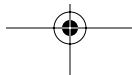
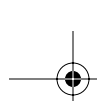


Part 1

The Mac OS X Basics

In this section, you will learn how to:

- ◆ Compare Mac OS X to other Mac versions
- ◆ Work with files and folders in the Finder
- ◆ Personalize your Mac
- ◆ Get help and search for items
- ◆ Print and fax files
- ◆ Set permissions and add users



Chapter 1

What Is Mac OS X and What's New?

AN OPERATING SYSTEM (OS) is a set of computer instructions that enables the computer to interact with the user and any peripheral devices such as printers, disk drives, and monitors. More to the point, the OS is what gives your computer a great deal of its “personality.” The OS determines the look of windows and icons and other controls on your screen. It’s used for managing your files and applications and documents. It’s the underlying technology for all sorts of tasks, from printing to playing back on-screen video to connecting to other computers over a wireless network or via the Internet.

Apple’s flagship OS is Mac OS X, now in its fourth major iteration, Mac OS X 10.3 “Panther.” Mac OS X is Apple’s twenty-first-century operating system—both metaphorically and in terms of its timeline—bringing a number of interesting tools and capabilities to Mac users while taking advantage of the continued hardware advances that Apple has made with its various models of Macintosh computers.

In this chapter, you’ll learn how Mac OS X came to be, what its outstanding features are, which version of the Macintosh operating system is best for you, and how you can use your existing Mac applications with OS X. You’ll also learn about the changes that have been made since Mac OS X was first introduced, particularly those that have occurred at the three milestone releases since Mac OS X was brought to market: Mac OS X version 10.1, Mac OS X version 10.2, and Mac OS X version 10.3.

In this chapter:

- ◆ What Is Mac OS X?
- ◆ Mac OS X Features
- ◆ Which OS for Which User?
- ◆ Mac OS X and Applications
- ◆ Classic Compatibility
- ◆ What Changed in Mac OS X Version 10.1?
- ◆ What Changed in Mac OS X Version 10.2?
- ◆ What’s New in Mac OS X Version 10.3?

What Is Mac OS X?

For years, the Mac OS (or the Macintosh “system” software, as it used to be called) has been considered the cutting edge of interface design and user friendliness.

The Mac OS, as innovative as it was when introduced in 1984, has long been in need of a major overhaul in order to make it fully “modern”—it should be as stable and capable as today’s computer scientists and programmers can make it. Although the Mac OS has been updated year after year, those updates were hampered somewhat by the original Mac OS design—a design that didn’t foresee every innovation in OS thinking. Since those innovations tended to be quick in coming—what seems impossible today becomes necessary within months, sometimes—the Mac OS in the late 1990s was consistently restricted by limitations that meant the Mac OS wasn’t taking advantage of the latest advances in computer and software design.

To solve this problem, Apple opted to essentially do away with the foundation of the existing Mac OS and move on to different technology. While some of the cues, interface elements, and tools of the new Mac OS X are similar to what is known now as the “Classic” Mac OS, many of those features have changed dramatically. And what has changed even more is the technological foundation of the Mac OS.

Mac OS X is based on much of the technology that Apple acquired when it bought NeXT Software, a company launched and run by Steve Jobs from the mid-1980s until 1997. NeXT Software sold an operating system called OpenStep, based on its earlier NeXTStep, which in turn was based on FreeBSD, a Unix-like, open-source operating system. OpenStep was a very modern operating system, featuring many of the advantages that Apple wanted the Mac OS to sport.

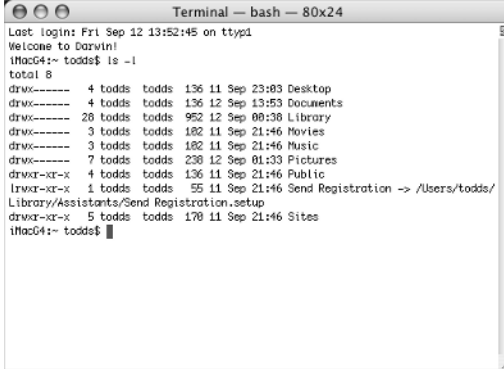
There was still a lot of work to do, though. OpenStep was designed to run on Intel-compatible chips and ran applications that weren’t very Mac-like in their interface design. Although OpenStep offered a very attractive graphical interface for applications, it also had a dark side: a Unix command line even more intimidating than the arcane DOS commands that run underneath Microsoft Windows (see Figure 1.1).

Porting the OpenStep underpinnings to run on Macintosh hardware was a challenge for Apple. On top of that, Apple spent even more time making the Mac OS X interface similar to the existing Classic Mac interface, while updating and improving it. Throughout this process, Mac OS X was engineered to support most existing Mac OS 9–based applications. Finally, it needed to be better than the previous operating system both in terms of its underlying technology and the features that it offered. That has been Apple’s goal with Mac OS X since it was introduced as version 10.0—improving it and making it truly an indispensable upgrade in the computing experience.

NOTE *It’s been interesting to watch Mac OS X gain respect in the computing community, particularly among developers and—well, computer geeks. It turns out the Mac OS X offers something that some people have wanted for a long time—a Unix-based operating system that offers a wide array of commercial applications and a user-friendly interface. It has surprised some industry watchers that this “buzzword-compliant” OS has been supplied by Apple under the guise of the Macintosh, which has historically been considered something of a “toy” computer by outsiders. (Its popularity in high-end creative and corporate tasks belies the notion that the Macintosh has ever been a toy.) Mac OS X offers nearly all the advantages of an open-source Unix-based operating system, with most of the advantages of the Macintosh’s existing base of quality applications, developer support, and ease-of-use advantages.*

FIGURE 1.1

The Unix command line, shown in Mac OS X's Terminal window



```

Last login: Fri Sep 12 13:52:45 on ttys1
Welcome to Darwin!
todd$ ls -l
total 8
drwx----- 4 todd todd 136 11 Sep 23:03 Desktop
drwx----- 4 todd todd 136 12 Sep 13:53 Documents
drwx----- 28 todd todd 952 12 Sep 00:38 Library
drwx----- 3 todd todd 182 11 Sep 21:46 Movies
drwx----- 3 todd todd 182 11 Sep 21:46 Music
drwx----- 7 todd todd 238 12 Sep 01:33 Pictures
drwx----- 4 todd todd 136 11 Sep 21:46 Public
drwx----- 1 todd todd 55 11 Sep 21:46 Send Registration -> /Users/todd/Library/Assistants/Send Registration.setup
drwx----- 5 todd todd 170 11 Sep 21:46 Sites
todd$

```

Mac OS X Features

Mac OS X is designed to address performance shortcomings in the Classic Mac OS with the following features: preemptive multitasking, memory protection, dynamic RAM allocation, and a microkernel-based design. With these four fundamental changes, Mac OS X is a more modern, less error-prone operating system than its predecessors. In addition, Mac OS X improves on two technologies that have a limited implementation in Mac OS 9: multithreading and symmetrical processing.

Perhaps more noticeably, Mac OS X also offers a new interface that builds on many of the strengths of Mac OS 9 while incorporating other theories and elements from OpenStep, Linux, and even Microsoft Windows. The result is a visually pleasing interface—called Aqua—that makes it easier to navigate a network, work on the Internet, and manage multiple open applications and documents.

What this means for the user is that Mac OS X is a user-friendly operating system that's also very powerful, taking full advantage of modern Macintosh hardware. Mac OS X is useful for a wide variety of tasks, including professional graphics and layout, 3D design and video editing, file sharing, and specialized Internet tasks such as serving QuickTime streaming media. Mac OS X is also perfectly well suited to the home or small office user, assuming that the user's consumer-level hardware can handle Mac OS X's requirements. Mac OS X is a consumer OS as well as a business one—it ships as the default operating system on all new Apple Macintosh computers, including the consumer-focused iMac, eMac, and iBook offerings. It's both a heavy-duty operating system, more capable and stable than the Classic Mac OS, and at the same time a "friendly" OS that offers typical users a pleasing experience for daily computing.

That's what Mac OS X is capable of. Let's take a look at some behind-the-scenes features that make Mac OS X what it is and enable it to take on heavy-duty computing tasks.

NOTE Throughout this book we'll refer to "Mac OS 9," the "Classic Mac OS" and, occasionally, a specific version, such as Mac OS 9.2.2. While it may seem confusing, there's good reason to do this. We refer to "Mac OS 9" when we mean it generically but don't intend to include earlier versions (such as Mac OS 8, 8.5, and so on) in the discussion. For instance, Mac OS 9 introduced certain changes to networking that are similar to some offerings in Mac OS X but weren't present in some earlier Mac OS versions. When we mean to include the entire gamut of earlier Mac OS versions, we'll refer to the "Classic Mac OS," as in "unlike the Classic Mac OS, Mac OS X cannot work with serial-based printers." Finally, we'll refer specifically to a Mac OS 9 version number when discussing a particular compatibility issue.

Preemptive Multitasking

Although the Classic Mac OS had basic *cooperative* multitasking capabilities (which allow more than one application to be running at a time) since Mac System 7 in the early 1990s, the Classic Mac OS was never updated to embrace a fully modern *preemptive* multitasking approach that Mac OS X offers.

In cooperative multitasking, it's up to each individual application to determine how much of the processor's attention it deserves and how much of that attention it's willing to give over to other applications. This system works well when all applications behave. A poorly written application or one that's experiencing errors can get in the way of this multitasking system, making the entire OS less reliable or causing it to hang or freeze, thus forcing you to restart the Mac and possibly lose unsaved data.

With preemptive multitasking, Mac OS X is responsible for telling applications how much time they can get from the processor and how much time other applications get. Working as a traffic cop, Mac OS X can keep an errant application from affecting others that are running at the same time. In practical terms, this limits the number of freezes or endless-loop crashes that you'll have in Mac OS X vs. the Classic Mac OS.

Memory Protection

One of the major reasons for an application crash is the accidental processing of garbage input—data that the application isn't expecting and doesn't know how to deal with. With any operating system, each launched application generally is assigned a certain amount of RAM (system memory); that application then can decide how to use the RAM, including where to put its data and instructions. If one application were to put bad data into a RAM location that belongs to another application, the second application might experience errors or crashes when it tries to read that spurious data.

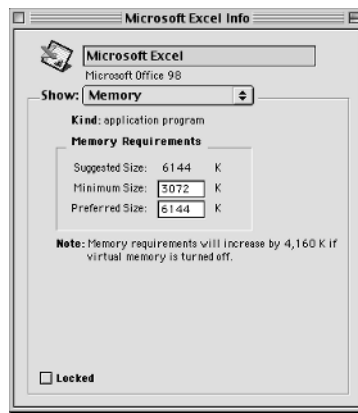
Memory protection in Mac OS X makes it impossible for one application to overwrite another's memory locations. This isn't exactly a common occurrence in Mac OS 9, but it's possible, resulting in a less stable system. With memory protection, Mac OS X can keep one crashing application from bringing down other applications, because Mac OS X doesn't allow one application to write to another's memory space. The upshot is a fairly dramatic decrease in the number of application crashes in Mac OS X vs. the Classic Mac OS, as well as the virtual elimination of a common problem in earlier Mac OS versions in which one application can cause another to crash. Even if an application encounters an error in Mac OS X, you can almost always continue computing in other applications without fear that they, too, will soon crash.

Dynamic RAM Allocation

Users of previous Mac OS versions know that each application gets a fixed allocation of RAM when the application is started. It's a range that's determined by a setting in the application's Get Info dialog box. (You can see this dialog box in Mac OS 9 by selecting an application icon and choosing File ➤ Get Info from the Finder's menu, as shown in Figure 1.2.) This fixed RAM allocation system, though, is wasteful because RAM assigned to an open application—even if that RAM isn't being used—is reserved and can't be used by another application.

FIGURE 1.2

The Memory panel of the Get Info dialog box (for Microsoft Excel) in Mac OS 9



Unfortunately, many Classic Mac crashes and problems arise from having the Get Info memory settings too low; even though the Classic Mac OS may have more RAM at its disposal, it will give an application only as much RAM as it requests when the application is launched. If the Get Info setting is too low and the application runs out of memory, there isn't much that can be done by the operating system. Instead, the user has to quit the application, open the Get Info dialog box, and manually increase the memory allocation. Upon relaunch, the application has access to more RAM.

Because of its dynamic RAM-allocation approach, Mac OS X is in charge of dealing with RAM requests from applications. When you launch an application, it will ask for as much RAM as it needs. If that RAM is available, Mac OS X will hand it over. If the application needs more because of additional documents or temporary tasks or for other reasons, it can ask for more, and Mac OS X can hand some over. If the application isn't using all that it has been allocated, it can free up that RAM on-the-fly, and the Mac OS can assign the RAM to another application that needs it.

This technology results in more stability for the system and less hassle for the user than was true in the Classic Mac OS: with RAM allocation out of your hands, you can simply launch applications and let Mac OS X figure out how best to allocate memory for those applications.

Multithreading

Another advanced OS feature is *multithreading*, which allows individual applications to create more than one *process*. For instance, a word processing application might create a thread that's designed to print one document while another thread enables the user to edit a second document. In this way, a multithreaded

application can be more responsive to user input, with multiple threads within that application accomplishing tasks simultaneously.

Although both Mac OS 9 and Mac OS X offer multithreading, Mac OS X is designed from the ground up to support it, while multithreading support in Mac OS 9 is grafted onto the OS. Not all applications written for Mac OS 9 are multithreaded, for instance, because the approach just isn't as pervasive. Applications written directly for Mac OS X use multithreading as a matter of course.

As Mac OS X has matured, more and more of its included applications and system-level components have been rewritten for multithreading, including such vital applications as the Finder (the main file management utility). This, along with other improvements and optimizations, has helped Mac OS X versions become better performers over time, even on the same equipment.

Symmetrical Multiprocessing

Mac OS X supports Macintosh computers that feature more than one processor (called *multiprocessor systems*). Although Macintosh systems have been capable of dealing with multiple processors in the past, it has always been on an application-by-application basis. (For instance, Adobe Photoshop, a favorite of Macintosh power users, offers a plug-in that supports multiprocessing in the Classic Mac OS.) With Mac OS X, the support is built right into the operating system, meaning all tasks and processes can take advantage of multiple processors.

Because the OS has control over managing the processors in a multiprocessor Mac, different tasks and threads can be assigned to different processors. This makes the machine more capable and more responsive overall because more processors are at work, and therefore things happen more efficiently. Symmetrical multiprocessing takes this concept even further: you can assign processes and threads *within one application* to different processors, which makes individual applications more responsive as well.

Although multiprocessing hasn't been a hallmark of Apple's hardware designs in past decades, that changed somewhat in the summer of 2000 with the introduction of dual-processor Power Macintosh G4 models. Although the dual processors are only somewhat useful when running Mac OS 9 (as mentioned, individual applications such as Photoshop must specifically support multiprocessing), Mac OS X takes full advantage of multiple processors automatically. The trend toward multiprocessor Power Macintosh models is guaranteed to continue, with more and more of Apple's most powerful desktop computers sporting multiple processors now and in the future.

Microkernel Architecture

At the heart of all of Mac OS X's improvements is a *microkernel*—a small mini-OS that works between the Mac OS interface and the physical Macintosh hardware. This microkernel provides a level of abstraction between the hardware and software; in this way, most of Mac OS X isn't written for a particular piece of hardware, as Mac OS 9 is. That makes the OS more stable and reliable. It also makes it more *portable*, leaving open the possibility that Mac OS X (and later versions) could run on processors other than Motorola's (or IBM's) PowerPC processor, which is the processor type currently shipped in every Macintosh.

The microkernel, called Mach 3.0, is also the traffic cop that manages many of the other features already mentioned: preemptive multitasking, multithreading, and multiprocessing.

WHAT IS MAC OS X SERVER?

By now, you're probably clear on what Mac OS X is, but you also may have heard of Mac OS X Server and wondered about the differences. Actually, they're reasonably similar—Mac OS X Server is the same operating system with more bundled applications that focus on managing a network of computers and/or an Internet presence. Mac OS X Server is more expensive, too, because it's designed to be a hub for the activity generated by a workgroup of Mac OS X and Mac OS 9 (and Mac OS 8) computers. One Macintosh running Mac OS X Server can serve files, manage the printing, and even serve content to Internet users, all from the same machine. Mac OS X Server can be bought separately and run on most any modern Mac hardware, although it's best suited to the Power Mac G4 Server or Apple's high-end, rack-mounted server computer, called Xserve (www.apple.com/xserve/).

Mac OS X Server is essentially a package of server applications and utilities that run on top of Mac OS X. The basic underpinnings—the Mach kernel, the “modern” OS capabilities, and many of the interface elements—are the same for both Mac OS X and Mac OS X Server. Although Mac OS X includes some server applications and utilities in its own right, Mac OS X Server extends those capabilities with high-end additions, including these:

QuickTime Streaming Server and Broadcaster QuickTime 4 and higher versions support streaming media—movies and audio clips that play as they arrive, instead of waiting for an entire download before playing. The QuickTime Streaming Server software built into Mac OS X Server enables you to webcast such streaming media, making them available to many people at once. QuickTime Broadcaster works with Streaming Server to enable you to broadcast live events over the Web.

WebObjects and Internet Serving This is another technology brought to Apple from NeXT Software. WebObjects is a network (usually Internet) application development and serving environment, making it easier to create full-fledged e-commerce solutions such as online stores. (For instance, Apple's online store is built and served using WebObjects.) Mac OS X Server includes Apache and SSL security, plus additional servers such as an e-mail server and support for PHP and MySQL server applications. Mac OS X Server also includes an e-mail server, FTP server, QuickTime Streaming Server, and others.

NetBoot and NetInstall NetBoot allows Mac OS X Server to boot client machines—iMacs, Power Macs, PowerBooks, and others—directly from a server instead of from that computer's internal hard disk. This feature makes it easier to standardize computers and control them from a central location. It also makes it easier for your personal files to follow you around, because you can boot a client computer with your password and then gain access to all your files and custom settings. NetInstall makes it possible for you to install applications on multiple networked Mac clients at the same time.

File and Printer Sharing Mac OS X Server can offer file sharing between the server and Macs using typical AppleShare protocols, over either AppleTalk or TCP/IP-based networks. Like AppleShare IP servers, a Mac OS X Server computer can store files and transfer them from the main server to workstations that are logged into the server. Mac OS X Server also can serve files to Windows clients and manage network print queues.

Other Innovations

Besides the basic system advances that Mac OS X offers over earlier Mac OS versions, it also sports a number of new features. These range from advantages brought on by the Unix underpinnings to

new features that have been written specifically for Mac OS X. Let's take a look at a quick list, although we'll be exploring these features throughout the book:

New Finder and Interface Mac OS X sports a new Finder (and, in Mac OS X 10.3, the Finder is updated significantly), based on the browser interface that was used in NeXT Software's operating systems, including OpenStep. The Mac OS X Finder offers a unique way to browse not only files on your Mac's hard disk but also those that exist over a network—whether it's a local network in your organization or disks and volumes that are available to you via the Internet. The Finder works hand-in-hand with a revamped interface (called *Aqua* by Apple) that offers a simpler, more animated look and feel. The OS also features a new Dock for managing applications and open documents, as well as the System Preferences application, menu behavior, menu bar icons, and many other changes.

New Graphics Architecture Called *Quartz*, the graphics architecture is based in part on Adobe's Portable Document Format (PDF). PDF technology enables computers to create documents that can be transmitted to other users and displayed or printed correctly, even if those users don't have the same printer, fonts, or other features as the computer where the document was created. Basing the underlying graphics system on this technology makes it easier for Mac OS X applications to share documents among multiple computers. Likewise, the graphics architecture builds in some sophisticated visual effects such as the transparency and text smoothing that's used throughout the Mac OS X interface. In Mac OS X 10.2 and higher, Apple's *Quartz Extreme* technology allows the OS to take advantage of the advanced graphics processors that are installed in modern Macs, enabling the OS's elements to display more quickly and with more sophisticated graphical effects.

Integrated E-Mail Client Mac OS X offers Mail, an e-mail client included with the Mac OS that offers full support for various types of email accounts, including .Mac accounts using Apple's subscription services, as well as standard POP accounts available from your ISP or IMAP account that you might use in an organizational setting. It also supports system-level technologies, such as adding PDF graphics to e-mail messages and searching your e-mail with Mac OS X's built-in search engine.

QuickTime Apple's multimedia architecture, QuickTime, is a fundamental part of the operating system, making its capabilities available to any application that wants to use them. That gives applications the capability to work easily with images, video, and audio, while translating between file formats and generally working some impressive multimedia magic. Even the Finder, Dock, and other parts of the Mac OS can quickly preview images and multimedia presentations to help you manage your "digital hub" tasks, such as working with photos, editing video, and managing music files.

NOTE "Digital hub" is Apple's name for its marketing and product development strategy to encourage the use of Macintosh computers as the hub for a variety of digital lifestyle devices such as digital cameras and camcorders, MP3 music players, personal digital assistants, and so on.

Multiuser Support Mac OS X requires a login name and password, enabling multiple users each to access a unique desktop, store personal documents and applications, and manage their own Internet connections. Log in with your username, and all your personal preferences are preserved, while your documents and personal applications are secure from other users.

Advanced Networking Features Because it's based on TCP/IP, the networking protocol used over the Internet, Mac OS X features a number of networking features, including the capability to network and share files (in various ways) over the Internet. One of these is Apple's AirPort technology, which enables wireless connections between your Macs.

The Classic Environment With support for Classic Macintosh applications, Mac OS X is able to run almost any application that's compatible with Mac OS 9. Although these applications aren't given access to full Mac OS X features (such as preemptive multitasking and protected memory), they can be run at the same time that other Mac OS X applications run. This enables you to use older applications that don't offer Mac OS X upgrades or that you can't afford to upgrade for one reason or another. The Classic environment has proven to be very useful for users who are transitioning to Mac OS X but haven't yet replaced all their older applications. (Also, because Mac OS X is very new, it's taken a while for all vendors to offer *native* Mac OS X versions of their popular applications.) As time wears on, the Classic environment will be less and less important. For now, however, it can still be critical, at least under some circumstances.

Which OS for Which User?

The three Mac OS versions we've discussed—Mac OS 9, Mac OS X, and Mac OS X Server—all fit different niches. In some cases, you may need to use all three, especially if you're a system administrator. In others, you may already be committed to using one or another. Although we'd prefer not to encourage you to return your copy of Mac OS X if you're already excited about it, make sure this OS is right for both you and your Mac before you move forward with it.

NOTE *If your Mac came preinstalled with Mac OS X (either from Apple or from your system administrator or consultant), you can skip the following discussion. Instructions for installing Mac OS X can be found in Appendix A, "Getting Installed and Set Up."*

If you're looking for an operating system to work as a server for a good-sized workgroup or as a high-end Internet server, Mac OS X Server is easily your best bet. It's the most flexible for a server operating system, featuring the capability to serve content to Mac OS 9 (and earlier) machines, Mac OS X, and even Unix and other operating systems. It acts as a web server, QuickTime server, and AppleShare server—it's multifaceted and very capable, but it requires some know-how and training. For a small network, you might be able to get away with a dedicated computer that runs Mac OS X and simple file sharing (see Chapter 19, "Building a Network and Sharing Files"), but that would be a network that supports very few computers. For a larger network (I'd say starting at five machines and certainly once your network has 10 or more), Mac OS X Server is definitely a good purchase.

If you're looking for an operating system for a workstation such as a computer you're going to use for everyday tasks, you're probably more likely to consider Mac OS X. With the advent of Mac OS X 10.3, most Mac users will likely want to switch to Mac OS X if they haven't already. Of course, there are exceptions, and you may have a good reason to stick with the Classic Mac OS.

First, if your Macintosh can't support Mac OS X, you'll need to run Mac OS 9 (or an earlier version of the Mac OS). Mac OS X requires a PowerPC G3 processor running at 233MHz, with a recommended minimum of 128MB of RAM and at least 1.5GB of hard-disk space. If you have an iMac, an

iBook, a Power Macintosh G3 (blue and white) or G4, or a PowerPC or G4-based PowerBook (with the exception of the first PowerBook G3 “FireWire” model), you can run Mac OS X 10.3. However, Mac OS X really shines with 256MB or more of RAM installed; the slower your G3 processor and the less RAM you have, the slower Mac OS X will seem. In general, Mac OS 9 feels “snappier” than Mac OS X on older hardware, which may be a consideration if you don’t plan to upgrade your current Mac or you want to wait on Mac OS X.

Mac OS X doesn’t officially support earlier Macintosh and “clone” machines that have been upgraded to G3 or G4 speeds using an upgrade card or some other processor upgrade, so you’ll want to use Mac OS 9 if you have such a machine. In fact, no Apple Macintosh or Mac OS clone machines built before the Power Macintosh G3 are officially compatible with Mac OS X, so you’ll want to stick with Mac OS 9 in those cases.

NOTE *Some manufacturers of upgrade cards for older Macs claim compatibility with Mac OS X, especially PowerPC G3 and G4 upgrades that work in Power Macintosh 7300, 7500, 7600, 8500, 9600, and similar models. (These models support a daughtercard upgrade that is often compatible with Mac OS X.) Upgrades for Macs that started as Power Macintosh G3 or G4 models also are generally compatible. Check with the manufacturer of your upgrade to see if it claims compatibility. Remember, though, that Apple does not officially support upgraded configurations with technical support, even if the upgrade proves to be compatible. You’ll probably need to rely on the third-party upgrade company to update driver software or provide answers to your tech-support questions.*

If you have a newer Power Macintosh, iMac, iBook, or PowerBook, you still might find yourself able to make a choice between Mac OS 9 and Mac OS X. Which should you choose? For the most part, it’s a question of why *not* use Mac OS X. Here are some reasons:

- ◆ *You have expensive applications that you don’t want to update.* In order to take full advantage of Mac OS X, you need to update your Classic applications. If you have older versions of Adobe Photoshop, Illustrator, InDesign, QuarkXPress or PageMaker or others, such as Macromedia Freehand, web editors, video editing applications, or high-end sound recording programs, you might want to stick with Mac OS 9. While a majority of professional level must-have software is now Mac OS X compatible, it still costs money to upgrade to those new versions.
- ◆ *You have peripheral hardware that isn’t supported in Mac OS X.* Some scanners, input devices, connectors, and other specialized peripherals don’t yet have Mac OS X drivers—and may never. If that’s the case, you may need to stick with Mac OS 9 until those drivers appear—or you may need to get new or different hardware.
- ◆ *You have a first-generation iMac, Power Macintosh G3, or PowerBook G3 and no desire to upgrade it.* The first generation of Macs that run Mac OS X are the slowest, and they tend to have the least RAM and the smallest hard disks. Installing Mac OS X might be more of a burden on these machines, particularly if you use them lightly and are generally pleased with Mac OS 9. If you opt to install Mac OS X, it’s advisable to install as much RAM as you can afford—but if you’d rather save your money for a new computer (or for other reasons), you can put off the Mac OS X upgrade, too.
- ◆ *You have many Classic Mac OS games that are very important to you.* Classic games don’t always run as well in the Classic compatibility environment, so if that’s one of your main uses for a Mac, you may be disappointed with Mac OS X. Still, many new games are Mac OS X compatible, and as long as your Mac was built before 2003, you can always boot into Mac OS 9 to play Classic games, even if you use Mac OS X for daily computing.

Aside from those reasons, Mac OS X (particularly with version 10.3) has become the default choice for nearly all Macintosh users who have models that support it. Most of the important applications are now available for Mac OS X, the operating system itself is gaining some maturity, and users are seeing the benefits of using the new operating system—particularly the flexibility for networking, Internet serving and utilization, graphics work, and other highly creative pursuits. In fact, starting in early 2003, Apple's hardware no longer boots into Mac OS 9, meaning that you can literally only start up into and use Mac OS X (the Classic environment will still be available). If you're using a new Mac manufactured in 2003 or later (with a few exceptions), you're stuck with running Mac OS X. Otherwise, if your Macintosh meets the basic requirements, and you're interested in using the latest applications while improving the stability and overall productivity of your computer, it's probably the right time to move to Mac OS X.

NOTE Looking for listings of native Mac OS X applications to see if the jump makes sense? Apple maintains lists of applications that work well on its Mac OS X website (www.apple.com/macosex/). VersionTracker (www.versiontracker.com) is a great source for staying on top of both shareware and commercially released software. Also, Appendix B discusses moving from the Classic Mac OS to Mac OS X, offering tips and suggestions for making the plunge.

Mac OS X and Applications

You'll encounter five different types of applications that Mac OS X can run. Which you choose can affect the performance of not only that one application but also your entire Mac OS X system. You need to know the types:

Mac OS X Applications These applications are written specifically for the “Cocoa” native portion of Mac OS X. They require no special emulation, and they run directly on top of Mac OS X without modification. Best of all, they take full advantage of multitasking, multithreading, multi-processor support, and memory protection. An example of these applications is the Mail application included with Mac OS X; it was written from scratch to support Mac OS X.

Mac OS “Carbon” Applications These applications also are native to Mac OS X, and they can pretty much take full advantage of the modern OS underpinnings. They may be a little more limited in their full performance potential because the Carbon libraries are a stopgap measure for Mac OS 9 developers who want their applications to run effectively in both Mac OS 9 and Mac OS X. That said, there's nothing wrong with running a Carbon application every day, all day, if you like. AppleWorks 6.x—an “office” application included with many consumer Mac models—is an example of a “carbonized” application.

Mac OS Classic Applications These applications are designed to be run only in Mac OS 9. Thanks to Mac OS X's capability to run a Mac OS 9 environment as an individual process, these applications also can be run in your workspace. This is fine on occasion, but it's not recommended that you rely on Classic applications for all your computing needs. If you have a lot of Classic applications, you should consider sticking with Mac OS 9, at least until you've upgraded to Carbon applications. (See the next section of this chapter for more on the Classic environment.)

Java Applications These are applications designed to run on any computer that supports the Java programming language. Mac OS X features an impressive Java interpreter. In general, it's okay to run these applications, although they might not have full access to all the features of the Mac OS. These applications, because of their one-size-fits-all approach, tend to be more limited in both capabilities and scope, but they are usually useful smaller applications that can perform their designed tasks well. (See Chapter 21, "Mac OS X and Other Platforms," for more on Java applications.)

Command-Line Applications Although its use is utterly discouraged by Apple, the fact remains that Mac OS X has a command-line interface (accessed most often through the Terminal application), and it's relatively easy to write and port applications that run from the command line without a standard Mac graphical interface. If you encounter such an application and wish to run it, you'll definitely need Mac OS X because it's the only Mac OS that supports such applications. (The Terminal and command-line applications will be discussed specifically in Chapter 23, Terminal and the Command Line," and Chapter 24, "Darwin Applications and Command-Line Magic.")

Classic Compatibility

Fortunately, moving to Mac OS X doesn't mean you have to leave all your Mac OS 9 applications behind. That's because Mac OS X can run a process that emulates the Mac OS 9 environment, enabling you to use applications that run specifically on Mac OS 9 (see Figure 1.3). Whenever you launch a Classic application (one that isn't designed to run natively in Mac OS X), the operating system will attempt to launch it in the Classic compatibility environment and will launch the environment itself if it isn't already running. If the application works in the Classic environment, you'll be able to use it side-by-side with other Mac OS X applications. The menu bar and windows will look slightly different, but that's the only obvious difference.

FIGURE 1.3
Mac OS 9 (the Classic environment) starting up on a Mac OS X system



There are less obvious differences, however. The support for Mac OS 9 applications in Mac OS X has its limitations because Mac OS X runs the entire Mac OS 9 Classic environment as a single process, as though it were just another Mac OS X application. In other words, individual Mac OS 9 applications are susceptible to crashes, freezes, and so on, thanks to the lack of memory protection and preemptive multitasking *within* the Classic environment.

Other Mac OS X applications continue to enjoy those features, so if the Classic environment does crash, it shouldn't affect the rest of the Mac OS X system. Instead, you'll be able to kill the Classic process and start over again if you like. However, that's the reason you shouldn't rely on multiple Mac OS 9 applications on a day-to-day basis if you're going to run Mac OS X. Aside from the potential for crashes, the Classic environment can be taxing on a Mac OS X system, causing sluggishness.

How about other machines in the office? Mac OS X and Mac OS 9 can work together in harmony on different machines. Because both support Apple File Services file sharing and AppleTalk printer sharing, Mac OS X and Mac OS 9 can coexist nicely on the same network. Even if you have older Macintosh computers sharing a network with your Mac OS X machine, you should have no problem using them together.

What Changed in Mac OS X Version 10.1?

Released in the fall of 2001, Mac OS X version 10.1 was considered by many (the suggestion was made even by Steve Jobs, CEO of Apple, Inc.) to be the first truly full-featured release of Mac OS X. This was the one that was deemed ready for prime time, with fewer hang-ups and problems than it had innovations and improvements. External devices worked better, new applications flourished, user interface improvements were made, and so on.

While it would be a mistake, for instance, to run Mac OS X 10.0 without upgrading to Mac OS X version 10.1, it wouldn't be quite as absurd to continue to use Mac OS X 10.1 instead of upgrading to Mac OS X version 10.2 or 10.3. That's because the latest version—while it fixes some bugs and improves some existing features—is more about adding new features and capabilities. Mac OS X version 10.1 (which has been incremented to version 10.1.5 via free bug-fix updates from Apple) is a complete operating system and could be used for the foreseeable future if you were to skip the upgrade to version 10.3. (We wouldn't recommend doing that, but version 10.3 is costly, and some owners of 10.1 may opt to stick it out for a while.)

Perhaps the key improvement that Mac OS X version 10.1 offered over its predecessors was performance. While the earlier versions of Mac OS X were slow on anything but the latest G3 and G4 processors, Mac OS X version 10.1 worked well even on midrange iMacs and PowerBooks. In particular, applications tended to launch much more quickly, and windows were redrawn and moved around on the screen in real time. In fact, Mac OS X version 10.1 tended to be much more responsive in multitasking situations—playing a song and a QuickTime movie and checking your email all at the same time—than earlier versions of Mac OS X.

Aside from performance, Mac OS X offered a few other improvements:

- ◆ New *menu bar icons*, which enabled you to change basic settings without opening System Preferences or accessing a Dock Extra. Menu bar icons made it easier to change system

preferences—volume, display settings, networking settings, and so on—by adding small menus to the top of the display near the clock in the top-right corner, by default.



- ◆ Improvements to the Finder window, including longer filenames, resizable columns, and more options on the toolbar; there also were more options to customize the Finder's desktop and how it handled removable disks.
- ◆ The capability to burn a data CD from the Finder, as well as to burn an audio CD from within iTunes, Apple's free music-management application for MP3 and CD audio.
- ◆ Changes to the Dock, including the capability to customize some of its characteristics, such as positioning it on the left or right side of the display.
- ◆ New or improved System Preference panes, including more General options and new keyboard, universal access, international, and other options.
- ◆ Networking improvements, including more support for AppleTalk, better support and configuration of AirPort Base Stations, and a rearranged Sharing pane.
- ◆ The (rudimentary) capability to connect to Microsoft Windows file servers.
- ◆ Changes to iDisk (Apple's online storage space made available to .Mac subscribers), including technology to keep it from complaining and disconnecting all the time.
- ◆ The capability to play DVD movies on Macintosh models that support DVD playback.
- ◆ Improved AppleScript support and support for remote Apple events.
- ◆ Changes in security, additional printer drivers, changes to the Disk Utility application, improvements to Disk Copy, and many more miscellaneous advances.

What Changed in Mac OS X Version 10.2?

Mac OS X version 10.2 was another exciting milestone for the Mac OS, if only because of the numerous new features and capabilities it brought to the table. While it's certainly true that many portions of the operating system were tweaked—again, including performance and responsiveness—what prompted Apple to give Mac OS X version 10.2 a new, hefty price tag (for most buyers, whether they were upgrading from Mac OS 9 or Mac OS X, the price for version 10.2 was a full U.S. \$129) was a slew of new and mostly impressive features.

NOTE Mac OS X was code-named “Jaguar” during its development, and that code name became popular. If you see Jaguar-print icons and marketing material, that's why. Apple carried the theme through to the final product.

In this section, we'll touch on just a few of the improvements to Mac OS X that happened with version 10.2.

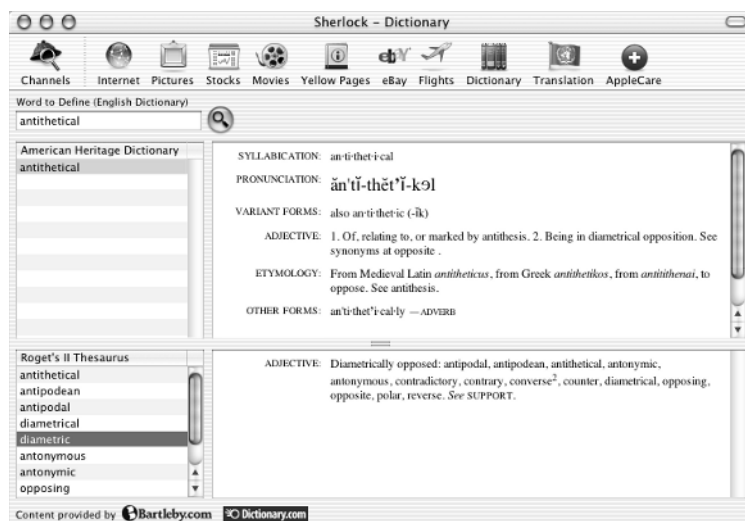
Enhanced Applications What most users recognized about Mac OS X version 10.2 were the improvements made to the applications included with the operating system. Apple beefed up offerings such as Apple Mail, which sported new features, including a junk-mail-blocking feature; iChat for text-based chatting with friends and family; and Sherlock, which offered a slightly new twist on browsing the Web, with topic-focused *channels* that cull information from various websites (see Figure 1.4).

New Personal Management Applications Version 10.2 also sported a new Address Book, designed to be a central location for people-based information such as physical addresses, phone numbers, and e-mail addresses. And around the same time that Apple released Mac OS X 10.2, it finished iCal, a calendar/date book application, and iSync, an application that synchronizes data from iCal and Address Book between different Macs or between a Mac and portable devices, such as a compatible cell phone or a personal digital assistant. (All of these applications are discussed in Chapter 9, “Built-In Accessory and Security Applications.”)

Input Technologies For users with physical challenges, Mac OS X 10.2 offered improved Universal Access features (Chapter 5, “Personalize Mac OS X”), comprising a number of improvements over previous Mac OS X versions, such as the capability to magnify portions of the screen, to have text read aloud, and to alter certain keyboard or mouse commands for slower, one-handed, or more precise use. Version 10.2 also included Inkwell (Chapter 16, “Audio, DVDs, and Speech and Handwriting Recognition”) for the first time, a new OS-level technology designed to make handwriting recognition available to applications, so that you can write your input on a special input device (a graphics tablet) and have it turned into computer text.

FIGURE 1.4

In Mac OS X 10.2, Sherlock made it easy to perform a number of common web-based Internet tasks, but without a web browser application.



QuickTime 6 and Quartz Extreme Apple's QuickTime (Chapter 15, "QuickTime, QuickTime Pro, and Digital Media") multimedia technology was updated in Mac OS X 10.2 to support MPEG-4, a new standard for video that offers high-quality, highly compressed streams of video that is particularly well designed to work over the Internet. When coupled with certain video circuitry, Quartz Extreme (Chapter 26, "Peripherals, Internal Upgrades, and Disks") increases the performance of the display of certain 2D and 3D video and graphics on the screen. It essentially off-loads some of the processor-intensive visual tricks and features used to make the Mac OS X interface (and its native applications) so, well, pretty.

Networking Version 10.2 offered some interesting updates in its networking capabilities, including the introduction of Rendezvous (Chapter 19), a technology that makes networking setup a "zero configuration" proposition. It also added considerable networking compatibility with Microsoft Windows, including support for accessing Windows-based computers or acting as a server for Windows users, so that you can share files back and forth on a local network. New to 10.2 was support for more secure forms of the File Transfer Protocol (FTP) and a new application for visually accessing a Mac over a network, called Remote Desktop.

Miscellany The miscellaneous improvements are too extensive to cover completely. Version 10.2 focused on adding considerable security options to the OS, including an Internet firewall (Chapter 11, "Configuring Internet Access"), a more easily understood password-management application (Keychain Access: Chapter 9), an improved Finder (Chapter 3, "The Finder"), and a new Find application for locating files (Chapter 6, "Getting Help and Searching Your Files"). Version 10.2 was the first to support Bluetooth (Chapter 26) for wireless peripherals and communications and offered increased support for digital cameras and scanners, a revamped Print Center, and much, much more.

What's New in Mac OS X Version 10.3?

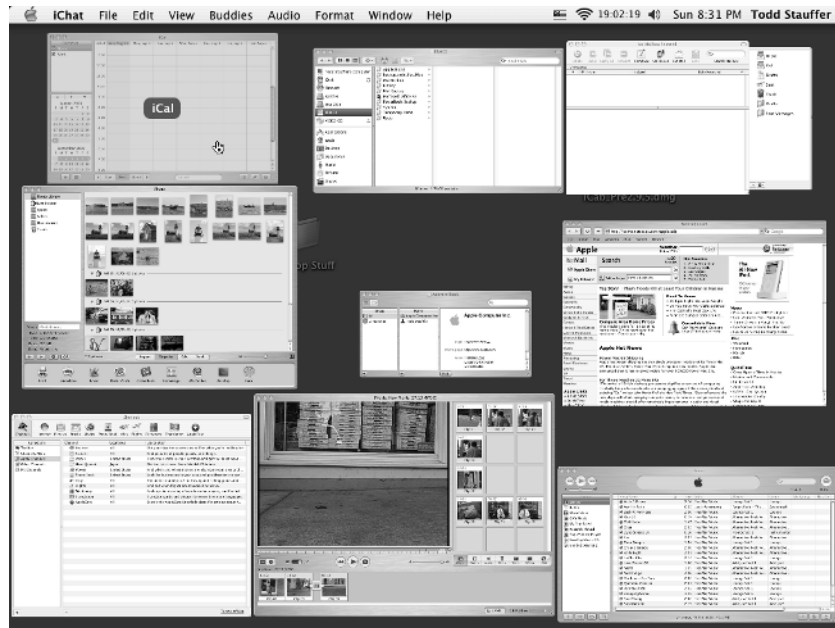
With Mac OS X version 10.3, the OS is beginning to look like it's been around for a while. This version has both major differences (in terms of how the OS looks and feels to the average user) and many, many subtle updates as well. While we won't cover them all here, let's look at some of the key improvements:

Finder Updates The Finder window in Mac OS X 10.3 sports a new brushed-metal look and rearranged toolbars. Also new is the Sidebar, where you'll always find your Mac's disks and shortcuts to the folders you most often access. The Finder window also integrates a universal search capability. Along with the new Finder comes the ability to assign AppleScripts to folders (called Folder Actions) and colorful Labels for folders, two features that were in the Classic Mac OS but absent from Mac OS X until now.

Exposé One of the more amazing new features in Mac OS X 10.3 is Exposé, which makes it easier to focus on the windows from a particular application—the Mac OS darkens other parts of the screen in order to highlight certain windows. By pressing one key, you can make all your windows small enough so that you can mouse over each one to select it (see Figure 1.5).

FIGURE 1.5

Exposé offers some cool new ways to handle multiple open windows.



Fast User Switching While all versions of Mac OS X have included multiple user accounts as a fundamental part of the experience, Mac OS X 10.3 adds a twist: Fast User Switching allows users to switch between their accounts *without* logging out of one and logging in to the other. That means you can quickly switch to your own settings, applications, and folders without waiting for someone else's applications and documents to close first. The feature also includes a whiz-bang rotating-screen animation that shows the OS changing from one user to another.

File Vault and Secure Deletion Mac OS X 10.3 introduces the File Vault technology (Chapter 5), which allows each user to encrypt their personal files automatically so that others who gain access to the hard disk can't access the data, even if they get around the login security of the OS. Mac OS X 10.3 also adds secure file deletion through a new command in the Finder, called Secure Empty Trash (see Chapter 3).

Fonts, Printing, and Faxing The way you select and manage printers has changed in version 10.3, as well as Font Book (see Chapter 7), which lets you preview, group, and manage fonts. This version also adds faxing as a completely new feature, enabling you to send faxes from the Print dialog box in most applications.

iDisk and iChat AV In version 10.3, you can now place a "permanent" copy of your remote iDisk on your Mac's desktop; this enables you to move files back and forth more readily than in the past. Your iDisk is then synchronized when you have an Internet connection. iChat AV (Audio Visual), introduced with version 10.2, has added audio-visual features, so that instead of simply typing messages back and forth, you can use the application (and online service, via .Mac)

for audio chat. iChat AV can also work with Apple's iSight video camera for long-distance video conferencing over the Internet.

Miscellany A number of other features have been updated, from the Mail application's speed and search capabilities to Address Book's ability to print labels for envelopes or to print a copy of your contacts. Version 10.3 offers more sophisticated tools for dealing with PDFs, compatibility with Windows virtual private networks, and a number of enhancements for Mac users who want to use Unix-based applications and networking. It's even easier to browse for connected servers in a networking environment, and Windows file-sharing servers show up right next to Macs.

For many users, Mac OS X version 10.2 was ready for serious use and made it realistic for people to move from the Classic Mac OS to Mac OS X. Version 10.3 is even more mature, offering interface tweaks, application updates, and some other compelling reasons to make the upgrade. Those added features and capabilities are covered throughout this text. Read on to see exactly how Mac OS X has begun to fulfill the promise of a completely modern, sophisticated, and yet friendly operating system.

There's no doubt that this is the future of the Macintosh, and it has quite a bit to offer.

What's Next?

Mac OS X is new and exciting; the latest versions are even more so. Mac OS X takes the friendliness of the Classic Mac OS and transforms it with powerful and sophisticated underpinning, making it a truly modern operating system. Versions 10.1 and 10.2 added considerable benefit to the original in the form of improved capabilities and completely new features and applications. Now, in version 10.3, tons of new features, tweaks to the way Mac OS X works, and overall improvements make it an impressive upgrade. If your hardware supports Mac OS X, now is a great time to make the move.

In Chapter 2, "The Fundamentals of Mac OS X," you'll learn the basics of Mac OS X's interface, including the Finder, the Dock, and the way individual items—icons, windows, buttons, and controls—look and work.