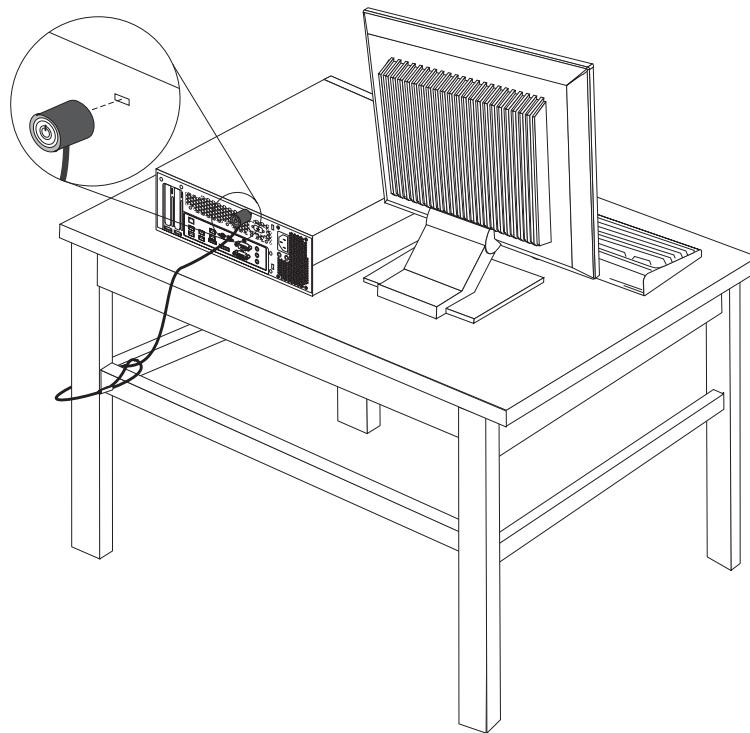


Figure 33. Integrated cable lock

Password protection

To deter unauthorized use of your computer, you can use the Setup Utility program to set a password. When you turn on your computer, you are prompted to type the password to unlock the keyboard for normal use.

Erasing a lost or forgotten password (clearing CMOS)

This section contains instructions on erasing some lost or forgotten passwords, such as a user password. For more information about lost or forgotten passwords, go to the ThinkVantage® Productivity Center program.

To erase a lost or forgotten password:

1. Open the computer cover. See “Opening the cover” on page 12.
2. Access the system board. See “Accessing system board components and drives” on page 13.

Note: You must remove the hard disk drive to gain access to the Clear CMOS/Recovery jumper.

3. Locate the Clear CMOS/Recovery jumper on the system board. See “Identifying parts on the system board” on page 9.
4. Move the jumper from the standard position (pin 1 and pin 2) to the maintenance or configure position (pin 2 and pin 3).
5. Reinstall the hard disk drive.
6. Lower the drive bay assembly and reconnect any cables that were disconnected.
7. Close the computer cover and connect the power cord. See Chapter 4, “Completing the parts replacement,” on page 35.
8. Restart the computer and leave it on for approximately 10 seconds. Turn off the computer by holding the power switch for approximately 5 seconds. The computer will turn off.
9. Repeat step 1 through step 3 on page 38.
10. Move the Clear CMOS/Recovery jumper back to the standard position (pin 1 and pin 2).
11. Reinstall the hard disk drive if removed.
12. Close the computer cover and connect the power cord. See Chapter 4, “Completing the parts replacement,” on page 35.

Appendix. 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 applications 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.
1009 Think Place - Building One
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.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

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.

Television output notice

The following notice applies to models that have the factory-installed television-output feature.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Trademarks

The following terms are trademarks of Lenovo in the United States, other countries, or both:

- Lenovo
- The Lenovo logo
- ThinkCentre
- ThinkVantage

Other company, product, or service names may be trademarks or service marks of others.

Index

A

- adapter
 - installing 15
- adapter card 15
- adapter card, replacing 30
- audio line-in connector 7
- audio line-out connector 7

B

- battery, replacing 20
- bay 2, installing 18

C

- cable lock, security 37
- card reader, replacing 31
- CMOS, clearing 38
- components, accessing system board 13
- components, internal 8
- connecting drives 18
- connector description 7
- connectors
 - front 5
 - rear 6
- cover
 - opening 12
- CRU
 - completing the installation 35

D

- device drivers 36
- devices, handling static-sensitive 4
- DisplayPort connector 7
- drivers, device 36
- drives
 - bays 17
 - internal 16
 - specifications 17

E

- eSATA connector 7
- Ethernet connector 7
- external options, installing 11

F

- front connectors 5

H

- hard disk drive, replacing 25
- heat sink and fan assembly, replacing 23

I

- important safety information 1
- information resources 3
- installing
 - bay 2 18
 - internal options 12
- installing options
 - adapter card 15
 - internal drives 16
 - security features 37
- internal options, installing 12

K

- keyboard connector 7
- keyboard, replacing 33

L

- locating components 8

M

- memory module, installing or replacing 28
- mouse connector 7
- mouse, replacing 33

N

- notice, television output 40
- notices 39

O

- opening the cover 12
- optical drive, replacing 26
- options, installing internal drives 16
- output notice, television 40
- overview 3

P

- parts replacement, completing 35
- password
 - erasing 38
 - lost or forgotten 38
- password protection 38
- power supply, replacing 21
- protection, password 38

R

- rear connectors 6
- replacing
 - battery 20
 - hard disk drive 25
 - heat sink and fan assembly 23

resources, information 3

S

safety information 1

security

 cable lock 37

 features, installing 37

serial port 7

static-sensitive devices, handling 4

system board

 components, accessing 13

 connectors 9

 identifying parts 9

 location 9

T

television output notice 40

trademarks 40

U

USB connector 7

lenovo®

Part Number: 46R4690

Printed in USA

(1P) P/N: 46R4690



Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>