



eMac

User's Guide

Includes setup, expansion, and
troubleshooting information for
your eMac computer

🍏 Apple Computer, Inc.
© 2003 Apple Computer, Inc. All rights reserved.

Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of Apple.

The Apple logo is a trademark of Apple Computer, Inc., registered in the U.S. and other countries. Use of the “keyboard” Apple logo (Option-Shift-K) for commercial purposes without the prior written consent of Apple may constitute trademark infringement and unfair competition in violation of federal and state laws.

Every effort has been made to ensure that the information in this manual is accurate. Apple is not responsible for printing or clerical errors.

Apple
1 Infinite Loop
Cupertino, CA 95014-2084
408-996-1010
www.apple.com

Apple, the Apple logo, AirPort, Apple Store, AppleTalk, Final Cut Pro, FireWire, iMovie, iTunes, Mac, the Mac logo, Macintosh, Mac OS, and QuickTime are trademarks of Apple Computer, Inc., registered in the U.S. and other countries.

eMac, Finder, iCal, iDVD, iPhoto, iPod, iSight, Panther, and SuperDrive are trademarks of Apple Computer, Inc.

AppleCare is a service mark of Apple Computer, Inc., registered in the U.S. and other countries.

.Mac is a service mark of Apple Computer, Inc.

ENERGY STAR® is a U.S. registered trademark.

Other company and product names mentioned herein are trademarks of their respective companies. Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Apple assumes no responsibility with regard to the performance or use of these products.

Manufactured under license from Dolby Laboratories. “Dolby,” “Pro Logic,” and the double-D symbol are trademarks of Dolby Laboratories. Confidential Unpublished Works, © 1992–1997 Dolby Laboratories, Inc. All rights reserved.

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

Apparatus Claims of U.S. Patent Nos. 4,631,603, 4,577,216, 4,819,098 and 4,907,093 licensed for limited viewing uses only.

Simultaneously published in the United States and Canada.

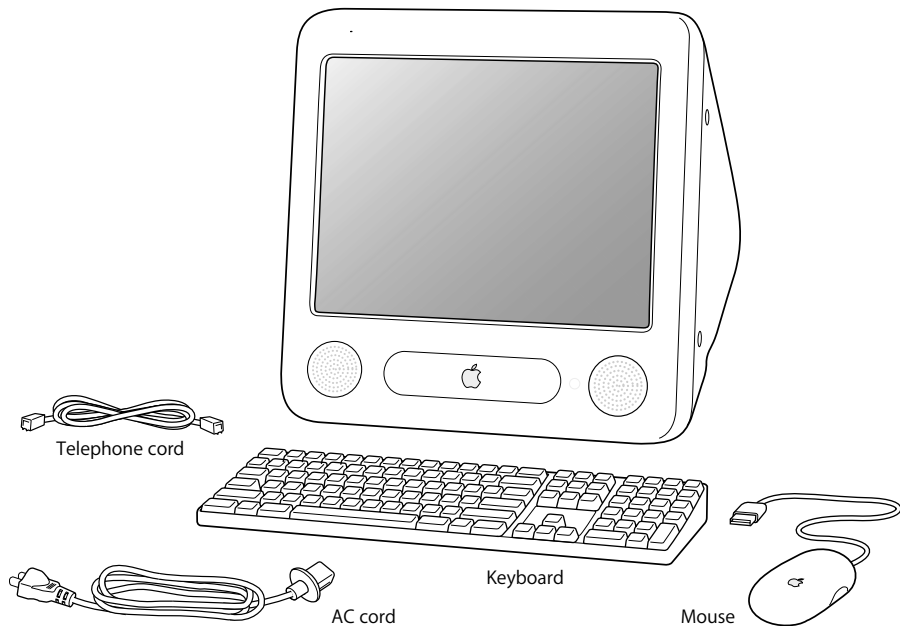
Contents

Chapter 1	5 Getting Started
	6 Setting Up Your eMac
	8 Where to Go From Here
	9 What to Do When You Have Finished Using Your eMac
Chapter 2	11 Getting to Know Your eMac
	12 eMac – Front View
	14 eMac – Side View
	16 Learning About Mac OS X
	17 Customizing Your Desktop and Setting Your Preferences
	18 Connecting to a Printer
	19 Playing a CD and Connecting Headphones
	19 Keeping Your Software Up to Date
	20 Connecting a Camera or Other FireWire Device
	20 Connecting to a Network
	20 Using the Internet
	20 Transferring Files to Another Computer
	21 When an Application Freezes
	22 Getting Answers to Your Questions Using Mac OS Help
	22 Using Applications
Chapter 3	23 Using Your Computer
	24 Universal Serial Bus (USB)
	26 FireWire
	27 AirPort Extreme Wireless Internet and Networking
	29 Ethernet (10/100Base-T)
	30 External Video Support (VGA, Composite, and S-Video)
	32 Using Your Optical Drive
	36 Keyboard Controls
	36 Securing Your Computer
Chapter 4	37 Enhancing Your Computer
	37 Installing Additional Memory
	41 Installing an AirPort Extreme Card

	45	Replacing the Internal Backup Battery
Chapter 5	49	Troubleshooting
	49	What You'll Find in This Chapter
	50	Problems That Prevent You From Using Your Computer
	51	Restoring Your Computer's Software
	52	Other Problems
	53	Locating Your Product Serial Number
Appendix A	55	Specifications
Appendix B	57	Care, Use, and Safety Information
	57	Cleaning Your eMac
	58	Carrying Your eMac
	58	Safety Instructions for Setting Up and Using Your Computer
	59	Apple and the Environment
	60	Ergonomics
Appendix C	61	Connecting to the Internet
	62	Setup Assistant Worksheet
	64	Troubleshooting Your Connection
Index	73	

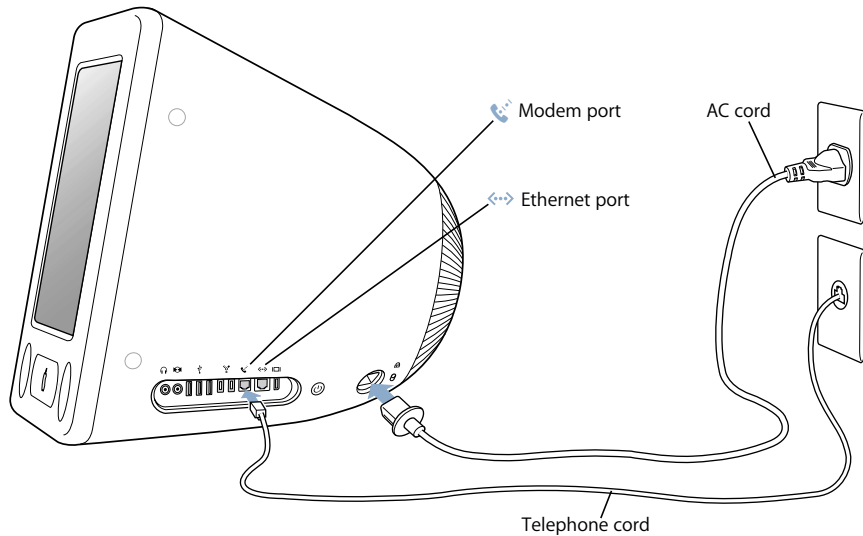
Your eMac has been designed so that you can set it up quickly and start using it right away. If you have never used an eMac or are new to Macintosh computers, read this section for instructions on getting started.

If you are an experienced user, you may already know enough to get started. Be sure to look over the information in Chapter 2, “Getting to Know Your eMac,” to find out about the new features of this eMac.

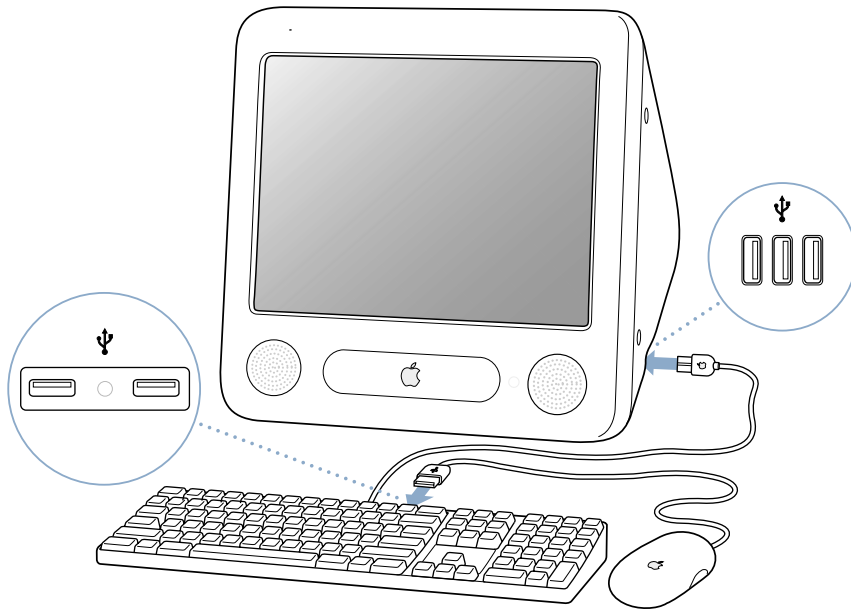


Setting Up Your eMac

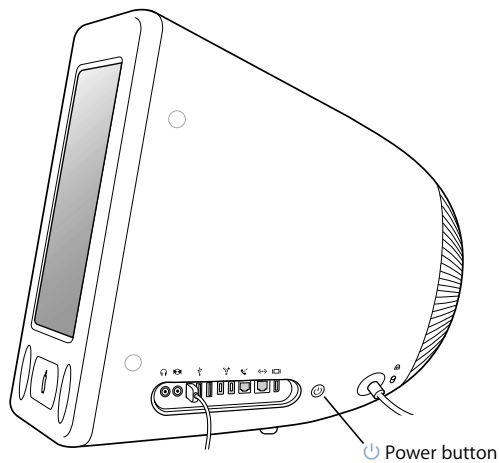
- 1 Plug the power cord firmly into the power socket (marked with the ~ symbol on the back of the computer) and plug the other end into a grounded outlet or power strip.
- 2 To enable Internet connectivity, connect your computer's Ethernet port to an Ethernet network or to your DSL or cable modem using an Ethernet cable. Or connect your computer's modem port (included on some models) to a telephone line using the included phone cord and your computer's modem port.



- 3 Connect the keyboard cable to one of the USB ports (⌘) on the computer. Plug the mouse cable into a USB port on the keyboard.



- 4 Turn on your computer by pressing the Power button (⏻) on the side of the computer.



Adjusting Your Display

To adjust the settings for your display, choose Apple (🍏) > System Preferences (click the Apple menu and choose System Preferences) and click Displays.

Where to Go From Here

You've done everything you need to get your eMac up and running. The first time you turn on your computer, the Setup Assistant takes you through the process of configuring your computer and setting it up for the Internet. Internet access usually requires an account with an Internet service provider (ISP). Fees may apply.

- If you don't already have an Internet account, the assistant can set you up with one.
- If you already have an Internet account, see Appendix C, "Connecting to the Internet," on page 61 for information you'll need to enter.

If you would like additional information, see the following:

To learn about...	See...
Shutting down your computer or putting it to sleep	"What to Do When You Have Finished Using Your eMac" on page 9.
What you can do with the hardware and software features of your eMac	Chapter 2, "Getting to Know Your eMac."
The additional information available in the onscreen help	"Getting Answers to Your Questions Using Mac OS Help" on page 22.
Using a specific feature of your eMac, or connecting a digital device, such as an iPod	Chapter 3, "Using Your Computer."
Installing memory or an AirPort Extreme Card	Chapter 4, "Enhancing Your Computer."
What to do if you have a problem with your eMac	Chapter 5, "Troubleshooting."

What to Do When You Have Finished Using Your eMac

When you have finished working with your eMac, you have two options.

Put Your eMac to Sleep

If you will be away from your eMac for less than a few days, put the computer to sleep. When the computer is in sleep, its screen is dark and a small white light pulsates to the right of the optical drive. You can quickly wake it and bypass the startup process.

To put the computer to sleep quickly, do one of the following:

- Choose Apple () > Sleep.
- Press the Power button.

To wake the computer, press any key on the keyboard.

Shut Down Your eMac

If you will not use your eMac for more than a few days, shut it down.

- Choose Apple () > Shut Down.

Warning: Shut down your eMac before moving it. Moving your computer while the hard disk is spinning can damage the hard disk, causing loss of data or the inability to start up from the hard disk.

This chapter gives you some basic information you'll need to know about your eMac.

Read on for an overview of the different parts of your computer and Mac OS X, and summary information on common tasks such as customizing the way your desktop looks, connecting to a printer, playing a CD, connecting a digital camera, using the Internet, getting answers when you need help, and more.

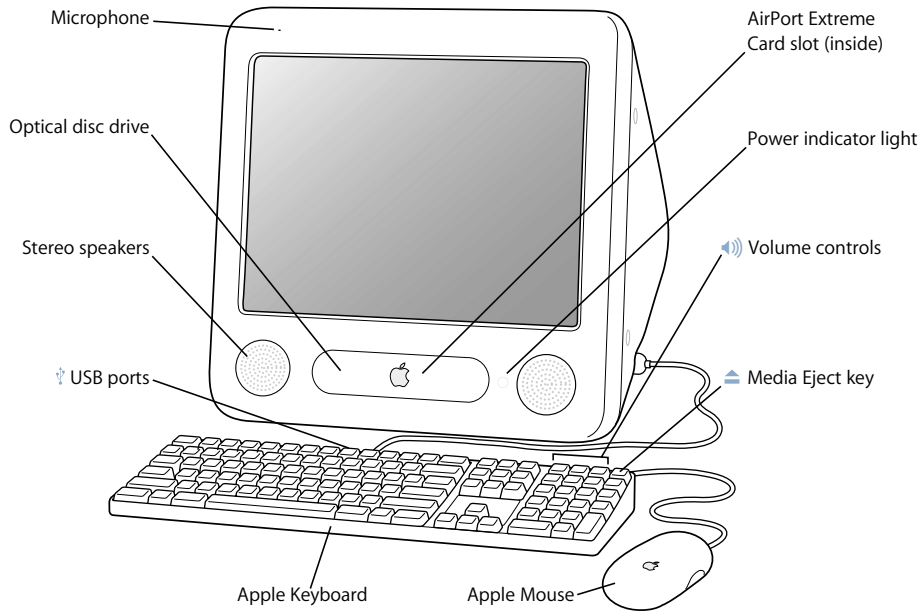
For the Latest Information

Because Apple frequently releases new versions and updates to its system software, images shown in this book may be slightly different from what you see on your screen.

The Apple website, at www.apple.com, links you to the latest Apple news, free downloads, and online catalogs of software and hardware for your eMac.

You can also find the manuals for many Apple products and technical support for all of Apple's products on the AppleCare Service and Support website at www.apple.com/support.

eMac – Front View



Microphone

Record sounds directly on your eMac or talk with friends live over the Internet using the included iChat AV application.

Optical disc drive

Your computer has a CD-ROM drive, a DVD-ROM/CD-RW Combo drive, or a SuperDrive. Each drive can read CD-ROM discs, photo CDs, standard audio discs, and other kinds of media. Both the Combo drive and SuperDrive can also read DVD discs and DVD movies, and write music, documents, and other digital files to CD-R and CD-RW discs. The SuperDrive can also write to blank DVD-R discs using the Finder or iDVD. To open the drive, press the Media Eject (⏏) key on your Apple keyboard.

Stereo speakers

Listen to music, movies, games, and multimedia.

**Two USB (Universal Serial Bus) ports (on keyboard)**

Connect low-power USB devices to your eMac's keyboard, such as mice, digital cameras, and joysticks. Connect your Apple mouse to one of the keyboard USB ports. There are three more USB ports on the side of your computer.

AirPort Extreme Card slot

An AirPort Extreme Card in your computer allows you to connect to a wireless network. Your eMac may have come with an AirPort Extreme Card already installed. If not, you can purchase an AirPort Extreme Card and install it yourself. See "Installing an AirPort Extreme Card" on page 41.

Power indicator light

A white light indicates that the computer is on. A pulsing light indicates the computer is in sleep.

**Volume controls**

Increase or decrease the volume of the sound coming from the built-in speakers and sound output port.

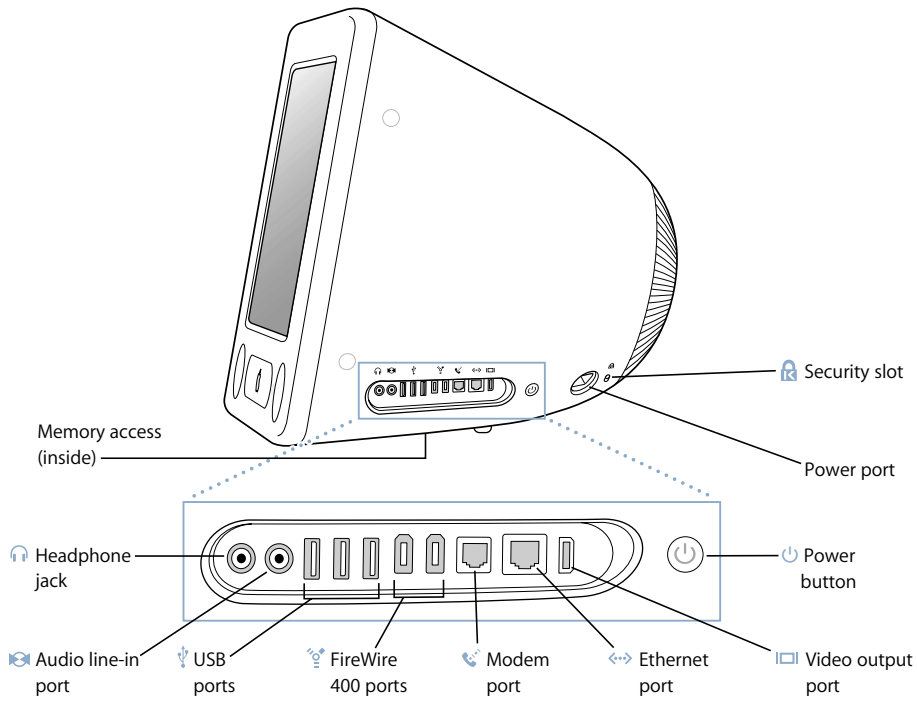
**Media Eject key**

Press and hold this key to eject a CD or DVD disc. You can also eject a disc by dragging its desktop icon to the Trash.

Apple mouse

A precision optical mouse you can use on almost any surface, no mouse pad required.

eMac – Side View



Memory access (underneath)

Your eMac comes with at least 128 megabytes (MB) of Synchronous Dynamic Random-Access Memory (SDRAM). There are two SDRAM slots, one of which is usually available for expansion. The maximum amount of memory you can have in your eMac is 1 gigabyte (GB), using two 512 MB SDRAM modules. For instructions, see “Installing Additional Memory” on page 37.

**Headphone port**

Connect external speakers, headphones, or other sound output devices.

**Audio line in port**

Connect your eMac to a line-level microphone or other audio equipment.

**Three USB (Universal Serial Bus) ports**

Connect USB devices, such as printers, external hard disks, digital cameras, modems, keyboards, and joysticks, to your eMac. There are two more USB ports on your keyboard.

**Two FireWire 400 ports**

Connect high-speed external devices, such as an iPod, digital video cameras, printers, and external storage devices.

**Modem port (on some models)**

Connect a standard phone line directly to the internal 56K v.92 modem.

**Ethernet port (10/100Base-T)**

Connect to a high-speed 10/100Base-T Ethernet network, a DSL or cable modem, or connect to another computer and transfer files. The Ethernet port auto-sensing feature detects other Ethernet devices. You don't need an Ethernet crossover cable to connect to other Ethernet devices.

**Video out port**

Using the optional Apple VGA Display Adapter (available at www.apple.com/store), connect to an external monitor or projection device that uses a VGA connector. Using the optional Apple Video Adapter (available at www.apple.com/store), connect your eMac to a television, VCR, or another video device that uses an S-video or composite video connector.

**Power button**

Turn on your eMac or put it to sleep. Press and hold to reset during troubleshooting.

**Power socket**

Connect the computer's power cord.

**Security slot**

Protect your eMac by connecting a security cable.

Learning About Mac OS X

Your computer comes with Mac OS X and features Classic, an environment for using Mac OS 9 applications while the computer is running Mac OS X.

Note: Mac OS 9 cannot be installed as the primary operating system on your eMac.

Mac OS X features include an elegant user interface, advanced graphics capabilities, and added system stability and performance.



When you're ready to learn more about Mac OS X and the applications that came with your computer, see the *Welcome to Panther* booklet that came with your eMac. Also open Mac OS Help and browse the information there. You'll find plenty of information for new users, experienced users, and people switching to the Mac. If you experience any problems while using Mac OS X, see the troubleshooting tips in the back of this book or choose Help > Mac Help from the menu bar at the top of the screen.

For information about the compatibility of software applications with Mac OS X, or to read more about Mac OS X, check the Apple website: www.apple.com/macosx.

Customizing Your Desktop and Setting Your Preferences

You can quickly make your desktop look the way you want using System Preferences. Choose Apple (🍏) > System Preferences from the menu bar.



Feel free to make changes and experiment with the following:

- **Desktop & Screen Saver:** Select this preference pane to change the background color or pattern of your desktop, or change it to a photo or image you like. You can also choose an eye-catching screen effect that will appear on your screen when the computer is left idle.
- **Dock:** Select this preference pane to change the look, location, and behavior of your Dock.
- **Appearance:** Select this preference pane to change the colors of buttons, menus, windows, and highlight colors, among other options.

As you get to know your computer, explore the other System Preferences. It is your command center for most settings on your eMac. For more information, open Mac OS Help and search for “System Preferences” or for the specific preference you want to change.

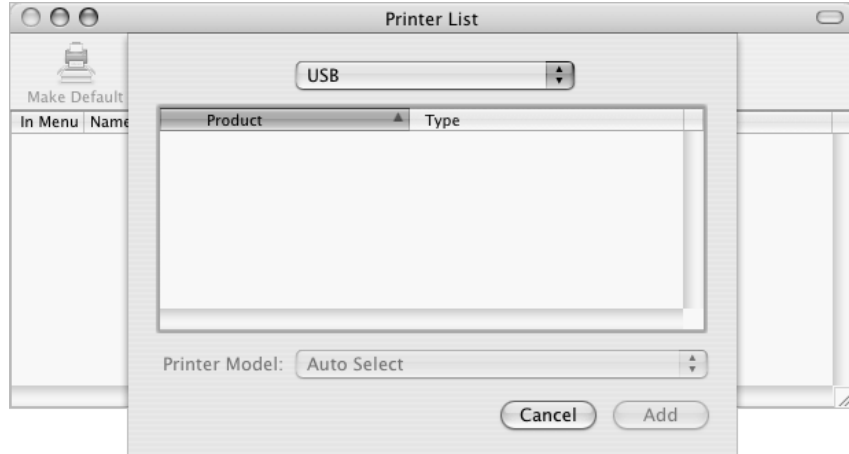
Connecting to a Printer

To use a printer with your eMac, follow the instructions that came with the printer to install required software and connect the printer. Many printers connect via a USB cable; others are accessed via a network connection, such as Ethernet. For more information about your USB ports, see “Ethernet (10/100Base-T)” on page 29. For more information about a network or wireless connection, see “Ethernet (10/100Base-T)” on page 29 and “AirPort Extreme Wireless Internet and Networking” on page 27.

After connecting and setting up your printer, use the Print & Fax pane of System Preferences to select your printer for use. If you’re connecting to a printer via a network, you may need to know the network name or address of the printer to select it. If you have a USB printer connected to an AirPort Extreme Base Station, and you have an AirPort Extreme Card installed in your eMac, you can connect to the printer and print wirelessly.

To set up a printer:

- 1 Open System Preferences and click the Print & Fax icon.
- 2 Click the Set Up Printers button.
- 3 Click the Add button.
- 4 Choose the type of connection for your printer (for example, USB, AppleTalk, and so on).



To add a USB printer connected to an AirPort Extreme Base Station, choose Rendezvous from the pop-up menu.

- 5 Select or enter your printer information and click Add.

Monitoring Printing

Once you've sent a document to a printer, you can monitor printing and halt or put it temporarily on hold.

To monitor printing:

- Click the Printer icon in the Dock to open the Printer window.

You can now see the print jobs in the print queue and work with them. For more information, open Mac OS Help (see page 22) and search for "printing."

Playing a CD and Connecting Headphones

If you'd like to listen to music while you work with your eMac, insert a music CD in your optical drive. iTunes, an easy-to-use music player, will appear automatically on the screen. You can also connect headphones with a minijack to the headphone port of your eMac to listen privately. To learn more about iTunes, open iTunes and choose Help > iTunes & Music Store Help. To learn more about your optical drive, see "Using Your Optical Drive" on page 32.

Keeping Your Software Up to Date

You can connect to the Internet and automatically download and install the latest free software versions, drivers, and other enhancements from Apple.

When you are connected to the Internet, Software Update checks Apple's Internet servers to see if any updates are available for your computer. You can set your Mac to check the Apple server periodically and download and install updated software.

To check for updated software:

- 1 Open System Preferences.
- 2 Click the Software Update icon and follow the directions on the screen.



- For more information, search for “Software Update” in Mac OS Help (see page 22).
- For the latest information on the Mac OS, go to the Mac OS website at www.apple.com/macos.

Connecting a Camera or Other FireWire Device

If you have an iPod, iSight camera, digital video camera, or other device that has a FireWire connector, you can connect it to your eMac. Follow the installation instructions that came with your device. For more information about FireWire, see “FireWire” on page 26.

Connecting to a Network

If you want to connect your eMac to an Ethernet network, cable or DSL modem, or a wireless network, see “Ethernet (10/100Base-T)” on page 29 and “AirPort Extreme Wireless Internet and Networking” on page 27 for more information about setting up an Ethernet or AirPort connection. Also open Mac OS Help (see page 22) and search for “Ethernet” or “AirPort” for further help.

Using the Internet

When you first set up your eMac, you were instructed on how to connect to the Internet. If you need to change to a different type of connection, such as DSL, cable modem, Ethernet local area network (LAN), or AirPort Extreme network, you can find more information in Appendix C, “Connecting to the Internet,” on page 61.

Transferring Files to Another Computer

If you want to transfer files or documents to or from your eMac, you have several ways of doing it.

- You can transfer files via the Internet using .Mac or another Internet account.
- You can transfer files to another computer on a network. To access another server or computer, choose Go > Connect to Server from the Finder menu bar.
- You can create a small Ethernet network by connecting an Ethernet cable from your eMac to another computer’s Ethernet port. For more information, open Mac OS Help and search for “Connecting two computers.”
- You can also connect to another Mac using a FireWire cable. Your eMac appears as a disk drive on the other computer and you can transfer files. For information about using FireWire to transfer files, see “FireWire Target Disk Mode” on page 27.

- If your computer has an AirPort Extreme Card, you can connect to an AirPort Extreme wireless network to transfer files. For more information, see “AirPort Extreme Wireless Internet and Networking” on page 27.

For general information about transferring files and documents, see “Switching to the Mac,” located in the “User Guides and Information” folder on your hard disk. Also open Mac OS Help and search for the type of connection you need.

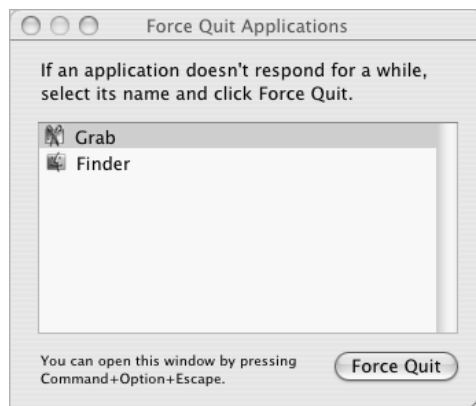
When an Application Freezes

On rare occasions, an application may freeze on the screen. Mac OS X provides a way to quit a frozen application without restarting your computer. Quitting a frozen application may allow you to save your work in other open applications.

To force an application to quit:

- 1 Press Command (⌘)-Option-Esc.

The Force Quit Applications dialog appears with the application selected.



- 2 Click Force Quit.

The application quits, leaving all other applications open.

If needed, you can force the Classic Environment to quit, which closes all Classic applications. You can also restart the Finder from this dialog.

If you're experiencing other problems, see Chapter 5, “Troubleshooting,” on page 49.

Getting Answers to Your Questions Using Mac OS Help

You can find answers to most of your questions about using your computer and Mac OS X using Mac OS Help onscreen.



To Use Mac OS Help

- 1 Click the Finder icon in the Dock.
- 2 Choose Help > Mac Help (click the Help menu and choose Mac Help).
- 3 Type a question and press the Return key on your keyboard.
- 4 Double-click an item in the list of Help topics.

Using Applications

Your eMac comes with software applications for doing things like sending email, surfing the Internet, chatting online, organizing music and digital photos, making movies, and much more. For more information on these applications, see the *Welcome to Panther* booklet that came with your computer.

Your eMac has many built-in features and expansion capabilities you can use to customize your computer to fit your needs.

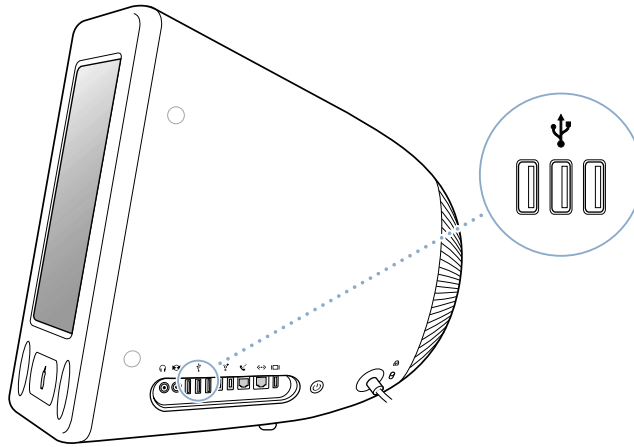
Here are some of your computer's features and capabilities:

- Universal Serial Bus (USB) ports for connecting additional equipment, such as printers, scanners, joysticks, keyboards, digital cameras, and floppy disk drives.
- FireWire ports for connecting high-speed equipment, such as an iPod, iSight camera, digital video cameras, and external hard drives.
- The latest in communications technologies, such as a 56K v.92 modem (on some models), 10/100Base-T Ethernet, and optional AirPort Extreme wireless Internet and networking.
- VGA output with the Apple VGA Display Adapter (available at www.apple.com/store) lets you use your eMac with an external monitor or video projector. Use your eMac's video out port and the Apple Video Adapter (available at www.apple.com/store) to present what's on your computer's screen on any television that supports composite or S-video.
- Audio line in port, headphone port, and more.

To learn about what you can do with your eMac, start with the information in this chapter. Additional information can be found in Mac OS Help (see page 22) and on the many Apple websites.

Universal Serial Bus (USB)

Your eMac comes with five USB ports (🔌) (three on the computer and two on the keyboard), which you can use to connect many types of external devices, including printers, scanners, digital cameras, game pads, joysticks, keyboards, and floppy disk drives. USB makes it easy to connect external equipment. In most cases you can connect and disconnect a USB device while the computer is running. Once you connect the device, it is ready to use.



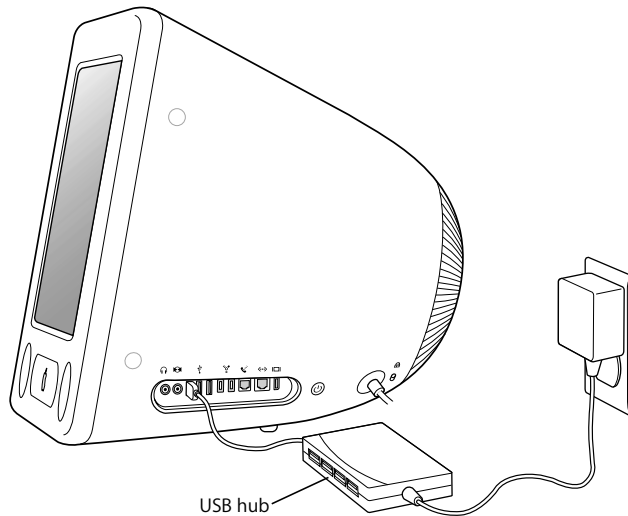
Using USB Devices

To use a USB device with your computer, simply connect the device to the computer. Your computer automatically accesses the necessary software whenever you connect a new device.

Note: Apple has already included software to work with many USB devices. When you connect a USB device, if your eMac cannot find the correct software, you can install the software that came with the device or check the device manufacturer's website for the latest software.

Using Multiple USB Devices at the Same Time

If all of your USB ports are being used and you want to connect more USB devices, you can purchase a USB hub. The USB hub connects to an open USB port on your computer and provides additional USB ports (usually four or seven). Most USB hubs also have a power adapter and should be plugged into an outlet.



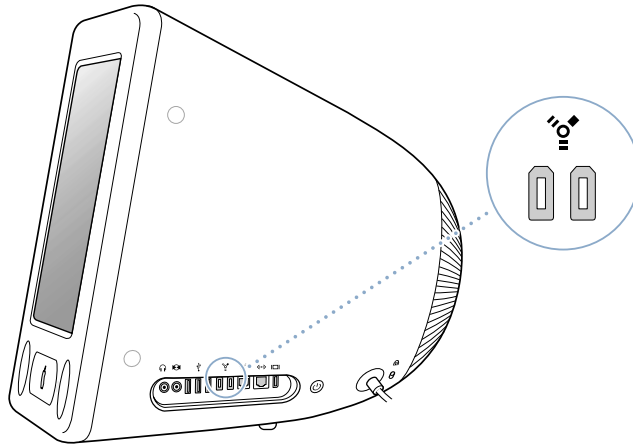
For More Information on USB

Additional information on USB is available in Mac OS Help (see page 22). Choose Help > Mac Help and search for “USB.” You can also find information on the Apple USB website at www.apple.com/usb.

For information on USB devices available for your computer, check the Macintosh Products Guide at www.apple.com/guide.

FireWire

Your computer has two FireWire 400 ports (). FireWire lets you easily connect and disconnect external high-speed devices—such as an iPod, an iSight camera, DV cameras, printers, scanners, and hard disks. You can connect and disconnect FireWire devices without restarting your computer.



These are some of the things you can do with FireWire:

- Connect an iPod and transfer thousands of songs from iTunes or synchronize contact and calendar information using iSync.
- Connect a digital video camera and capture, transfer, and edit high-quality video directly on your computer using video-editing software such as iMovie, Final Cut Pro, or Final Cut Express.
- Connect an external FireWire hard disk drive and use it to back up data or transfer files.
A FireWire hard disk icon appears on your desktop after you connect the drive to your eMac.
- Start up from an external FireWire hard disk. Connect an external FireWire disk (with a valid operating system installed on it), open the Startup Disk pane of System Preferences, and click the FireWire disk. Restart your computer.

Using FireWire Devices

To use a FireWire device with your computer, simply connect the device to the computer. Apple has already included software to work with many FireWire devices. When you connect a FireWire device, if your eMac cannot find the correct software, you can install the software that came with the device or check the device manufacturer's website for the latest software.

Note: The FireWire port is designed to provide power for FireWire devices (up to 8 watts maximum). You can connect multiple devices to each other and connect the “daisy-chain” of devices to the FireWire port on your computer. In most cases, at most two devices should get power from the computer. If you connect more than two devices, the rest of the devices in the daisy-chain should be powered by separate power adapters. Connecting more than two FireWire devices that get power from the computer may cause problems. If a problem occurs, shut down the computer, disconnect the FireWire devices, and restart your computer.

FireWire Target Disk Mode

If you want to transfer files between your eMac and another FireWire-equipped computer, or you have a problem that prevents your computer from starting up, you can use FireWire Target Disk Mode to connect to another computer.

To connect your eMac in FireWire Target Disk Mode, follow these steps:

- 1 Make sure that your eMac is shut down.
- 2 Use a FireWire cable with a standard 6-pin connector on each end to connect your eMac to another FireWire-equipped computer.
- 3 Start up your eMac and immediately hold down the T key. Your eMac display shows the FireWire logo. The other computer’s display shows the eMac internal hard disk icon and the icon of a CD or DVD disc in the eMac’s optical drive.
- 4 When you are finished transferring files, drag the eMac hard disk icon and the CD or DVD disc icon to the Trash.
- 5 Press the Power button on the eMac to shut it down, and then disconnect the FireWire cable.

For More Information on FireWire

Additional information on FireWire is available in Mac OS Help (see page 22). Choose Help > Mac Help and search for “FireWire.” You can also find information on the Apple FireWire website at www.apple.com/firewire.

AirPort Extreme Wireless Internet and Networking

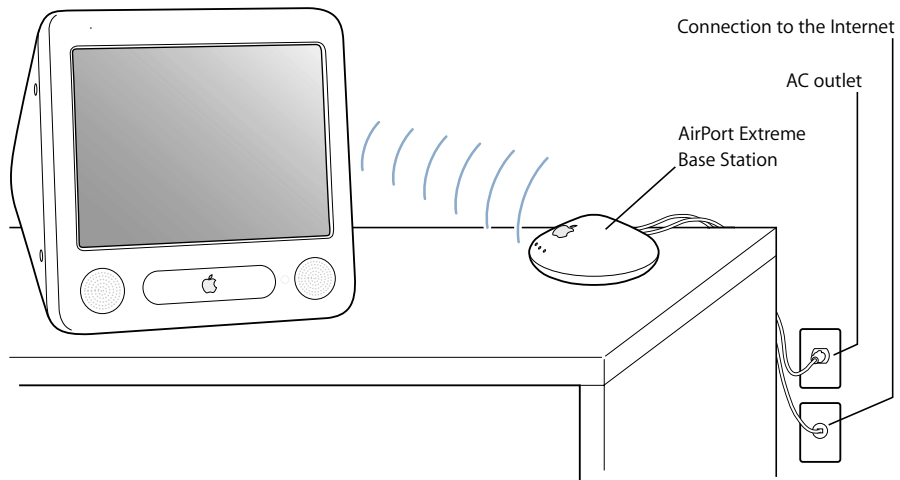
Your eMac is AirPort Extreme-ready. If you ordered an AirPort Extreme Card when you purchased your eMac, the card is already installed. If you do not have an AirPort Extreme Card installed and would like to install one, see page 41 for more information.

AirPort offers an easy and affordable way to provide wireless Internet access anywhere in the home, at work, or in the classroom. Instead of using traditional cables, AirPort uses wireless local area network (LAN) technology to provide wireless communication between multiple computers. Through a wireless network you can set up access to the Internet, transfer files, play multiplayer games, and more.

Note: Wireless Internet access requires an AirPort Extreme Card. Previous models of AirPort Card are not compatible with your computer. You also need an AirPort Base Station and Internet access (fees may apply). Some Internet service providers are not currently compatible with AirPort. Range may vary with site conditions.

How AirPort Provides Wireless Internet Access

With AirPort, you set up a wireless connection to a device known as a *base station*, which has a physical connection to the Internet. AirPort technology works like a cordless telephone. The AirPort Extreme Card in the computer makes a wireless connection to the base station, which is connected to the Internet via a telephone line or a DSL or cable modem.



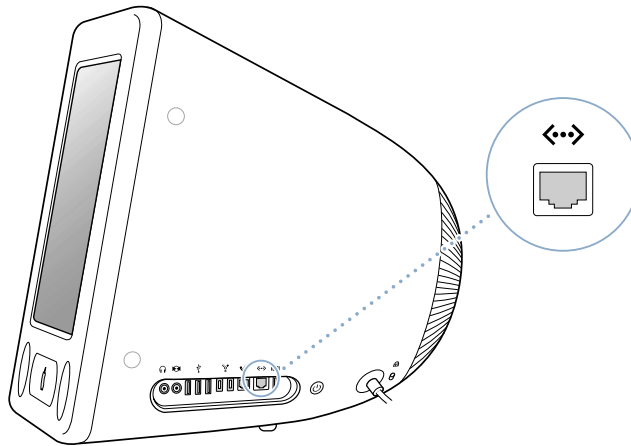
For More Information on AirPort

To purchase an AirPort Base Station, contact your Apple-authorized dealer or go to the Apple Store at www.apple.com/store.

Additional information on AirPort is available in AirPort Help. Choose Help > Mac Help, then choose Library > AirPort Help. You can also find information on the Apple AirPort website at www.apple.com/airport and in the Apple Knowledge Base at kbase.info.apple.com.

Ethernet (10/100Base-T)

Your computer comes with built-in 10/100 megabit per second (Mbps) Base-T (twisted-pair) Ethernet networking capability, which you can use to connect to a network or to a cable or DSL modem.



Connecting to a network gives you access to other computers. You may be able to store and retrieve information; use network printers, modems, and electronic mail; or connect to the Internet. You can also use Ethernet to share files between two computers or set up a small network. The Ethernet port on your eMac automatically detects other Ethernet devices. You don't need an Ethernet crossover cable to connect to other Ethernet devices.

- Use 2-pair category 3 (Cat 3) Ethernet cables to connect to a 10Base-T Ethernet network.
- Use 2-pair category 5 (Cat 5) Ethernet cables to connect to a 10Base-T or a 100Base-T Ethernet network.

For More Information on Using Ethernet

Additional information, including how to set up an Ethernet network and transfer files using Ethernet, is available in Mac OS Help (see page 22). Choose Help > Mac Help and search for "Ethernet" or "network."

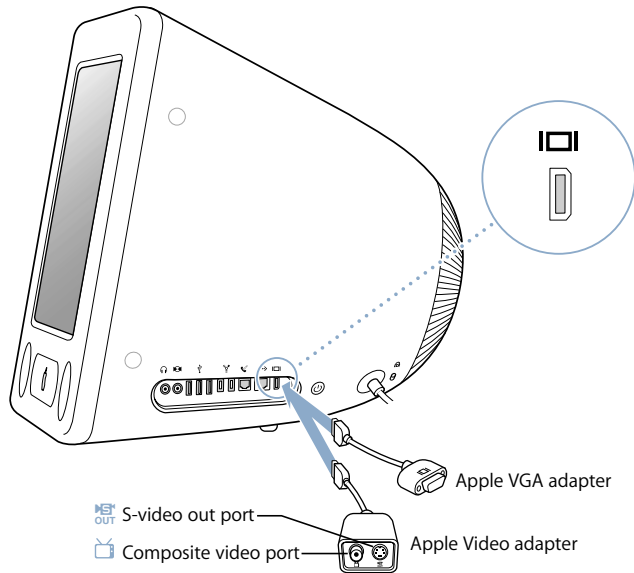
For information on networking products you can use with your eMac, check the Macintosh Products Guide at www.apple.com/guide.

External Video Support (VGA, Composite, and S-Video)

Your computer has a video out port you can use to connect an external display (monitor) or VGA projector, using the Apple VGA Display Adapter (available at www.apple.com/store).

You can also display or record computer images by connecting a TV, video projector, or videocassette recorder (VCR), using the Apple Video Adapter (available at www.apple.com/store).

Note: The Apple Video Adapter is not compatible with some previous models of eMac.



When an external monitor or television is connected, the same image appears on both the eMac display and the external monitor (known as *video mirroring*).

Note: Because of the display limitations of most televisions, images displayed on a television screen are of lower quality than those on the built-in display or external monitor.

Connecting an External Display or Projector

To connect an external display or projector to your computer with a VGA connector:

- 1 Turn on the external display or projector.
- 2 Connect the Apple VGA Display Adapter to the VGA port on the external display or projector.
- 3 Connect the Apple VGA Display Adapter to your eMac. Your eMac automatically detects the external display.

Important: To ensure that your eMac automatically detects the external display or projector, be sure the VGA adapter is plugged into the external display or projector first.

- 4 Use the Displays pane of System Preferences to adjust the resolution on the external display or projector.

Connecting a Television, VCR, or Other Video Device

To connect a TV, VCR, or other video device to the eMac:

- 1 Connect the single-plug end of the Apple Video Adapter to the video out port on your eMac.
- 2 Connect the other end of the adapter to the composite video port or the S-video port on the TV or VCR.
- 3 Turn on the external device.
- 4 To adjust how the images are displayed on the device, use the Displays pane of System Preferences.

The image appears on both the eMac and the TV, except for DVD playback, which appears only on the TV.

For More Information on Using an External Display or TV

Additional information on using and configuring an external monitor is available in Mac OS Help. Choose Help > Mac Help and search for “display.”

Using Your Optical Drive

You can install or use software from CDs using your optical drive. You can play multimedia content (such as QuickTime movies) from CD discs and music from audio CDs.

If your eMac has a DVD/CD-RW Combo drive or a SuperDrive, you can burn music CDs, and save documents and other digital files on CD-R and CD-RW discs. You can also play DVD movies and use most DVD discs.

If your eMac has a SuperDrive, you can also use your home movies to make video DVDs that can be played in most home DVD players, or save documents to blank DVD-R (recordable DVD) discs.

Note: If you have older software that comes on floppy disks, contact the software manufacturer to see if the software is available on a CD or for download from the web, or purchase an external USB floppy disk drive for your eMac from your Apple dealer or the Apple Store (www.apple.com/store).

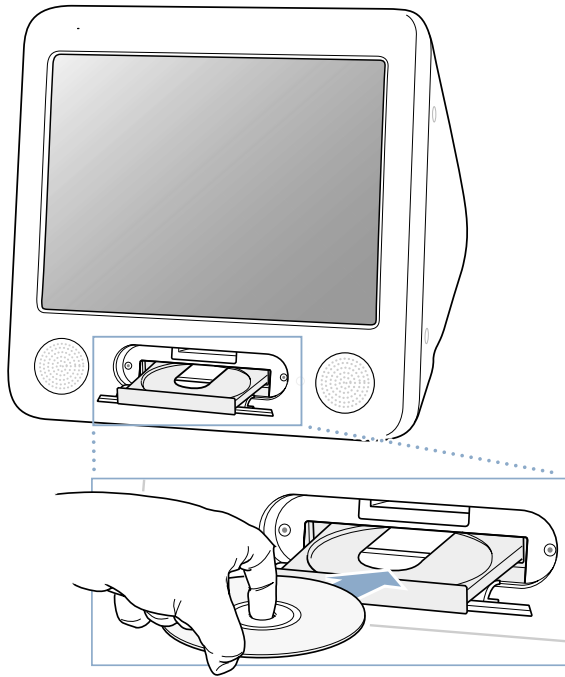
Inserting a CD or DVD Disc

To install or use programs from a CD or DVD disc, follow these steps:

- 1 With the computer turned on, press the Media Eject key (⏏) on the keyboard to open the drive tray.

- 2 Place the disc flat on the tray, with the label facing up, and press the Media Eject key again to close the tray.

Note: Some DVD discs are two-sided.



- 3 When the icon for the disc appears on the desktop, the disc is ready to use.

Ejecting a Disc

To eject a disc, do one of the following:

- Drag the disc icon to the Trash.
- Press and hold the Media Eject (⏏) key on the keyboard until the disc ejects.

If you can't eject the disc, quit any applications that may be using the disc and try again. If that doesn't work, restart the computer while holding down the mouse button.

Playing DVD Discs

If your eMac has a DVD/CD-RW Combo drive or a SuperDrive, you can play standard DVD-Video discs. To play a DVD, insert the DVD disc. DVD Player opens automatically and starts playing the disc.

If your eMac is connected to a TV so that you can watch DVD playback on the TV screen, select 720 x 480 NTSC (in the United States) or 720 x 576 PAL (in Europe and other regions) in the Displays pane of System Preferences.

You can easily connect your eMac to your stereo system. Use a 3.5-millimeter miniplug-to-RCA cable (not included) to connect the headphone port (🔊) on your eMac to the audio input ports on your stereo.

Recording CD-R and CD-RW Discs

If your eMac has a DVD/CD-RW Combo drive or a SuperDrive, you can record music on CD-R or CD-RW discs right from your iTunes library.

To record music to a CD-R or CD-RW disc:

- 1 Click the iTunes icon in the Dock.
- 2 Select the playlist you want to record.
- 3 Insert a blank CD-R or CD-RW disc. (For highest compatibility with CD players, use a CD-R disc.)
- 4 At the top of the iTunes window, click Burn CD.

You can also record data on CD-R and CD-RW discs:

- 1 Insert a blank disc in the optical drive.
- 2 In the dialog that appears, enter a name for the disc. An icon for the CD appears on the desktop.
- 3 Drag files and folders to the disc icon.
- 4 Choose File > Burn Disc, or select the disc and drag it to the Burn Disc icon in the Dock.

For More Information

- For information about how to use iTunes to record music files on a CD-R disc, open iTunes and choose Help > iTunes & Music Store Help.
- For instructions on using DVD Player, open DVD Player and choose Help > DVD Player Help.

Recording Information on a DVD

If your eMac has a SuperDrive, you can record your own digital movies on a blank DVD-R (DVD-Recordable) disc. You can also record other kinds of digital data (for example, you can back up your files to DVD-R discs).

With iDVD, you can create your own customized DVD, burn it on a blank DVD-R disc, and play it on most standard DVD players.

To burn an iDVD project to a blank DVD:

- 1 Open iDVD and open your completed DVD project.
- 2 Click the Burn button.
- 3 Insert a new blank DVD-R disc into the drive when prompted.
- 4 Click the Burn button again.

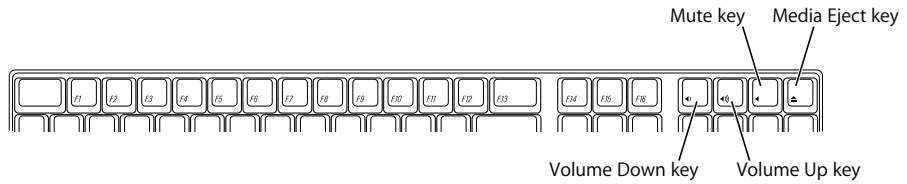
To record data to a DVD-R disc:

- 1 Insert a blank DVD-R disc in the drive.
- 2 In the dialog that appears, enter a name for the disc and select the format you want to create. An icon for the DVD appears on the desktop.
- 3 Double-click the DVD icon, then drag files and folders to it.
- 4 Choose File > Burn Disc, or select the disc and drag it to the Burn Disc icon in the Dock.

For more information about how to use iDVD, open iDVD and choose Help > iDVD Help.

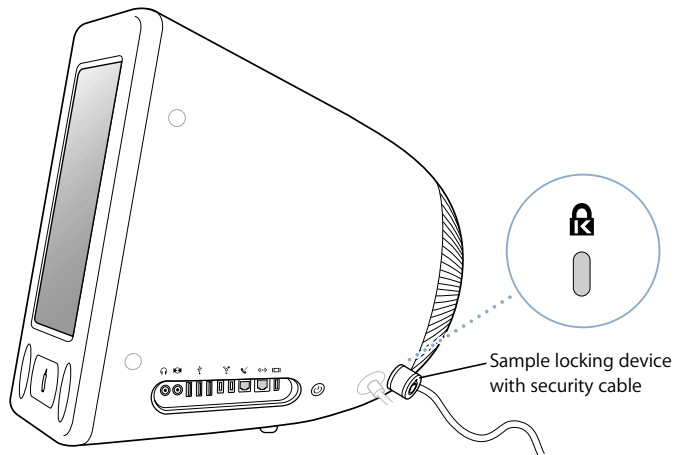
Keyboard Controls

You can quickly adjust the volume or eject a CD or DVD disc using the keyboard controls.



Securing Your Computer

Use a locking cable and the built-in security slot to attach your eMac to a stationary object.



Additional information on the software security features of your eMac, including multiple user passwords and file encryption, is available in Mac OS Help (see page 22). Choose Help > Mac Help and search for “security” or “multiple users.”

This chapter provides information and instructions for enhancing your computer.

Instructions are provided for the following procedures:

- “Installing Additional Memory” on page 37
- “Installing an AirPort Extreme Card” on page 41

Warning: Apple recommends that you have an Apple-certified technician install memory. Consult the service and support information that came with your computer for instructions on how to contact Apple for service. If you attempt to install memory and damage your equipment, such damage is not covered by the limited warranty on your computer.

Installing Additional Memory

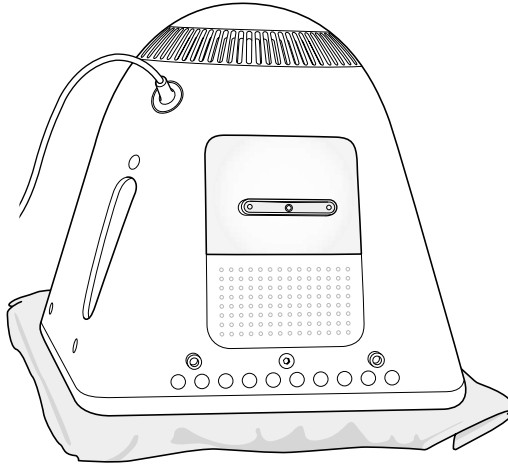
Your eMac comes with at least 128 megabytes (MB) of Synchronous Dynamic Random-Access Memory (SDRAM). There are two SDRAM slots, one of which is usually available for expansion. Each memory slot accepts any memory module that meets the following specifications:

- Dual Inline Memory Module (DIMM)
- 3.3 volt (V)
- Unbuffered
- 64-bit wide, 168-pin module
- PC-133 compliant

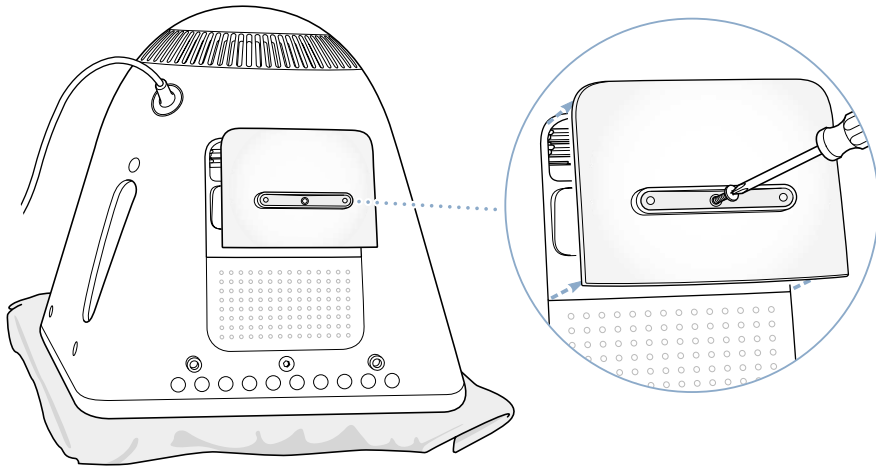
The maximum amount of RAM you can have in your eMac is 1 gigabyte (GB), using two 512 MB memory modules.

To install additional memory:

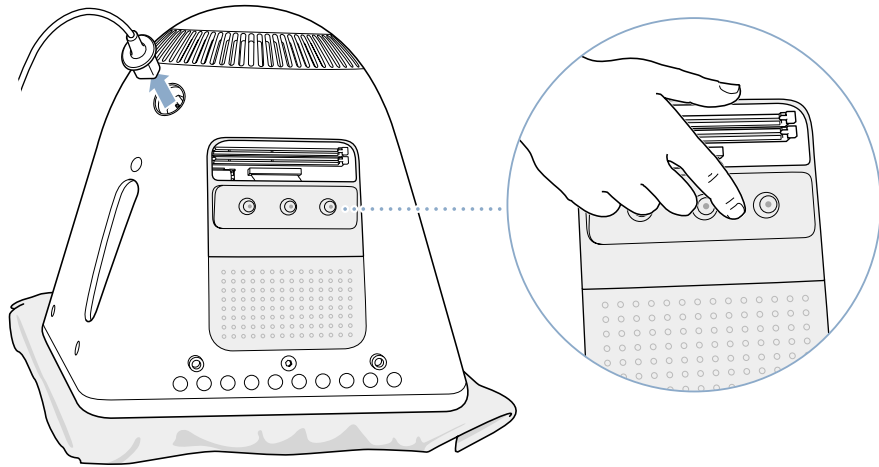
- 1 Turn your computer off by choosing Apple (🍏) > Shut Down. Disconnect all cables except the power cord from your computer.
- 2 Place a soft, clean towel or cloth on the desk or surface. Slowly lift up and turn the computer so the screen is facing down on the cloth.



- 3 Use a Phillips screwdriver to loosen the captive screw on the memory access panel. Then gently remove the access panel.



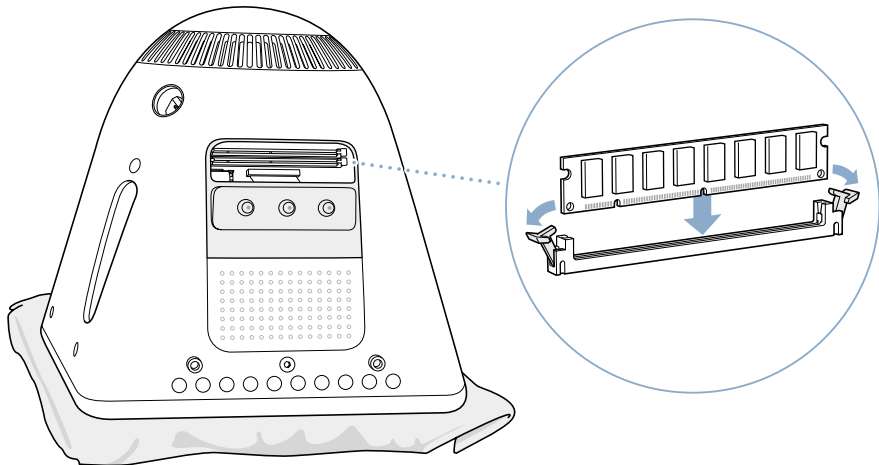
- 4 Touch metal inside the computer to protect the computer from damage caused by electrostatic discharge.



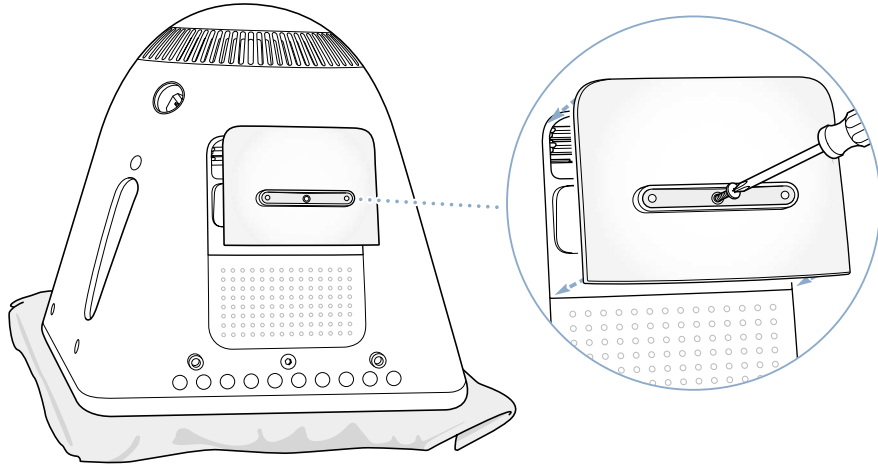
Important: Always discharge static electricity before you touch any parts or install any components inside the computer. To avoid generating static electricity, do not walk around the room until you have finished installing the memory and closed the computer.

- 5 Disconnect the power cord from the computer.
- 6 Insert the memory module into the memory slot. The module fits into the slot only one way. Be sure to align the notches on the module with the small notches inside the slot.

With the ejectors in the open position, push down on the DIMM until it locks into place. The ejectors will automatically close.



- 7 Hold the access panel against the base of the computer and tighten the screw.



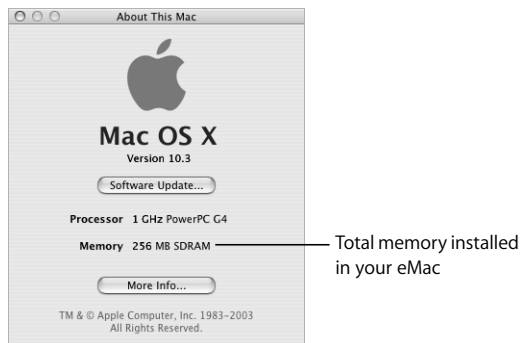
- 8 Gently turn the computer right side up. Then reconnect the cables you disconnected from your computer.
- 9 Press the Power button on the side of your computer to turn it on.

Warning: Operating the computer when it is open or missing parts can be dangerous and could damage your computer.

Making Sure Your Computer Recognizes the New Memory

After installing additional memory in your eMac, check whether the computer recognizes the new memory. Do the following:

- 1 Start up your computer.
- 2 When you see the Mac OS desktop, choose Apple () > About This Mac.



The total includes the amount of memory that originally came with the computer plus the new memory you added. For a more detailed breakdown of the amount of memory installed in your computer, open Apple System Profiler by clicking More Info.

If your computer doesn't recognize the memory or it doesn't start up correctly, shut down your eMac and check the instructions again to make sure that the memory you installed is compatible with this eMac and that it is installed correctly. If you still have problems, remove the memory and consult the support information that came with the memory or contact the vendor who provided the memory.

Installing an AirPort Extreme Card

If your computer did not come with an AirPort Extreme Card, you can purchase one from your Apple-authorized dealer or from the Apple Store at www.apple.com/store and install it yourself or have it installed by an Apple-authorized service provider.

Note: Your eMac is not compatible with older AirPort Cards. Use only an AirPort Extreme Card.

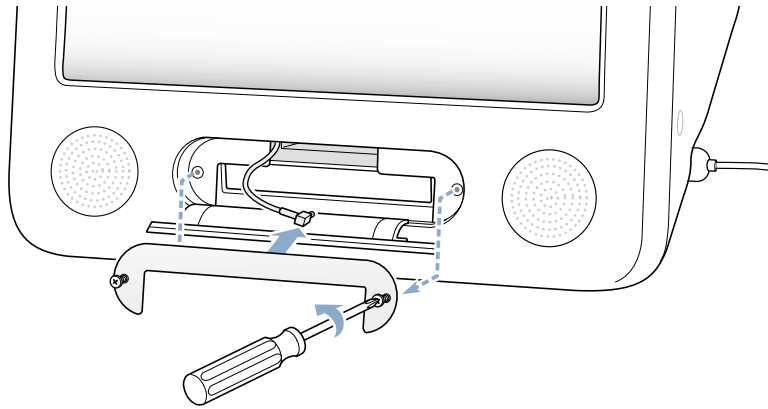
To install an AirPort Extreme Card in your eMac:

- 1 Press the Media Eject key (⏏) on the keyboard to open the access door. Then hold the door open and press the eject key again to retract the drive tray.

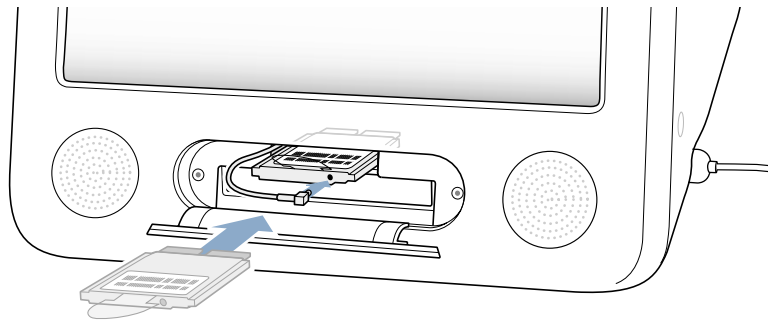


- 2 Turn your computer off by choosing Apple () > Shut Down.

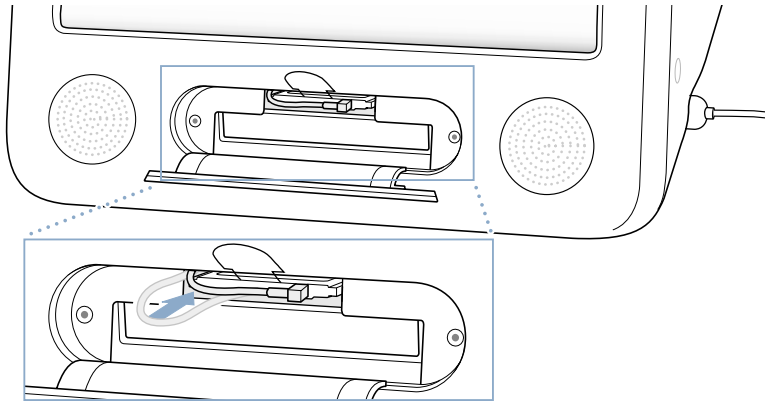
- 3 Loosen the captive screws on the AirPort access panel using a Phillips screwdriver. Then remove the panel and unhook the antenna from the panel.



- 4 Insert the AirPort Extreme Card partially into the slot, with the logo facing down, then connect the antenna firmly to the card.

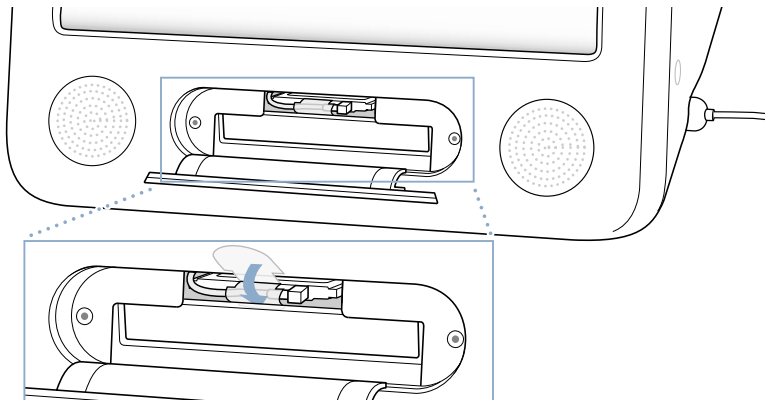


- 5 Push the AirPort Extreme Card firmly into the slot and tuck the antenna down into the computer. You may need to lift the card slightly as you push it in.

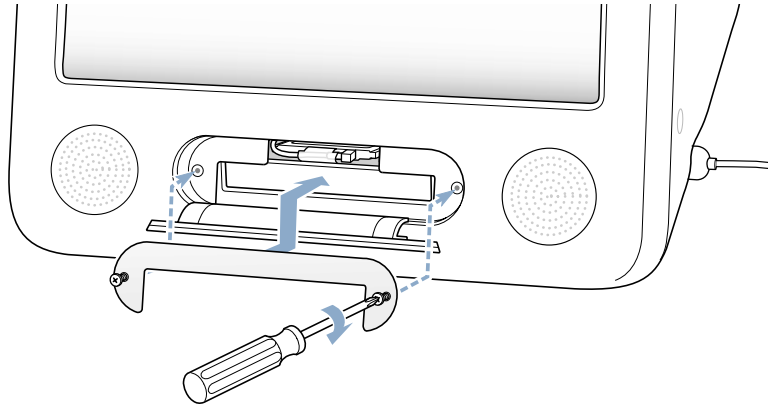


Important: Be sure to push the AirPort Extreme Card firmly all the way into the slot.

- 6 Tuck the tab on the AirPort Extreme Card down into the computer.



- 7 Replace the AirPort access panel.



- 8 Press the Power button on the side of your computer to turn it on.

If there is an AirPort network in range, you can select it using the AirPort status icon in the menu bar. If you want to set up an AirPort Base Station, use the AirPort Setup Assistant, in Applications/Utilities.

Replacing the Internal Backup Battery

Your computer has a backup battery that preserves certain settings, such as the date and time, when the computer is off.

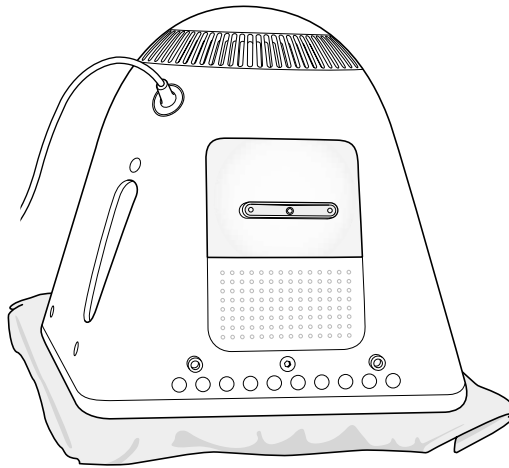
You may need to replace the battery if you have intermittent problems starting up your computer, or if settings such as the date and time change when you start up your computer.

You can purchase a replacement 3.6V, 1/2AA leadless lithium battery at most electronics or computer stores.

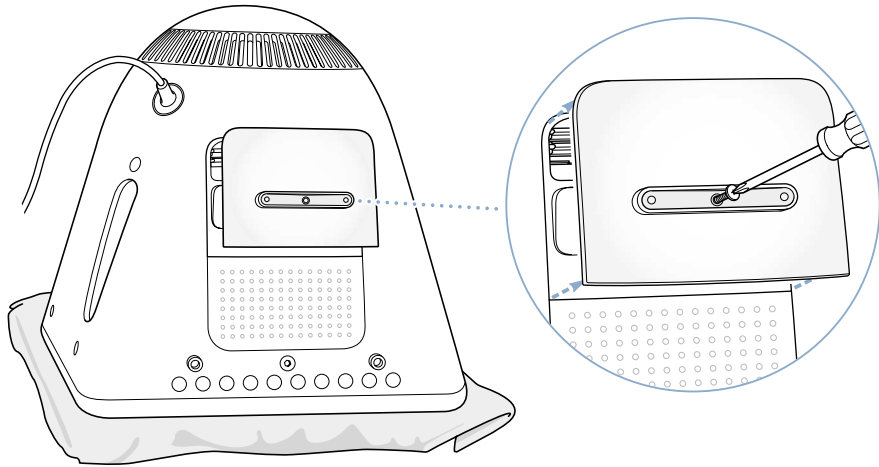
Note: If your computer is plugged into a power strip, Apple recommends you leave the strip turned on to avoid shortening battery life.

To replace the internal backup battery:

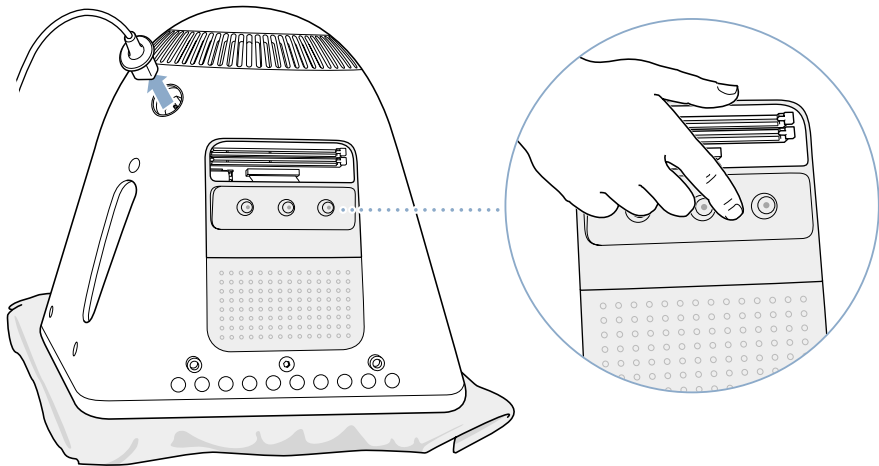
- 1 Turn your computer off by choosing Apple (🍏) > Shut Down. Disconnect all cables except the power cord from your computer.
- 2 Place a soft, clean towel or cloth on the desk or surface. Slowly lift up and turn the computer so the screen is facing down on the cloth.



- 3 Use a Phillips screwdriver to loosen the captive screw on the memory access panel. Then gently remove the access panel.



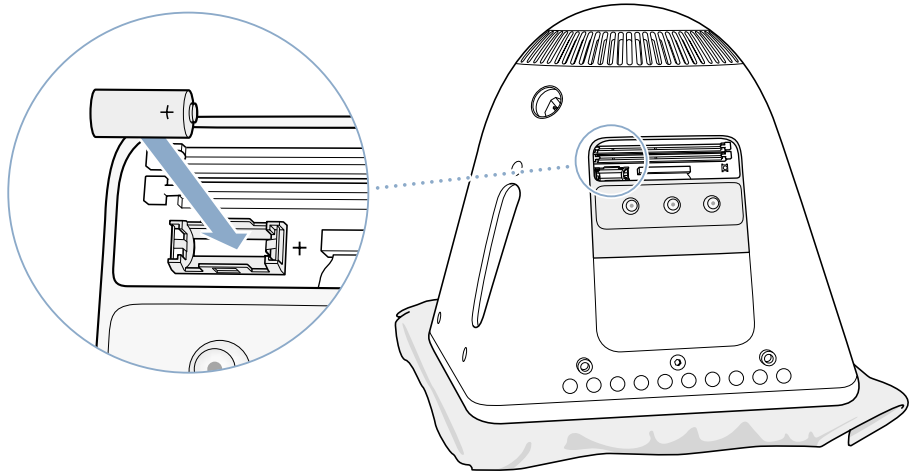
- 4 Touch metal inside the computer to protect the computer from damage caused by electrostatic discharge.



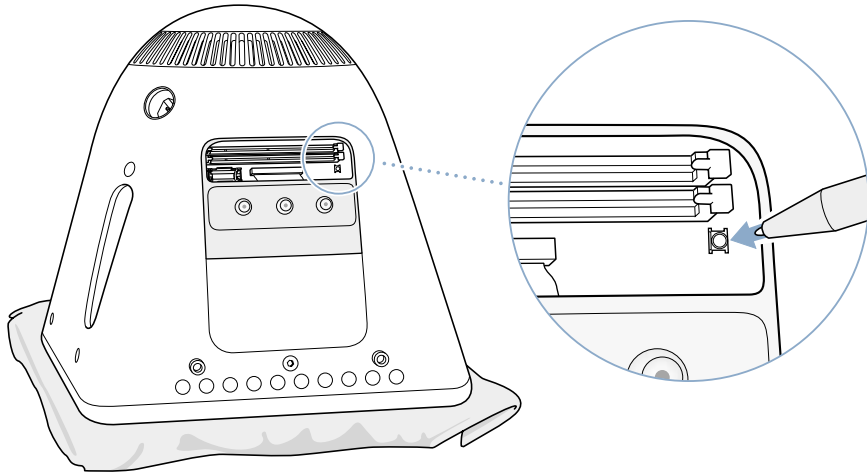
Important: Always discharge static electricity before you touch any parts or install any components inside the computer. To avoid generating static electricity, do not walk around the room until you have finished installing the memory and closed the computer.

- 5 Disconnect the power cord from the computer.

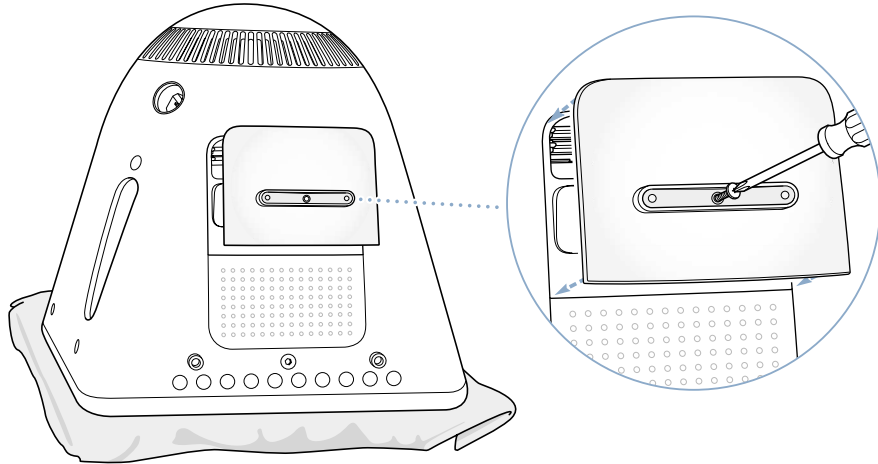
- 6 Remove the internal backup battery and replace it with the new one. Make sure to align the plus sign (+) on the battery with the one inside the computer.



- 7 Locate the PMU reset button inside the computer. Push the button for one second using a pen or pencil.



- 8 Hold the access panel against the base of the computer and tighten the screw.



- 9 Gently turn the computer right side up. Then reconnect the cables you disconnected from your computer.
- 10 Press the Power button on the side of your computer to turn it on.

Warning: Operating the computer when it is open or missing parts can be dangerous and could damage your computer.

- 11 Dispose of the old battery according to your local environmental guidelines.

Replacing the battery may cause some settings on your computer, such as date and time, to revert to the factory default settings. You may also have to restore modem settings in any communications programs you use.

Occasionally you may have problems while working with your eMac. This chapter gives you some solutions to try when you have a problem.

Most problems occur because your software isn't properly set up or you're using software that isn't compatible with the version of the Mac OS (system software) installed on your computer. Other less likely sources include problems with the Mac OS or problems with your computer's hardware, such as the memory or hard disk.

When you experience a problem with your computer, it's important to remember that there is usually a simple and quick solution. When you encounter a problem, be aware of the conditions that led up to the problem. Making a note of things you did before the problem occurred will help you narrow down the possible causes of the problem and then find the answers you need. Things to note include:

- The applications you were using when the problem occurred. Problems that occur only with a specific application may indicate that the application is not compatible with the version of the Mac OS installed on your computer.
- Any software that you recently installed. Certain applications install extensions that may not be compatible with the Classic environment.
- Any new hardware (such as additional memory or a peripheral) that you installed.

What You'll Find in This Chapter

This chapter contains solutions to problems that prevent you from working with your computer, such as a system freeze or a computer that will not start up. You can find more troubleshooting information in Mac Help (see page 22), on the Apple Support website at www.apple.com/support, and in the Apple Knowledge Base at kbase.info.apple.com.

Problems That Prevent You From Using Your Computer

If the computer won't respond or the pointer won't move

- First, make sure the mouse and keyboard are connected. Unplug and then plug in the connectors and make sure they are secure.
- If that doesn't work, try to force problem applications to quit. Hold down the Option and Command (⌘) keys and then press the Esc key. If a dialog appears, select the application and click Force Quit. Then save your work in any open applications and restart the computer to be sure the problem is entirely cleared up.
- If you are unable to force the application to quit, press and hold the Power button (⏻) for a few seconds to shut down the computer.
- If that doesn't work, unplug the power cord from the computer. Then plug the power cord back in and press the Power button (⏻) on the computer to turn it on.

If the problem occurs frequently when you use a particular application, check with the application's manufacturer to see if it is compatible with your computer.

For support and contact information about the software that came with your computer, go to www.apple.com/guide.

If the problem occurs frequently, you may need to reinstall your system software (see "Restoring Your Computer's Software" on page 51).

If the computer freezes during startup or you see a flashing question mark

- Wait a few seconds. If the computer doesn't start up after a delay, shut down your computer by pressing and holding the Power button (⏻) for about 5 seconds, until the computer shuts down. Then hold down the Option key and press the Power button (⏻) again to start up your computer. When your computer starts up, click the hard disk icon, then click the right arrow.
- After the computer starts up, open System Preferences and click Startup Disk. Select a local Mac OS X System folder.
- If the problem occurs frequently, you may need to reinstall your system software (see "Restoring Your Computer's Software" on page 51).

If the computer won't turn on or start up

- Make sure the power cord is plugged into the computer and into a functioning power outlet.
- If that does not work, press the Power button (⏻) and immediately hold down the Command (⌘), Option, P, and R keys until you hear the startup sound a second time.
- If you recently installed additional memory, make sure that it is correctly installed and that it is compatible with your computer. See whether removing it allows the computer to start up (see page 37).
- If you are still unable to start up your computer, see the service and support information that came with your eMac for information on contacting Apple for service.

Restoring Your Computer's Software

Use the Software Install and Restore discs that came with your computer to reinstall Mac OS X, applications, or Classic support. Some models of eMac come with a series of Software Install CDs and another series of Software Restore CDs, and some models come with a single series of Software Install and Restore DVDs.

To restore all of your computer's software:

- Follow the instructions below to reinstall Mac OS X, then follow the instructions to reinstall applications and Classic support.

Reinstalling Mac OS X

- 1 Back up essential files, if possible.
- 2 Insert the first Software Install and Restore disc (or the first Software Install disc) that came with your computer.
- 3 Double-click the Install Mac OS X icon.
- 4 Follow the onscreen instructions.
- 5 After selecting the destination disk for installation, click Options and continue following the onscreen instructions.

Reinstalling Applications and Classic Support

To reinstall applications and Classic support if your eMac came with two Software Install and Restore DVDs:

- 1 Back up essential files, if possible.
- 2 Insert the first Software Install and Restore disc that came with your computer.
- 3 Double-click the "Install Applications and Classic Support" icon.
- 4 Follow the onscreen instructions.

To reinstall applications and Classic support if your eMac came with multiple Software Install and Software Restore CDs:

- 1 Back up essential files, if possible.
- 2 Insert the first Software Restore disc. Double-click the "SoftwareRestore.pkg" icon to install the Software Restore application.
- 3 Follow the onscreen instructions to restore your computer's software.

Note: iCal, iChat AV, iMovie, iPhoto, iSync, and iTunes are part of Mac OS X. To install them you must follow the directions for installing Mac OS X (above).

Other Problems

If you have a problem with an application

- For problems with software from a manufacturer other than Apple, contact the manufacturer. Software manufacturers often provide updates to their software on their websites. You can configure your eMac to automatically check for and install the latest Apple software using the Software Update pane of System Preferences. For more information, choose Help > Mac Help and search for “software update.”

If you have trouble using AirPort wireless communication

- Make sure you have properly configured the software according to the instructions that came with your AirPort Extreme Card or AirPort Base Station.
- Make sure the computer or network you are trying to connect to is running and has a wireless access point.
- Make sure you are within antenna range of the other computer or the network’s access point. Nearby electronic devices or metal structures can interfere with wireless communication and reduce this range. Repositioning or rotating the computer may improve reception.
- Check the AirPort signal level:
 - In Mac OS X, there are up to four bars in the AirPort status icon in the menu bar.
 - In Classic, there are up to five green dots in the AirPort portion of the Control Strip.
- You may experience network performance problems if a microwave oven, cordless phone, or other source of interference is used frequently near your base station. To minimize interference, move the base station away from the device.
- For more information on using and troubleshooting AirPort, choose Help > Mac Help, then choose Library > AirPort Help.

If you have trouble ejecting a disc

- Quit any applications that may be using the disc and try again. If that doesn’t work, restart the computer while holding down the mouse button.

If you have problems with your Internet connection

- Make sure your telephone line or network cable is connected and functioning properly.
- If you are using a dialup Internet connection, make sure that your telephone cord is plugged into the modem port (marked with the icon ) and not the Ethernet port (marked with the icon ).
- See “Connecting to the Internet” on page 61 for information on setting up your computer to connect to the Internet. There you will find how to locate your Internet settings and the contact information for your Internet service provider (if you used the Setup Assistant to get your Internet account).
- See “Troubleshooting Your Connection” on page 64 for more information if you have problems with your Internet connection.

If you have a problem using your computer or working with the Mac OS

- If the answers to your questions are not in this manual, look in Mac Help for instructions and troubleshooting information.
- Check the Apple Support website at www.apple.com/support for the latest troubleshooting information and software updates.

If your date and time settings get lost repeatedly

- You may need to replace the internal backup battery. See “Replacing the Internal Backup Battery” on page 45 for more information.

If you suspect a problem with your computer hardware

- You can use the included Apple Hardware Test CD to help determine if there is a problem with one of your computer’s components, such as the memory or processor.

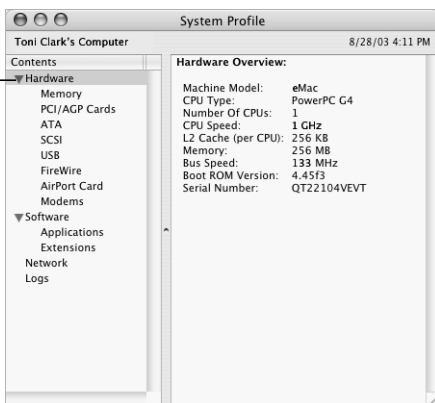
Locating Your Product Serial Number

You can find the serial number for your eMac on the inside of the optical drive door. Press the Media Eject (⏏) key on the keyboard to open the door. If you can’t turn on your computer, you can open the drive door using a fingernail.

You can use System Profiler to find out detailed information about your eMac, such as the amount of built-in memory, hard disk size, devices connected, and the product serial number.

To access the information in System Profiler, choose Apple () > About This Mac from the menu bar and then click More Info, or open System Profiler, located in Applications/Utilities.

Click the triangles in the window to show and hide information in the different categories.



Additional information is available on the Internet at www.apple.com/emac and www.apple.com/support.

For your safety and that of your equipment, follow the rules in this appendix for cleaning and handling your computer, as well as the guidelines for working more comfortably.

Cleaning Your eMac

Follow these general rules when cleaning the outside of your computer and its components:

- Shut down your eMac and disconnect all cables.
- Use a damp, soft, lint-free cloth to clean the computer's exterior. Avoid getting moisture in any openings. Do not spray liquid directly on the computer.
- Don't use aerosol sprays, solvents, or abrasives.

Cleaning Your eMac Display

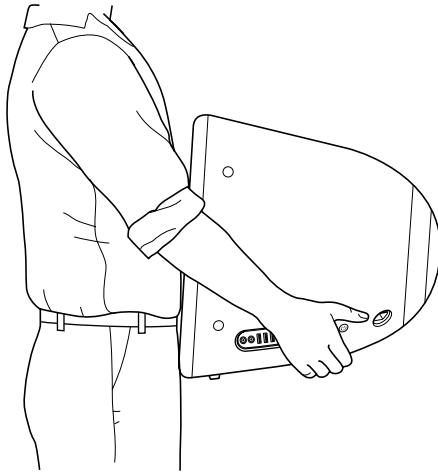
To clean your eMac screen, do the following:

- Shut down your eMac and disconnect all cables.
- Dampen a clean, soft, lint-free cloth or paper with water only and wipe the screen. Do not spray liquid directly on the screen.

Carrying Your eMac

Your eMac weighs about 50 pounds (22.7 kilograms). If possible, use two people to lift it.

If you are lifting your eMac by yourself, stand with the screen facing you and hold the bottom of the computer with both hands. Lift using your legs, rather than your back.



Safety Instructions for Setting Up and Using Your Computer

For your own safety and that of your equipment, always take the following precautions.

Disconnect the power plug (by pulling the plug, not the cord) and disconnect the phone cord if any of the following conditions exists:

- You want to remove any parts
- The power cord or plug becomes frayed or otherwise damaged
- You spill something into the case
- Your computer is exposed to rain or any other excess moisture
- Your computer has been dropped or the case has been otherwise damaged
- You suspect that your computer needs service or repair
- You want to clean the case (use only the recommended procedure described earlier)

Important: The only way to turn off power completely is to disconnect the power cord and phone cords. Make sure at least one end of the power cord is within easy reach so that you can unplug the computer when you need to.

Warning: Your AC cord came equipped with a three-wire grounding plug (a plug that has a third grounding pin). This plug will fit only a grounded AC outlet. If you are unable to insert the plug into an outlet because the outlet is not grounded, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug.

Be sure that you always do the following:

- Keep your computer away from sources of liquids, such as drinks, washbasins, bathtubs, shower stalls, and so on.
- Protect your computer from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your computer into a wall socket.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

Important: Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

Warning: Never push objects of any kind into this product through the openings in the case. Doing so may be dangerous and result in fire or a dangerous electric shock.

Apple and the Environment

Apple Computer, Inc., recognizes its responsibility to minimize the environmental impacts of its operations and products.

ENERGY STAR Compliance

As an ENERGY STAR® partner, Apple has determined that standard configurations of this product meet the ENERGY STAR guidelines for energy efficiency. The ENERGY STAR program is a partnership with office product equipment manufacturers to promote energy-efficiency. Reducing energy consumption of office products saves money and reduces pollution by eliminating wasted energy.

For More Information

Go to www.apple.com/about/environment.

Ergonomics

Keyboard

When you use the keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an angle that is slightly greater than a right angle, with your wrist and hand in roughly a straight line.

Use a light touch when typing and keep your hands and fingers relaxed. Avoid rolling your thumbs under your palms.

Change hand positions often to avoid fatigue. Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.

Chair

An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor. The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.

You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

Mouse

Position the mouse at the same height as your keyboard and within a comfortable reach.

Computer

Arrange the computer so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).

Position the computer to minimize glare and reflections on the screen from overhead lights and windows.

For More Information

Go to www.apple.com/about/ergonomics.

You can use your eMac to browse the World Wide Web, send email to friends and family, and chat in real time over the Internet.

When you first start up Mac OS X, the Setup Assistant helps you enter your Internet configuration information and sign up for an Internet service provider (ISP) if you don't already have one.

There are three kinds of Internet connections:

- **Dialup connection:** Your computer is plugged into a telephone wall jack using the included telephone cable (with models that include a modem).
- **High-speed DSL or cable modem connection:** Your computer is plugged into a special modem you get from an ISP using an Ethernet cable.
- **Local area network (LAN):** Your computer is plugged into a LAN using an Ethernet cable. This type of connection is usually used in the workplace.

To connect to the Internet:

- 1 Get an account with an ISP. If you do not have an ISP account, the Setup Assistant can help you get one. If you don't want to use the ISP suggested by the Setup Assistant, you can find an ISP in your phone directory. Look under "Internet access."

Note: If you want to use America Online as your ISP, skip the Internet setup part of the Setup Assistant. Then open the AOL Installer application (in Applications/Installers) and follow the onscreen instructions to set up AOL.

- 2 Get information from your ISP (if you don't want to use the ISP suggested by the Setup Assistant). You can write the information directly on the next few pages (see "Setup Assistant Worksheet" on page 62), then enter it in the Setup Assistant.
- 3 Plug the included phone cable into your computer's modem port and into a phone wall jack. Or, if you got a DSL or cable modem from your ISP, follow the instructions that came with the modem to connect it to your computer.
- 4 Turn on your computer and enter information in the Setup Assistant to configure your Internet connection.

Note: If you already started your computer and did not use the Setup Assistant to configure your Internet connection, choose Apple (🍏) > System Preferences and click Network. Then click “Assist me.” The Setup Assistant opens.

Setup Assistant Worksheet

You can write the information you get from your ISP on these pages, then enter it in the Setup Assistant.

Select how your computer connects to the Internet.

- ☐ Telephone Modem
- ☐ Cable Modem
- ☐ DSL Modem
- ☐ Local network (Ethernet)

To set up a telephone dialup connection, enter the following information:

User Name

Password

ISP Phone Number

Dialing prefix to obtain an outside line

To set up a DSL or cable modem or a LAN connection:

- 1 Choose your connection type. Ask your ISP for this information.

- ☐ Manually
- ☐ Manually using DHCP Router
- ☐ Using DHCP
- ☐ Using BootP
- ☐ PPP

2 Enter information from your ISP:

If you selected “Manually” or “Manually using DHCP Router,”* enter the following:

IP Address

Subnet Mask

Router Address

* If you selected “Manually using DHCP Router,” you don’t need to enter a subnet mask or router address.

If you selected “Using DHCP,” enter the following:

DHCP Client ID

Note: DHCP Client ID is optional and may not be required. Ask your ISP.

If you selected “PPP (for PPPoE connections),” enter the following:

Service Provider (optional)

PPPoE Service Name (optional)

Account Name

Password

The information below is optional. Ask your ISP if you need to enter it.

DNS Hosts (optional for DHCP & BootP)

Domain Name (optional)

Proxy Server (optional)

Troubleshooting Your Connection

Cable Modem, DSL, and LAN Internet Connections

If you can't connect to the Internet using your cable modem, DSL, or local area network (LAN), see the following steps.

Important: Instructions that refer to modems do not apply to LAN users. LAN users may have hubs, switches, routers, or connection pods that cable and DSL modem users do not. LAN users should contact their network administrator rather than an ISP.

Check the cables and power supplies

Make sure all modem cables are firmly plugged in, including the modem power cord, the cable from the modem to the computer, and the cable from the modem to the wall jack. Check the cables and power supplies to Ethernet hubs and routers.

Turn the modem on and off and reset the modem hardware

Turn off your DSL or cable modem for a few minutes, then turn it back on. Some ISPs recommend that you unplug the modem's power cord. If your modem has a reset button, you can press it either before or after you turn the power off and on.

PPPoE Connections

If you are unable to connect to your Internet service provider using PPPoE, first check the cables and power supplies, then turn the power off and on and reset the modem hardware.

Check System Preferences settings

Use System Preferences (in the Apple menu) to verify that you've selected PPPoE and to verify:

- Your account information
- Your TCP/IP settings
- That the primary network interface is set to Built-in Ethernet

Follow these steps:

- 1 Choose Apple () > System Preferences.
- 2 Click Network.
- 3 Choose Network Port Configurations from the Show pop-up menu.
- 4 Drag Built-in Ethernet to the top of the Port Configurations list.
- 5 Choose Built-in Ethernet from the Show pop-up menu.
- 6 Click PPPoE.
- 7 Select "Connect using PPPoE."
- 8 Check the Account Name field to be sure you have entered the correct information from your ISP.
- 9 Retype your password if you chose to save your password, to be sure it is correct.

- 10 Click the TCP/IP tab. Follow your ISP's instructions for setting up this pane.
- 11 Click Apply Now.

Network Connections

If you have two or more computers attempting to share an Internet connection, be sure that your network is set up properly. You need to know if your ISP provides only one IP address or if it provides multiple IP addresses.

If only one IP address is used, then you must have a router capable of sharing the connection, also known as network address translation (NAT) or "IP masquerading." For setup information, check the documentation provided with your router or ask the person who set up your network. The AirPort Base Station may be used for this routing function. For information on using the AirPort Base Station, check the onscreen help or visit the Apple AirPort website at www.apple.com/airport.

If you cannot resolve the issue using these steps, contact your ISP.

Communications Regulation Information

FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

Radio and Television Interference

This computer equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

Changes or modifications to this product not authorized by Apple Computer, Inc., could void the EMC compliance and negate your authority to operate the product.

This product was tested for EMC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Responsible party (contact for FCC matters only): Apple Computer, Inc. Product Compliance, 1 Infinite Loop M/S 26-A, Cupertino, CA 95014-2084, 408-974-2000.

Industry Canada Statement

Complies with the Canadian ICES-003 Class B specifications. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI Class B Statement

情報処理装置等電波障害自主規制について

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は家庭環境で使用されることを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取扱をしてください。

European Community

Complies with European Directives 72/23/EEC and 89/336/EEC.

Laser Information

Making adjustments or performing procedures other than those specified in your equipment's manual may result in hazardous radiation exposure.

Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM, DVD-ROM, or DVD-RAM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a

user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.



Class 1 label



Service warning label

Exposure to Radio Frequency Energy

The radiated output power of the optional AirPort Extreme Card is far below the FCC radio frequency exposure limits. Nevertheless, it is advised to use the wireless equipment in such a manner that the potential for human contact during normal operation is minimized.

Mouse Class 1 LED Information

The Apple optical mouse is a Class 1 LED product in accordance with IEC 60825-1 A1 A2. This product complies with the requirements of European Directives 72/23/EEC and 89/336/EEC.

It also complies with the Canadian ICES-003 Class B Specification.

Taiwan Statement

產品名稱：滑鼠

型號：M 5 7 6 9

進口商：美商蘋果電腦股份有限公司台灣分公司

Korea Statement

명 칭 (모델명): 마우스 (M5769)

인 증 번 호: E-C011-00-3670 (B)

인 증 자 상 호: 애플컴퓨터코리아(주)

제 조 년 월 일: 별도표기

제조사/제조국: Apple Computer Inc. / 중국



명 칭 (모델명): 마우스 (M5769)

인 증 번 호: E-C011-00-3000 (B)

인 증 자 상 호: 애플컴퓨터코리아(주)

제 조 년 월 일: 별도표기

제조사/제조국: Apple Computer Inc. / 말레이시아



High-Risk Activities Warning

This computer system is not intended for use in the operation of nuclear facilities, aircraft navigation or communications systems, or air traffic control machines, or for any other uses where the failure of the computer system could lead to death, personal injury or severe environmental damage.

ENERGY STAR® Compliance

As an ENERGY STAR® partner, Apple has determined that standard configurations of this product meet the ENERGY STAR® guidelines for energy efficiency. The ENERGY STAR® program is a partnership with office product equipment manufacturers to promote energy-efficiency. Reducing energy consumption of office products saves money and reduces pollution by eliminating wasted energy.

Telephone and Apple 56K Modem Information

Notify Your Telephone Company

Some telephone companies require that you notify the local business office when you hook up a modem to their lines.

Information You Need in the United States

The internal modem complies with Part 68 of the FCC rules. On the back of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, provide this information to your telephone company.

- *Ringer equivalence number (REN):* 0.68 The REN is useful to determine the quantity of devices you may connect to your telephone lines and still have all those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.
- *Telephone jack type:* USOC, RJ-11 An FCC-compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that complies with Part 68 rules. See the installation instructions for details.

Telephone Line Problems

If your telephone doesn't work, there may be a problem with your telephone line. Disconnect the modem to see if the problem goes away. If it doesn't, report the problem either to your local telephone company or to your company's telecommunications people.

If disconnecting the modem eliminates the problem, the modem itself may need service. See the service and support information that came with your Apple product for instructions on how to contact Apple or an Apple-authorized service provider for assistance.

If you do not disconnect your modem when it is adversely affecting the telephone line, the telephone company has the right to disconnect your service temporarily until you correct the problem. The telephone company will notify you as soon as possible. Also, you will be informed of your right to file a complaint with the FCC.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of your equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

The internal modem will not work with party lines, cannot be connected to a coin-operated telephone, and may not work with a private branch exchange (PBX).

Telephone Consumer Protection Act

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it was sent and an identification of the business or other entity, or individual sending the message and the telephone number of the sending machine of such business, entity, or individual.

Information You Need in Canada

The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to a user's satisfaction.

Before installing this equipment, make sure that you are permitted to connect to the facilities of the local telecommunications company. Be sure you use an acceptable method of connection to install the equipment. In some cases, you may extend the company's internal wiring for single-line individual service by means of a certified telephone extension cord. Be aware, however, that compliance with these conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any equipment malfunctions or repairs or alterations that you make to this equipment may cause the telecommunications company to request that you disconnect the equipment.

In Canada, contact Apple at: 7495 Birchmount Road, Markham, Ontario, L3R 5G2, 800-263-3394

Warning: Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or electrician.

- **Load number:** 0.2 The load number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to the telephone loop that is used by the device, to prevent overloading. The termination of a loop may consist of any combination of devices, subject only to the requirement that the sum of the load numbers of all devices does not exceed 100.
- **Telephone jack type:** CA-11

Informations Destinées aux Utilisateurs Canadiens

L'étiquette d'Industrie Canada identifie un matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder au réseau de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, le câblage appartenant à l'entreprise utilisé pour un service individuel à ligne unique peut être prolongé au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique).

L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations. De fait, les entreprises de télécommunication ne permettent pas que l'on raccorde un matériel aux prises d'abonnés, sauf dans les cas précis prévus par les tarifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par la fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil suite à des réparations ou à des modifications effectuées par l'utilisateur ou en raison d'un mauvais fonctionnement.

Veuillez contacter Apple pour des informations supplémentaires:

Apple Canada, Inc.

7495 Birchmount Road

Markham, Ontario

Canada L3R 5G2

Service à la clientèle d'Apple Canada: 800-263-3394

Pour sa propre protection, l'utilisateur doit s'assurer que tout les fils de mise à la terre du secteur, des lignes téléphoniques et les canalisations d'eau métalliques, s'il y en a, soient raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à une service d'inspection des installations électriques ou à un électricien, selon le cas.

- *Numéro de charge:* 0.2 L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui sera raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.
- *Type de prise téléphonique:* CA-11

Information You Need in the United Kingdom

This terminal equipment is intended for direct connection to the analogue Public Switched Telecommunications Network and is approved for use within the United Kingdom with the following features:

- Modem facility
- Autocalling facility
- Autoanswer facility
- DTMF signaling

Operation in the absence of proceed indication or upon detection of proceed indication

This product is in conformity with relevant regulatory standards following the provisions of European Council Directives 73/23/EEC (Low Voltage Directive) and 89/336/EEC amended by 92/31/EEC (EMC Directive).

Informationen für Deutschland

Diese Modem-Karte ist als Endeinrichtung vorgesehen und muss an ein TAE mit F-Kodierung angeschlossen werden. Diese Endeinrichtung ist in Konformität gemäß Niederspannungsrichtlinie 73 / 23 / EWG sowie EMC-Richtlinien 89 / 336 / EWG und 92 / 31 / EWG.

Informations pour la France

Ce matériel est conforme aux normes applicables de sécurité électrique d'après la directive 73 / 23 / CEE et aux normes applicables de comptabilité électromagnétique d'après la directive 89 / 336 / CEE, modifié par la directive 92 / 31 / CEE.

Information You Need in Australia

All telecommunications devices are required to be labelled as complying to the Australian telecommunications standards, ensuring the health and safety of the operator and the integrity of the Australian telecommunications network. To provide compliance with the Australian Communications Authority's technical standards, please ensure that the following AT commands are maintained:

- ATB0 (ITU/CCITT operation)
- AT&G0 (no guard tone)
- AT&P1 (33/66 pulse dial make/break ratio)
- ATSO = 0 or ATSO = 1 (no answer or answer greater than one ring)
- ATS6 = 95 (DTMF period between 70–255 ms)
- ATS11 = 95 (DTMF period between 70–255 ms)

For calls that are automatically generated, a total of three call attempts are allowed to a telephone number, with a minimum period between calls of 2 seconds. If the call does not connect after three attempts, 30 minutes must expire before automatic redialing may be initiated. Failure to set the modem (and any associated communications software) to the above settings may result in the modem being non-compliant with Australian telecommunications standards. Under these circumstances a user could be subject to significant penalties under the Telecommunications Act 1997.

This modem must be properly secured in order for you to use it. Telecommunications network voltages exist inside the computer and the telecommunications line connection must be removed before opening the computer.

Information You Need in New Zealand

This modem is fully approved to operate on the New Zealand telecommunications network under Telepermit number PTC 211/01/096. All telecommunications devices are required to hold a Telepermit and be labelled accordingly with the approved Telepermit number to comply with the

New Zealand telecommunications standards, ensuring the health and safety of the operator and the integrity of the New Zealand telecommunications network. To ensure compliance, all calls that are automatically generated should not make more than 10 call attempts to the same number within any 30 minute period with a minimum period between calls of 30 seconds. Failure to adhere to these standards may result in the modem being non-compliant with New Zealand Telecom standards. Under these circumstances a user could be subject to significant penalties.

Important: The grant of a Telepermit for any item of terminal equipment indicates that only Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

Index

A

- AirPort Extreme 13, 27
 - installing an AirPort Extreme Card 41
 - problems using 52
- application freeze 21
- applications 22
 - reinstalling applications 51
- audio line in port 15
- audio line out port 15

B

- battery
 - replacing the internal backup battery 45
- burning a CD-R or CD-RW disc 34
- burning a DVD 35

C

- cameras
 - digital 24
 - DV 26
- carrying your eMac 58
- CD
 - burning (recording) 34
- CD-ROM drive 13, 32
- changing
 - System Preferences 17
 - the desktop 17
- cleaning your computer 57
- Combo drive 13, 32
- connecting
 - a printer 18
 - headphones 19
 - to a network 29
 - to an external display or VGA projector 30
 - to a TV, video projector, or VCR 30

D

- date and time settings lost 53
- dialup connection 61
- digital video camera 26
- display
 - adjusting 8

- cleaning 57
- downloading software 19
- DVD
 - burning (recording) 35
- DVD-ROM/CD-RW Combo drive 13, 32
- DVD-Video, playing 34

E

- ejecting a disc 52
- eject key 13
- eMac
 - front view 12
 - side view 14
- environment 59
- ergonomics 60
- Ethernet 29
 - port 15
- external hard disks 26

F

- FireWire
 - connecting devices 26
 - ports 15
- FireWire Target Disk Mode 27
- floppy disk drives 24
- Force Quit 21
- freezing up 50
- frozen application 21

G

- game pads 24

H

- hard disks 26
- headphone/audio line out port 15

I

- iDVD 35
- inserting a CD or DVD 32
- Internet
 - connecting to 8
 - problems connecting 52, 64

- settings 62
- Internet service provider 61
- iPod 26
- ISP 61

J

- joysticks 24

K

- keyboard 7, 24
 - controls 36
 - ergonomics 60

M

- Mac Help 22
- Mac OS 9 16
- Mac OS X 16
 - reinstalling 51
- memory 15
 - installing additional memory 37
 - seeing how much memory your computer has 40
- microphone 13
- modem
 - cable 29, 61
 - DSL 29, 61
 - port 15
- monitoring
 - a printer 18
- mouse 7, 13
 - ergonomics 60

N

- network connections 65

O

- optical disc drive 13, 32

P

- power button 15
- power indicator light 13
- power socket 15
- Print & Fax preferences 18
- printing 18
 - setup 18
- problems
 - AirPort Extreme 52
 - computer freezes during startup 50
 - computer won't respond 50
 - computer won't start up 50
 - connecting to Internet 64

- date and time settings lost 53
- ejecting a disc 52
- Internet connection 52
- network connections 65
- problem with an application 52

R

- restoring your computer's software 51

S

- safety 58
- scanners 24, 26
- security slot 15
 - securing your computer 36
- serial number 53
- setting up a printer 18
- setting up your computer 6
- shutting down 9
- sleep 9
- Software Update 19
- speakers 13
- specifications 55
- stopping
 - an application 21
- SuperDrive 13, 32
- System Preferences 17
- System Profiler 55

T

- transferring
 - files or documents 20
- troubleshooting 49

U

- updating software 19
- USB 7, 24
 - connecting devices 24
 - hubs 25
 - ports 13, 15
 - using multiple devices at once 25

V

- video out port 15, 30
- volume controls 13

W

- wireless networking and Internet
 - installing an AirPort Extreme Card 41
- wireless networking and Internet access 27
- working with a printer 18

