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ThinkCentre
User Guide

ThinkThinkThinkCentreThink

Machine Types: 7570, 7577, 7578, 7580, 7583, 7584, 7589, 7594, 7595, 7597, 7598

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Note: Before using this information and the product it supports, be sure to read and understand the *ThinkCentre Safety and Warranty Guide* and Appendix A "Notices" on page 35.

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Contents

Important safety information

CAUTION:
Before using this manual, be sure to 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 this 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 a Portable Document Format (PDF) version from the Lenovo® Support Web site at:
http://www.lenovo.com/support

Chapter 1. Product overview

This chapter provides information about the computer features, specifications, software programs provided by Lenovo, and locations of connectors.

This chapter contains the following topics:

- "Features" on page 1: This section provides information about the computer features.
- "Specifications" on page 4: This section lists the physical specifications for your computer.
- "Software overview" on page 6: This section provides information about the software programs provided with your computer.
- "Locations" on page 7: This section provides information to help you locate your computer connectors.

Features

This section provides information about the computer features.

System information

The following information covers a variety of models. For information about your specific model, use the Setup Utility program. See Chapter 4 "Using the Setup Utility program" on page 21.

Microprocessor

Your computer comes with one of the following microprocessors (internal cache size varies by model type):

- Intel® Core™ i3 microprocessor
- Intel Core i5 microprocessor
- Intel Pentium® microprocessor

Memory module(s)

Your computer supports up to two double data rate 3 dual inline memory modules (DDR3 DIMMs).

Note: Your computer supports both 1066 MHz and 1333 MHz DDR3 memory modules. However, if you are using the 1333 MHz memory module(s) with a microprocessor that runs at 1066 MHz (such as the Intel Pentium G6950 microprocessor), your memory module(s) will operate at 1066 MHz.

Internal drives

- Card reader (available in some models)
- One slim Serial Advanced Technology Attachment (SATA) optical drive
- One SATA hard disk drive

Video subsystem

- Integrated graphics functioning through a Video Graphics Array (VGA) IN connector and a DisplayPort out connector

Audio subsystem

- Integrated high-definition (HD) audio
- Microphone connector and headphone connector

- Internal speakers

Connectivity

10/100/1000 Mbps integrated Ethernet controller

System management features

- Ability to store the power-on self-test (POST) hardware test results
- Advanced Configuration and Power Interface (ACPI) support
- Automatic power-on startup
- Desktop Management Interface (DMI)
- Intel Active Management Technology (AMT) (available in some models)
- Intel Rapid Storage Technology
- Preboot Execution Environment (PXE)
- System Management (SM) Basic Input/Output System (BIOS) and SM software
- Wake on LAN (WOL)
- Windows Management Instrumentation (WMI) (WMI is the infrastructure for management data and operations on Windows operating systems.)

Input/Output (I/O) **features**

- One DisplayPort connector
- One Ethernet connector
- One optional 9-pin serial port
- One optional card reader
- One optional ExpressCard slot
- One optional Personal System/2® (PS/2®) keyboard connector
- One optional PS/2 mouse connector
- One VGA IN connector
- Six Universal Serial Bus (USB) connectors
- Two audio connectors (microphone connector and headphone connector)

For more information, refer to "Locating connectors, controls, and indicators on the front of your computer" on page 7 and "Locating connectors and parts on the rear of your computer" on page 9.

Expansion

- One hard disk drive bay
- One optical drive bay

Power supply

- 150-watt auto-sensing power supply

Security features

- Computrace
- Cover presence switch (also called intrusion switch) (available in some models)
- Enabling or disabling SATA devices

- Enabling or disabling the serial port
- Enabling or disabling USB connectors
- Keyboard with fingerprint reader (shipped with some models)
- Power-on password (POP), administrator password, and hard disk drive password to deter unauthorized use of your computer
- Startup sequence control
- Startup without keyboard or mouse
- Support for the addition of an integrated cable lock (Kensington lock. See "Integrated cable lock" on page 13 for more information.)

Preinstalled software programs

Your computer is preinstalled with some software programs to help you work more easily and securely. For more information, see "Software overview" on page 6.

Preinstalled operating system

Your computer is preinstalled with the Microsoft® Windows® 7 operating system.

Operating system(s), certified or tested for compatibility[1] (varies by model type)

- Linux®

Single-touch and multi-touch feature

Note: The single-touch feature or multi-touch feature is only available on some computer models.

Your computer might come with the single-touch feature or multi-touch feature depending on your model. If the single-touch feature or the multi-touch feature is available on your computer, you can tap the touch screen once with your finger to make a single click. To make a double-click, tap twice without pausing. To make a right-click, tap the touch screen once and then hold your finger on the touch screen until a round circle is displayed. Then, lift your finger off the touch screen. A context menu will be displayed, where you can make selections.

Using the single-touch feature: The single-touch feature enables you to use only one finger at a time to interact with your computer.

Using the multi-touch feature: The multi-touch feature enables you to use one or two fingers to interact with your computer. For example, you can zoom in, zoom out, scroll, or rotate on the touch screen with two fingers while browsing the Internet or reading or editing a document.

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1. The operating system(s) listed here are being certified or tested for compatibility at the time this publication goes to press. Additional operating systems might be identified by Lenovo as compatible with your computer following the publication of this manual. This list is subject to change. To determine if an operating system has been certified or tested for compatibility, check the Web site of the operating system vendor.

The following table shows the supported touch feature on each operating system edition.

Table 1. Operating system edition and supported touch feature

Operating system edition	Supported touch feature
Windows 7 Home Basic	Single-touch
Windows 7 Home Premium	Single-touch or multi-touch
Windows 7 Professional	Single-touch or multi-touch
Windows 7 Ultimate	Single-touch or multi-touch
Windows 7 Starter	Single-touch

Specifications

This section lists the physical specifications for your computer.

Computer dimensions (with a stand and frame foot)

- Width: 560 mm (22.05 inches)
- Maximum height:
  - 421.9 mm (16.61 inches) (with a frame stand and frame foot)
  - 566.9 mm (22.32 inches) (with a lift stand)
- Depth: ranges from 109 mm (4.29 inches) to 250 mm (9.84 inches) (varies by configuration)

Touch screen dimensions

Width: 531.4 mm (20.92 inches)

Height: 311.6 mm (12.27 inches)

Depth: 2 mm (0.08 inch)

Computer weight

Maximum configuration as shipped: 14.1 kg (31.09 lbs)

Lift stand

Height adjustment: 110 mm (4.33 inches)

Tilt adjustment: -5 degrees to 25 degrees from the vertical

Frame stand

Tilt adjustment: 15 degrees to 45 degrees from the vertical

Environment

- Air temperature:

  Operating: 10°C to 35°C (50°F to 95°F)

  Non-operating: -20°C to 60°C (-4°F to 140°F) (with package)
- Humidity:

  Operating: 20% to 80% (10% per hour, non-condensing)

  Non-operating: 20% to 80% (10% per hour, non-condensing)
- Altitude:

  Operating: -50 to 10 000 ft (-15.2 to 3 048 m)

  Non-operating: -50 to 35 000 ft (-15.2 to 10 668 m)

Electrical input

- Input voltage:
  - Low range:

    Minimum: 100 V ac

    Maximum: 127 V ac

    Input frequency range: 50 to 60 Hz

    Voltage-selection switch setting: 115 V ac
  - High range:

    Minimum: 200 V ac

    Maximum: 240 V ac

    Input frequency range: 50 to 60 Hz

    Voltage-selection switch setting: 230 V ac

Software overview

The computer comes with a preinstalled operating system and several software programs provided by Lenovo.

Software provided with your Windows operating system

This section provides information about the software provided with your Windows operating system.

Software provided by Lenovo

The following software programs are provided by Lenovo to help you improve productivity and reduce the cost associated with maintaining your computer. Software programs provided with your computer might vary depending on your model type and preinstalled operating system.

Lenovo ThinkVantage Tools

The Lenovo ThinkVantage® Tools program guides you to a host of information sources and provides easy access to various tools to help you work more easily and securely. For more information, see "Lenovo ThinkVantage Tools" on page 31.

Lenovo Welcome

The Lenovo Welcome program introduces some innovative built-in features of Lenovo to you and guides you through some important setup tasks to help you make the most of your computer.

Product Recovery

The Product Recovery program enables you to restore the contents of the hard disk drive to the factory default settings.

ThinkVantage Rescue and Recovery

The ThinkVantage Rescue and Recovery® program is a one button recovery and restore solution that includes a set of self-recovery tools to help you diagnose computer problems, get help, and recover from system crashes, even if you cannot start the Windows operating system.

Note: If the **Enhanced Backup and Restore** icon in the Lenovo ThinkVantage Tools program is dimmed, it indicates that you need to install the Rescue and Recovery program manually before enabling its features. To install the Rescue and Recovery program, do the following:

1. Click **Start ➙ All Programs ➙ Lenovo ThinkVantage Tools**, and double-click **Enhanced Backup and Restore**.
2. Follow the instructions on the screen.
3. When the installation process completes, the **Enhanced Backup and Restore** icon is activated.

Password Manager

The Password Manager program automatically captures and fills in authentication information for Windows applications and Web sites.

Note: If the **Password Vault** icon in the Lenovo ThinkVantage Tools program is dimmed, it indicates that you need to install the Password Manager program manually before enabling its features. To install the Password Manager program, do the following:

1. Click **Start ➙ All Programs ➙ Lenovo ThinkVantage Tools**, and double-click **Password Vault**.
2. Follow the instructions on the screen.
3. When the installation process completes, the **Password Vault** icon is activated.

Power Manager

The Power Manager program provides convenient, flexible, and complete power management for your ThinkCentre® computer. By using the Power Manager program, you can adjust your power settings to achieve the best balance between system performance and power saving.

ThinkVantage System Update

The ThinkVantage System Update program helps you keep the software on your computer up-to-date by downloading and installing software packages (ThinkVantage applications, device drivers, BIOS updates, and other third party applications).

Fingerprint Software

The integrated fingerprint reader provided on some keyboards works with the Fingerprint Software program to enable you to enroll your fingerprint and associate it with your Windows password. As a result, fingerprint authentication can replace your password and enable simple and secure user access. A fingerprint reader keyboard is available with certain computers or can be purchased for computers that support this option.

Lenovo ThinkVantage Toolbox

The Lenovo ThinkVantage Toolbox program helps you maintain your computer, improve computing security, diagnose computer problems, get familiar with the innovative technologies provided by Lenovo, and get more information about your computer. For more information, see "Lenovo ThinkVantage Toolbox" on page 28.

Adobe Reader

The Adobe Reader program is a tool used to view, print, and search PDF documents.

See "Online Books folder" on page 31 for more information about accessing and viewing the publications.

Antivirus software

Your computer comes with antivirus software that you can use to detect and eliminate viruses. Lenovo provides a full version of antivirus software on your computer with a free 30-day subscription. After 30 days, you must renew the license to continue receiving the antivirus software updates.

For more information about how to use your antivirus software, refer to the help system of your antivirus software.

Locations

This section provides information to help you locate the connectors on your computer.

Locating connectors, controls, and indicators on the front of your computer

Figure 1 "Front connector, control, and indicator locations" on page 8 shows the locations of the connectors, controls, and indicators on the front of your computer.
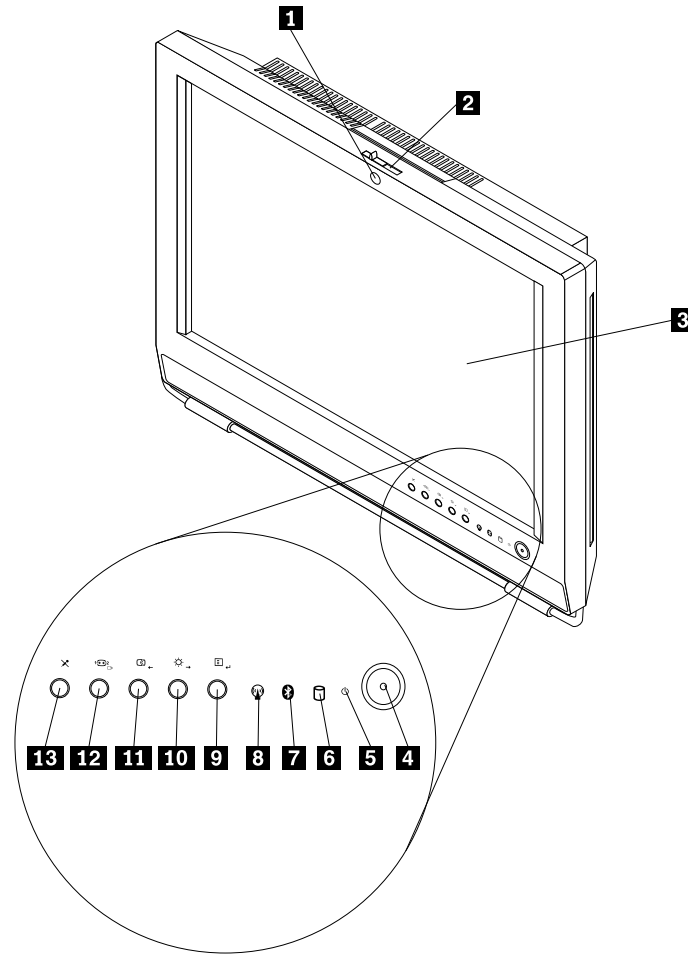
Figure 1. Front connector, control, and indicator locations

1 Integrated camera with MIC (microphone) (available in some models)

8 Wireless activity indicator

2 Integrated camera on/off button

9 Menu/Enter

3 Liquid crystal display (LCD) panel

10 Brightness control /Right

4 Power switch

11 Image setup control /Left

5 Power indicator

12 Monitor mode control /Exit

6 Hard disk drive activity indictor

13 Microphone mute/on control

7 Bluetooth activity indicator

Using your computer in monitor mode

Your computer can work in two modes: computer mode or monitor mode. This section provides instructions on how to use your computer in monitor mode.

To use your computer in monitor mode, you need to have a second computer. Connect one end of the VGA cable to the VGA IN connector on the rear of your computer, and the other end to the VGA connector on the second computer. Use the monitor mode control $^{1}\!\!\overset{2}{\rightarrow}$ on the front of your computer to switch your computer between computer mode and monitor mode.

The following table shows the functions of each control when your computer works in computer mode or monitor mode.

Icon	Control	Description
▣ ↵	Menu	Open the main On-Screen Display (OSD) menu.
	Enter	Confirm a selection.
☼ →	Brightness control	Adjust overall monitor brightness.
	Right	Move to the right.
◁ ←	Image setup control	Automatically optimize the image.
	Left	Move to the left.
¹↹² ↵	Cancel/Exit	Cancel an operation or exit the main OSD menu.
	Monitor mode control	Switch your computer between computer mode and monitor mode.

Locating connectors and parts on the rear of your computer

Figure 2 "Rear connector and part locations" on page 9 shows the locations of the connectors and parts 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.

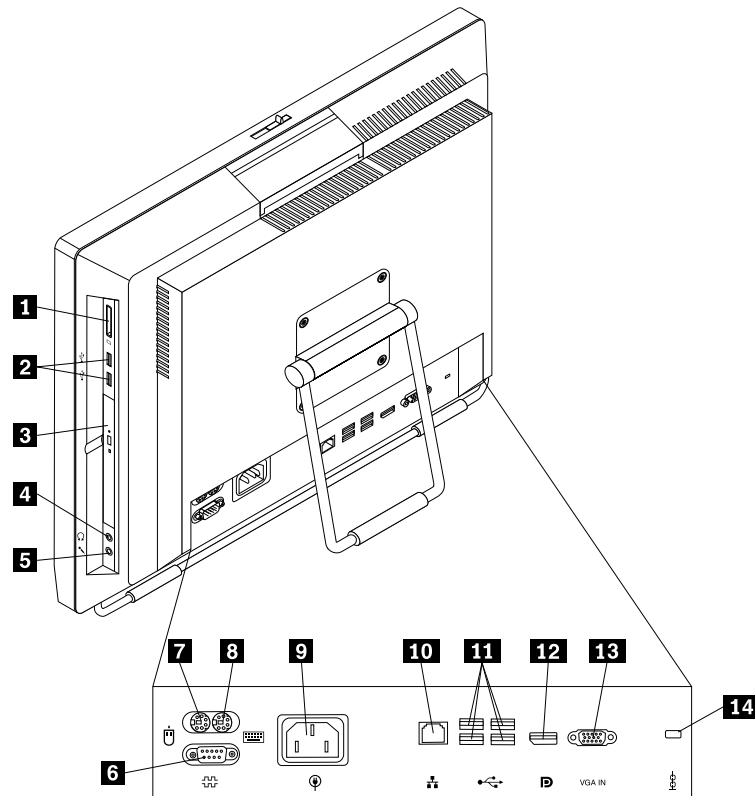*Figure 2. Rear connector and part locations*

1 Card reader (available in some models)

2 USB connectors (2)

3 Slim optical drive

8 PS/2 keyboard connector (available in some models)

9 Power cord connector

10 Ethernet connector

4 Headphone connector   **11** USB connectors (4)

5 Microphone connector   **12** DisplayPort out connector

6 Serial port (available in some models)   **13** VGA IN connector

7 PS/2 mouse connector (available in some models)   **14** Integrated cable lock slot

Connector	Description
DisplayPort out connector	Used to attach a high-performance monitor, a direct-drive monitor, or other devices that use a DisplayPort connector.
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.
Microphone connector	Used to attach a microphone to your computer when you want to record sound or if you use speech-recognition software.
PS/2 keyboard connector (optional)	Used to attach a keyboard that uses a PS/2 keyboard connector.
PS/2 mouse connector (optional)	Used to attach a mouse, a trackball, or other pointing devices that use a PS/2 mouse connector.
Serial port (optional)	Used to attach an external modem, a serial printer, or other devices that use a 9-pin serial port.
USB connector	Used to attach a device that requires a 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.
VGA IN connector	Used to connect your computer to a VGA monitor connector on a second computer so that you can use your computer in monitor mode.

Chapter 2. Installing or replacing hardware

This chapter provides instructions on how to install or replace hardware for your computer.

Attention: To prevent possible damage to your computer, do not remove the computer cover and install or replace internal parts by yourself. See Chapter 7 "Getting information, help, and service" on page 31 for more information about help, service, and technical assistance for Lenovo products.

This chapter contains the following topics:

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 computer parts and components, take these precautions to avoid static-electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always carefully handle the parts and other computer components. Handle PCI cards, memory modules, system boards, and microprocessors by the edges. Never touch 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 new part to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity from the package and your body.
- Remove the new part from the static-protective package and directly install it in the computer without placing it on any other surface. If it is hard for you to do this in your specific situation, place the static-protective package of the new part on a smooth, level surface, and then place the new part on the static-protective package.
- Do not place the part on the computer cover or other metal surface.

Installing or replacing hardware

This section provides instructions on how to install or replace hardware for your computer.

Notes:

1. Use only computer parts provided by Lenovo.
2. When installing or replacing an option, use the appropriate instructions in this section along with the instructions that come with the option.

Installing external options

You can install external options to your computer, such as external speakers, a printer, or a scanner. For some external options, you must install additional software in addition to making the physical connection. When you install an external option, see "Locating connectors, controls, and indicators on the front of your

computer" on page 7 and "Locating connectors and parts on the rear of your computer" on page 9 to identify the required connector. Then, use the instructions that come with the option to help you make the connection and install software or device drivers that are required for the option.

Installing a computer wall mount

Your computer supports Underwriters Laboratories (UL) certified 100 mm × 100 mm (3.94 inches × 3.94 inches) wall mounts. For proper mounting, use four screws of the following specifications: Diameter × Pitch × Length: 4 mm × 0.7 mm × 10 mm (0.16 inch × 0.03 inch × 0.39 inch)

Note: When installing a computer wall mount, make sure that you leave at least a 60 mm (2.36 inches) space between the wall and your computer for easy access to the connectors on the rear of your computer.

Replacing the keyboard

<table>
<tr><td>

Attention:
Do not open your computer or attempt any repair before reading and understanding 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

</td></tr>
</table>

This section provides instructions on how to replace the keyboard.

To replace the keyboard, do the following:

1. Remove all media from the drives. Then, turn off all attached devices and the computer.

2. Disconnect all power cords from electrical outlets.

3. Disconnect the old keyboard cable from the computer.

4. Connect a new keyboard to the appropriate connector on the computer. Your keyboard might be connected to a PS/2 keyboard connector **1** or a USB connector **2**. Depending on where you want to connect your keyboard, see "Locating connectors, controls, and indicators on the front of your computer" on page 7 or "Locating connectors and parts on the rear of your computer" on page 9.

Figure 3. Keyboard connectors

Replacing the mouse

<table>
<tr><td>

Attention:
Do not open your computer or attempt any repair before reading and understanding 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

</td></tr>
</table>

This section provides instructions on how to replace the mouse.

To replace the mouse, do the following:

1. Remove all media from the drives. Then, turn off all attached devices and the computer.

2. Disconnect all power cords from electrical outlets.

3. Disconnect the old mouse cable from the computer.

4. Connect a new mouse to the appropriate connector on the computer. Your mouse might be connected to a PS/2 mouse connector **1** or a USB connector **2**. Depending on where you want to connect your mouse, see "Locating connectors, controls, and indicators on the front of your computer" on page 7 or "Locating connectors and parts on the rear of your computer" on page 9.
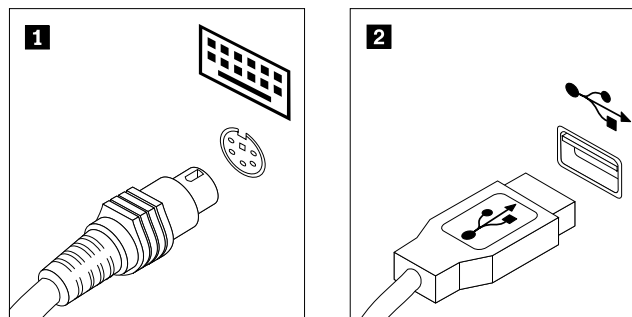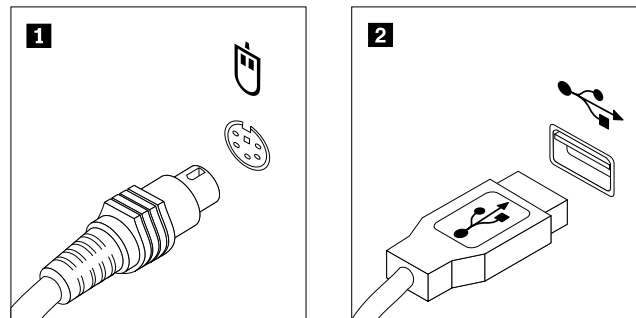

Figure 4. Mouse connectors

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.

Basic security features

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

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. The computer cannot be used until a valid password is typed in. Refer to Chapter 4 "Using the Setup Utility program" on page 21 for more information.

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 computer cover. See Figure 5 "Installing an integrated cable lock" on page 14. This is the same type of lock used with many notebook computers. You can order an integrated cable lock from Lenovo by searching for *Kensington* at: http://www.lenovo.com/support

Note: Make sure that the integrated cable lock you installed does not interfere with other computer cables.
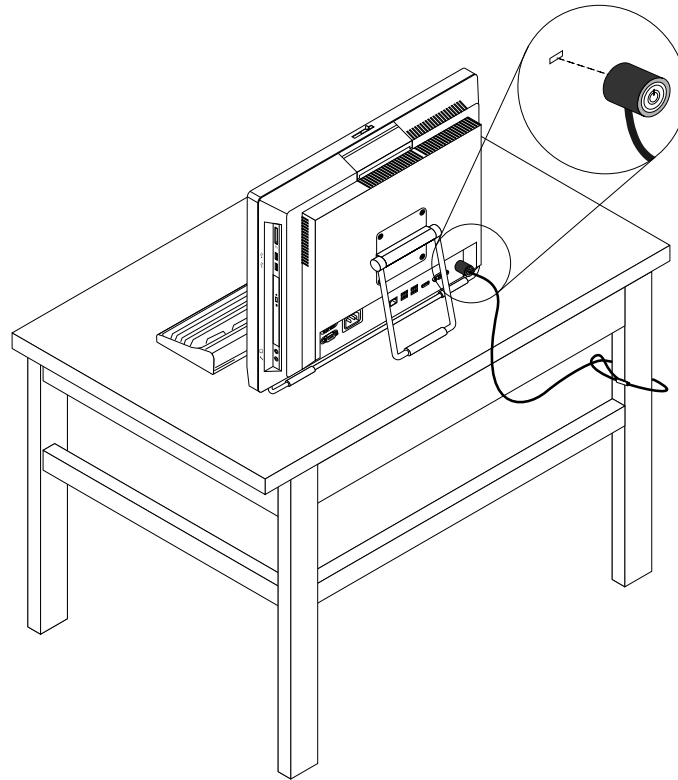

Figure 5. Installing an integrated cable lock

Chapter 3. Recovery information

This chapter provides information about the recovery solutions provided by Lenovo.

This chapter contains the following topics:

- "Creating and using recovery media" on page 15
- "Performing backup and recovery operations" on page 16
- "Using the Rescue and Recovery workspace" on page 17
- "Creating and using a rescue medium" on page 18
- "Installing or reinstalling device drivers" on page 19
- "Solving recovery problems" on page 20

Notes:

1. The recovery information in this chapter only applies to the computers that have the Rescue and Recovery program or the Product Recovery program installed. If the **Enhanced Backup and Restore** icon in the Lenovo ThinkVantage Tools program is dimmed, it indicates that you need to install the Rescue and Recovery program manually before enabling its features. To install the Rescue and Recovery program, do the following:

    a. Click **Start → All Programs → Lenovo ThinkVantage Tools**, and double-click **Enhanced Backup and Restore**.

    b. Follow the instructions on the screen.

    c. When the installation process completes, the **Enhanced Backup and Restore** icon is activated.

2. There are a variety of methods to choose from when considering how to recover in the event of a software- or hardware-related problem. Some methods vary depending on the type of your operating system.

3. The product on the recovery media may be used only for the following purposes:

    - Restore the product preinstalled on your computer
    - Reinstall the product
    - Modify the product using the Additional Files

Creating and using recovery media

You can use recovery media to restore the hard disk drive to the factory default settings. Recovery media are useful if you transfer the computer to another area, sell the computer, recycle the computer, or put the computer in an operational state after all other methods of recovery have failed. As a precautionary measure, it is important to create recovery media as early as possible.

Note: The recovery operations you can perform using recovery media vary depending on the operating system from which the recovery media were created. The recovery media might contain a boot medium and a data medium. Your Microsoft Windows license permits you to create only one data medium, so it is important that you store the recovery media in a safe place after you have made them.

Creating recovery media

This section provides instructions on how to create recovery media on the Windows 7 operating system.

Note: On the Windows 7 operating system, you can create recovery media using discs or external USB storage devices.

To create recovery media on the Windows 7 operating system, click **Start ➙ All Programs ➙ Lenovo ThinkVantage Tools ➙ Factory Recovery Disks**. Then, follow the instructions on the screen.

Using recovery media

This section provides instructions on how to use recovery media on the Windows 7 operating system.

On the Windows 7 operating system, you can use recovery media to restore the computer to the factory default settings only. You can use recovery media to put the computer in an operational state after all other methods of recovery have failed.

Attention: When you use recovery media to restore the computer to the factory default settings, all the files currently on the hard disk drive will be deleted and replaced by the factory default settings.

To use recovery media on the Windows 7 operating system, do the following:

1. Depending on the type of your recovery media, connect the boot medium (memory key or other USB storage device) to the computer, or insert the boot disc into the optical drive.
2. Repeatedly press and release the F12 key when turning on the computer. When the **Startup Device Menu** opens, release the F12 key.
3. Select the desired startup device and press Enter. The restore process begins.
4. Follow the instructions on the screen to complete the operation.

Notes:

1. After restoring your computer to the factory default settings, you might have to reinstall device drivers for some devices. See "Installing or reinstalling device drivers" on page 19.
2. Some computers come with Microsoft Office or Microsoft Works preinstalled. If you need to recover or reinstall your Microsoft Office or Microsoft Works applications, you must use the *Microsoft Office CD* or *Microsoft Works CD*. These discs are provided only with computers preinstalled with Microsoft Office or Microsoft Works.

Performing backup and recovery operations

The Rescue and Recovery program enables you to back up all your hard disk drive contents including the operating system, data files, software programs, and personal settings. You can designate where the Rescue and Recovery program stores the backup:

- In a protected area of your hard disk drive
- On the secondary hard disk drive if a secondary hard disk drive is installed in your computer
- On an attached external USB hard disk drive
- On a network drive
- On recordable discs (a recordable optical drive is required for this option)

After you have backed up the contents on the hard disk drive, you can restore the complete contents of the hard disk drive, restore only the selected files, or restore only the Windows operating system and applications.

Performing a backup operation

This section provides instructions on how to perform a backup operation using the Rescue and Recovery program on the Windows 7 operating system.

To perform a backup operation using the Rescue and Recovery program on the Windows 7 operating system, do the following:

1. From the Windows desktop, click **Start → All Programs → Lenovo ThinkVantage Tools → Enhanced Backup and Restore**. The Rescue and Recovery program opens.

2. In the Rescue and Recovery main window, click the **Launch advanced Rescue and Recovery** arrow.

3. Click **Back up your hard drive** and select backup operation options. Then, follow the instructions on the screen to complete the backup operation.

Performing a recovery operation

This section provides instructions on how to perform a recovery operation using the Rescue and Recovery program on the Windows 7 operating system.

To perform a recovery operation using the Rescue and Recovery program on the Windows 7 operating system, do the following:

1. From the Windows desktop, click **Start → All Programs → Lenovo ThinkVantage Tools → Enhanced Backup and Restore**. The Rescue and Recovery program opens.

2. In the Rescue and Recovery main window, click the **Launch advanced Rescue and Recovery** arrow.

3. Click the **Restore your system from a backup** icon.

4. Follow the instructions on the screen to complete the recovery operation.

For more information about performing a recovery operation from the Rescue and Recovery workspace, see "Using the Rescue and Recovery workspace" on page 17.

Using the Rescue and Recovery workspace

The Rescue and Recovery workspace resides in a protected, hidden area of your hard disk drive that operates independently from the Windows operating system. This enables you to perform recovery operations even if you cannot start the Windows operating system. You can perform the following recovery operations from the Rescue and Recovery workspace:

- Rescue files from your hard disk drive or from a backup The Rescue and Recovery workspace enables you to locate files on your hard disk drive and transfer them to a network drive or other recordable media, such as a USB device or a disc. This solution is available even if you did not back up your files or if changes were made to the files since your last backup operation. You can also rescue individual files from a Rescue and Recovery backup located on your local hard disk drive, a USB device, or a network drive.

- Restore your hard disk drive from a Rescue and Recovery backup If you have backed up your hard disk drive using the Rescue and Recovery program, you can restore the hard disk drive from a Rescue and Recovery backup, even if you cannot start the Windows operating system.

- Restore your hard disk drive to the factory default settings The Rescue and Recovery workspace enables you to restore the complete contents of your hard disk drive to the factory default settings. If you have multiple partitions on your hard disk drive, you have the option to restore the factory default settings to the C: partition and leave the other partitions intact. Because the Rescue and Recovery workspace operates independently from the Windows operating system, you can restore the factory default settings even if you cannot start the Windows operating system.

Attention: If you restore the hard disk drive from a Rescue and Recovery backup or restore the hard disk drive to the factory default settings, all files on the primary hard disk drive partition (usually drive C:) will be deleted in the recovery process. If possible, make copies of important files. If you are unable to start the Windows operating system, you can use the rescue files feature of the Rescue and Recovery workspace to copy files from your hard disk drive to other media.

To start the Rescue and Recovery workspace, do the following:

1. Make sure the computer is turned off.

2. Repeatedly press and release the F11 key when turning on the computer. When you hear beeps or see a logo screen, release the F11 key.

3. If you have set a Rescue and Recovery password, type your password when prompted. The Rescue and Recovery workspace opens after a short delay.

   Note: If the Rescue and Recovery workspace fails to open, see "Solving recovery problems" on page 20.

4. Do one of the following:

   • To rescue files from your hard disk drive or from a backup, click **Rescue files** and follow the instructions on the screen.

   • To restore your hard disk drive from a Rescue and Recovery backup or to restore your hard disk drive to the factory default settings, click **Restore your system** and follow the instructions on the screen.

For more information about the features of the Rescue and Recovery workspace, click **Help**.

Notes:

1. After restoring your hard disk drive to the factory default settings, you might have to reinstall device drivers for some devices. See "Installing or reinstalling device drivers" on page 19.

2. Some computers come with Microsoft Office or Microsoft Works preinstalled. If you need to recover or reinstall your Microsoft Office or Microsoft Works applications, you must use the *Microsoft Office CD* or *Microsoft Works CD*. These discs are provided only with computers preinstalled with Microsoft Office or Microsoft Works.

Creating and using a rescue medium

With a rescue medium, such as a disc or a USB hard disk drive, you can recover the computer from failures that prevent you from gaining access to the Rescue and Recovery workspace on your hard disk drive.

Notes:

1. The recovery operations you can perform using a rescue medium vary depending on the operating system.

2. The rescue disc can be started in all types of optical drives.

Creating a rescue medium

This section provides instructions on how to create a rescue medium on the Windows 7 operating system.

To create a rescue medium on the Windows 7 operating system, do the following:

1. From the Windows desktop, click **Start ➙ All Programs ➙ Lenovo ThinkVantage Tools ➙ Enhanced Backup and Restore**. The Rescue and Recovery program opens.

2. In the Rescue and Recovery main window, click the **Launch advanced Rescue and Recovery** arrow.

3. Click the **Create Rescue Media** icon. The Create Rescue and Recovery Media window opens.

4. In the **Rescue Media** area, select the type of the rescue medium you want to create. You can create a rescue medium using a disc, a USB hard disk drive, or a secondary internal hard disk drive.

5. Click **OK** and follow the instructions on the screen to create a rescue medium.

Using a rescue medium

This section provides instructions on how to use the rescue medium you have created.

• If you have created a rescue medium using a disc, use the following instructions to use the rescue medium:

   1. Turn off your computer.

2. Repeatedly press and release the F12 key when turning on the computer. When the **Startup Device Menu** opens, release the F12 key.

3. On the **Startup Device Menu**, select the desired optical drive as the first boot device. Then, insert the rescue disc into the optical drive and press Enter. The rescue medium starts.

- If you have created a rescue medium using a USB hard disk drive, use the following instructions to use the rescue medium:

  1. Attach the USB hard disk drive to one of the USB connectors on your computer.

  2. Repeatedly press and release the F12 key when turning on the computer. When the **Startup Device Menu** opens, release the F12 key.

  3. On the **Startup Device Menu**, select the USB hard disk drive as the first boot device and press Enter. The rescue medium starts.

- If you have created a rescue medium using the secondary internal hard disk drive, set the secondary internal hard disk drive as the first boot device in the startup device sequence to start the rescue medium. See "Selecting a startup device" on page 23.

When the rescue medium starts, the Rescue and Recovery workspace opens. The help information for each feature is available from the Rescue and Recovery workspace. Follow the instructions to complete the recovery process.

Installing or reinstalling device drivers

Before installing or reinstalling device drivers, make sure that you have a preinstalled operating system and the documentation and software media for the device.

Device drivers for factory-installed devices are located on the computer hard disk drive (usually drive C:) in the SWTOOLS\DRIVERS subdirectory. The latest device drivers for factory-installed devices are also available at http://www.lenovo.com/support. Other device drivers are on the software media that come with individual devices.

To install or reinstall the device driver for a factory-installed device, do the following:

1. Turn on the computer.

2. Use Windows Explorer or **My Computer** to display the directory structure of your hard disk drive.

3. Go to the C:\SWTOOLS directory.

4. Open the DRIVERS folder. Within the DRIVERS folder, there are several subfolders named for various devices installed in your computer, such as AUDIO or VIDEO.

5. Open the appropriate device subfolder.

6. Do one of the following:

   - In the device subfolder, look for a SETUP.exe file. Double-click the file and follow the instructions on the screen to complete the installation.

   - In the device subfolder, look for a README.txt file or a file with the .txt extension. This file might be named after the operating system, such as WIN98.txt. The TXT file contains information about how to install the device driver. Follow the instructions to complete the installation.

   - If the device subfolder contains a file with the .inf extension and you want to install the device driver using the INF file, refer to your Windows Help and Support information system for detailed information about how to install the device driver.

Solving recovery problems

If you are unable to access the Rescue and Recovery workspace or the Windows environment, do one of the following:

- Use a rescue medium to start the Rescue and Recovery workspace. See "Creating and using a rescue medium" on page 18.
- Use recovery media if all other methods of recovery have failed and you need to restore the hard disk drive to the factory default settings. See "Creating and using recovery media" on page 15.

Note: If you are unable to access the Rescue and Recovery workspace or the Windows environment from a rescue medium, or recovery media, you might not have the rescue device (an internal hard disk drive, a disc, a USB hard disk drive, or other external devices) set as the first boot device in the startup device sequence. You must first make sure that your rescue device is set as the first boot device in the startup device sequence in the Setup Utility program. See "Selecting a startup device" on page 23 for detailed information about temporarily or permanently changing the startup device sequence. For more information about the Setup Utility program, see Chapter 4 "Using the Setup Utility program" on page 21.

It is important to create a rescue medium and a set of recovery media as early as possible and store them in a safe place for future use.

Chapter 4. Using the Setup Utility program

You can use the Setup Utility program to view and change the configuration settings of your computer, regardless of which operating system you are using. However, the operating system settings might override any similar settings in the Setup Utility program.

This chapter provides information about the following topics to help you use the Setup Utility program:

- "Starting the Setup Utility program" on page 21
- "Viewing or changing settings" on page 21
- "Using passwords" on page 21
- "Enabling or disabling a device" on page 23
- "Selecting a startup device" on page 23
- "Exiting the Setup Utility program" on page 24

Starting the Setup Utility program

This section provides instructions on how to start the Setup Utility program.

To start the Setup Utility program, do the following:

1. Make sure your computer is turned off.
2. Repeatedly press and release the F1 key when turning on the computer. When you see a logo screen, release the F1 key. The Setup Utility program opens.

   Note: If a password has been set, the Setup Utility program menu will not be displayed until you type the correct password. For more information, see "Using passwords" on page 21.

Viewing or changing settings

The Setup Utility program menu lists various items about the system configuration settings. To view or change the settings, start the Setup Utility program. See "Starting the Setup Utility program" on page 21. Then, follow the instructions on the screen.

When working with the Setup Utility program, you must use the keyboard. The keys used to perform various tasks are displayed at the bottom of each screen.

Using passwords

By using the Setup Utility program, you can set a password to prevent unauthorized access to your computer and data. The following options are available to help you set an administrator password, a power-on password, or a hard disk drive password:

- **Set Administrator Password**
- **Set Power-On Password**
- **Hard Disk Password**

You do not have to set a password to use your computer. However, using a password improves computing security. If you decide to set a password, read the following sections.

Password considerations

A password can be any combination of up to 64 (1 to 64) alphabetic and numeric characters. For security reasons, it is recommended to use a strong password that cannot be easily compromised. To set a strong password, use the following guidelines:

Note: The Setup Utility program passwords are not case sensitive.

- Have at least eight characters in length
- Contain at least one alphabetic character and one numeric character
- Not be your name or your user name
- Not be a common word or a common name
- Be significantly different from your previous passwords

Administrator password

The **Set Administrator Password** option enables you to set an administrator password, which deters unauthorized users from changing configuration settings. If you are responsible for maintaining the settings of several computers, you might want to set an administrator password. For more information on how to set a password, see "Setting, changing, or deleting a password" on page 22.

After you have set an administrator password, a password prompt is displayed each time you try to access the Setup Utility program. You cannot access the Setup Utility program until a valid password is typed in.

If you have set both a user password and an administrator password, you can type either password to use your computer. However, to change any configuration settings, you must use your administrator password.

Power-on password

After you have set a power-on password using the **Set Power-On Password** option, a password prompt is displayed each time you turn on the computer. You cannot use the computer until a valid password is typed in. For more information about how to set a password, see "Setting, changing, or deleting a password" on page 22.

Hard disk drive password

The **Hard Disk Password** option enables you to set a hard disk drive password, which prevents unauthorized access to the data on the hard disk drive. When a hard disk drive password is set, you are prompted to type a valid password each time you try to access the hard disk drive. For more information on how to set a hard disk drive password, see "Setting, changing, or deleting a password" on page 22.

Setting, changing, or deleting a password

This section provides instructions on how to set, change, or delete a password.

To set, change, or delete a password, do the following:

1. Start the Setup Utility program. See "Starting the Setup Utility program" on page 21.
2. From the Setup Utility program main menu, select **Security**.
3. Depending on the password type, select **Set Administrator Password**, **Set Power-On Password**, or **Hard Disk Password**.
4. Follow the instructions on the screen to set, change, or delete a password.

   Note: A password can be any combination of up to 64 (1 to 64) alphabetic and numeric characters. For more information, see "Password considerations" on page 22.

Enabling or disabling a device

This section provides instructions on how to enable or disable user access to a device.

SATA Controller When this option is set to **Disabled**, all devices connected to the SATA connectors (such as the hard disk drive and the optical drive) are disabled and will not be displayed in the system configuration.

USB Support Use this option to enable or disable a USB connector. When a USB connector is disabled, the device connected to the USB connector cannot be used.

To enable or disable a device, do the following:

1. Start the Setup Utility program. See "Starting the Setup Utility program" on page 21.
2. From the Setup Utility program main menu, select **Devices**.
3. Depending on the device you want to enable or disable, do one of the following:

   - Select **ATA Drive Setup → SATA Controller** to enable or disable the devices connected to the SATA connectors on the system board.
   - Select **USB Setup** and follow the instructions on the screen to enable or disable the USB connector(s) of your choice.

4. Select the desired settings and press Enter.
5. Press Esc to return to the Setup Utility program main menu. You might have to press Esc several times.
6. Press F10 to save the new settings and exit the Setup Utility program.

   Notes:

   a. If you do not want to save the new settings, select **Exit → Discard Changes and Exit**.
   b. If you want to return to the default settings, press F9 or select **Exit → Load Optimal Defaults**.

Selecting a startup device

If your computer does not start up from a device (such as a hard disk drive or the disc in an optical drive) as expected, do one of the following to select the desired startup device.

Selecting a temporary startup device

This section provides instructions on how to select a temporary startup device. You can use the instructions in this section to start up from any startup device.

Note: Not all discs and hard disk drives are bootable.

To select a temporary startup device, do the following:

1. Turn off your computer.
2. Repeatedly press and release the F12 key when turning on the computer. When the **Startup Device Menu** opens, release the F12 key.
3. Select the desired startup device on the **Startup Device Menu** and press Enter.

Note: Selecting a startup device on the **Startup Device Menu** does not permanently change the startup device sequence.

Viewing or changing the startup device sequence

This section provides instructions on how to view or permanently change the configured startup device sequence.

To view or permanently change the configured startup device sequence, do the following:

1. Start the Setup Utility program. See "Starting the Setup Utility program" on page 21.

2. Select **Startup → Primary Boot Sequence**. Read the information displayed on the right side of the screen.

3. Select the first boot device, second boot device, and so on.

4. Press Esc to return to the **Startup** menu. Then, select the devices for the **Automatic Boot Sequence** and **Error Boot Sequence**.

5. Press Esc to return to the Setup Utility program main menu. You might have to press Esc several times.

6. Press F10 to save the new settings and exit the Setup Utility program.

   Notes:

   a. If you do not want to save the new settings, select **Exit → Discard Changes and Exit**.

   b. If you want to return to the default settings, press F9 or select **Exit → Load Optimal Defaults**.

Exiting the Setup Utility program

After you finish viewing or changing settings, press Esc to return to the Setup Utility program main menu. You might have to press Esc several times. Then, you can do one of the following:

- If you want to save the new settings and exit the Setup Utility program, press F10 or select **Exit → Save Changes and Exit**. Otherwise, your changes will not be saved.

- If you do not want to save the new settings, select **Exit → Discard Changes and Exit**.

- If you want to return to the default settings, press F9 or select **Exit → Load Optimal Defaults**.

Chapter 5. Updating system programs

This chapter provides information about updating the POST and BIOS, and how to recover from a POST and BIOS update failure.

This chapter contains the following topics:

Using system programs

System programs are the basic layer of software built into your computer. System programs include the POST, the BIOS, and the Setup Utility program. The POST is a set of tests and procedures that are performed each time you turn on your computer. The BIOS is a layer of software that translates instructions from other layers of software into electrical signals that the computer hardware can execute. You can use the Setup Utility program to view or change the configuration settings of your computer. See Chapter 4 "Using the Setup Utility program" on page 21 for detailed information.

Your computer system board has a module called electrically erasable programmable read-only memory (EEPROM, also referred to as flash memory). You can easily update the POST, the BIOS, and the Setup Utility program by starting your computer with a system-program-update disc or running a special update program from your operating system.

Lenovo might make changes and enhancements to the POST and BIOS. When updates are released, they are available as downloadable files on the Lenovo Web site at http://www.lenovo.com. Instructions for using the POST and BIOS updates are available in a TXT file that is included with the update files. For most models, you can download either an update program to create a system-program-update disc or an update program that can be run from the operating system.

Updating (flashing) the BIOS from a disc

This section provides instructions on how to update (flash) the BIOS from a disc.

Note: You can download a self-starting bootable disc image (known as an ISO image) with the system program updates to create a system-program-update disc. Go to:
http://www.lenovo.com/support

To update (flash) the BIOS from a disc, do the following:

1. Turn off your computer.
2. Repeatedly press and release the F12 key when turning on the computer. When the **Startup Device Menu** opens, release the F12 key.
3. On the **Startup Device Menu**, select the desired optical drive as the startup device. Then, insert the disc into this optical drive and press Enter. The update begins.
4. When prompted to change the serial number, it is suggested that you do not make this change by pressing N. However, if you do want to change the serial number, press Y, then type in the serial number and press Enter.

5. When prompted to change the machine type and model, it is suggested that you do not make this change by pressing N. However, if you do want to change the machine type and model, press Y, then type in the machine type and model and press Enter.

6. Follow the instructions on the screen to complete the update. After the update is completed, remove the disc from the optical drive.

Updating (flashing) the BIOS from your operating system

Note: Because Lenovo makes constant improvements to its Web sites, the Web page contents are subject to change without notice, including the contents referenced in the following procedure.

To update (flash) the BIOS from your operating system, do the following:

1. Go to http://www.lenovo.com/support.

2. Do the following to locate the downloadable files for your machine type:

   a. In the **Enter a product number** field, type your machine type and click **Go**.

   b. Click **Downloads and drivers**.

   c. Select **BIOS** from the **Refine results** drop-down list box to easily locate all the BIOS related links.

   d. Click the BIOS update link.

3. Click the TXT file that contains the instructions for updating (flashing) the BIOS from your operating system.

4. Print these instructions. This is very important because these instructions will not be displayed on the screen after the download begins.

5. Follow the printed instructions to download, extract, and install the update.

Chapter 6. Troubleshooting and diagnostic programs

This chapter provides information about some basic troubleshooting and diagnostic programs. If your computer problem is not described in this chapter, see Chapter 7 "Getting information, help, and service" on page 31 for additional troubleshooting resources.

This chapter contains the following topics:

- "Basic troubleshooting" on page 27
- "Diagnostic programs" on page 28
- "Cleaning an optical mouse" on page 29

Basic troubleshooting

The following table provides some basic information to help you troubleshoot your computer problems.

Note: If you cannot solve the problem after doing the basic troubleshooting, have the computer serviced. Refer to the *ThinkCentre Safety and Warranty Guide* that came with your computer for the safety and warranty information and the list of service and support telephone numbers. You can also get the latest service and support telephone numbers and a PDF version of the *ThinkCentre Safety and Warranty Guide* from the Lenovo Support Web site at:
http://www.lenovo.com/support

Symptom	Action
The computer does not start when you press the power switch.	Verify that: • The power cord is correctly connected to the rear of the computer and to a working electrical outlet. • The power indicator on the front of the computer is on. • The computer voltage matches the voltage available at the electrical outlet for your country or region.
The monitor screen is blank.	Verify that: • The power cord is correctly connected to the rear of the computer and to a working electrical outlet. • The computer voltage matches the voltage available at the electrical outlet for your country or region. • The brightness and contrast controls are set correctly.
The USB or PS/2 keyboard does not work.	Verify that: • The computer is turned on. • The keyboard is correctly connected to an appropriate keyboard connector (the PS/2 keyboard connector or one of the USB connectors) on the computer. • No keys are stuck.

Symptom	Action
The USB or PS/2 mouse does not work.	Verify that: • The computer is turned on. • The mouse is correctly connected to an appropriate mouse connector (the PS/2 mouse connector or one of the USB connectors) on the computer. • The mouse is clean. Refer to "Cleaning an optical mouse" on page 29.
The wireless keyboard or mouse does not work.	Verify that: • The computer is turned on. • The battery or batteries installed in the wireless keyboard or mouse are in good condition. • The wireless configurations are all set correctly. You might need to refer to the documentation that come with the wireless keyboard or mouse, or refer to your Windows Help and Support information system for wireless related instructions. If your wireless mouse has a dongle, make sure the dongle is correctly connected to one of the USB connectors on the computer. • For the wireless keyboard, no keys are stuck. • The wireless mouse is clean.
The operating system does not start.	Verify that you list the device where the operating system resides in the startup device sequence. Usually, the operating system is on the hard disk drive. For more information, see "Selecting a startup device" on page 23.
The computer beeps multiple times before the operating system starts.	Verify that no keys are stuck.

Diagnostic programs

Diagnostic programs are used to test hardware components of your computer. Diagnostic programs can also report operating-system-controlled settings that interfere with the correct operation of your system. You can use the preinstalled Lenovo ThinkVantage Toolbox program to diagnose computer problems, if your computer is running the Windows operating system.

Notes:

1. You can also download the PC-Doctor for DOS diagnostic program from http://www.lenovo.com/support. See "PC-Doctor for DOS" on page 29 for detailed information.

2. If you are unable to isolate and repair the problem yourself after running the programs, save and print the log files created by the programs. You will need the log files when you speak to a Lenovo technical support representative.

Lenovo ThinkVantage Toolbox

The Lenovo ThinkVantage Toolbox program helps you maintain your computer, improve computing security, diagnose computer problems, get familiar with the innovative technologies provided by Lenovo, and get

more information about your computer. You can use the diagnostics feature of the Lenovo ThinkVantage Toolbox program to test devices, diagnose computer problems, create bootable diagnostic media, update system drivers, and view system information.

To run the Lenovo ThinkVantage Toolbox program on the Windows 7 operating system, click **Start ➙ All Programs ➙ Lenovo ThinkVantage Tools ➙ System Health and Diagnostics**. Follow the instructions on the screen.

For additional information about running the Lenovo ThinkVantage Toolbox program, refer to the Lenovo ThinkVantage Toolbox help system.

PC-Doctor for DOS

You can also download the latest version of the PC-Doctor for DOS diagnostic program from http://www.lenovo.com/support. The PC-Doctor for DOS diagnostic program runs independently of the Windows operating system. Use the PC-Doctor for DOS diagnostic program if you are unable to start the Windows operating system. You can run the PC-Doctor for DOS diagnostic program from a diagnostic disc that you created.

Creating a diagnostic disc

This section provides instructions on how to create a diagnostic disc.

To create a diagnostic disc, do the following:

1. Download a self-starting bootable disc image (known as an ISO image) of the diagnostic program from: http://www.lenovo.com/support
2. Use any disc burning software to create a diagnostic disc with the ISO image.

Running the diagnostic program from the diagnostic disc

This section provides instructions on how to run the diagnostic program from the diagnostic disc that you created.

To run the diagnostic program from the diagnostic disc that you created, do the following:

1. Make sure your computer is turned off.
2. Repeatedly press and release the F12 key when turning on the computer. When the **Startup Device Menu** opens, release the F12 key.
3. Insert the diagnostic disc into the optical drive.
4. Select the optical drive with the diagnostic disc as the startup device and press Enter. The diagnostic program opens.
5. Follow the instructions on the screen to run the desired diagnostic test. For additional help, press the F1 key.
6. Remove the diagnostic disc from the optical drive after completing the diagnostic test.

Cleaning an optical mouse

This section provides instructions on how to clean an optical mouse.

An optical mouse uses a light-emitting diode (LED) and an optical sensor to navigate the pointer. If the pointer on the screen does not move smoothly with the optical mouse, you might need to clean the mouse.

To clean an optical mouse, do the following:

1. Turn off your computer.

2. Disconnect the mouse cable from the computer.

3. Turn the mouse upside down to check the lens.

   a. If there is a smudge on the lens, gently clean the area with a plain cotton-tipped swab.

   b. If there is debris in the lens, gently blow the debris away from the area.

4. Check the surface on which you are using the mouse. If you have a very intricate picture or pattern beneath the mouse, it may be difficult for the digital signal processor (DSP) to determine changes in the mouse position.

5. Reconnect the mouse cable to the computer.

6. Turn your computer back on.

Chapter 7. Getting information, help, and service

This chapter provides information about help, service, and technical assistance for Lenovo products.

This chapter contains the following topics:

Information resources

You can use the information in this section to access useful resources relating to your computing needs.

Online Books folder

The Online Books folder preinstalled on your computer contains the *ThinkCentre User Guide*, which provides information about your computer to help you set up, use, and maintain your computer. It requires no Internet access to view the publication.

To view the publication, click **Start ➔ All Programs ➔ Online Books ➔ Online Books**, then double-click the publication for your computer. The publication is also available on the Lenovo Support Web site at: http://www.lenovo.com/support

Notes:

1. The publication is in PDF version. To view the publication, you need to have the Adobe Reader program preinstalled on your computer. If the Adobe Reader program has not been installed on your computer, a message will be displayed when you attempt to view the PDF file and you will be guided through the Adobe Reader installation.

2. The publication is available in other languages on the Lenovo Support Web site at: http://www.lenovo.com/support

3. If you want to install a different language version of the Adobe Reader program rather than the version preinstalled on your computer, download the desired language version from the Adobe Web site at: http://www.adobe.com

Lenovo ThinkVantage Tools

The Lenovo ThinkVantage Tools program helps you work more easily and securely by providing easy access to various technologies, such as:

- Lenovo ThinkVantage Toolbox
- Password Manager
- Power Manager
- Product Recovery
- Rescue and Recovery
- System Update

To access the Lenovo ThinkVantage Tools program, click **Start ➔ All Programs ➔ Lenovo ThinkVantage Tools**.

Lenovo Welcome

The Lenovo Welcome program introduces some innovative built-in features of Lenovo to you and guides you through some important setup tasks to help you make the most of your computer.

Access Help

The Access Help information system provides information about getting started, doing basic tasks, customizing settings for your personal preference, protecting data, expanding and upgrading, and troubleshooting.

To open the Access Help information system on the Windows 7 operating system, click **Start → Help and Support → Lenovo Access Help**.

After you have opened the Access Help information system, use the left panel to make a selection from the **Contents** tab or the **Index** tab, or use the **Search** tab to find a particular word or phrase.

Safety and warranty

The *ThinkCentre Safety and Warranty Guide* that came with your computer contains information about safety, warranty, service and support phone numbers, CRUs, and other notices and information resources. You can also get the latest service and support telephone numbers and a PDF version of the *ThinkCentre Safety and Warranty Guide* from the Lenovo Support Web site at:
http://www.lenovo.com/support

Before using the information in this manual and the product it supports, be sure to read and understand the *ThinkCentre Safety and Warranty Guide* and Appendix A "Notices" on page 35.

Lenovo Web site (http://www.lenovo.com)

The Lenovo Web site provides up-to-date information and services to help you buy, upgrade, and maintain your computer. You can also do the following:

- Shop for desktop and notebook computers, monitors, projectors, upgrades and accessories for your computer, and special offers.
- Purchase additional services, such as support for hardware, operating systems, software programs, network setup and configuration, and custom installations.
- Purchase upgrades and extended hardware repair services.
- Download the latest device drivers and software updates for your computer model.
- Access the online manuals for your products.
- Access the Lenovo Limited Warranty.
- Access troubleshooting and support information for your computer model and other supported products.
- Find the service and support phone numbers for your country or region.
- Find a Service Provider located near you.

Help and service

This section provides information about obtaining help and service.

Using the documentation and diagnostic programs

If you experience problems with your computer, see Chapter 6 "Troubleshooting and diagnostic programs" on page 27. For information about additional resources to help you troubleshoot your computer problems, see "Information resources" on page 31.

If you suspect a software problem, see the documentation that came with the operating system or software program, including readme files and online help.

Most computers come with a set of diagnostic programs that you can use to help you identify hardware problems. For instructions on how to use the diagnostic programs on your computer, see "Diagnostic programs" on page 28.

You can get the latest technical information and download device drivers and updates from the Lenovo Support Web site at:
http://www.lenovo.com/support

Calling for service

During the warranty period, you can get help and information from the Lenovo Customer Support Center by telephone.

The following services are available during the warranty period:

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

The following items are not covered by the warranty:
- Replacement or use of parts not manufactured for or by Lenovo or non-warranted Lenovo parts
- Identification of software problem sources
- Configuration of the 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 application programs

Refer to the safety and warranty information that is provided with your computer for a complete explanation of warranty terms. You must retain your proof of purchase to obtain warranty service.

For a list of the Lenovo Support phone numbers for your country or region, go to http://www.lenovo.com/support and click **Support phone list** or refer to the *ThinkCentre Safety and Warranty Guide* that is provided with your computer.

Note: The service and support 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.

If possible, be at your computer when you call and have the following information available:
- Machine type and model
- Serial numbers of your hardware products
- Description of the problem
- Exact wording of any error messages
- Hardware and software configuration information

Using other services

If you travel with your computer or relocate it to a country where your desktop or notebook computer machine type is sold, your computer might be eligible for International Warranty Service, which automatically entitles you to obtain warranty service throughout the warranty period. Service will be performed by authorized Service Providers.

Service methods and procedures vary by country, and some services might not be available in all countries. International Warranty Service is delivered through the method of service (such as depot, carry-in, or on-site service) that is provided in the servicing country. Service centers in certain countries might not be able to service all models of a particular machine type. In some countries, fees and restrictions might apply at the time of service.

To determine whether your computer is eligible for International Warranty Service and to view a list of the countries where service is available, go to http://www.lenovo.com/support, click **Warranty**, and follow the instructions on the screen.

For technical assistance with the installation of or questions related to Service Packs for your preinstalled Microsoft Windows product, refer to the Microsoft Product Support Services Web site at http://support.microsoft.com/directory or you can contact the Customer Support Center. Some fees might apply.

Purchasing additional services

During and after the warranty period, you can purchase additional services, such as support for hardware, operating systems, and application programs; network setup and configuration; upgraded or extended hardware repair services; and custom installations. Service availability and service name might vary by country or region. For more information about these services, go to the Lenovo Web site at: http://www.lenovo.com

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Index

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