

***lenovo***

ThinkCentre  
User Guide



ThinkThink**ThinkCentre**Think

**Machine Types:** 1165, 1184, and 1186



***lenovo***

ThinkCentre  
User Guide

**Note**

Before using this information and the product it supports, be sure to read and understand the *ThinkCentre Safety and Warranty Guide* and "Notices," on page 29.

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## 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>



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# Chapter 1. Product overview

This chapter describes the computer features, specifications, preinstalled software programs, and part and connector locations.

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## 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 13.

### Microprocessor

- Intel® Celeron® dual-core microprocessor
- Intel Core™2 Duo microprocessor
- Intel Pentium® dual-core microprocessor

### Memory

- Supports up to two double data rate 2 dual inline memory modules (DDR2 DIMMs)

### Internal drives

- One optical drive
- One Serial Advanced Technology Attachment (SATA) internal hard disk drive

### Audio subsystem

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

### Connectivity

- 10/100/1000 Mbps Ethernet controller

### System management features

- Ability to store power-on self-test (POST) hardware test results
- Automatic power-on startup
- Desktop Management Interface (DMI)
- Preboot Execution Environment (PXE)
- System Management (SM) Basic Input/Output System (BIOS) and SM software
- Wake on LAN

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

- Ethernet connector
- One 9-pin serial port

- Six USB (Universal Serial Bus) connectors
- Two audio connectors (headphone connector and microphone connector)

**Expansion**

- One hard disk drive bay
- One optical drive bay

**Power**

- 130-watt power supply
- Advanced Configuration and Power Interface (ACPI) support

**Security features**

- Computrace
- Enabling or disabling a device
- Enabling or disabling USB connectors
- User Password and Administrator Password for BIOS access
- Startup sequence control
- Startup without keyboard or mouse
- Support for the addition of an integrated cable lock (Kensington lock)

**Software programs, preinstalled**

Your computer might come with preinstalled software programs. If it does, an operating system, device drivers to support built-in features, and other support programs are included. For more information, see “Software overview” on page 3.

**Operating system, preinstalled**

- Microsoft® Windows® 7
- Microsoft Windows XP Professional  
(preinstalled through downgrade rights in Windows 7 Professional)

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## Specifications

This section lists the physical specifications for your computer.

### Dimensions

Width: 472 mm (18.58 inches)

Height: 355 mm (13.98 inches)

Depth: 70 mm (2.76 inches)

### Weight

Maximum configuration as shipped: 7.2 kg (15.87 lbs)

### Environment

Air temperature:

Operating: 10° to 35°C (50° to 95°F)

Non-operating: -20° to 50°C (-4° to 122°F) (with package)

Humidity:

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

Non-operating: 10% to 90% (10% per hour, non condensing)

Maximum 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

High range:

Minimum: 200 V ac

Maximum: 240 V ac

Input frequency range: 50 to 60 Hz

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## Software overview

The computer comes with a preinstalled operating system and several preinstalled applications.

### Software provided with your Windows operating system

This section describes 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 25.

**Note:** The Lenovo ThinkVantage Tools program is only available on computers with Windows 7 from Lenovo.

**ThinkVantage Productivity Center:** The ThinkVantage Productivity Center program guides you to a host of information and tools to help you set up, understand, maintain, and enhance your computer. For more information, see “ThinkVantage Productivity Center” on page 25.

**Note:** The ThinkVantage Productivity Center program is only available on computers preinstalled with Windows XP from Lenovo.

**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.

**Note:** The Lenovo Welcome program is only available on computers preinstalled with Windows 7 from Lenovo.

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

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

**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. See “Lenovo ThinkVantage Toolbox” on page 20 for detailed information.

**Note:** The Lenovo ThinkVantage Toolbox program is only available on computers preinstalled with Windows 7 from Lenovo.

**Lenovo System Toolbox:** The Lenovo System Toolbox diagnostic program is preinstalled on your hard disk drive. This diagnostic program works through the Windows operating system to diagnose hardware problems and report operating-system-controlled settings that can cause hardware failures. See “Lenovo System Toolbox” on page 20 for more information.

**Note:** The Lenovo System Toolbox program is only available on computers preinstalled with Windows XP from Lenovo.

## **Adobe Reader**

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

See “Online Books folder” on page 25 for more information about accessing the online books and the Lenovo Web site.

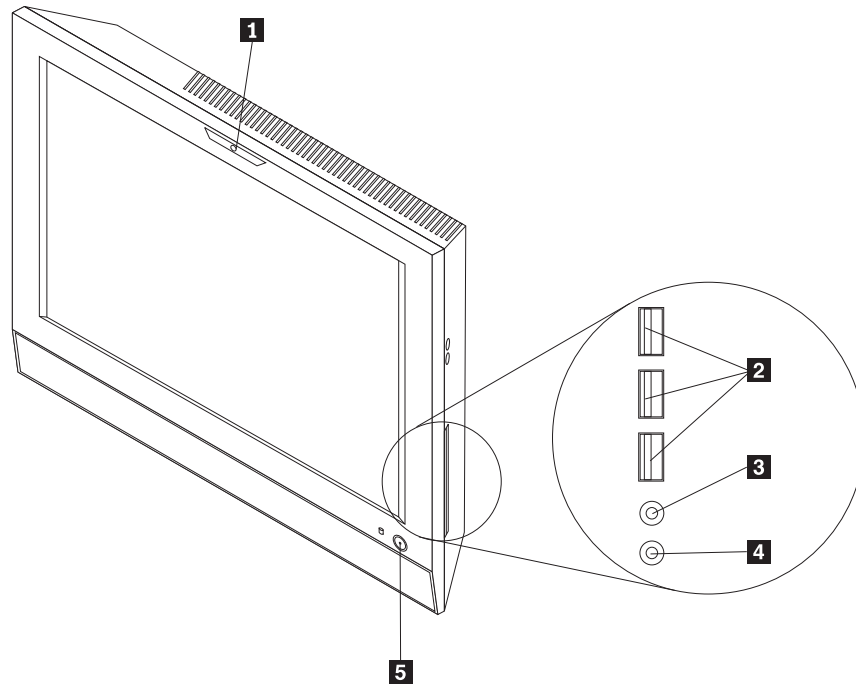
## Antivirus software

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 hard disk drive with a free 30-day subscription. After 30 days, you must renew the license to continue receiving the antivirus program updates.

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## Locating computer connectors and parts

This section shows the locations of the connectors and parts of your computer.



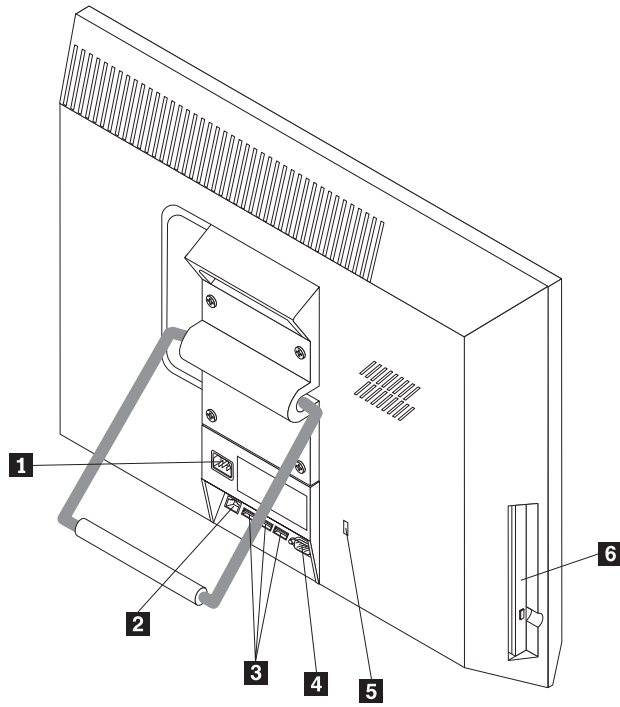
**1** Integrated camera (some models)

**2** USB connectors (3)

**3** Microphone connector

**4** Headphone connector

**5** Power switch



- 1** Power cord connector
- 2** Ethernet connector
- 3** USB connectors (3)

- 4** Serial port
- 5** Integrated cable lock slot
- 6** Optical drive

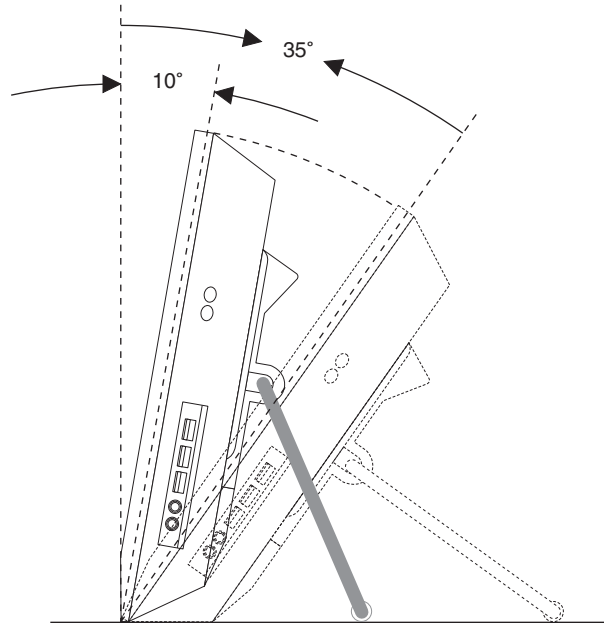
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## Adjusting the computer stand

Your computer comes with a stand that you can use to position the computer. Pull the stand open and adjust the position of the computer at an angle of 10° to 35° as shown in the following illustration.

**CAUTION:**

**Make sure the angle is at least 10° from the vertical; otherwise, the computer might be unstable and fall over.**



Your computer also supports UL (Underwriters Laboratories) 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)



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## Chapter 2. Installing or replacing hardware

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

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### Installing or replacing hardware

This section provides instructions on how to install or replace hardware for your computer. You can expand the capabilities of your computer and maintain your computer by installing or replacing hardware.

**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 connect 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 installing an external option, see “Locating computer connectors and parts” on page 5 to identify the required connector. Then, use the instructions that come with the option to help you make the connection and install any software or device drivers that are required for the option.

### Installing a computer wall mount

**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 or mouse

**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>

This section provides instructions on how to replace the keyboard or mouse.

To replace the keyboard or mouse, do the following:

1. Remove any 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 or mouse cable from the computer.

4. Connect a new keyboard or mouse to one of the USB connectors on the computer. See “Locating computer connectors and parts” on page 5.

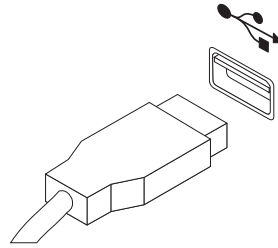


Figure 1. Connecting the USB keyboard or mouse

5. Reconnect the external cables and power cords to the computer.

**Note:** In most areas of the world, Lenovo requires the return of the defective Customer Replaceable Units (CRUs). Information about this will come with the CRUs or will come a few days after you received the CRUs.

## 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.

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## Installing 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.

**Note:** Make sure that any security cables you installed 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 the integrated cable lock slot at the rear of your computer and is operated with a key. See “Locating computer connectors and parts” on page 5 for the location of the integrated cable lock slot. This is the same type of lock used with many notebook computers. You can order a security cable directly from Lenovo by searching for *Kensington* at: <http://www.lenovo.com/support>

### 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 13 for more information.

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## Chapter 3. Recovery information

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

### Notes:

1. 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.
2. 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

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## 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 different operating systems.

**Note:** On Windows 7, you can create recovery media using discs or external USB storage devices. On Windows XP, you can create recovery media using discs only.

- To create recovery media on Windows 7, click **Start** → **All Programs** → **Lenovo ThinkVantage Tools** → **Factory Recovery Disks**. Then, follow the instructions on the screen.
- To create Product Recovery discs on Windows XP, click **Start** → **All Programs** → **ThinkVantage** → **Create Recovery Media**. Then, follow the instructions on the screen.

### Using recovery media

This section provides instructions on how to use recovery media.

You can use recovery media to restore the computer to the factory default settings only. 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 to restore the computer to the factory default settings, 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 restarting the computer. When the **Startup Device Menu** opens, release the F12 key.
3. Select the desired startup device and press Enter. For example, if you are using a boot disc, select the optical drive as the startup device. The restoration process begins.
4. Follow the instructions on the screen.

After restoring the computer to the factory default settings, you might have to reinstall some software programs or device drivers.

---

## 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 in the SWTOOLS\DRIVERS subdirectory on the computer hard disk drive (usually drive C:). 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 a 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 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 the detailed information about how to install the device driver.
  - In the device subfolder, look for a SETUP.EXE file. Double-click the file and follow the instructions on the screen.

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## Chapter 4. Using the Setup Utility program

The Setup Utility program is used 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.

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### Starting 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 hear multiple beeps or 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.”

---

### Viewing and changing settings

The Setup Utility program menu lists various items about the system configuration. To view or change settings, start the Setup Utility program. See “Starting the Setup Utility program.” 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 passwords to prevent unauthorized access to your computer and data. The following options are available for you to set a User Password or an Administrator password:

- **Set User Password**
- **Set Administrator Password**

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

#### Password considerations

A password can be any combination of up to sixteen 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:

- Have at least eight characters in length
- Contain at least one alphabetic character and one numeric character
- Setup Utility program passwords are not case sensitive
- Not be your name or your user name
- Not be a common word or a common name

- Be significantly different from your previous passwords

## Set User Password

After you have set a User Password using the **Set User Password** option, the user is prompted to type a valid User Password each time the computer is turned on. The computer cannot be used until a valid User Password is typed in. For more information on how to set a password, see “Setting, changing, and deleting a password.”

## Set 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, and deleting a password.”

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 Administrator Password is typed in.

If you have set both the User Password and the Administrator Password, you can type either password. However, to change any configuration settings, you must use your Administrator Password.

## Setting, changing, and deleting 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 13.
2. From the Setup Utility program main menu, select **Security**.
3. Follow the instructions displayed on the screen to set, change, or delete a password.

**Note:** A password can be any combination of up to sixteen alphabetic and numeric characters. For more information, see “Password considerations” on page 13.

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## Enabling or disabling a device

This section provides instructions on how to enable or disable user access to the devices connected to the SATA connectors on the system board.

**USB Functions**                      Use this option to enable or disable the USB connectors.

**SATA Controller**                      When this option is set to **Disabled**, all devices connected to the SATA connectors (such as hard disk drives or the optical drive) are disabled and cannot be accessed.

To enable or disable a device, do the following:

1. Start the Setup Utility program. See “Starting the Setup Utility program” on page 13.
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 **USB Setup** to enable or disable a USB device.
  - Select **ATA Drives Setup** to enable or disable a SATA device.
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 and exit the Setup Utility program. See “Exiting from the Setup Utility program” on page 16.

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

---

## Selecting a startup device

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

### Selecting a temporary startup device

Use this procedure to start up from any startup device.

**Note:** Not all discs, hard disk drives, and diskettes 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 from the **Startup Device Menu** and press Enter to begin.

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

### Selecting or changing the 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 13.
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 and exit the Setup Utility program. See “Exiting from the Setup Utility program” on page 16.

---

## Exiting from 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, do one of the following:

- If you want to save the new settings, press F10 to save and exit the Setup Utility program.
- If you do not want to save the settings, select **Exit → Discard Changes and Exit**.
- If you want to return to the default settings, press F9 to load the default settings.

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## Chapter 5. Updating system programs

This chapter contains information about updating POST/BIOS and how to recover from a POST/BIOS update failure.

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### Using system programs

System programs are the basic layer of software built into your computer. System programs include the POST, the BIOS code, and the Setup Utility program. POST is a set of tests and procedures that are performed each time you turn on your computer. 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 and change the configuration and setup of your computer.

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 POST, BIOS, and the Setup Utility program by starting your computer with a flash 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/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 (flash) disc or an update program that can be run from the operating system.

**Note:** You can download a self-starting bootable CD/DVD image (known as an ISO image) of the diagnostics program to support computers without a diskette drive. Go to:  
<http://www.lenovo.com>

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### Updating (flashing) BIOS from a disc

This section provides instructions on how to update (flash) BIOS from a disc. System program updates are available at:  
<http://www.lenovo.com/support>

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

1. Make sure the optical drive you want to use is set as the first boot device in the startup device sequence. See “Selecting or changing the startup device sequence” on page 15.
2. Make sure the computer is turned on and insert the disc into the optical drive. The update begins.

**Note:** You can insert the disc into the optical drive when you are setting the startup device sequence. However, if you insert the disc into the optical drive when you have already entered the operating system, you need to restart the computer to begin the update process.

3. When prompted to change the serial number, press N. If you want to change the serial number, press Y when prompted, type in the serial number and press Enter.
4. When prompted to change the machine type/model, press N. If you want to change the machine type/model, press Y when prompted, type in the machine type/model and press Enter.
5. Follow the instructions on the screen to complete the update.

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## Updating (flashing) BIOS from your operating system

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

To update (flash) BIOS from your operating system:

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** in the **Refine results** field to easily locate all the BIOS related links.
  - d. Click the BIOS update link.
  - e. Click the TXT file that contains the instructions for updating (flashing) BIOS from your operating system.
3. Print these instructions. This is very important because they are not on the screen after the download begins.
4. Follow the printed instructions to download, extract, and install the update.

---

## Chapter 6. Troubleshooting and diagnostics

This chapter describes some basic troubleshooting and diagnostic programs. If your computer problem is not described here, see Chapter 7, "Getting information, help, and service," on page 25 for additional troubleshooting resources.

---

### Basic troubleshooting

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

**Note:** If you cannot correct 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 Lenovo Support telephone numbers.

Symptom	Action
The computer does not start when you press the power switch.	Verify that: <ul style="list-style-type: none"><li>• The power cord is correctly connected to the rear of the computer and to a working electrical outlet.</li><li>• If there is a secondary power switch on the back of your computer, make sure that it is switched on.</li><li>• The power indicator on the front of the computer is on.</li><li>• The computer voltage matches the voltage available at the electrical outlet for your country or region.</li></ul>
The monitor screen is blank.	Verify that: <ul style="list-style-type: none"><li>• The power cord is correctly connected to the rear of the computer and to a working electrical outlet.</li><li>• The computer voltage matches the voltage available at the electrical outlet for your country or region.</li></ul>
The USB keyboard does not work.	Verify that: <ul style="list-style-type: none"><li>• The computer is turned on.</li><li>• The USB keyboard is correctly connected to one of the USB connectors on the computer.</li><li>• No keys are stuck.</li></ul>
The USB mouse does not work.	Verify that: <ul style="list-style-type: none"><li>• The computer is turned on.</li><li>• The USB mouse is correctly connected to one of the USB connectors on the computer.</li><li>• The USB mouse is clean. Refer to "Cleaning the mouse" on page 21.</li></ul>
The operating system does not start.	Verify that the startup device sequence includes the device where the operating system resides. Usually, the operating system is on the hard disk drive. For more information, see "Selecting a startup device" on page 15.
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 and report operating-system-controlled settings that can cause hardware failures. Your computer is preinstalled with the Lenovo ThinkVantage Toolbox diagnostic program, which you can use when you are 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” for detailed information.
2. If you are unable to isolate and repair the problem yourself after running the diagnostic programs, save and print the log files created by the diagnostic programs. You will need the log files when you speak to a Lenovo technical support representative.

## Lenovo ThinkVantage Toolbox

**Note:** The Lenovo ThinkVantage Toolbox program is only available on computers preinstalled with Windows 7 from Lenovo.

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 problems, create bootable diagnostic media, update system drivers, and review system information.

To diagnose the computer problems by using the Lenovo ThinkVantage Toolbox program, click **Start** → **All Programs** → **Lenovo ThinkVantage Tools** → **System Health and Diagnostics** → **Diagnostics**. Follow the instructions on the screen. For additional information, refer to the Lenovo ThinkVantage Toolbox help system.

## Lenovo System Toolbox

**Note:** The Lenovo System Toolbox program is only available on computers preinstalled with Windows XP from Lenovo.

The Lenovo System Toolbox program is a diagnostic program that works through the Windows operating system and enables you to view symptoms and solutions for computer problems, access the Lenovo troubleshooting center, update system drivers, and review system information.

To run the Lenovo System Toolbox program, click **Start** → **All Programs** → **Lenovo Services** → **Lenovo System Toolbox**. Follow the instructions on the screen. For additional information about running the diagnostic program, refer to the Lenovo System Toolbox help system.

The Lenovo System Toolbox program also has problem determination aids that determine software and usage problems.

## 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 if you are unable to start the Windows operating system or if the two diagnostic programs preinstalled on your computer have not been successful in isolating a possible problem. You can run the PC-Doctor for DOS 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 CD/DVD image (known as an ISO image) of the diagnostic program from:  
<http://www.lenovo.com/support>
2. Use any CD/DVD burning software to create a diagnostic disc with the ISO image.

### **Running the diagnostic program from a diagnostic disc**

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

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

1. Make sure the optical drive you want to use is set as the first boot device in the startup device sequence. See “Selecting or changing the startup device sequence” on page 15.
2. Make sure the computer is turned on and then insert the disc into the optical drive. The diagnostic program opens.

**Note:** You can insert the disc into the optical drive when you are setting the startup device sequence. However, if you insert the disc into the optical drive when you have already entered the operating system, you need to restart the computer to access the diagnostic program.

3. Follow the instructions on the screen to select the diagnostic test you want to run.

**Note:** For additional help, press the F1 key.

4. Remove the diagnostic disc from the optical drive when you complete the diagnostic process.

---

## **Cleaning the mouse**

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

### **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.

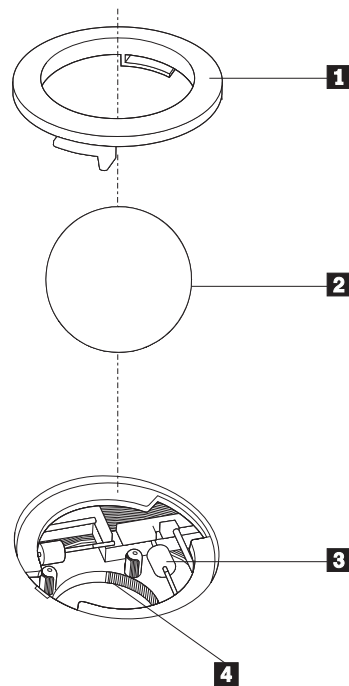
To clean the optical mouse, do the following:

1. Turn off your computer.
2. Disconnect the mouse cable from the computer.
3. Turn the mouse upside down to look at 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.

## Non-optical mouse

The non-optical mouse uses a ball to navigate the pointer. If the pointer on the screen does not move smoothly with the mouse, you might need to clean the mouse.



- 1** Retainer ring
- 2** Ball
- 3** Plastic rollers
- 4** Ball cage

To clean the non-optical mouse, do the following:

**Note:** The illustration might be slightly different from your mouse.

1. Turn off your computer.
2. Disconnect the mouse cable from the computer.
3. Turn the mouse upside down. Twist the retainer ring **1** to the unlocked position to reveal the ball.
4. Place your hand over the retainer ring and ball **2**, and then turn the mouse bottom-side down, so that the retainer ring and ball fall out into your hand.
5. Wash the ball in warm, soapy water. Then dry it with a clean cloth.
6. Blow air carefully into the ball cage **4** to dislodge dust and lint.

7. Look for a buildup of dirt on the plastic rollers **3** inside the ball cage. This buildup usually appears as a stripe running across the middle of the rollers.
8. If the rollers are dirty, clean them by using a cotton swab soaked in isopropyl (rubbing) alcohol. Turn the rollers with your finger and continue swabbing them until all the dirt is removed. Be sure the rollers are still centered in their channels after you clean them.
9. Remove any fibers from the swab that might be remaining on the rollers.
10. Reinstall the ball and the retainer ring. Twist the retainer ring to the locked position.
11. Reconnect the mouse cable to the computer.
12. Turn your computer back on.



---

## Chapter 7. Getting information, help, and service

This chapter contains information about help, service, and technical assistance for products manufactured by Lenovo.

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### 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 publications, click **Start** → **All Programs** → **Online Books** → **Online Books**, then double-click the appropriate publication for your computer. The publications are also available on the Lenovo Support Web site at:  
<http://www.lenovo.com/support>

#### Notes:

1. The publications are in Portable Document Format (PDF). To view the publications, 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 appear when you attempt to view the PDF file and you will be guided through the Adobe Reader program installation.
2. The publications are 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 language version you want from the Adobe Web site at:  
<http://www.adobe.com>

#### 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.

**Note:** The Lenovo ThinkVantage Tools program is only available on computers with Windows 7 from Lenovo.

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

#### ThinkVantage Productivity Center

The ThinkVantage Productivity Center program contains information sources and tools designed to make computing easy and secure. It provides easy access to various technologies, such as:

- Power Manager

- Product Recovery
- System Update

**Note:** The ThinkVantage Productivity Center program is only available on computers preinstalled with Windows XP from Lenovo.

To access the ThinkVantage Productivity Center program, click **Start → All Programs → ThinkVantage → Productivity Center**.

## Lenovo Welcome

**Note:** The Lenovo Welcome program is only available on computers preinstalled with Windows 7 from Lenovo.

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 Windows 7, click **Start → Help and Support → Lenovo Access Help**.
- To open the Access Help information system on Windows XP, click **Start → All Programs → ThinkVantage → 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 is provided with your computer contains information on safety, warranty, and notices. Read and understand all safety information before using this product.

## 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, application 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.

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## Help and service

This section contains information about obtaining help and service.

### Using the documentation and diagnostic programs

If you experience a problem with your computer, see Chapter 6, “Troubleshooting and diagnostics,” on page 19. For information on additional resources to help you troubleshoot your computer problem, see “Information resources” on page 25.

If you suspect a software problem, see the documentation that comes 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 using the diagnostic programs, see “Diagnostic programs” on page 20.

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 by telephone through the Customer Support Center.

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 fix 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 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:** 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. 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 service providers authorized to perform warranty service.

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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## Appendix. Notices

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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.

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