Discover what 7.5.5 can do for you!

Guide to Macintosh®

System 7.5.5

Don Crabb

with a foreword by Roger Ebert
To My Fellow Macheads

Pretty cool desktop, huh? Yep, I can almost smell the day-old coffee in the cup! Of course, the point of this is not merely for you to tour my desktop, but to provide me a forum to blab about the book you are about to read.

*Guide to Macintosh System 7.5.5* is a pretty darn good book, and I can say that without a trace of arrogance (OK, maybe a trace). It's a good book not just because I wrote it, but because the team at Hayden is the best in the business. Period. Enough said.

It's also a pretty darn good book because my friends at Apple were kind enough to work closely with me at every turn; they rode me hard to get all the details right; this book is proof of that.

Finally, this is a pretty darn good book because, despite that nice Apple logo on the front cover, Apple knows that no software product is perfect; System 7.5.5 is no exception. Apple had the guts to let me give you my real unadorned expert opinions on System 7.5.5 (albeit made somewhat less libelous than I might have otherwise!). In all honesty, I simply can't imagine our friends in Redmond, WA, allowing me the same forthrightness were I writing about Windows95 or WindowsNT.

In any case, you be the judge. Tear through this tome and then feel free to tear through me. The Don Crabb Macintosh Library is about real books for real people that solve real problems. Which means I can take any real criticism you can dish out. In fact, I'm looking forward to it!

See you on the ether!

Don Crabb
Aruba
September, 1996
Guide to Macintosh System 7.5.5

Don Crabb
Guide to Macintosh System 7.5.5
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Library of Congress Catalog Number: 94-75945

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Interpretation of the printing code: the rightmost double-digit number is the year of the book's printing; the rightmost single-digit number is the number of the book's printing. For example, a printing code of 96-2 shows that the second printing of the book occurred in 1996.

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Dedication

To Roberta with love: thanks for putting up with all the nonsense that I spew out when writing books. You are, quite literally, the greatest. I don't deserve you, but I am darn glad you're here.

Who Is This Crabb Guy?

For those of you who care (and apparently a lot of you do, judging from my mail), here is my current bio (the brief version) to give you some idea of my background—just so you know that I might just know what the heck I am talking about!

Don Crabb

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Computer Scientist. Don Crabb is the Associate Director of Graduate and Undergraduate Studies in Computer Science at the University of Chicago, where he has taught undergraduate, graduate, and professional computing and computer science courses since 1979. Don also functions as a certified instructional software developer for Microsoft, IBM, Apple, and Sun.

Columnist. Don is a Contributing Editor and Columnist for MacWEEK magazine—writing the weekly “Mac Manager” and “Steamed Crabb” columns, as well as other articles. Don is also the Chicago Sun-Times Computer Columnist and a technology writer, writing the thrice weekly column “Crabb on Computers,” which is syndicated by the Chicago Sun-Times Features Syndicate. Don’s Reader Q&A, Product Reviews, and FAQ can also be read via The Chicago Sun-Times Online at http://www.suntimes.com.

Don works as a Contributing Editor and/or Columnist for MacUser (“The Mac Workshop” column, features, and reviews), PC Magazine (features and reviews), Mac/CHICAGO (“Don’s Desktop” column, features, and reviews), The Weigand Report and Digital Chicago (“Don Crabb Says” column), CompuServe Magazine (features), MacMonthly (“Crabb’s Apple” column), Mobile Office (features), MacInsider (“Inside Apple” column), MacTech (“Crabb’s Apple” column), IDG’s Do It with the Mac and PowerBook Companion (“Macinations” and “The Traveling Mac” columns, respectively), MacToday (“Present at the Creation” column), MacHome Journal (“The Last Word” column and features), IDG’s Tip World (“Crustacean-At-Large” column), IDG’s InfoCaster (“Monsieur Farci” column), and Consumer Guide (reviews), among others.

TV/Radio Producer and Personality. Don was the co-producer, co-host, and technical editor of the weekly syndicated cable "MacTV" show, for which he now plays an advisory role. He was also a frequent guest co-host of "PCTV," a syndicated weekly cable TV show dealing with all kinds of computing topics. Don can also be seen regularly discussing technology and computers on Chicago's NBC-TV station, and he's currently developing a new syndicated radio show, "Crabb on Computers" in the Chicago area.

Book Series Editor/Author. Don was the senior consulting editor for books published by Hayden Books, and the series editor of The Don Crabb Macintosh Library, of which Guide to Macintosh System 7.5.5 is a member. The Word Book by Tonya Engst, Excel 5 Starter Kit for Macintosh by Charles Seiter, and Power Macintosh Programming Starter Kit by Tom Thompson are other books in The Don Crabb Macintosh Library. Don is now an author and editor for Osborne/Mcgraw-Hill, MIS Press, and M&T Books.

Analyst. As a computer industry analyst, Don has been quoted extensively in Business Week, Forbes, Fortune, Time, Newsweek, Money, The New York Times, The Chicago Tribune, and other publications.

All this bio stuff really proves, of course, is that I have no social life, whatsoever. Is this the fun part?
Acknowledgments

As any sincere author knows, no book is his work alone. Book writing—at least good book writing—is a collaborative effort between authors and all of their colleagues, editors, and friends. After all, better to pick the brains of the experts and get it wrong, than to have just gotten it wrong all on your own!

*Guide to Macintosh System 7.5.5* is no exception to this. The simple fact is that without the guidance and help of my editors, colleagues, and friends, this book never would have been completed (especially with the nutty production schedule—don’t ask!), nor probably even started.

It most certainly would have been a much paler effort. Having said that, I want to thank some people explicitly. My acknowledgments list is not exhaustive; many more people helped me with this book in ways both profound and subtle. I’ve tried to list as many of them here as I can, so I apologize in advance for missing some. I think, though, that it is safe to say that the people most responsible for any success this book might have are listed here.

Keep in mind, too, that the shortcomings, mistakes, and problems that you might find in *Guide to Macintosh System 7.5.5* are all mine. Please don’t think that any of these wonderful folks have anything to do with these gaffes. Had I only listened more closely to them, I probably could have eliminated all such problems.

My new friends at Hayden Books not only have been marvelous to work with, but they have greatly helped me to write a good book. For this alone, I owe them a debt of gratitude that I can never repay. If this book has any elegance and value, it is due to these publishing professionals. I can’t imagine working with better people.

The technical content of this book has been immeasurably improved by Tom Thompson. Tom was my editor at *BYTE* magazine and he made many suggestions, changes, and improvements to the manuscript.
Also to Chuck Weigand, who made important contributions to chapter 4, and Ross Rubin, who helped immeasurably with chapters 6 and 7, I want to express my thanks.

I also must thank my beta tester for this book—my old friend and Mac fan, Roger Ebert. Roger read every chapter and used the manuscript to help him get 7.5.5 up and running. His comments, asides, support, and friendship have been invaluable to me.

There are a slew of other folks who helped me with this book in a variety of ways. I wish I could write a paragraph about each one of them, but if I do these acknowledgments will be longer than the book, itself. Again, if I have omitted anyone, I apologize: Dale Coleman, Anita Malnig, and Mark Hall of MacWEEK; Susan Janus of MacUser; David Rogelberg, Karen Whitehouse, Stacy Kaplan, Brian Gill, and Brad Miser of Hayden Books; Andy Hammond, Eric Slosser, Bob Hagenau, Mary DeVincenzi, David Nagel, Kurt Piersol, Whitney Greer, Cyndie Powers, Andy Lauta, Radhi Sammeta, and Leslie Torvik of Apple; and Jon Perr, Mel Badgett, and Larry Slotnick of Claris.
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Foreword  
by Roger Ebert

This time it is WindowShades and Stickies. Before that it was Aliases, and before that—those little arrows to the left of the folders in the Name view. Every time Apple updates the Macintosh System, I am presented with innovations that are useful, make sense, and feel exactly right. And they’re usually so easy, so obvious, that all I have to do is click to understand them. Then Don Crabb comes along to explain all the other features—the stuff I’m going to grow into during the weeks and months to come.

Crabb is the guy who talked me into buying my first Macintosh. “Get the SE, dude,” he said. “You’re a heavy user and you’re going to need that extra power.” Over the years, the old SE has been followed by an LC, a IIci, an LC 575, and a PowerBook 540, and the last time I fired that SE up, it seemed lumberingly slow. But he was right. The SE did give me extra power: the power to *use* it.

My previous computers (starting with my beloved Tandy Model 100, and the visionary but doomed DEC Rainbow) were arcane tools that I approached with hesitation. I found out how to do two things on them (write text files and send them electronically), and that was where I stayed, stuck, until I got the Mac. I fired the SE up, took the Macintosh Tour, and stayed at the keyboard for hours, clicking here, clicking there. I logged on to CompuServe. I made squiggles with Draw. I splashed them with Paint. I opened a spreadsheet and typed in some data about my mutual funds. An idea was slowly forming: This Mac was not simply a tool, but an extension. Like the extensions loaded into the System folder, the computer as a whole was an extension used by my mind—a way of doing things and going places that I had not experienced before.

One of Crabb’s colleagues in the world of expert Mac writers, Andy Ihnatko, says his “Spidey-Sense” tells him when something is truly exciting. He
emailed me a few days ago: "Just like Spiderman gets this tingling in the back of his head when there's danger present, I have a psychic reaction on those VERY few occasions when I'm being introduced to a machine which is simply a brilliant idea, executed with EXACTLY the right hardware and software."

An hour after I sat down at my first Mac, my Spidey-Sense was tingling like crazy. For the first time, computing truly became accessible to me. The Rainbow sat there and waited for me to sweet-talk it. The Mac reached out and guided me into all the ways I could use it. It was exactly right. Some years later, I tried Windows, but come on now. Start two computers, side by side, one with Mac OS, one with Windows, and what reasonable person could argue that Windows is not the wallflower?

Don Crabb is one of those rare writers who is able to deal with technical information in a way that helps you visualize what he's talking about, and what it would be like to do it. His column printed in the Chicago Sun-Times and other newspapers is written like a balancing act: Useful for professionals, but understandable to general readers. He shipped me his Guide to Macintosh System 7.5.5 in text form, via CompuServe, shortly after supplying me with a beta version of 7.5.5 in my LC 575. So I've been living with the book for awhile. I learned about Apple Guide and PC Exchange and Launcher (which I am not crazy about, because it replaces too many old habits). And when I ported 7.5.5 to my PowerBook (as a beta tester, this wasn't piracy, right?), I followed his italic warnings and used Safe Install Utility BEFORE doing anything else.

This book is complete, useful and reassuring. And because it is by Crabb, it is also entertaining (see "The Top Ten Reasons Why You Must Buy and Read Guide to Macintosh System 7.5.5"). It goes next to my computer, and there it will stay.

ROGER EBERT
I Have the Manual, Why do I Need This Book?

The manual that ships with System 7.5.5 (The Macintosh System 7.5.5 Upgrade Guide) is about as slim as any manual that Apple's ever produced. The reason is twofold: System 7.5.5 is a natural extension of System 7, so the learning curve is not steep; and Apple wants you to learn about 7.5.5 from reading this book and from using the Macintosh's Apple Macintosh Guide—which showcases the new Apple Guide online help system (accessible from the Balloon Help/Apple Guide menu in the Finder menu bar).

As good as those Apple Guides are (and believe me, they are quite good), this book takes more of a critical solutions-oriented approach to the installation, use, and abuse of System 7.5.5 In short, I'll tell you not just how to do something, but I'll put it into context, telling you why to do it, when to do it, and what benefit it will be to you—what solutions it can offer.

Of course, there are other, perhaps less rigidly-defined reasons why you should buy and read this book that cry out for a Top Ten List.

The Top Ten Reasons Why You Must Buy and Read the Guide to Macintosh System 7.5.5

10. So you can amaze your friends with inside information on the latest Apple System software.
8. You'll regain your faith in Apple as you see that it's got a cool future laid out for us with new Mac operating systems and Power Macs.
7. So you can tell the difference between an Apple Guide and a tour guide.
6. If you don't buy it, you'll miss out on an instant collector's item!
5. Because it "Fits In and Stands Out."
4. You'll learn who makes up those "interesting" Apple System marketing tag lines (see number 5).
3. So that you can become a pontificating gasbag of System 7.5.5 knowledge like a certain author we know.
2. Because I was too stupid to write a book about Windows95—where I could have made some real dough. Oops, sorry, that's a top ten reason why I should have written about Windows.

And the number one, Top Ten Reason is:

1. Because the ghost of Don Crabb will inhabit your conscience forever if you don't. Hey, $25 is a cheap way to prevent that!

**Criticisms and Comments**

I'll be the first to admit that this book is not perfect. I fully expect to start revising it even before the ink is dry on the first printed copies. I have already planned with my editors to update the book for revised printings as Apple updates System 7.5.5 (8.0, 9.0, 2000.0...).

To do a creditable job of revising and updating, as well as getting my advanced planning together for System 8.0, I'd like to encourage you all to get in touch with me. Tell me where I am full of it, that I've missed the point, or that I am just plain wrong. And if you agree with me or just want to share your own System 7.5.5 war stories, I want to hear about them. Eventually, they will somehow get into the revised editions of this book, and I'll quite likely address them in my *MacWEEK* column.

The best way to contact me is via electronic mail. While I have accounts on nearly every online service, please send mail to my Internet address at the University of Chicago: **decc@cs.uchicago.edu**. If you don't have email access (sorry, but you have no excuse NOT to have email these days!), then please write to me at Hayden Books. This is also the place to send letters with direct comments and criticisms to my editors and publisher (but please don't complain too loudly!). You can also write to me directly at: the University of Chicago, Department of Computer Science, Ryerson Physical Laboratory, 1100 East 58th Street, Chicago, IL 60637.
System 7.5.5
Reality Check

What's the deal with System 7.5.5? Do you need it, or is this just an attempt by Apple to make a silk purse out of sow's ear?
Well, the short answer is that System 7.5.5 is important and not just a way to waste your money. System 7.5.5 codifies important System tools and features, like AppleScript, Open Doc, Open Transport, Cyberdog, PowerTalk, and QuickDraw GX, that Apple has developed over the past five years (since the release of System 7.0) and previously sold separately at considerable cost. Besides those underpinnings, System 7.5.5 adds a bunch of functionality that was previously available only with extra-cost third-party control panels and extensions. And to top it all off, System 7.5.5 also adds Apple’s hot new online documentation technology, Apple Guide.

In essence, then, System 7.5.5 is a reference release and a productivity release that puts all Mac owners on the same System page, with the same set of available System functions and features, and with a number of productivity enhancements.

About four years ago, Apple made the decision to spend its primary resources on the move to the Power Mac platform, seeing that the end of the 68K CPU was in sight. At that time, Apple could have decided to focus instead on its Systemware, such that this book could have been Guide to Macintosh System 9.0. The problem with that strategy is that Apple derives most of its revenue from the sale of its computers, not from the sale of its Systemware. For my money, Apple made the right decision in dialing down System development to concentrate on the Power Macs. Now that the Power Macs are out and flourishing, hindsight rakishly agrees with Apple’s original decision.

As important as System 7.5.5 is to all Mac owners (especially to Power Mac owners, because more of the System is written in PowerPC native code, making it run faster and smarter than System 7.1.2), it’s hardly the end of the line. Indeed, there will be a System 8.0 MacOS sometime in 1997 and a System 9.0 sometime beyond that. And as operating systems from Apple’s corporate partners like IBM come into their own, you’ll likely see a convergence of their technologies with Apple’s own system efforts.

But I digress. The bottom line with System 7.5.5 is that it is the best System to run on any Macintosh that can support it (more about that later). It’s a no-brainer that most every Mac owner should buy it (and many of you reading this will already have it, since it’s included on new Macs).
What's in System 7.5.5?

System 7.5.5 includes a collection of new capabilities that streamline how people work on a computer (both individually and with others), simplify working with MS-DOS and Windows disks and files, and improve printing and graphics. Apple believes that Macintosh System 7.5.5 will advance its efforts to attract MS-DOS and Windows users to its platform, and will enhance the company's competitive position in its traditional markets.

System 7.5.5 uses Apple's new version numbering scheme and is the last for Macs and Mac clones that don't support 32-bit memory addressing, including the Mac Plus, SE, SE/30, Classic, LC, II, IIX, IICX, Portable and PowerBook 100. Future Mac OS releases will require 32-bit memory addressing.

System 7.5.5 will install only on machines running System 7.5.3 and will integrate everything found in System 7.5.3 (released in June of 1996), which was the last full CD-ROM based Mac OS. System 7.5.5 improves the performance of virtual memory and reduces the launch time of memory-hungry applications. System 7.5.5 also improves the System's memory management on Power Macs and comes with a revised Code Fragment Manager to properly handle multi-threaded modern Mac applications. System 7.5.5 also fixes a floppy drive problem that occurs when you insert a disk while Windows is launching on a Mac running a DOS Compatibility Card.

System 7.5.5 improves the general reliability of PCI Macs and PowerPC-based PowerBooks and fixes a handful of networking bugs, including a problem with machines running virtual memory and connected to Ethernet networks. System 7.5.5 also fixes a LocalTalk problem on Macintosh 5400 machines and improve general networking performance on 5400 and 6400 systems.

System 7.5.5 will also improve the performance of Mac OS clones running 180-MHz or faster PowerPC 604 or 604e processors. System 7.5.5 also improves the performance of Quadra and Centris systems updated with the Apple Power Mac upgrade card when running sound-intensive applications. System 7.5.5 also improves the reliability of the remote control included with the Apple TV tuner and Macintosh TV.
Here's a short list of the goodies in System 7.5.5:

**Safe Install Utility** (application to run before all others)—this one is out of alphabetical order, because you should run it *before* you install System 7.5.5. It will flag control panels and extensions that might not work with 7.5.5 and move them to a special folder. It also offers a database with vendor contracts for all the software it finds on your disk. Very handy. **REMEMBER TO RUN IT FIRST!!! AND READ THE README FILE THAT YOU'LL FIND ON THE DISK!!!**

One final caveat, if you have a Workgroup Server 95 or an Apple Network Server 500 or 700, **do not install System 7.5.5 on them**. You must continue to run System 7.0.1 with the System Update 3.0 on an AWS 95 and the new AIX on the ANS 500 and 700. Doing otherwise will cream your server.

**Apple Macintosh Guide** (extension and guide files)—a built-in, interactive, step-by-step guide that helps the user solve a problem without interrupting
the task at hand. When a user has a question, such as “how do I change the desktop pattern?,” he fires up the Macintosh Guide, and he is then prompted with meaningful queries throughout the process. It provides onscreen visual cues (or coachmarks) to highlight items so that he can proceed through to the next step.

Apple Guide, the System 7.5.5 extension, is the engine that enables Guide files (like the Macintosh Guide and PowerTalk Guide that live in the System folder) to provide appropriate information and steps based on current context (such as which window is in front, items selected, and so on) and will skip steps if they are already complete. It also checks to make sure a step has been completed before moving on to the next one. Overall, Apple Guide allows users to learn quickly, thereby increasing productivity and decreasing support and training costs. In addition, Apple Guides can be customized by using the Guide Maker developer's tool (available separately as part of the Apple Guide Authoring Kit), to lead users through tasks that are unique to their company or products.

CD Audio Player (control panel)—full controls for playing and programming audio CDs. Very cool.

Date and Time (Finder enhancement)—are now displayed in the menu bar, thanks to Steve Christensen's built-in SuperClock.

Desktop Patterns (control panel)—new textured desktop patterns so that people can customize their desktops.

Default Documents Folder (file manager improvement)—the System automatically saves files to a folder named “Documents” on the desktop (rather than to the creating application’s folder), making it easier for novices to keep track of a document. Saving a document can be set to the most recently accessed folder for an application, the Document folder, or the folder where the application is located.

Desktop Hiding (Finder improvement)—allows the desktop to be inactive while an application is running. If you click outside the document window, the application will still remain active, preventing the novice user from getting “lost” by switching to the Finder or another application.
Find File (new application and extension)—enables more detailed file searches based on an increased number of search criteria. Presents all files found in list form with a path to the file. From the found file list, users can now open or drag and drop the file to a new location. Very sweet, indeed.

Hierarchical Menus in Apple Menu (Finder improvement)—allow faster and easier access to items in the Apple menu by displaying submenus.

Launcher (Finder improvement)—enables applications, documents, and folders to be accessed by clicking on buttons contained in a floating window. Many like it, I never use it. You be the judge.

Macintosh Drag and Drop™ (Finder improvement)—introduces the drag-and-drop metaphor for transferring data. When either text or graphics are dragged onto the desktop from a “drag-aware” application, a clippings file is automatically created. You can use Macintosh Drag and Drop to add the same element to many additional documents. Seriously good stuff, it starts to get you thinking more about your documents and less about your software. OpenDoc will leverage this “document-centric” computing metaphor up another notch.

Macintosh Easy Open™ (Finder improvement)—used in conjunction with Macintosh PC Exchange, it automatically searches for a Macintosh application that is capable of opening a document for which you don't have the creating application, including DOS and Windows documents.

Once an application is selected by the user from the list of possibilities, Macintosh Easy Open manages the translation and opens the file. No more Apple File Exchange! Way to go, Apple!

Macintosh PC Exchange 2.0™ (Finder improvement)—allows you to insert a DOS or Windows-formatted disk into your Mac's floppy drive (must be a high density capable drive) and view the disk's contents from the Macintosh desktop. Directories and files are viewed by the Macintosh user as folders and documents. Most notably enhanced in this version is the ability to read SCSI hard disks and SyQuest and Bernoulli removable-media disks.

MacTCP® 2.0.6 and Open Transport 1.1.1 and the Network Selector Switch Application (Networking improvement)—built-in TCP/IP (Transmission Control Protocol/Internet Protocol)—a major and pervasive
communications protocol for UNIX networking (at the software level). TCP/IP is also the standard protocol for the Internet.

**Multitasking Thread Manager** (System improvement)—for concurrent applications processing. This feature allows software that has adopted the Thread Manager to run concurrent processes. It is extremely beneficial for architectural or engineering packages that require intensive calculations. It still isn't process or application preemption, though, but it's better than System 7.x. Expect full preemption in later Systems that will benefit **ALL SOFTWARE**.

**PowerBook® Utilities** (PowerBook improvements)—allow for extended battery life and provide automatic power management for tasks such as switching to full performance (if the PowerBook is plugged in) or to full conservation (if it's not). Includes:

- Battery management features—include automatic backlight dimming and a permanent RAM disk feature that saves information between restarts and shutdowns.
- Consolidated Control Strip—simpler access to controls for customizing the PowerBook system. The Control Strip can be moved anywhere on the screen and the whole strip, or portions of it, can be hidden to fit user preferences. The Control Strip includes: AppleTalk Switch, Battery Monitor, Filesharing, Hard Disk, Power Settings, Sleep Now, Sound Volume, and Video Mirroring. You'll wonder how you ever got along without it.
- File Assistant—synchronizes files between any two files, folders, or entire disks to ensure that the user is always working on the latest version of a document. You have to be very careful not to monkey around with your System clock, though, or you will overwrite the wrong files!
- PB 150 Modem Patch (System bug fix)—this fixes a problem with the built-in modems of PB 150s and some communication programs.

**PowerTalk™** (Collaborative improvement)—enables users to send electronic mail, share files, and digitally “sign” and forward documents from within an application. PowerTalk previously cost extra under System 7 Pro.

**PowerTalk** features include:
• A Universal Desktop Mailbox—a single mailbox and a consistent interface for browsing and searching information, regardless of the number of communications services in use. It provides a single mailbox icon for all incoming and outgoing mail—including online services, fax, voice, electronic mail from various sources, and documents from any application. Cyberdog 1.1 also provides for a universal mailbox and is included in System 7.5.5.

• Catalogs and Information Cards—store information about users and other objects required to facilitate better communication. Catalogs contain Information Cards that keep individual or group profiles including electronic addresses, phone and fax numbers, personal notes, and more. Because PowerTalk supports drag and drop, delivery files and folders can be sent to others by dragging them onto Information Cards. Catalog storage ranges from Personal Catalogs (collections of Information Cards stored on a user’s hard disk) to sophisticated hierarchical, distributed, and replicated repositories such as those implemented by Apple’s PowerShare Catalog server.

• AppleMail and Cyberdog 1.1 mail—built-in, entry-level mail applications with support for messages that contain stylized text, images, and video. It does not require a mail server. Neither requires a mail server.

• DigiSign—enables users to sign documents without printing them and circulating them for approval. Instead, documents can be routed through electronic mail and verified. DigiSign supports data ranging from a single cell or file to a complete compound document.

• PowerTalk Key Chain—a single mechanism for securing access to multiple network and desktop services, including the mailbox.

• PowerShare™ (Client)—for the sharing and administration of centralized collaboration services such as shared catalogs and gateways.

Jigsaw Puzzle (Fun improvement)—lets you paste in any image and scramble the pieces to create a jigsaw puzzle with three levels of difficulty. Shows that Apple will never become as straightlaced as its competition. Praise be for that!

QuickDraw GX™ (Printing and Imaging improvement)—advances graphics and printing with drag-and-drop printing from the desktop, ways to print
and view any document (regardless of the application), greater typography control, and improved color management. QuickDraw GX includes:

- Streamlined Printing—printer control via desktop printer icons. To print a document, you can simply drag a file onto a printer icon. Double-clicking a printer icon reveals the printer queue, and you can arrange and rearrange the document order in the queue, or change to a different printer by dragging and dropping the file. New print extensions from third-party developers can be used with existing applications and enable users to customize print output with watermarks. The System 7.5.5 CD-ROM includes two such GX print goodies from the Peirce Print Tools collection.

- Portable Digital Documents (PDDs)—enable users to generate files that can be opened, viewed, and printed from any Macintosh that has QuickDraw GX installed (without having the same applications or fonts used to create the file). Portable documents can be created with any existing Macintosh applications. Goodbye mixed-network document headaches!

- International Support—extensive, system-level support for international text such as Arabic or Kanji. Text that combines different reading directions—left to right, right to left, or vertical—can be combined within the same line. QuickDraw GX fully supports world-wide character sets based on international standards. Achtung Baby!

- Consistent Color Input, Display, and Output—incorporates Apple's ColorSync color management technology to ensure that the onscreen color matches the colors produced by a variety of output devices, thereby saving the cost of printing drafts just to proof color.

QuickTime™ 2.5 for Macintosh (Multimedia enhancement)—enhanced version of the popular QuickTime multimedia software extension that lets you integrate sound, video, graphics, and animation on your Mac and on the World Wide Web. Also, QuickDraw 3D and QuickTime Conferencing provide 3D imaging and video conferencing over the Web.

Scriptable Finder and AppleScript 1.1 (Finder improvement)—automates system tasks with AppleScripts for complex or mundane tasks, such as backing up a hard disk onto the server. A “Watch Me” feature lets you create
scripts by turning on the "Watch Me" recorder and the Mac records your actions. AppleScript can control many Mac applications for true automation. For my money, this may be the best improvement in System 7.5.5—a critical Apple technology unmatched by the competition.

**Sound Manager** (Multimedia improvement)—16-bit stereo quality sound for multimedia applications.

"**Stickies**" (Productivity improvement)—onscreen electronic notes with various colors and stylized text.

**System and Application Folder Locking** (Finder improvement)—prevents accidental deletion of important files by novice or infrequent Macintosh users.

**Telephone Manager** (Communication enhancement)—part of the Macintosh Telephony Architecture (MTA), which provides a framework for the integration of personal computers and telephones. For example, Contact Manager programs that take advantage of MTA could be used to initiate telephone calls or video conferences.

**WindowShade** (Finder improvement)—a utility that enables you to click on a window title bar to hide the window from view, thereby reducing screen clutter caused by having numerous windows open at once. Very handy.

**Updated Scrapbook and Notepad** (Productivity improvement)—includes new built-in support for Macintosh Drag and Drop that enables users to drag and drop text or graphics from applications (that support it) directly onto either item.

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**Third-Party Software Bundled on the CD-ROM Version of System 7.5.5**

If you bought the CD-ROM version of 7.5.5, check out the CD Extras folder on the disc. You will find some nice third-party software that takes advantage of new System 7.5.5 capabilities.
Two printing extensions—one that lets users add watermarks to printer output and one that lets users print multiple pages (in a reduced format) on a single page—are included from Peirce Software, Inc. (Peirce Watermark and Paper Saver).

Several of the products are PowerTalk personal gateways, which provide transparent access from the universal mailbox to other mail and messaging services, including the Apple PowerTalk Direct Dialup gateway (which allows you to dial into a Mac server to read your AppleMail from your PowerBook, without needing AppleTalk Remote Access). You can also send messages using the AppleMail application or third-party applications that support the PowerTalk mail capability, which may really make PowerTalk a big deal for you. You also get the CompuServe PowerTalk gateway, so you can handle your CompuServe mail directly through your AppleMail PowerTalk universal mailbox.

The included full version of PowerFax PE Software from STF Technologies, Inc. will let you send and receive faxes via PowerTalk, and the 60-day trial version of Notify! software from ExMachina, Inc. will let you send pager messages from your PowerTalk mailbox.

In addition, the CD-ROM contains 60-day trial versions of software from Quarterdeck, Inc., which lets you exchange email messages with users of QuickMail and the Internet. For only $49, you can buy full versions of these gateways from StarNine (which normally cost $65).

You also get a nice multimedia tour of PowerTalk, an offer to receive the full Apple Guide Authoring Kit for free, a game called Eric’s Solitaire, some QuickTime extras (including the MoviePlayer and some sample movies), the At Ease! updater, PlainTalk updater, and Power Mac GeoPort Updater.

In short, you get a nice little bundle of goodies when you buy System 7.5.5 on CD-ROM.

**Crabb’s Bottom Line**

The deal with this book is simple: read it and I’ll teach you about System 7.5.5, what it does, what it doesn’t do, and what it’s leading to with future Apple Systems.
I will also teach you how to work around System 7.5.5's shortcomings using tips and tweaks (or is it hints and tricks?) and using good old-fashioned consumer power—by buying the right third-party applications, control panels, and other helpful doodads. You'll also learn why certain things are done (in addition to how and when) and how to solve particular problems with System 7.5.5.

In short, I'll give you the skinny (and the fat, I suppose) on System 7.5.5, with my basic, "prove it to me" attitude.

This book is written for beginners, for experienced Macheads, and for Mac managers. I've purposefully called-out the material that appeals to Mac managers in special layouts, so that beginners or Macheads who don't care about System 7.5.5's management issues can skip them. Likewise, beginners' tips are also called-out. You will also find each chapter full of Don Crabb Bottom Line Tips to help you over System 7.5.5's rough spots, as well as a quiz at the end (with answers, can you beat that?!?). Indeed, this book is really full of it.

Here's how the chapters break down:

Chapters 1 through 6 explain all the features, commands, and functions of System 7.5.5 in a critical, solutions-oriented framework. Along with these detailed explanations, the chapters show you how to use these new capabilities to get the most out of the new System.

Chapter 1, "A First Look at System 7.5.5," gives you an overview of System 7.5.5 and introduces the features that you need to know. Chapter 2, "Using Finder 7.5.5," takes a detailed look at the Mac's most important application and how you use it.

"Modifying the System 7.5.5 Environment" is chapter 3. In it, I'll show you how to customize the System so that it reflects your needs and preferences. Chapter 4, "Fonts and Printing," gives you the information to handle QuickDraw GX, which may very well revolutionize the way we work with our Macs. Chapter 5, "The Multimedia is the Message," describes how multimedia support, always one of the Mac's major benefits, has been woven into System 7.5.5 with the new QuickTime 2.5 extension.

Chapters 7 through 10 concentrate more exclusively on management issues, getting help, and other extended topics.

Chapter 7, “Improving Your Memory,” focuses on managing and maximizing memory under System 7.5.5. Chapter 8, “Management Strategies for System 7.5.5,” shows how to best utilize System 7.5.5’s features to help workgroups of Macs work well together.

Chapter 9, “The Art and Science of Troubleshooting System 7.5.5,” is painful, but hey, I’m staying in the real world on this one; it’s likely that you’ll have trouble at some point that you need to fix ASAP. If the tips in chapter 9 don’t bail you out of your crises, then you can use chapter 10, “We All Need More Help, So Here’s How to Get It.”

Last, but not least, you’ll find three appendices: Apple Guide and GuideMaker, PlainTalk, and Glossary.

Without further ado, it’s time to go to chapter 1.
If you have already bought System 7.5.5, you have my congratulations. If you are sitting on the fence and don't know whether to buy or wait, let me twist your purchasing arm with some solid reasons, upfront, for why you should buy 7.5.5, rather than waiting or trying to put it together from the parts bin. In any
case, what I will do in this book is tell you all about 7.5.5, and then you can make your own decisions.

Do you need to buy System 7.5.5? No, not if you are happy going through all the trouble of surfing the online world, contacting your local dealer, and putting together all the machinations required to assemble the functional parts of System 7.5.5. Even then, your system ditty bag won’t have the full contents of System 7.5.5.

If you are like the rest of us, though, going through all that hassle and expense just doesn’t make sense. For us, getting a set of floppies or a single CD-ROM with all of the System 7.5.5 goodies is the way to go, even if it “looks” like it costs more. Add up the costs of surfing online, dealer-hopping, buying blank disks, or using hard disk space (to hold all the stuff you are downloading and copying), and your time spent, and you’ll find that the System 7.5.5 Personal Upgrade Kit from Apple is a bargain. And, it’s complete. It’s your only source for all the doohickeys that Apple calls collectively, System 7.5.5.

System 7.5.5 incorporates many new features into a base that is pure System 7 Pro (System 7.1.1). System 7.5.5 includes a number of products that Apple sold or freely distributed separately, including Open Transport 1.1.1 (for advanced TCP/IP networking), OpenDoc (for document-centric small applications and application “parts”), Cyberdog (for WWW browsing and email and other Internet functions all in an OpenDoc context), PC Exchange (for reading DOS and Windows disks), Macintosh Easy Open (for reading files in which you don’t have the creating applications, such as DOS applications), and MacTCP (for basic TCP/IP networking) on non-PCI PowerMacs. The new system also includes an extensible hypertextual and context-sensitive help system, called Apple Guide, which lets you use Apple Guides (System 7.5.5 ships with several Guides, including a PowerTalk Guide, a Macintosh Guide, and others). You also receive useful programs that were previously sold by third parties or by AppleSoft, including, for a limited time, DataViz’s MacLinkPlus (which works with Macintosh Easy Open and PC Exchange) and Adobe’s Type Manager GX (ATM GX) that works with QuickDraw GX fonts.

With the CD version, System 7.5.5 also ships with a slew of third-party utilities and some trial programs.
System 7.5.5 comes as a set of fat binaries that includes both the 68K and Power Macintosh versions, making installation a breeze with the smart Installer 4.0 that Apple also includes.

But if you don’t have a Power Macintosh or lots of RAM, you don’t need to worry about System 7.5.5 hogging all your resources.

The reason is that the 7.5.5 installer is actually three installers—one for System 7.5.5, one for PowerTalk, and one for QuickDraw GX. If you have a RAM-limited Mac, you can decide simply to run ONLY the System 7.5.5 installer, and hold-off on PowerTalk and QuickDraw GX until you add to your RAM.

In addition, the Safe Install Utility, which comes with 7.5.5, should be run on your system before installing the new Mac OS. Safe Install determines which of your current extensions can be safely used with the new stuff in System 7.5.5. If Safe Install finds old extensions and control panels that won’t work with 7.5.5, it can (at your discretion) move them to a new folder called “May Not Work with System 7.5.5.”

System 7.5.5 also comes with Version 1.1 of PowerTalk (which is the application that implements AOCE—Apple’s Open Collaboration Environment), which improves performance, adds and updates some interface elements to the first version of PowerTalk, lowers memory requirements, and fixes many bugs (including the nasty one that can cause a large PowerTalk Catalog to simply disappear from the desktop). The new System also includes other AOCE improvements, like multiple message tagging and letterhead creation.

The Macintosh Desktop: A Guided Tour

If you are a veteran Macintosh user, System 7.5.5 will not surprise you. Indeed, System 7.5.5 is simply another in a long series of incremental upgrades to the Macintosh System (6.0, 6.07, 7.0, 7.1, and so forth). In short, System 7.5.5 doesn’t break all that much new ground (with the exceptions of QuickDraw GX and Apple Guide), but it does consolidate gains that Apple has made over the past year with its System software. And for that reason alone, System 7.5.5 is very significant for all Macintosh users.
Of course, if you have never used a Macintosh before, or you are migrating from Windows (good for you!), the System and its integrated graphical user interface (GUI), called the Finder, will take some getting used to. In this chapter, I'll give you the 50 cent overview on how System 7.5.5 works, while introducing its GUI, Finder 7.5.5. But if you want to really get you feet wet with the new Finder, I'll cover that in chapter 2, "Using Finder 7.5.5."

A-number one on your list of things to remember about the Macintosh is that the Finder was created around a concept that Apple borrowed from Xerox PARC in the early 80s—the concept of the desktop (see figure 1.1).

![Figure 1.1 The System 7.5.5 desktop](image-url)
After you have taken a gander at figure 1.1, please note that the figures of the desktop here and throughout the book show most of the new desktop features of 7.5.5, including QuickDraw GX printer icons, PowerTalk mailbox, and PowerBook control strip. If you don't install QuickDraw or PowerTalk, or you aren't using a PowerBook, your actual screen may look different. (In fact, you can't officially use the PowerBook control strip on a desktop Mac's desktop.) I made these figures so you would see the whole works. Your mileage may vary and you probably won't see a desktop exactly like those in this book's figures. Don't worry about it; it's not a big deal, but you should note it for future reference.

The desktop is what you see when you turn on any Macintosh. Whether that Macintosh is running System 1.0, System 6.x, System 7.0, or System 7.5.5, the desktop will look substantially the same. For my money, that is the beauty of the Macintosh computer's original conception. Across the top of the screen is a menu bar. The menu bar gives a list of command categories that you can search through and select from at any given time. For the desktop menu bar under System 7.5.5, those categories are the Apple menu (which is referenced by the Apple Logo (APPLE LOGO) on the far left of the menu bar), File menu, Edit menu, View menu, Label menu, and Special menu. Your instrument for the menu and command selection process, of course, is the mouse, or a trackball or trackpad (as you will find on the PowerBook 500 series). When you move your mouse/trackball/trackpad on your real desktop, an arrow cursor moves about on your Finder desktop. To activate a menu bar command, you point to it and click to open the menu bar. Then drag the mouse down to highlight the command you want and release the mouse button. The command then executes. To work with icons and windows on the screen, you control them by clicking and dragging the mouse. A good place to start is with the Macintosh Basics folder (that came with your Macintosh) and with the Macintosh Guide (that comes with System 7.5.5).
To the right of the menu categories you'll find a clock. This is made possible by Steve Christensen's famous freeware SuperClock control panel, which now ships with System 7.5.5 as a value-added freebie incorporated into the Date and Time control panel. Adjacent to the clock (which can show the time or date), you may see the symbol of a battery (if you are running System 7.5.5 on a Portable, PowerBook, or Duo). This symbol, part of the SuperClock implementation, displays the approximate amount of charge left in the battery or batteries. If you already have SuperClock installed, make sure you remove it before installing the full System 7.5.5 set of extensions, otherwise you will end up with two competing menu bar clocks, which can lead to problems with your system (not the least of which is the lousy aesthetic competing clocks create!).

Next to the battery icon, you'll find the new Balloon Help/Apple Guide icon. This icon gives you access to Balloon Help, the Macintosh Guide (an online Apple Guide document), documentation of command shortcuts, and access to the PowerTalk Guide (if you installed PowerTalk). Depending on your installation, you may also have access to other customized Apple Guides.

Directly to the right of the Balloon Help icon you'll find the Application menu, which allows you to manipulate any open application (including the Finder) by hiding it from the desktop view, or by moving to any other application that you have open, by choosing the application's name from the Application menu's list of open applications.

To see which commands reside in any given desktop menu, just point to the command category (File, for example) and press the mouse button. Hold the button down, and you'll see a list of all the possible commands you can activate from that menu. As you can see in figure 1.2, the File menu opens and displays all the possible command choices (New Folder, Open, Print, Close Window, Get Info, Sharing, Duplicate, Make Alias, Put Away, Find, Find Again, Page Setup, and Print Desktop).
Figure 1.2 The File menu opened on the desktop

The Sharing, Find, Page Setup, and Print Desktop commands each have ellipses (...) after them. Apple uses ellipses to show you that a command offers more options, either through a pop-up menu, or through a dialog box. Select the Sharing command from the File menu, and a dialog box appears (see figure 1.3).
A little triangle (▶) next to a command in a pull-down menu means that another hierarchical menu (submenu) can be displayed. You can view this menu by placing the mouse cursor on the arrow and holding down the mouse button. Apple supports hierarchical or cascading (doesn't that sound pleasant?) menus (submenus) in the Apple Menu, and many many third-party extensions or control panels add that functionality to appropriate menu bar commands (Now Menus from Now Utilities is the best). You can turn this feature on and off via the Apple Menu Options control panel (see figure 1.4). This control panel also controls the Recent Documents, Recent Applications, and Recent Servers folders in the Apple menu (more about these later).

**Figure 1.4 Apple Menu Options control panel**

Don Crabb Bottom Line Tip When installing System 7.5.5, make sure that you remove all third-party extensions and control panels (place them into folders called something like MyOldExtensions and MyOldControlPanels). Then, when you install System 7.5.5, you won't create startup or operational conflicts with your old third-party stuff. Only after you verified them (either by testing them separately—using the Extensions Manager or Casady and Greene's Conflict Catcher II
as an aid—or by checking out their compatibility from Apple and other sources) should you move them over to your new Control Panels and Extensions folders. If you want to automate this when installing System 7.5.5, you can use the ⌘-K option once the installer is launched. This undocumented option automatically moves your entire existing System folder to a new folder called Previous System Folder. Consider it a cheap prophylactic against installation incompatibilities.

As in previous versions of the Finder, you'll also see that some menu commands are dimmed (you can see that the Duplicate command, for example, is dimmed in figure 1.2). A dimmed command simply means that the command is not available at that point. Usually, this is because it wouldn't make any sense for the command to be available. In the case of the Duplicate command above, it is dimmed because nothing has been selected to duplicate.

Using Finder 7.5.5 takes a bit more practice than just mousing around the desktop menu bar, but that's not the point of this chapter. If you'll check out chapter 2, I get down and dirty with using Finder 7.5.5 everyday. Apple also does a very nice job explaining the use of desktop menus in the online Macintosh Guide which is part of every System 7.5.5 upgrade kit.

Manager's Tip From the management perspective, the important thing to remember about Finder 7.5.5 is that it works the same as it did under previous versions of the System. If you trained your staffers on Finder 7.1, they will have no problems migrating to 7.5.5. You and your staff won't have to learn any new techniques to make things happen, although you will have to learn the Finder's new commands and capabilities, which I cover in chapter 2.
System 7.5.5 consists of more than just the Finder; although the Finder is the most obvious part of the System since you see it all the time. Even when you are running an application program with its own menu bar sitting on the top of the screen, the Finder is still there, in the background, waiting to be called back to the surface. If you pay attention to the menu bar that is showing on your desktop at any time, you can always tell whether or not you are working inside an application (its menu bar will be showing) or you are working on the desktop (its menu bar will be showing). Moving between layers of application menu bars and the Finder menu bar is as easy as clicking on the layer you want to use. But I’m getting ahead of myself a bit here with this talk of using multiple applications. Let’s return the focus to the System software.

Besides the Finder, which controls everything on your Macintosh, the System consists of a set of control panels (which were called CDEVS before System 7 appeared in 1991), Extensions (AKA INITS), desk accessory programs, utility programs, fonts, device drivers, preference files, communications protocol files, and some miscellaneous other program flotsam. I’ll cover each of these System components, how to use them, and how to manage them in subsequent chapters.

**What’s New and Important in System 7.5.5?**

System 7.5.5 is best described as a features and marketing consolidation effort. It consolidates separate Apple products released over the past three years (since System 7.0), adds some features and goodies from third-party software, and improves all areas of the Macintosh, including the Finder, printing, memory usage, scripting, networking, messaging, communications, and how you customize your Macintosh work. These changes are generally good, although some are less good than others. Apple’s improvements to System 7.5.5 make the Macintosh easier to use and manage. I’ll go through a brief discussion of these improvements now, and then concentrate on the details in later chapters.
Finder 7.5.5

The Finder, the Macintosh computer's most obvious and, I think, its most important application, has received a minor facelift. Finder 7.5.5 includes some solid new features and fixes a lot of interface quirks that were bothersome under System 7. For the most part, the new features are logical extensions of the way Macintosh users expect things to work. The designers of System 7.5.5 clearly realized that most people are accustomed to some version of System 7. It took me about an hour to get used to the changes, and really smart folks will get used to them almost immediately.

But keep in mind, getting used to System 7.5.5 is NOT the same as becoming solidly productive with System 7.5.5. That takes a lot more practice and training.

GUI Improvements

Many of the changes to the Finder are subtle; nonetheless they make the Finder 7.5.5 desktop (AKA the Finder's GUI) a much friendlier and more modern GUI. Apple paid close attention to its users and their concerns, while also noting the features now made popular by non-Macintosh GUIs, like Windows and Motif (the de facto standard GUI in the UNIX world).

Frankly, there is no big news about Finder 7.5.5. It's really a features consolidation, not a new features breakthrough.

Finder 7.5.5 includes a few visual and functional improvements. These include:

- **Apple Menu Changes**—hierarchical sub-menus now enable faster and easier access to items that are kept in folders under the Apple menu. Also, a set of Recent Applications, Recent Documents, and Recent Servers automatically track documents, applications, and servers that were recently used, allowing the user to quickly refer back to them and open them again (see figure 1.5).
Figure 1.5 Apple Menu changes

- **Stickies**—lets you create onscreen electronic notes (see figure 1.6).
- **Finder hiding**—allows the Finder to be inactive while an application is running; if you click outside a document window, the application remains selected, thus preventing a novice user from getting “lost” by switching to the Finder or another application.
- **Default document folder**—automatically saves files to a folder named “Documents” on the desktop, rather than to the application’s folder, making it easier for novice users to keep track of documents.
- **System and application folder locking**—prevents accidental deletion of important files.
- **Updated Scrapbook and Notepad**—includes built-in support for Macintosh Drag and Drop.
Chapter 1: A First Look at System 7.5.5

Figure 1.6 Stickies

- **WindowShade**—allows you to easily hide windows from view, thereby reducing screen clutter caused by multiple windows being open at once (see figure 1.7). The WindowShade control panel works much like Motif's iconification method and Windows 3.1 and 95 minimize commands.

Besides the visual improvements and the changes to the Apple menu, Apple has improved the way the Finder organizes and manages your files.

**Miscellaneous Improvements**

System 7.5.5 has keyboard layout and international date, time, number, and text formats for Roman languages. This allows you to customize system software using these control panels (many of which were in earlier versions).
The available date and time formats are Australian, British, Danish, Dutch, Finnish, Flemish, French, French Canadian, German, Italian, Norwegian, Spanish, Swedish, Swiss French, Swiss German, Swiss Italian, and U.S. The Date and Time control panel also controls the menu bar SuperClock.

Numbers

The available number formats (decimal and thousands separators, currency) are Australian, British, Danish, Dutch, Finnish, Flemish, French, French Canadian, German, Italian, Norwegian, Spanish, Swedish, Swiss French, Swiss German, Swiss Italian, and U.S.

This control panel seems like a very minor point, unless you work with numbers formatted according to some European and Japanese conventions, where decimal points are used as thousands separators.
Text

The available text behaviors (sorting order and text selection) are Danish, Dutch, English, Finnish, French, French Canadian, German, Italian, Norwegian, Spanish, and Swedish.

These are important if you are working in a language other than English as you need to use certain accent marks, special characters, and the like that aren’t normally used in English.

Non-Roman alphabet languages, like Hebrew, Arabic, Kanji, Chinese, or work with System 7.5.5 through extra-cost language kits and the built-in WorldScript language support of System 7.5.5.

Keyboard

The available keyboard layouts are Australian, British, Danish (regular and Macintosh Plus), Dutch, Finnish, Flemish, French (regular and numerical), French Canadian, ISO Canadian, German, Italian, Norwegian, Spanish, Swedish, Swiss French, Swiss German, and U.S. (regular and System 6). Contact your Apple dealer to inquire about international keyboards.

System performance

Overall, Arabic, Hebrew, and Thai system versions are faster than the corresponding older System 7.1 versions. Opening text files and text editing is significantly faster.

New Find Command

With System 7.5.5, the improved Find File command of System 7 has been further improved and now offers features like third-party file finders such as PrairieSoft’s DiskTop, Symantec’s Fast Find, and Claris’s Retrieve It.

As with System 7, the Find Command is found in the File menu and under the Apple Menu.

The Find Command lets you search for files by name, size, kind, label, date created, date modified, version, and lock attribute (see figure 1.9). You can also search for multiple attributes, which you couldn’t do with System 7—a nice improvement. Unlike the third-party utilities, however, Find can only
look at file names and their allied attributes, not at file contents. The windows in the Find command are now live Finder windows, which means you can manipulate them in natural ways, including opening the files found simply by double-clicking on their icons. That is amazingly handy!

![New Find command](image)

**Figure 1.8  New Find command**

**Scriptable Finder**

With System 7.5.5, Apple builds in its AppleScript scripting technology and Open Scripting Architecture (OSA) so you can automate routine or complex tasks—offering a broad range of scripting options. You no longer have to pay extra to buy this capability.

Using AppleScript’s “Watch Me” feature in supported applications, you can automate any series of actions—such as reformatting a document or recalculating a spreadsheet. With scripting, you can also build custom solutions by combining the most useful features of several applications—for instance, a
word processing program could be scripted to automatically retrieve information from a customer database and an accounts payable module to generate a letter demanding payment.

In addition to regular AppleScripting, System 7.5.5 makes the Finder a "scriptable" application—so now you can automate system tasks with your scripts. For example, using AppleScript and the desktop functions of the Finder, you could create a script that backs up a hard disk onto a server, automatically logs into the Internet and searches a World Wide Web server for new information on a particular Web page and downloads it, or performs other system administration functions that benefit from the automation of an AppleScript.

Taking advantage of the Scriptable Finder, you could also create a script that sets up a File Sharing "drop" folder (for use in gathering project materials or offering a place for students to leave their homework electronically), automatically enabling File Sharing, specifying privileges, and creating a folder that can be shared (Apple had this idea too and provides a script to do just this).

Using AppleScript to script both the Finder and applications, one could automate the process of updating a weekly report. The script could retrieve and open the report template from a departmental server and then go onto an administrator's hard disk and open the most recent budget spreadsheet, select this month's figures, and copy them directly into that report. Very slick and very handy.

The script could then enter today's date in the report, open the PowerTalk "mailer" attached to the report document, identify people on several different mail services to whom it should be sent, and send it. Once sent, the script can do a "Save As" and name the report with the current date, saving it in an archive folder on the server.

File Manager Improvements

System 7.5.5 provides an improved set of file management features over those in System 7.0, 7.1, and 7 Pro. The glue for these improvements is the System's built-in file manager that is more robust in System 7.5.5. The
enhanced file manager better handles multiple disks with lots of files and folders stored on them. You don’t have to worry, for example, about System 7.5.5 choking on large numbers of file copies (which occasionally occurred under System 7). That alone may be reason enough to upgrade to System 7.5.5.

The largest supportable partition size has been increased from 2 GB to 4 GB for System 7.5.5. Unfortunately, with 4 GB disks (we should all be this unfortunate!), the minimum block size is 64K, so that even tiny files will use up that much disk space on a 4 GB disk under System 7.5.5.

Macintosh Drag and Drop

As early as 1984 and the first System, the Macintosh made “cut and paste” functionality popular—selecting data in a particular document, cutting it, and then pasting it elsewhere in the document or in another open file. Under System 7.5.5, Apple pushes beyond cut and paste by supporting Macintosh Drag and Drop—many find that this is a big improvement in manipulating files on the desktop.

Using an application that supports Macintosh Drag and Drop, you select a block of data (text, graphics, and so on) from an open file (or the desktop) and drag it to another location. This eliminates the steps of opening the application, copying the selected data, switching to an open document, and pasting the data elsewhere—instead, the user simply drags the data to where he wants it.

An example makes this Drag and Drop process a bit clearer: A person using a graphics program creates a design document that she wants to add to a word-processing document. To do so, she selects the design and drags it into the document (which needs to be open). The graphic now appears in both the drawing program and the word-processing document—without copying and pasting. This drag and drop operation is not a hot link, however, like you would get with Publish and Subscribe. It is a simply a more convenient and less modal way of doing static cuts, copies, and pastes.
Alternatively, she could drag the design onto her desktop (where it becomes a Clippings file that she can drag into other files), making it a useful organization technique for work in-progress. For example, suppose she wants to use her mailing address or company logo repeatedly. She could save these as Clippings files and drop them into any document when she needed them (see figure 1.9).

![Figure 1.9  Macintosh Drag and Drop clippings files](image)

A desktop Clippings file, such as a graphic, can be dragged into other locations when needed. In this example, the graphic is represented by the picture clipping on the desktop, and was dragged into the Scrapbook.

**Macintosh Easy Open**

To provide the correct data translation between different types of applications, System 7.5.5 also supports Macintosh Easy Open, which automatically
translates data when it is moved between different applications (and the correct data translators are present). DataViz's MaclinkPlus data translators for Macintosh Easy Open are included, as well.

**QuickDraw GX**

System 7 brought great improvements to Macintosh imaging, printing, and font control with its printing architecture, TrueType fonts, Fonts folder, and other tweaks. With System 7.5.5, Apple pushes these improvements forward with QuickDraw GX.

With QuickDraw GX, Apple believes it is setting the stage for the next generation in graphics, imaging, and printing. QuickDraw GX significantly extends and expands the graphics capabilities of the Macintosh, creating a new standard for desktop graphics computing (and should resolidify the Macintosh as the best desktop publishing platform). I am betting that Apple got most of this right. QuickDraw GX offers significant improvements for both Macintosh generalists and DTP pros.

What does QuickDraw GX do and how does it work? It's a very large (1.6 MB!) extension that the separate QuickDraw GX Installer will install for you. Once installed, its new features are available:

- Simplified printing and print management via a new, customizable print architecture and user interface.
- The capability to create “portable” documents from any applications that allow you to print and view the document without having the original application or fonts.
- Consistent color between scanners, displays, and printers via Apple's ColorSync color management technology.
- Powerful type and text capabilities that, in conjunction with updated or new applications, enable the display and printing of any typeface.
- Tools for developers that result in new applications offering greater sophistication in graphics, type, and printing.
QuickDraw GX is compatible with all of your existing pre-System 7.5.5 applications. Current Macintosh fonts also work with QuickDraw GX, and can work with many of the printing enhancements it provides. Revised and newly-designed applications and fonts that take full advantage of QuickDraw GX color, type, and graphics capabilities are being released by third-party vendors.

QuickDraw GX runs on 68020, 68030, or 68040 Macintosh systems and is also optimized for the PowerPC chip, allowing applications to access the greater speed and performance of the PowerPC technology (available on Power Macintosh computers).

Many of the features of QuickDraw GX are available to users immediately, such as improved printing and portable document technology. Other features, such as advanced type and graphics, will require developers to build those features into new GX-savvy applications.

But what do you get from QuickDraw GX now? (The future is always wonderful in this kind of scenario, isn’t it?)

Overall, you get simplified, more powerful printing (if you are willing to pay the price of installing QuickDraw GX, which increases the size of the System heap by nearly 2 MB). The Macintosh continues as an industry leader in this area by providing powerful and intuitive printing functionality. QuickDraw GX takes the successful Macintosh print functions and makes them even more powerful and convenient.

QuickDraw GX allows you to display and control selected printers via printer icons on the Macintosh desktop (see figure 1.10 and figure 1.10B). To print a document, drag the file to the desired printer icon (further picking up on the drag-and-drop theme of System 7.5.5).

While this might not seem like a big deal now, as Apple moves the Finder towards more document-centric computing with OpenDoc (that will let you get more done from your documents and worry less about your applications), QuickDraw GX will become a key enabling technology.
By the way, OpenDoc is Apple's upcoming document-centric computing architecture that will move you from thinking about your applications to thinking about your documents. It will allow the development of smaller
applications and a rich document format where you won't care which application produced which part of the document. More on OpenDoc in chapter 6.

QuickDraw GX's desktop printer icons become a key part of document-centric architecture, which will change the way you use your Macintosh computer.

Because multiple printer icons can appear on the desktop, you can choose to send a document to a number of printers. An improved print dialog box also lets the user select among multiple desktop printers without having to access the Chooser, or that creaking old PrintMonitor application (see figure 1.11).

Figure 1.11  QuickDraw GX improved Print dialog box

A desktop printer icon behaves much like a file server or other network-device icon. Double-click on a printer icon, and a print queue status window appears (see figure 1.10B). You can decide to reorder the print queue or postpone a print job simply by dragging document icons to a new location. You can also transfer print jobs to other printers by dragging document icons to another printer icon. These print management functions replace the old PrintMonitor, which works with System 7.5.5, but you don't need it (unless you don't install QuickDraw GX).

QuickDraw GX also supports new printer extensions that can be used with existing applications. These allow you to customize print output with
watermarks and print multiple pages on one sheet (this is great for snapshot views of long documents). An introductory set of these custom QuickDraw GX printing extensions from Peirce Software (Peirce Print Tools) comes on the System 7.5.5 CD.

QuickDraw GX supports a new type of document file format, known as a portable digital document (PDD) or "print and view" document. This technology makes it much easier to exchange documents in electronic form. With a "print and view" document, users can create a file that can be opened, viewed, and printed from any other Macintosh that has QuickDraw GX installed. It will be interesting to see if GX kills third-party document interchange technologies such as Adobe's Acrobat, NoHands' Common Ground, and Farallon's Replica.

Because any Mac that has 7.5.5 can have PDDs, that alone may be sufficient reason for PDDs to succeed where the extra cost third-party products have failed.

Even if the target Macintosh doesn't have the same application or typefaces that were used to create the document, the file retains all of the original document's graphics and typographic information. New software is not required: portable documents can be created using any of today's applications. In fact, one of the QuickDraw GX extensions called the PDD Maker (Portable Digital Document Maker), allows you to drag a file to its icon, and "print" it into a disk file that any QuickDraw GX Macintosh computer can use. This extension works regardless of whether the host computer has the creating application or not. This, my friends, is way cool.

QuickDraw GX will also offer you a bunch of extras—once third-party applications incorporate it. Expect to find, by late 1994, the following improvements from third parties.

**Better Typography**

Macintosh gave many of us our first opportunity to work with high-quality type. This helped make our written work more readable and effective. Many Macfolk are now demanding better typography from their applications, and they want it to be even easier to use. Applications that work with QuickDraw
GX satisfy both of these demands. Everything from QuarkXpress to Aldus PageMaker will be updated to work with QuickDraw GX.

QuickDraw GX will raise the standards of type and document composition, making typographic excellence the standard, not the exception. This is because QuickDraw GX automates much of the typographic process. If you work extensively with type, you will no longer have to determine the proper kerning and justification for a particular block of type, or remember to select special characters (such as ligatures) when typing. These settings and capabilities are built into QuickDraw GX fonts, and are handled automatically within applications that support QuickDraw GX.

You can find more information about GX fonts and typography in chapter 4.

**Font Management**

The installation, screen display, and printing of fonts will be simplified with QuickDraw GX, which includes support for Apple's TrueType font standard as well as a new version of Adobe Type Manager (ATM GX) for support of Adobe Type 1 fonts, which ships with System 7.5.5. This will allow you to select the typefaces you want, whether in TrueType or Type1 format.

**International Support**

QuickDraw GX also provides extensive system-level capabilities for the display and printing of any international text system, such as Arabic, Hebrew, Mandarin, or Kanji. It doesn't matter whether the text reads right-to-left, left-to-right, vertically, or some combination of the three. QuickDraw GX can even display text that combines different reading directions within the same line.

In addition, QuickDraw GX and WorldScript, Apple's existing system technology for international application development, will offer Macintosh computer developers a solid set of tools for the creation and release of equivalent software versions worldwide. Nisus Software's NisusWriter, for example, already includes this multiple language support via QuickDraw GX and WorldScript.
Specifically, QuickDraw GX provides support for the display and graphical manipulation of international fonts and text systems on Macintosh computers. QuickDraw GX fully supports worldwide character sets based on international standards.

**Better Color Support**

It's easy to create documents that contain color information—most Macintosh computers have color displays and most Macintosh applications are color-capable. The difficulty is in getting the onscreen colors to match the colors produced on a variety of color output devices. All too often the printed color output doesn't even come close to the onscreen colors.

For example, without QuickDraw GX, if you find that the contrast between the text and the background colors are not nearly as visible on transparencies as it is onscreen, you may find yourself redesigning an entire presentation. Or a graphic designer might have to rework a design when the colors in a corporate logo come out differently in print than they look on the screen.

To create better color matching, QuickDraw GX incorporates Apple's ColorSync color management technology. ColorSync will enable color devices and applications to input, display, exchange, and output color information consistently and predictably. It will match colors between scanners, displays, printers, and even between Macintosh systems: you can send a color file from one Macintosh (with QuickDraw GX installed) to another, and the same color matching processes will help maintain accurate color display and printout on the second machine.

**Smaller Applications**

Some QuickDraw GX applications are much smaller than comparable applications today, requiring considerably less RAM and hard disk space. And they should be easier and faster to develop.

Because major print functions—including background printing, dialogs, and PostScript font management—are provided as standard objects under
QuickDraw GX, developers should be able to quickly build printer drivers for existing and new output devices, resulting in Macintosh support for an even greater range of output devices.

Collaboration (AOCE and PowerTalk)

System 7 Pro's dubious claim to fame was its inclusion of PowerTalk—Apple's collaboration solution for individuals. Apple split the System into two versions—System 7.1 without PowerTalk and System 7 Pro with PowerTalk (at a greater cost)—to help generate revenue to pay for the development of PowerTalk.

Fortunately for all Macfolk, Apple abandoned this policy and included PowerTalk with System 7.5.5. Unlike the separate server product, PowerShare, the communications aspects of PowerTalk do not require a server and can be used on a peer-to-peer basis with a modem or AppleTalk local area network (LocalTalk, EtherTalk, or TokenTalk).

PowerTalk builds messaging, electronic mail, digital signature verification, and other collaboration technologies into the System rather than having them provided by third parties. As a result, System 7.5.5 can handle personal messaging and mail directly.

With System 7.5.5's PowerTalk, you get all of the following (which, remember, used to cost you extra!).

A Universal Desktop Mailbox

PowerTalk gives you the benefits of a single mailbox and a consistent interface for browsing and searching information, regardless of the number of communications services the mailbox represents (see figure 1.12). It provides a single mailbox icon for all incoming and outgoing mail—including online services, fax, voice, electronic mail from various sources, and documents from any application (see figure 1.13). The universal mailbox makes use of third-party gateway software that can permit seamless information
exchange among users, assuming that the gateway software works appropriately. At this stage in PowerTalk's development, there are a number of third-party gateways (also called SAMs, for Service Access Modules) available, but few of them really work seamlessly yet.

![Figure 1.12 PowerTalk mail announcement dialog](image1)

**Figure 1.12** PowerTalk mail announcement dialog

![Figure 1.13 Mailbox icon opened on the desktop](image2)

**Figure 1.13** Mailbox icon opened on the desktop

Of course, not everyone will want a universal mailbox. Some like having multiple mailboxes for different projects. Apple's PowerShare server gives you this flexibility, but you must pay extra to get it. Of course, you can always use the PowerTalk Mailbox for some mail, and still keep your direct mailboxes (like CompuServe).

Mail agents that are available from third parties, such as Beyond, Inc., can help you manage the ever-increasing flow of electronic correspondence. Mail agents can automatically sort and forward incoming mail, archive mail after it
is read, monitor databases and information sources, and create personalized newspapers by delivering preselected types of information to any System 7.5.5 desktop mailbox.

Besides the universal desktop mailbox, PowerTalk provides AppleMail, a built-in electronic mail (email) application (see figure 1.14).

![Figure 1.14 AppleMail—PowerTalk's built-in e-mail](image)

**AppleMail**

AppleMail provides entry-level mail capabilities for messages that contain stylized text, images, and video. Unlike many e-mail applications, AppleMail does not require a server. Best yet, it's free with System 7.5.5!
In addition to providing mail capabilities with AppleMail, PowerTalk also extends mail functionality to every application by providing a “mailer,” so that you can send mail from any PowerTalk-compliant application without invoking a separate e-mail system.

The mailer provides a standard user interface for a mailing label that can be attached to documents.

Applications that take advantage of the mailer are “mail-capable,” and allow you to send a given document to any number of people using any available mail system (including fax). The mailer also features the ability to attach multiple enclosures and a digital signature.

**Catalogs and Information Cards**

Catalogs store information about the people to whom you want to send email and other objects that make communication easier. Catalogs store these as Information Cards and provide quick access to the information needed (see figure 1.15).

![Figure 1.15 Information Card](image)

Information Cards keep individual or group profiles containing electronic addresses, phone and fax numbers, personal notes, and more (see figure 1.16). Because PowerTalk supports drag-and-drop delivery, files and folders can be sent to others by simply dragging them onto Information Cards.
By defining new catalog templates, third-party developers are able to extend and customize catalog functionality to deliver access to any type of information via PowerTalk (see figure 1.17). The implementation of catalog storage ranges from Personal Catalogs (collections of Information Cards stored on a user's hard disk) to sophisticated hierarchical, distributed, and replicated repositories of information such as those implemented by Apple's PowerShare Catalog server.
DigiSign Digital Signature Verification

DigiSign digital signature technology represents an important new capability at the System level. DigiSign provides a mechanism to electronically approve and verify data. The data can range from a single cell or field to a complete compound document. With DigiSign, you can attach an electronic signature as well verify other signatures and determine if a document has been altered.

You can now sign documents without the time-consuming process of printing them and then circulating them for approval. Instead, documents can be routed through electronic mail, allowing them to be processed electronically. This allows individuals or organizations to do business in a more time- and cost-effective manner. System 7.5.5 includes a demonstration DigiSign signer, as well as information on obtaining actual signers for all your needs.

The PowerTalk Key Chain

This security technology provides a single mechanism for securing access to multiple network and desktop services, including the mailbox. It's implemented as a fairly simple dialog box where you set access passwords for each of the network and communications services you want to connect to via PowerTalk.

PowerShare

For larger installations and more complex requirements, Apple offers PowerShare Collaboration Server software as an optional product to augment the peer-to-peer capabilities offered by PowerTalk and System 7.5.5. PowerTalk includes the client-side software in a PowerShare client/server environment.

PowerShare, which shipped in January 1994, provides sharing and administration of centralized collaboration services. By providing for consolidated administration of shared information catalogs and gateways, PowerShare lets users take advantage of server-based messaging, catalog, authentication, and
privacy services on an AppleTalk network. As a result, PowerShare enables teams of people to work together more easily—whether they are collaborating on projects, routing a document through several electronic signature levels, or communicating with each other with disparate electronic mail systems.

PowerShare also addresses another key requirement in today's distributed information systems: network security. Most information traveling on today's local area networks (LANs) can be easily captured by anyone with the appropriate tools. PowerShare secures network traffic through network authentication and encryption services that support the exchange of mission-critical or highly sensitive information on existing LANs.

**Messaging Microsoft**

At the same time that Apple announced PowerShare, it announced a joint agreement with Microsoft that ensures interoperation between their respective messaging and directory services (at least that is what the agreement says—so far products have not been released).

Under the terms of this agreement, Apple's PowerShare servers, which are built upon the AOCE (Apple Open Collaboration Environment) architecture, will support Windows clients as well as Apple's own PowerTalk clients. And Microsoft will support PowerTalk clients on its Enterprise Messaging System servers (that use the MAPI protocols).

Because PowerTalk is built into the operating system, System 7.5.5 users will be able to take advantage of this interoperability as soon as it becomes available. Of course, given the strange love/hate relationship that Microsoft has for the Macintosh computer (Microsoft loves all the applications it sells into the market, but it hates the fact it has to sell them at all, since it takes sales away from its Windows mainstream) who knows if ANYTHING will ever come of this agreement. It wouldn't be the first time Apple signed up with a competitor on a joint project only the have the whole deal fizzle. Does the name Digital Equipment Corporation ring a bell?
Macintosh Telephone Manager

Apple's Telephone Manager software has been available to developers for two years, and is now built into the operating system with System 7.5.5. The Telephone Manager is part of the Macintosh Telephony Architecture (MTA), which provides a framework for the integration of personal computers and telephones.

The MTA framework enables developers to create sophisticated telephony-based solutions, which users are able to take advantage of with System 7.5.5's built-in Telephone Manager support. Solutions (for which you pay in the form of third-party applications), so far, include:

- Telephony-aware applications that tie software applications to telephone functions. These include applications such as: contact managers that can initiate telephone calls, databases that automatically present information based on incoming calls, calendar programs that automatically dial scheduled conference calls, accounting applications that can automate accounts receivable follow-up phone calls, and electronic forms applications that allow individuals to call the originator of a form before approving it.

- Screen-based telephony applications that provide the user interface for a virtual telephone on the user's Macintosh desktop. At a basic level, these applications provide an easier-to-use and a better integrated alternative to the keypad on a telephone—allowing you to place calls, answer calls, transfer and hold calls, and so on, with a simple, direct manipulation user interface. Examples include: programs that log call times for professionals charging hourly rates, and phone applications for receptionists who juggle many calls simultaneously.

- Programmed telephony applications that allow you to script a Macintosh computer to handle incoming calls and interact with callers to create telephone-based information retrieval systems, voice mail, and personal agents.

- Telephony applications can be combined with PowerTalk's catalogs technology for the storage of telephone numbers and other personal
information. This provides a real-time application of PowerTalk's integration of store-and-forward collaboration to the Macintosh user experience.

**Improvements for PowerBook Owners**

System 7.5.5 includes a new set of utilities that extend PowerBook battery life, synchronize files between laptop and desktop systems, and offer convenience features that make mobile computing easier and faster. These same new utilities and extensions are also shipping separately with the new PowerBook 500s and Duos.

**Extending Battery Life**

The PowerBook Assistant gives you increased hours of battery life by providing automatic power management—switching to full performance if the PowerBook is plugged in, and full conservation if it's not. It also provides for quick and easy configuration of the PowerBook for either performance or battery conservation.

Battery management features include automatic backlight dimming and a permanent RAM disk feature that saves information between restarts and shutdowns. The PowerBook control panel consolidates power-management features into a single control panel.

**Consolidated Control Strip**

Because PowerBook control panels are now combined into a single Control Strip (see figure 1.18), you have simpler access to controls and customization of PowerBook systems.

*Figure 1.18  PowerBook Control Strip*
The Control Strip can be moved anywhere on the screen. The whole Strip, or portions of it, can be hidden and you can arrange the modules to fit the way you work:

- **AppleTalk Switch**: Enables you to switch AppleTalk on or off without going to the Chooser.
- **Battery Monitor**: Provides a visual indication of present battery charge levels, rate of battery consumption, and a digital readout of battery time remaining. It also displays whether one or two batteries are being used (on 500 series PowerBooks), and includes icons that let the user know if the batteries are charged, charging, or draining.
- **File Sharing**: You can switch File Sharing on or off and change the sharing set-up.
- **Hard Disk (HD) Spin Down**: Allows you to spin down the hard disk drive with a single click. This saves battery power.
- **Power Settings**: You can open the PowerBook control panel or set your PowerBook system to better conservation or better performance.
- **Sleep Now**: Allows you to put the PowerBook into sleep mode with a single click.
- **Sound Volume**: Click on the sound icon to select volume—you no longer need to resort to the control panels.
- **Video Mirroring**: Allows you to switch video mirroring on or off without going to the control panels. (This icon is available in the Control Strip only when a PowerBook is attached to an external monitor).

Video Mirroring means that you connect a large monitor or projection system to your PowerBook such that the image on your PowerBook's screen is the same as image on the attached screen. This is very useful for doing presentations.

**File Synchronization**

The PowerBook File Assistant (formerly an extra cost package from AppleSoft) automatically synchronizes files between PowerBook computers
and other Macintosh systems. With it, you have the freedom to work whenever and wherever, without worrying about whether the other computers have the most current version of a document. The PowerBook File Assistant keeps any two files, folders, or disks synchronized—locally, over a network, or using a disk. It provides “drag and drop” set up and lets you select automated or manual synchronization of data. Synchronization can be one-way or bidirectional.

**Convenience features**

Other built-in utilities include queuing up documents to print as soon as the PowerBook is connected to a printer and improving mouse tracking by enhancing cursor visibility. A sleep key puts the PowerBook into sleep mode when not in use. When it comes out of sleep, hard disks and servers are automatically remounted using the AutoRemounter control panel.

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**Don Crabb Bottom Line Tip**  
When installing System 7.5.5 on your PowerBook, make sure that you write down your preference settings for backlight dimming, disk spin down, and so forth. That way, if System 7.5.5 installation removes your preferred settings, you will be able to redo them easily. Also, make sure that any third-party utilities don’t conflict with the new built-ins of System 7.5.5.

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**System Requirements and Availability**

According to Apple, System 7.5.5 requires a Macintosh Plus or later with a minimum of 4 MB of RAM; for PowerTalk and QuickDraw GX, a minimum of 8 MB of RAM and a 68020 processor is required. When installed on Power Macintosh systems, System 7.5.5 requires a minimum of 8 MB of RAM; for PowerTalk and QuickDraw GX, a minimum of 16 MB is recommended.

Multiply all those Apple minimums by a factor of two and you will have a dandy System 7.5.5 platform. Frankly, I wouldn’t install System 7.5.5 on
anything older or slower than a Mac II (and that’s really pushing it). You simply won’t be happy with it because you will have to give up many System 7.5.5 features just to make it small enough to launch in the available memory space.

Software and Hardware Compatibility

Although the most up-to-date information about software and hardware compatibility can only be found in the README files (that Apple updates periodically and ships with System 7.5.5), I need to give you a couple of tips up front.

First of all, virtually all of your software that ran under System 7.0, 7.1, and 7 Pro is going to run under System 7.5.5. You might have to fiddle with your systems a bit, but you can probably make your old software work perfectly.

Second, virtually all of your Apple and third-party hardware and peripherals work OK under System 7.5.5—although you may have to contact the vendors to obtain new device driver software, especially imaging devices that will use QuickDraw GX.

Installing System 7.5.5

Don Crabb Bottom Line Tip  A lot of your friends and colleagues may tell you that you don’t need to buy System 7.5.5 to upgrade. You can simply borrow their copy. Don’t believe them. If you do, you will be engaging in software piracy, which is wrong for so many reasons, I could write another book on that issue alone.

Installing System 7.5.5 is really pretty easy, but you shouldn’t rush into it. You should buy the necessary upgrade kit from Apple and read all the
manuals before you start. Then make sure that you backup the installation disks *(make sure that if you use the floppy version, you lock the disks to prevent you from overwriting them)* before proceeding. If you buy the CD-ROM version, though, don’t sweat this part.

**The Installer**

The installer that Apple includes on the System 7.5.5 upgrade disks (and CD-ROM disc) works just like it did in earlier software upgrade versions. In fact, using the installer is practically a no-brainer, so you have to be careful that you don’t let it do something that you don’t want done. The installer has two basic operating modes—automatic and custom.

**Automatic Installation**

Automatic installation lets you click an OK button and have at it; all you do is sit back and pump in the floppy disks while the installer removes old System files and installs new ones. (Of course, if you are using the CD version, you don’t even have to do this much!) But be careful when selecting automatic installation. If you don’t want all of the System 7.5.5 files installed, or if you don’t want to overwrite your existing System 7.5.5 files on your startup disk, then don’t run the installer in automatic mode. Instead, switch to custom mode and only install what you want to.

**Custom Installation**

The Custom mode lets you select precisely which files (System, printing, fonts, utilities, and so on) that you want to install, and where you want to install them (on which disk). This lets you install System 7.5.5 on a disk other than your current startup disk, in case you want to keep a working version of System 7.0, 7.1, or 7 Pro. The custom mode also lets you install only the support files, rather than the full set of System files. Whatever the reason, though, if you expect to have any control over the System 7.5.5 installation process, you need to switch into the custom mode.
If you decide to do a customized installation of System 7.5.5 you should note that the Custom button offers many options not readily apparent because they are hidden in hierarchical menus. Doing a custom installation can be especially convenient if you want to install just the minimal software needed for your machine, thus avoiding doing something wasteful such as installing a bunch of PowerBook extensions on your desktop Mac.

Don Crabb Bottom Line Tip  To install System 7.5.5 and automatically update your existing System folder, copy its contents into a new folder (called Previous System Folder), and then install a new clean System 7.5.5 folder by holding down the control-shift-K keys while you click the Install button. Once installed, you may copy the third-party control panels and extensions from your old system folder to the new one. By doing it this way, you risk fewer installation problems.

Upgrades

System 7.5.5 is the latest version of the Mac OS for all Macs and it updates and replaces System 7, 7.01, 7.1, 7.5, 7.5.1, 7.5.2, 7.5.3, and 7.5.4. It comes on CD-ROM, costs $99 list and $79 street, and is the version every Mac owner should be using. If you own System 7.5, you can upgrade first to System 7.5.3, using the upgrade software available free on Apple's Web site (http://www.apple.com) and then to System 7.5.5 using the same mechanism. To make it even simpler, though, shell out the #79 for the full System 7.5.5 CD-ROM. It will make Open Doc and Cyberdog installation easier, too.

The installation disks contain (the following dull list of stuff is a necessary evil, since thoroughness is a virtue): System Software 7.5.5 and Utilities, AppleCD Audio Player software, version 2.0; AppleScript software version 1.1, including sample scripts; Macintosh CD Setup software version 5.0.1; Macintosh Easy Open software version 1.1; Macintosh PC Exchange software version 2.0.1; MacTCP software version 2.0.4; PowerBook utilities; PowerTalk software version 1.1, including DigiSign and AppleMail; QuickTime software version 2.0 (boo-hoo, you don't get the cool QuickTime VR); and the QuickDraw GX software version 1.0.

You also get a thin manual called the Upgrade Guide, which is another reason why you need this book to help you really use System 7.5.5.

These upgrades also come with phone support. Apple, having caught usersupport fever a few years ago, gives you unlimited basic free telephone help when you buy System 7.5.5. All you have to is call Apple's toll free hotline,
the System 7 Upgrade Answerline at 1-800-SOS-APPL, and pray (picking multiple deities helps).

Every time that you dial up the Apple help line, you will eventually get to a live support specialist, but you will likely have to play touchtone trivia to get there.

If you need more help from Apple—like information about service, support, and training programs—look for the support phone number on the little card that came with your upgrade kit (that has probably already fallen onto the floor). You should send this in right away as it entitles you to receive information from Apple on future updates, buys and so on. Here are the numbers that you can call to find out more about System 7.5.5 and Apple’s support:

- For training help call 1-800-732-3131, extension 400
- For service provider help call 1-800-732-3131, extension 400 (yeah, I know, it’s the same number, but trust me, it works)
- For other service and support problems call 1-800-776-2333

Apple System 7.5.5 Information Assistance Numbers

For general information:

Customer Assistance Center 1-800-776-2333
To locate an Apple Reseller 1-800-538-9696

Education and Government customers can contact their Apple Inside Sales Representative:

K–12 Inside Sales 1-800-800-2775
Higher Education Inside Sales 1-800-793-3389
State and Local Government Inside Sales 1-800-998-2775
Federal Government Inside Sales 1-800-676-2775
Program information can be found on AppleLink at Apple Sales & Mktg, Apple Programs, and Apple Software Volume Licensing Program.

Questions about the program can be sent via AppleLink to VOL.LICENSE. Or if you are really retrograde (!), you can write to Apple at: Apple Computer, Inc., 1 Infinite Loop, Cupertino, CA 95014, or phone them at (408) 996-1010, or telex at TLX 17.576 (you've got that home telex option on your Performa, right?!).

**Apple Software Maintenance Program**

To keep your 7.5.5 multiple copies up-to-date, you might consider purchasing a 2-year software maintenance program. Again, your price will be what you can negotiate with Apple:

- Subscription term is for 2 years, payable in 1-year (annual) installments. Annual fee for licensee begins with quantities of 50 and above covered systems.
- Prices depend upon product and quantity purchased—flat fee per discount tier level (same as previous tier levels).
- Subscription covers software upgrades, updates, like-platform replacement products, and system enhancements. For details, please refer to the Apple Software Maintenance Program documentation you can obtain from Apple.
- Available for all products covered under the Apple Software Volume Licensing Program, as well as System 7.5.5, except for the Apple Font Pack.
- New System 7.5.5 and MAE maintenance subscribers at tier levels above 500 receive a 1-year free subscription to the Apple Support Professional Program, a robust array of tools and services designed to meet the special needs of support professionals, as an introductory bonus.

**Getting System 7.5.5 Outside the U.S.A.**

Availability of Macintosh System 7.5.5 outside the United States varies by country. Localized versions began shipping during September 1994. For information about the availability and price of Macintosh System 7.5.5 in a specific country, contact the Apple office in that country.
Common Myths about System 7.5.5

Being the public-spirited individual that I am, I now present some of the most common myths, the party line, and the truth according to Crabb about System 7.5.5. Remember, your mileage may vary.

The Party Line and Don’s Comments

Myth #1. You have to upgrade all your machines to System 7.5.5 at once.

The Party Line: System 7.0, 7.1, 7.1 Pro, and 7.5.5 systems can share networks, applications, documents, and printers transparently. You can upgrade some machines to System 7.5.5 and leave others at previous versions of System 7.

Don’s Comments: Anytime I hear the word “transparently” (when it comes to computers), I run for the hills. As a result, I would upgrade all my Macintosh computers to 7.5.5 just as soon as I could afford it. This system has too many bug fixes and enhancements not to be installed right away. Why create problems for yourself? Still, if you choose to keep older System 7.x around with 7.5.5, my tests show you will have very few problems.

Myth #2. They say System 7.5.5 runs in 4 MB but you really need 8 MB.

The Party Line: There’s more application space available in a 4 MB System 7.5.5 machine (without PowerTalk and QuickDraw GX installed) than there is in a 2 MB System 7.0 machine. So a 4 MB configuration will be great for running one application at a time, just like a 2 MB 7.0 Macintosh. Of course, to run larger applications or multiple applications, you’ll want more memory.

Don’s Comments: You need at least 8 MB to run 7.5.5 on a 68K Macintosh, and 16 MB on a Power Macintosh. I wouldn’t be happy without at least double those minimums if I were also running the QuickDraw GX and PowerTalk. System 7.5.5 has too many improvements to hamstring it with insufficient memory. RAM is a cheap way to make your Macintosh experience a very pleasant one.
Myth #3. MacTCP won’t work with System 7.5.5.

The Party Line: System 7.5.5 includes MacTCP 2.0.4, which is the latest version. This fixes everything.

Don’s Comments: Bingo, you must be in the front row! Now, let’s see you keep it up!

Myth #4. System 7.5.5 includes a new version of HyperCard.

The Party Line: System 7.5.5 includes no version of HyperCard at all. It includes the new Apple Guide technology and Apple Guides for hypertextual online help, which supplant the need for the HyperCard Player.

Don’s Comments: HyperCard is a dying duck, so it’s not included in 7.5.5. That’s a shame, but so are lots of things in life.

Myth #5. Buyers of new Macintosh computers don’t have to pay for System 7.5.5, why should I, an old Macintosh user, have to pay?

The Party Line: Apple ships System 7.5.5 with every CPU once it is available. It doesn’t cost Apple anything more to include its latest System, which is why the System is bundled with it. Apple charges existing customers to help recover development costs and because Apple has to make money from its software.

Don’s Comments: Apple has always been a software company and just recently started acting that way. It simply can’t give away its software any longer, so the days of free System software are now officially over. Get used to it. PC users have for years. Repeat after me: System Software Costs Money to Create so it Must Cost Money to Buy!!!

Chapter 1 Summary

Thus ends chapter 1. I’ve tried to give you some introductory information about System 7.5.5, point out the important new features, and let you in on some common myths. In the next chapter, I’ll get into the Finder 7.5.5 improvements in more detail, including how to use its new features and functions. But before I close this chapter officially, here’s a short quiz to help you focus on the important stuff in this chapter. (And it will also test whether you’ve looked ahead in this book!)
Don Crabb Bottom Line Tip

Why upgrade to System 7.5.5?

System 7.5.5 provides a more robust environment that 7.0, 7.1, or 7.1 Pro. It handles memory more intelligently and it's also faster (except when you pile on PowerTalk and QuickDraw GX). And it includes every extra System doodad for which Apple used to charge extra. For me, though, the bottom line is that it crashes less often than previous versions and it comes with enough built-in Apple extras (AppleScript, Apple Guide, WindowShade, MacTCP, Hierarchical Apple Menus, and 3rd party extensions (which always increase the likelihood of crashing).

I like the File Assistant because it enables me to keep my PowerBook and desktop Mac's files synchronized. I also like the Control Strip and the built-in PC Exchange and DataVix MacLink translators, since I have a lot of old Mac and PC files in odd formats that I want to use. Considering you used to have to pay $149 just to get PC Exchange, the price for System 7.5.5 starts to look pretty good.

Crabb’s Computing Quiz for Chapter 1

1. Why did Apple call it System 7.5.5?
2. What kind of hardware do you need to run System 7.5.5?
3. What would you use drag and drop for?
4. What sort of glue do Stickies use?
5. Why does Apple use “Power” in so many of its products?
6. How much did you pay for System 7.5.5?
7. Does System 7.5.5 support application preemption?
8. What’s the best improvement with System 7.5.5?
9. What’s the most dubious improvement with System 7.5.5?
10. How many of you thought this would be a serious quiz?
Answers to Crabb’s Computing Quiz for Chapter 1

1. Because Windows95 was already taken. Seriously, the number was chosen as a half-way marker to System 8.0. It’s probably not half-way in terms of OS architecture, but it is a serious stepping stone towards System 8.0.

2. A Macintosh would be a good start. This information was in the middle of this chapter. You skipped to the end, didn’t you?

3. Bad habits, perhaps?

4. Don’t be an idiot.

5. They are overcompensating for something. Probably Redmond-envy.

6. I got it for free! I love being an author...

7. No, but you can bet some future System will. Apple’s too smart not to include it.


9. The Launcher—I will talk about it in the next chapter, but, frankly, I think it’s of very limited use, although it looks cool and some people really like it. But, then, some people really like liver and onions, Tripe ala Normande, and the Beastie Boys. There is no accounting for taste.

10. Ha, way too many!
Chapter 2

Using Finder 7.5.5

This chapter will show you how to use the new Finder 7.5.5 for your everyday tasks as well as how to manage its capabilities for your staff. (Of course, that assumes you have a staff. If you don't have a staff to manage, consider yourself the luckiest person on the planet!)
Although you can use System 7.5.5 (and manage others who use it) without knowing much about how the operating environment works, a better strategy is to get grounded in the basics of Macintosh System 7.5.5. That's what this chapter is designed to do—give you enough of the bits and bytes of System 7.5.5 so that you'll have an idea of what to expect when you are using it in the real world (wherever that is).

**Finder Menus**

Just as with previous versions of the System, the Finder is where all the action takes place. Ergo, a good place to start with System 7.5.5 is with the new Finder (Finder 7.5.5), and each of the menus and commands in the Finder's menu bar.

Please take a close look at the annotated screenshot in figure 2.1. This figure shows each of the menus available from the Finder.

In this figure, you'll see the Apple, File, Edit, View, Label, and Special menus at the top of the screen.

How is this different from the old System 7.x Finder menus? It isn't. There's nothing new. Nada. Zilch. Remember, friends, System 7.5.5 is a reference release, not a groundbreaker. However, further along the menu bar, you see that a clock has been added (Steve Christensen's SuperClock, which is controlled by the Date and Time control panel), the balloon help icon looks 3D (and it has new features), and the old Application menu icon still anchors the right side of the menu bar.

**The Apple Menu**

Let's look at the menus and refresh ourselves on exactly how the Finder commands work. The Apple menu is a good place to start. The only difference between the Apple menu and other Finder menus is that the Apple menu is fully customizable, while the others are not. You can modify the Apple menu to suit your own working style and preferences.
As it is under System 7.x, the Apple menu holds the contents of your Apple Menu Items folder (which lives in your System folder). You can put applications (including any old-style Desk Accessories [DAs]), aliases, files, and folders in this folder. To open an item in the Apple menu, drag down the menu to highlight your choice and release the mouse button.

Allow me to demonstrate: in figure 2.2, I moved my mouse pointer to the Apple menu, opened it by clicking the mouse button, then dragged down the menu to find Disk First Aid (the application I wanted to launch, which
Guide to Macintosh System 7.5.5

Mac Masters
System 7.5.5 includes an updated version of Disk First Aid that does a solid job of diagnosing and fixing disk problems. Still, if you want the best disk diagnostic and repair utility, buy a copy of Norton Utilities 3.1 from Symantec. It includes the best parts of Norton Utilities 3.2 and Symantec Utilities for Macintosh, rolled into a new set of utilities, and it can find and fix disk problems that even Apple's Disk First Aid cannot handle. Symantec also sells the excellent MacTools 4.0, another first rate disk saver/fixer.

In any case, I recommend that you run Disk First Aid at least once per month (and more often if you have to do a hard reset on your Macintosh fairly often to free it from a System crash). Also, after you run Disk First Aid (or Norton Utilities) make sure that you rebuild the desktop.

There was in the new Recent Applications folder. (By the way, I would strongly recommend that you run Disk First Aid immediately after a serious crash. This way you catch and repair any directory structure corruption before it spreads.)

![About Microsoft Word...]

Figure 2.2 Using the Apple menu

Note that the Apple Menu now supports hierarchical or cascading of submenus (call them what you want, they make it easier to find and open files and folders). Hierarchical menu items have a little triangle (it looks like `)` that indicates there are further selections available "under" that item. To see these choices, drag down the menu and highlight a hierarchical menu item. You can then move out into the "new" menu to make a selection. Take another look at figure 2.2 and you'll see what I mean. This option is very handy if you have a lot of applications, since you can keep application aliases in your Apple menu, and launch the applications using the new submenus.
You'll also note some new folders have been added to the Apple menu under System 7.5.5: Mail and Catalogs, Recent Applications, Recent Documents, Recent Servers, Speakable Items (AV Macs only), and Automated Items (sometimes installed as Useful Scripts if you already have AppleScript 1.1 installed). You'll also find the • Shut Down command, the usual desk accessories, the Control Panels folder, Stickies (electronic Post-It notes), the new Jigsaw Puzzle (who says Apple can't provide corporate America what it needs!), plus the PowerTalk Key Chain control (which lives in the Mail and Catalogs folder and its alias can also appear on the desktop).

**Apple Menu Options**

The new folders in the Apple menu are fairly easy to understand. The most immediately useful items are Recent Applications, Recent Documents, and Recent Servers. Each folder automagically holds the most recently used applications, documents, and servers (it keeps track of them even after you restart or shutdown, which is very nice). You can set the number of applications, documents, and servers that each folder holds in the Apple Menu Options control panel (see figure 2.3); you can also use this to turn off the hierarchical menus (but why would you ever want to do that?).

![Figure 2.3 The Apple Menu Options control panel](image)

*Mac Masters*

You do not, however, have to rebuild your desktop everytime you get a blip on your Mac, which used to be the conventional wisdom. See chapter 9 for more details on these sorts of troubleshooting issues.

*Mac Basics*

To rebuild your desktop, press the Shift-~-Power keys to restart your Mac (the Power key is in the upper right corner of your keyboard, it has a little triangle on it). While your Mac is restarting, hold the ~ and Option keys down. After a bit, a dialog box will ask you if you want to rebuild the desktop file for the currently open disk. Click OK to have the desktop rebuilt.
The File Menu

The File menu is the heart of the Finder, just as it is under earlier versions. The File menu enables you to:

• Create new folders.
• Open selected desktop objects.
• Print selected desktop objects.
• Close windows.
• Get information about a selected object.
• Turn on file sharing for a selected item.
• Make a copy of a desktop object.
• Create aliases of desktop objects.
• Put open objects away and close objects.
• Find objects.
• Find them again with the same parameters (which is useful for repeated searches).
• Setup a page for printing.
• Print the currently selected window.

All of this is shown in figure 2.4.

![Figure 2.4 The File menu](image-url)
Get Info

Let's take a closer look at one of the most useful File menu commands: Get Info. To use this command, highlight something (a file, folder, or application) and choose Get Info from the Finder menu.

Figure 2.5 shows you the Get Info command being selected from the File menu, while figure 2.6 shows the Info dialog box for a document.

Figure 2.5  Get Info command selected

A look at this dialog box reveals no changes from System 7.x. For example, the Stationery pad option remains.

Get Info also enables you to change a document's icon. You can select the icon within the Info box and then paste in a new icon (which you have created elsewhere or via a handy icon editor such as Icon 7).

Note also the Locked checkbox in the bottom left-hand corner. If you check this box, you prevent changes from being made to the document, so don't check this box if you plan to edit the file. When you close the Info box, the changes you made to the Locked and Stationery pad checkboxes take effect immediately.
Checking the Stationery pad box turns the current item (selected for Get Info) into a stationery "template." A stationery document gives you a ready-to-use template. This is useful for letters and other documents that have a similar format every time you create one.

Figure 2.6  Info dialog box for a document

As you see in figure 2.7, completing a Get Info command on an application gives you a different dialog box than the one given for a document. This Info dialog box lacks the Stationery pad checkbox, since the concept of boilerplate applications doesn't make much sense. The Locked checkbox is there, however, so you can prevent an application from being altered.

Figure 2.7  Info box for an application
Don Crabb Bottom Line Tip  The most important difference between an Info box for an application and one for a document is the Memory Requirements box (see figure 2.7). This area tells you the software publisher's recommendation for the minimum amount of memory that the program needs to function properly (Suggested size), the currently set minimum amount the program should have before it will open (Minimum size), and the maximum amount of RAM the program will be able to use (Preferred size).

Since almost every application needs more memory than the vendor thinks it needs, you are almost always better off setting the Preferred size to at least 25 percent larger than the Suggested size figure indicates. As soon as you close this Info box, your new memory configuration will be active for that program. However, you will find that you cannot change memory sizes of System files and desk accessories (even though they may be classified as applications). This is to keep you from setting the memory value so low that it would prevent your Macintosh from starting up (see figure 2.8).

Figure 2.8  Info box for a System file
Mac Basics

When you need to find an original file for which you have an alias, click the Find Original button in the alias' Info box, and the Finder will blast you to the desktop with the original file selected.

You can, of course, use the Get Info command on any icon that appears on the desktop, whether it's a document, application, alias, System file, disk volume, files server volume, or folder. The kinds of Info boxes those commands will invoke look very much like the ones you have seen, except that you probably will have less information and you may not be able to make many changes.

The Edit Menu

In the Edit menu, you will find the same Undo, Cut, Copy, Paste, Clear, Select All, and Show Clipboard commands that you used under System 7.x. Each of these Finder Edit commands can work on files, folders, disk volume names, or other icons. In short, the Edit menu does the basic dirty work on Finder-level data—cutting, copying, and pasting information within the desktop and within applications.

The View Menu

The View menu is the same as it is in System 7.x. The View menu enables you to view the contents of any Finder window according to seven different display parameters (display by Small Icon, Icon, Name, Size, Kind, Label, or Date).

Don Crabb Bottom Line Tip

I have already used the Views control panel to cut this list of parameters down to a manageable size (you can have as many as nine parameters); otherwise when you display view by Name, by Kind, and so forth, you'll get too much useless information. (Let's get serious here folks, who really cares about viewing by version or by comment! Talk about a non-productivity aid.)
I used to think it was pretty swift to be able to sort your Finder window views by all these criteria. In real life, though, I've found the only important ones are View by Label, View by Name, and View by Date. I'd eighty-six the rest by turning them off in the Views control panel; this will also have the salubrious effect of speeding-up your windows displays.

Using Views to Organize Files

The Views menu enables you to select the “sort order” and display type for each file in a given window. Figure 2.9 shows View by Name being selected; to see the effect of the View by Name command, take a look at figure 2.10, which shows an open Finder window. Notice that the files in that window are listed in alphabetical order by name. If you change to View by Label as in figure 2.11, you can see the files rearranged according to the sort order of their labels (see figure 2.12). At any time, of course, you can return to the old standby, the View by Icon (see figure 2.13).

![Figure 2.9 View menu, with by Name being selected](image-url)
Figure 2.10  Viewing a window by Name

Figure 2.11  View menu, with by Label being selected
Chapter 2: Using Finder 7.5.5

**Figure 2.12** Viewing a window by Label

**Figure 2.13** Viewing a window by Icon
Mac Masters

If you want to really maximize the Views control panel, consider adding Inline Software's clever PopUpFolder control panel. PopUpFolder puts hierarchical control over any Finder folder, which plays beautifully off of the Finder's sorting orientation. PopUpFolder also extends the Apple menu by making it available from any folder. PopUpFolder is an inexpensive way (less than $50 at street prices) to extend 7.5.5's already solid viewing and accessing file management tools. Figure 2.14 shows how PopUpFolder works.

**Figure 2.14** PopUpFolder in action

### Using the Views Control Panel

The Views control panel controls the way that your Finder displays files. Figure 2.15 shows the Views control panel (which is stored within your System folder, and can be quickly reached through the Control Panels item in your Apple menu).

**Figure 2.15** The Views control panel
The Views control panel enables you to set the default type font and size (but not style) for each Finder window and its components (files and folders). It also enables you to set whether you want a straight grid or a staggered grid when you View by Icon. You can even make sure that your icons always snap to an invisible grid within the window—which really helps reduce window clutter.

Under the List Views area, you can choose the size of the small icon displayed next to each file and folder name (you ought to pick the smallest one to save valuable screen real estate), as well as the default information calculated and displayed with each file and folder.

Here's one more bit of info about Finder outline views (see figure 2.16 for a quick look at a list view showing outlines).

![Figure 2.16 Finder window showing an outline view](image_url)
Outline views are automatically invoked (you won't find a View by Outline command, for example, in the Views menu) when you select any list view of your files and folders (name, size, kind, label, date, version, or comments). Like an outliner in a word processor, outline views give you an indented, hierarchically organized view of your files.

**Don Crabb Bottom Line Tip** Here are some tips for using outline views:

- Outline views are great for organizing the top two levels of each nest of folders.
- When you use outline views for more than the top two levels, you'll probably run out of display space in the window to show all your files at once.
- Open folders below the top two levels and then use the outline views within those folders to help organize them. The key to using outline views and nested folders is to try to avoid large folders that you must scroll through to find what you need.

### The Label Menu

The Label menu is another carryover from System 7.x; it replaces the Color menu found in System 6.x.

The Label menu offers a very basic (eight colors) color-coding scheme for your files, folders, disks, and other Finder items. To use the Label menu, you must have a least an 8-bit color Macintosh with the display set to 16 colors or shades of gray.

**Don Crabb Bottom Line Tip** FYI, if you do not have a color monitor, using labels with gray shades is a pain in the eyes. For people who cannot distinguish gray scales easily, it may also prove to be an exercise in futility. Also, if you
don't have a color monitor, what are you waiting for? Buy one now! Color is easier on your eyes and your brain.

The Label menu comes with several default names associated with its colors or shades of gray. As you can see from figure 2.17, these names are *None* (no label), *Essential*, *Hot*, *In Progress*, *Cool*, *Personal*, *Project 1*, and *Project 2*. If Apple's default names don't work well with your labeling scheme (and frankly, they DON'T for mine!), then you can edit them easily, by opening the Labels control panel (see figure 2.18).

*Figure 2.17 The Label menu*

*Figure 2.18 The Labels control panel*

The Labels control panel enables you to change the names associated with the colors or gray shades in the boxes. All you need to do is:

- Select the label name that you want to change.
- Type a new name or edit the name being displayed.
Mac Basics
Or, you can simply apply colors to desktop icons to make your desktop more fun to look at. Never overlook a chance to have fun with your Macintosh!

- Hit a Return or Enter key to set the new name.
- Press the Tab key to set the name while advancing to the next name in the list.

As soon as you change a Label name, it will be reflected in the Labels control panel, in the Labels menu, and throughout the Finder.

Of course, you don’t have to monkey around with labels if you don’t want to. If you choose not to play with labels, each time you create a new icon on the desktop (whether its a document, application, or whatever) it will lack a label. And if you want to color code it with a label, simply select the icon and then select a color or shade of gray from the Labels menu.

Besides the most obvious label characteristic (its color or shade of gray), Label shows up in any list view within a Finder window. Figure 2.19 shows how the Label field is displayed in a list view of files.

### Figure 2.19  A window sorted by the Label field

<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
<th>Kind</th>
<th>Label</th>
<th>Last Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Menu Items</td>
<td>-</td>
<td>folder</td>
<td>Essential</td>
<td>Fri, Sep 9, 1994, 7:26 PM</td>
</tr>
<tr>
<td>Apple Menu Items (Disa...)</td>
<td>-</td>
<td>folder</td>
<td>Hot</td>
<td>Sat, Sep 10, 1994, 8:13 AM</td>
</tr>
<tr>
<td>Control Panels</td>
<td>-</td>
<td>folder</td>
<td>Hot</td>
<td>Mon, Sep 12, 1994, 9:58 PM</td>
</tr>
<tr>
<td>Clipboard</td>
<td>68K</td>
<td>file</td>
<td>In Progress</td>
<td>Tue, Sep 13, 1994, 8:25 PM</td>
</tr>
<tr>
<td>AppleLink Out Basket</td>
<td>-</td>
<td>folder</td>
<td>Cool</td>
<td>Fri, Nov 12, 1993, 8:17 AM</td>
</tr>
<tr>
<td>Claris</td>
<td>-</td>
<td>folder</td>
<td>Cool</td>
<td>Tue, Jul 26, 1994, 8:39 PM</td>
</tr>
<tr>
<td>Control Panels (Disabled)</td>
<td>-</td>
<td>folder</td>
<td>Cool</td>
<td>Mon, Sep 12, 1994, 9:58 PM</td>
</tr>
<tr>
<td>Control Strip Modules</td>
<td>-</td>
<td>folder</td>
<td>Personal</td>
<td>Fri, Sep 9, 1994, 9:04 AM</td>
</tr>
</tbody>
</table>

**Don Crabb Bottom Line Tip**  Labels can be useful organizational aids, since they allow you to sort in Finder windows just as you can also sort on name, date, kind, and other list view categories. Unfortunately, only having eight discreet labels (including the None label) can make for some pretty rough organization. For example, if you want to sort documents that belong to the same project, you might want to use color or gray labels. I use them, for example, to help
organize the different kinds of files (text, screens, tables, and so on) that made up this book as I was writing it. When used in conjunction with the intelligent use of folders, labels can help keep your desktop organized. Just don't expect those eight categories of labels to perform organizational miracles.

The Special Menu

How special is it? The Special menu remains firmly in control of its System 7.x role as Apple's multipurpose Finder menu. All the funky little commands that couldn't be shoved into some other Finder menu are found in the Special menu. As in previous versions of the Finder, the Finder 7.5.5 Special menu includes Restart, Shut Down, Eject Disk, and Erase Disk commands that do what they always have done.

The Special Menu houses two PowerTalk-related commands: I'm at and Lock Key Chain (or Unlock Key Chain if the sucker is already locked!). The I'm at command enables you to tell PowerTalk where you are currently working (at work, at home, on the road, or offline). Based on which of those you select, PowerTalk will attempt to connect you to the PowerTalk-related mail and messaging services in each of those domains—either over hardwired networks (AppleTalk, EtherTalk, or TokenTalk) or over modem dialups (via the AppleTalk Remote Access software or the PowerTalk Remote Dialup software).

The Lock or Unlock Key Chain commands let you button-down PowerTalk access—so if you wander away from your Macintosh, some cretin won't be able to access all the AppleShare compatible and mail servers PowerTalk enables you to access.

But, I am getting way ahead of the game here. If you don't have a clue what all that jazz is about, jump ahead to chapter 6, "Networking vs. Collaboration (Welcome to the Workgroup)," where I'll dive into PowerTalk in all its glory, including using these Finder commands.
The other important command within the Special menu is Clean Up. It allows you to keep from having icons in a mess all over the screen. As under System 7.x, Clean Up only works on windows displaying icons or small icons, not on any of the list views, since they are organized by alphabetical or some other sort order.

Don Crabb Bottom Line Tip  Just as with System 7.x, you can choose from among six different Clean Up commands, depending upon what you have selected to be cleaned up, and whether you pressed the Option key while selecting the Clean Up command. The Clean Up command choices include:

- Clean Up Window, which attempts to organize everything in the Window so that icons don't overlap and make names unreadable.
- Clean Up Selection, which does the same thing for a selection of icons in a window.
- Clean Up by Label or Clean Up by Name, which organize icons according to the labels or names you have set for them. Label is chosen if you previously organized this window with the View by Label command. Name is chosen if you previously organized this window with the View by Name command.
- Clean Up Desktop or Clean Up All, which attempts to organize your entire desktop. To use these commands, select a single icon on the desktop, or select the desktop's background (so that no icon is highlighted). To select Clean Up Desktop, just pick it from the top of the Special menu. To select Clean Up All, hold down the Option key while selecting Clean Up All from the Special menu.

Regardless of which Clean Up command you select, you will be organizing your window and desktop icons according to an
invisib le desktop grid. This grid, just as in System 7.x, hides under all icon view windows and the Finder desktop. You can adjust it slightly using the Views control panel that I described earlier in this chapter. Using any Clean Up command forces the Finder to move icons around, snapping them to this invisible grid.

You also empty the trash, erase floppy and hard disks, and shut down and restart your Macintosh from the Special menu.

**Using the Trash**

The Trash is a full-blown folder under System 7.5.5, as it is with System 7.x. Its contents remain intact until you choose the Empty Trash command from the Special menu. Even then, you’ll get a warning dialog from the System asking you to verify that you want to continue with this potentially heinous act (see figure 2.20). If you really want those files to go bye-bye, then click the OK button. If you’ve flubbed it, however, and didn’t know what you were doing, you should click the Cancel button. Open up the Trash (remember, it’s a folder) and retrieve the stuff you didn’t want to toss.

![Warning dialog](image)

**Figure 2.20 Emptying Trash Warning**

Because the Trash shows up in file dialogs as a real folder, you can even recover files that have been accidentally placed there from within an application. If you are like me, though, you already practice safe trash habits, so that all this extra fuss about the Macintosh computer’s file dustbin is little probably overkill. Never fear, though, because Apple gives us an out. If you don’t want to see that darned warning dialog every time you want to empty the trash, you can avoid it simply by holding down the Option key when you select Empty Trash from the Special menu. Then it’s good-bye, you rancid old files!
Like other folders, the Trash can be examined with the Get Info command (see figure 2.21). Be sure to note the checkbox at the bottom left corner of the screen—Warn before emptying. This preference checkbox enables you to set a default for trash warning, rather than using the Option key method I described earlier. With this checkbox marked, the warning dialog box does not appear when you select the Empty Trash command. For that reason, I don’t recommend that most Macintosh users make this change. Unless you plan to be very diligent about not trashing important documents, that is.

Figure 2.21 Trash Info

Erasing Floppy Disks

The Erase Disk command has been expanded with System 7.5.5, thanks to the inclusion of the PC Exchange control panel. This means that when you select a disk to be erased or initialized, you can specify not only the disk name, but also the kind of formatting you would like: Macintosh 1.4 MB or 800K (depending upon the density of the disk—the Macintosh reads this from the notches on the disk), ProDOS (Apple II format) 1.4 MB or 800K, or MS-DOS 1.4 MB or 720K. Figure 2.22 shows the options you get with a HD disk.

Once you have selected the proper formatting and given the disk a name, click the OK button and the formatting magic begins. Ooohhh!!!, is that cool or what?
The same command can be used for erasing hard disks. However, RESIST THIS URGE! Never blithely use this command on hard disks. Take a pill first and consider what you are doing. It will blow away all those megabytes on your hard disk. Stop the madness!

Don Crabb Bottom Line Tip

Seriously, don't try to reformat a hard disk this way. Instead, if it's an Apple drive, first backup all of its contents. Then, use the Apple HD Setup application to reformat and reinitialize the disk. Then copy all your stuff from the backups to the restored disk. You only want to reformat a disk when you install new system software (and it is recommended), when the disk is badly munged from abortive shutdowns, or when you have problems because of severe fragmenting.

If you don't have an Apple drive, use the formatting software that came with your drive. Or, use an outstanding third party formatting program, like FWB's Hard Disk Toolkit. This is absolutely first-rate formatting software that can do more to hard disks than I thought possible, including fixing those that seemed forever ill.

SuperClock

Hi, my name is SuperClock. People call me SuperClock. This one is a true no-brainer. If you want a clock that can show you either the date or the time,
turn it on using the Date and Time control panel (see figure 2.23). If you have a PowerBook, the menu bar clock (this is really Steve Christensen's SuperClock built into the Date and Time control panel) also shows a battery gauge in the form of a filled battery icon. This gauge is highly approximate, however, so you're better off trusting the battery gauge in the PowerBook Control Strip.

![Date & Time control panel](image)

**Figure 2.23** The Date and Time control panel controls the menu bar clock

### The Balloon Help/Apple Guide Menu

The Balloon Help menu has retained balloon help and Macintosh shortcuts from System 7.x. In addition, this menu has, in my opinion, the most enabling technology of System 7.5.5—Apple Guide.

Apple Guide is so important that the Balloon Help menu is now called the Guide menu by Apple. Whip that Balloon Help name from your cerebrum. The items in this menu include:

- **About Apple Guide**—an Apple Guide about Apple Guides! Pinch us all, we're definitely dreaming!
- **Show Balloons**—good old System 7 Balloon Help.
Chapter 2: Using Finder 7.5.5

• **Tutorial**—a training guide to basic Macintosh skills that you’ll need if you are new to Macintosh.

• **Macintosh Guide**—a step-by-step set of instructions for a variety of tasks and other information about your Macintosh and System 7.5.5.

• **Shortcuts**—a six-screen guide to command key shortcuts on the Macintosh that keep your hands on the keyboard and off the mouse.

• **PowerTalk Guide**—everything you need to know about PowerTalk (if you have not installed PowerTalk, you won't see this Guide).

**Apple Guide**

Click the Balloon Help/Apple Guide menu and see the various options. Go ahead and open About Apple Guide. You get a two-panel introduction to using Apple Guide, like you see in figures 2.24 and 2.25.

![About Apple Guide](image)

**Figure 2.24**  About Apple Guide (first panel)
When you choose Macintosh Guide, you see a list of topics. After you choose a topic, instructions appear in the window below.

Click to close the Guide window

Click to compress the Guide window

Click to go back to the list of topics

Click to show a definition or other information

Click to go to next step

Click to go to previous step

Figure 2.25  About Apple Guide (second panel)

You’ll learn that Apple Guide windows (panels) always float on top of anything else on your desktop, so you can always find them. It also means that you may have to shift items so that a Guide window does not obscure your other windows.

To compress the Guide window, click the box in the upper-right corner. To close the Guide window, click the upper-left corner box. Guide windows cannot be resized.

Each Guide window typically contains: a Topics button that you can click to bring up a list of help topics, a Huh? button that you click to receive more information, and left and right arrows to advance forward and backward through the material. A number placed between the arrows (lower-right corner) shows you which panel of information you are currently reading.
Besides providing you with context-sensitive online textual help, Apple Guide can also show you, on the desktop, exactly how to do something and then go ahead and do it. What a concept!

To test this, open the Macintosh Guide from the Guide menu (see figure 2.26).

![Figure 2.26 Opening Macintosh Guide](image)

You will get an intro screen. Click the Topics button (see figure 2.27). Then you'll get a list of scrollable topic areas.

![Figure 2.27 Topics button and topics list in Macintosh Guide](image)
From that list, select Using DOS Files & Disks. Highlight it and you will get a list of "How do I" explanations and one "Definitions." Select "How do I set up my Macintosh to use DOS files?" as shown in figure 2.28.

![Figure 2.28](image)

**Figure 2.28** Learning how to use DOS files on your Mac

Double-click the "How do I" command, or click the OK button in the bottom-right corner. The Guide will bring up a new panel with information about the topic you have chosen. You can choose to let it teach you about choosing a program or about assigning a program to open each type of DOS file. Choose the former and then click the right arrow as instructed.

The Guide will tell you to use the Macintosh Easy Open control panel. Click the right arrow to continue.

The next panel will tell you to open the Apple menu and choose the Control Panels folder, then click the right arrow. Ignore the instruction and simply click the right arrow.
The Guide ignores your stupidity and goes ahead and opens the Control Panels folder for you anyway, telling you that "Apple Guide is assisting you by opening the Control Panels folder." Even a doofus like me can figure this out, as you can see from figure 2.29!

![Image of Apple Guide's active assistance](image)

**Figure 2.29 Apple Guide's active assistance**

The Guide then circles the Macintosh Easy Open control panel in the Control Panels folder with a broad red coachmark, telling you to select it then click the right arrow (the coachmark looks like a Magic Marker job). If you continue to miss the point, the Guide will continue to give you active assistance, opening the control panel for you and, step-by-step, taking you through the task at hand.

The Apple Guide active assistance is so good that you will want to fiddle with it—even when you don’t have a real question or problem.

Depending upon your model of Macintosh and what parts of System 7.5.5 you installed, your Guide menu may include the Macintosh Guide, a PowerTalk Guide, and an AppleMail Guide. More Apple Guides are forthcoming from Apple and, you can use the Guide Maker application to create your own custom guides. See appendix A for more information on Apple Guide and the Guide Maker application.
Don Crabb Bottom Line Tip  Remember that the Apple Guides will only appear in the Guide menu when you are at the Finder level. From within applications that don't have Guides, the Guide menu only allows you to turn on Balloon Help and to bring up the screens of Macintosh command key shortcuts. To use these Guides, you must be at the Finder (desktop) level. As other applications support Apple Guides, you will be able to access them from within the application itself. As an example of this, AppleMail (installed if you are using PowerTalk) has its own Guide that can be accessed while you are in AppleMail.

Balloon Help

System 7's Balloon Help continues with System 7.5.5. It's in the same menu as the Apple Guides (see figure 2.30).

Figure 2.30  Balloon Help lives

Balloon Help remains a clever little context-sensitive help system that offers the most utility to new Macintosh users. To use it, turn it on by selecting the Show Balloons command (see figure 2.30). Then you can point to anything on the desktop or within System 7-savvy applications and get a short description of the item to which you are pointing (see figure 2.31).
Figure 2.31 Balloon Help describes the File menu

Balloon help also explains the function of many of the Finder's icons, menus, windows, and other visible objects. Balloon help is also incorporated into many third-party application programs as a standard way to provide online help.

When you get sick of all these balloons (my tolerance for them is pretty low, I have to admit), go back to the Balloon Help menu and select Hide Balloons. Ahhh, now that is true customization!

Shortcuts

As I mentioned above, the Apple Guide/Balloon Help menu is also where you will find a list of Finder shortcuts. To access them, select Shortcuts from the Balloon Help menu.

You'll then see a single Apple Guide panel that gives you six alternatives (see figure 2.32). These alternatives are:

- Working with icons
- Working with windows
- Working with list view
- Using directory dialog boxes
- Restarting the computer
- Miscellaneous options
You can use keyboard commands to work quickly in the Finder. Click a category below. (Other keyboard commands are listed in the menus.)

- Working with icons
- Working with windows
- Working with list view
- Using directory dialog boxes
- Restarting the computer
- Miscellaneous options

**Figure 2.32 Macintosh Shortcuts**

From this window, pick any of the six options (by clicking on them) to receive instructions on how to use Finder shortcuts. Each domain contains multiple screens with explanations of the command keys.

**Don Crabb Bottom Line Tip** For my money, however, shortcuts are one place where the Apple Guide technology is a pain in the butt. If you want some quick reference panels (like the Finder Shortcuts command in the Balloon Help menu of System 7.x), you are out of luck. And if you are like me, you'll quickly run out of patience. This is one place where Apple should have let the old technology stand. For example, just to find out the different command key modifications you can make when restarting your Macintosh now takes three Apple Guide shortcut screens, plus the intro screen to get you there. That's annoying.
The Application Menu

The Application menu is the same as it is under System 7.x. It enables you to switch among all the applications that you are currently running (the old MultiFinder technology of System 6.x remains built into System 7.5.5), and it enables you to hide or show different applications (minimizing the number of open windows). However, hiding doesn't shut down or close applications that are open. Figure 2.33 shows a typical Application menu in action. The checkmark indicates that the Finder is the frontmost, active application.

![Figure 2.33 The legendary Application menu](image)

Managing Your Hard Disks and Their Files

The Finder, of course, is the controlling application for System 7.5.5. It functions as a traffic cop for system services, as a visual display and control center, and as the primary interface to the Macintosh computer's filing system. In short, its much more than a simple menu system for commands.

Opening and Saving Documents

The way that you open documents (files and applications) from the Finder desktop remains the same as it is under System 7.x. You can either: select the document by single-clicking it with the mouse, and then select the Open
command from the File menu; bypass the second step by simply double-clicking on the selected document; or drag the document icon to an application and let the application open it.

If the Finder cannot locate the application that created the document, or if you drag a file to an incompatible application, like trying to open a Word file with a copy of 4th Dimension (or perhaps because it is a document that you copied from someone else, and you don't have the application that created it), then the Finder will give you a dialog box allowing you to pick an application that is able to read the document, courtesy of the new Macintosh Easy Open control panel (see figure 2.34) and the DataViz file translators that come with System 7.5.5.

![Figure 2.34: Macintosh Easy Open at work](image)

If Macintosh Easy Open cannot find a suitable translator and application, you can try to open the file with SimpleText. In any case, if Easy Open gives up, you will see the infamous Missing Applications dialog box, telling you no application or translator exists to open and read the file.

If you don’t want to open the file with SimpleText, then you’ll need to do one of the following:

- Get a copy of the creating application.
- Change the application creator type so that another application will open it (you can do this using ResEdit or a utility like FileInfo).
• Open the file by opening a compatible application first, and then using it to open the recalcitrant file.
• Use a third-party file launching redirection utility, like Connectix's Handoff II, to automatically open certain files using a substitute list of applications (which sometimes works when Macintosh Easy Open does not).

Using the Save and Save As Dialogs

Well, here's a shocker, saving files from within applications works the same under System 7.5.5 as it does under System 7.x. Stop the presses! Damn the torpedoes! Hi-oh Silver, away!!! (Is this how Tom Clancy got his start?)

Applications still sport the usual Save and Save As commands and the desktop button in the dialog boxes allows you jump to the desktop. (The desktop is the top level of your Finder directory path and file dialog box.) Because the desktop is the place where you can see all of your currently mounted disks and fileservers (plus the Trash), it is easier to save documents exactly where you want them. See figure 2.35 for a look at a sample file dialog box and the desktop button.

Figure 2.35  Microsoft Word's Save As dialog box

Besides the Desktop button, you'll also see a pop-up menu above the list of disk volumes or files being displayed. You can click this pop-up menu in order to scroll through the other possible locations for the file you are saving. This makes it very handy to find the disk and folder you need. Figure 2.36 shows what a typical file dialog pop-up menu looks like.
Open any Finder window and select a list view. Create a new folder in that window. Rename the folder TEST FOLDER. Select View by Name and look at the window, the new folder migrates to the bottom of the list, probably disappearing from the screen. Then select a file you want to move to this new folder. Drag the file down towards the bottom of the window; notice that the window scrolls downward (you can adjust the speed by moving the file relative to the bottom of the window). Once you see the TEST FOLDER appear, continue dragging your file to it, and drop it in. That's all made possible by Finder 7.5.5's automatic window scrolling.

**Figure 2.36** *Save As dialog box showing a pop-up menu*

The same pop-up menu will also be found when you open documents from within applications, as its function is generic to all file operations (opening, closing, saving, saving into, and so on).

Items that appear dimmed in the pop-up display aren't available.

As with all Macintosh item lists, you select the file, folder, or disk volume from the list shown in the file dialog box by double-clicking it, or by selecting it and then using the Open command.

Another file dialog button you use in concert with the pop-up file dialog menus is the New Folder button, (see figure 2.36). This command enables you create a new file folder to use, making it much easier to manage and organize your files from within the file dialog boxes.

### Using Automatic Window Scrolling

System 7.5.5 supports the same automatic window scrolling of System 7.x. This allows you to select a file in any list-view of a window, and then drag it to another folder within that window. When the dragged file (or folder) gets to the window limit, the window will scroll up or down (whichever way you drag the file), until you deposit the item you're dragging. While this may sound a bit confusing, it works great in practice.

### Using Pop-up Window Navigation Menus

If you take a look at figure 2.37, you'll see a pop-up file window navigation menu. To see such a menu, click on the name of the active window from
which you want to navigate while holding down the ⌘ key. This pops-up
the menu, letting you quickly navigate up and down the window's filing
hierarchy. Still, to improve this function, I recommend buying and installing
Inline Software's PopUpFolder, which adds hierarchical management pop-up
menus to every folder.

Figure 2.37  A pop-up window navigation menu

Moving and Copying Files

File moving, copying, and duplicating hasn't changed much under Finder
7.5.5. You move a file simply by dragging it around. Finder 7.5.5 always
moves a file when you drag it among folders on the desktop, and it always
makes a copy of that file (and deposits the copy on the target disk) when you
drag it between disks or volumes.

If you want to duplicate a file or folder on the same disk, you can use the
Duplicate command in the File menu. You can also press the Option key
while dragging an item to duplicate it; simply select the item, hold down the
Option key and drag it to the new location. A copy will be made at the new
location.

Editing File and Icon Names

Editing icon names (files, folders, and disk volumes, for example) also hasn't
changed under System 7.5.5. As before, if you want to change the name of a
file, folder, or disk volume, click once on the item's name. Wait for a bit and
then the name will be highlighted and surrounded by a box. Once it is, you
can edit at will (see figure 2.38).
It's simple to create file aliases. Just select a file for which you want an alias. Then go to the File menu and select the Make Alias command (or press ⌘-M). This will place an alias next to the original file (it may overlap the original file) with the name "alias" stuck to the end of the original file name. Figure 2.39 shows what happened when I made an alias of the monitors control panel.

**Using File Aliases**

File aliases enable you to create placeholder files that refer back to an original document or application stored elsewhere on your Macintosh (or on a large network). When you open the alias, you actually open the real file that it references—even though the two files may reside on different Macintosh computers. File aliases can be easily accessed and you don’t waste disk space with duplicate files. Aliasing also gives you better control of the information appearing on your desktop. Aliases are especially handy as organizational aids to workgroup computing over networks. Plus, you can have a number of aliases of the same file scattered about so that access to that file is always convenient.

After making an alias (as you can see in figure 2.39, the monitors file spawned the monitors alias), you'll see that the alias's name is selected—this allows you to immediately change the name of the alias. For some applications, though, you may want to keep the alias name, since it will give you instant text confirmation of the file's status. You'll also see that the alias's icon is the same as the original's. In all cases, though, every alias' name will be in italics; this cannot be changed so that you can always differentiate aliases from the original.
Chapter 2: Using Finder 7.5.5

Figure 2.39 An alias of the Monitors Control Panel

Aliases can be launched, renamed, duplicated, copied, moved, manipulated via AppleScripts, or trashed just like any other file. You can use the Get Info command on them, and you can lock them to prevent them from being altered or deleted. But the most important thing to remember about aliases is that changes made to the alias do not affect the original file. If I delete my Monitors alias, it won’t delete the original Control Panel.

This feature works both ways. If I delete the original Monitors Control Panel, the Monitors alias remains. However, the alias is useless because the Control Panel to which it refers no longer exists.

The best use of aliases can be found in the Apple Menu Items folder. Here, you can deposit aliases for all the applications or other files that you use regularly, then you can open them from the ever present Apple menu. And most aliases take up only 1 to 4K (depending upon the block size of your hard disk), so keeping them in the Apple Menu Items folder doesn’t add much to the size of your System folder.

System 7.5.5 creates several aliases when you install the System software, they are: Automated Tasks (aliases to some System 7.5.5 AppleScripts); Control Panels; Mail and Catalogs (aliases to PowerTalk and Mail Catalogs); Recent Documents, Recent Applications, and Recent Servers; and Speakable Items (if you installed Apple’s PlainTalk speech recognition software).

Depending upon your System 7.5.5 installation, you may have others to work with as well.

Working with the Enemy

Before System 7.5.5, mounting DOS (or Windows) disks on the Macintosh was a real pain. Apple File Exchange worked, but it was anything but elegant and straightforward.
With System 7.5.5, Apple adds the PC Exchange control panel (see figure 2.40) that enables you to automatically mount foreign floppy disks on your desktop (MS-DOS, ProDOS, and Windows). PC Exchange recognizes the file type by the extension on the file name. Using this extension, PC Exchange selects the application to be used by your Mac to open the file. This is shown in figure 2.40, where all files ending in .DOX are set to be opened by Microsoft Word.

Some of the more common DOS/Windows file extensions and Macintosh applications I recommend to open their file types are:

<table>
<thead>
<tr>
<th>DOS file suffix</th>
<th>Mac Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>.TXT</td>
<td>SimpleText</td>
</tr>
<tr>
<td>.WKS</td>
<td>Excel</td>
</tr>
<tr>
<td>.BIN</td>
<td>BinHex or Stuffit Deluxe</td>
</tr>
<tr>
<td>.PCX</td>
<td>ClarisDraw or Illustrator or Painter</td>
</tr>
<tr>
<td>.DIF</td>
<td>Excel</td>
</tr>
<tr>
<td>.DLM</td>
<td>FileMaker Pro</td>
</tr>
<tr>
<td>.BAT</td>
<td>SimpleText</td>
</tr>
<tr>
<td>.COM</td>
<td>Forget it, these are DOS system files so don’t bother</td>
</tr>
<tr>
<td>.HLP</td>
<td>SimpleText</td>
</tr>
<tr>
<td>.TIF</td>
<td>PhotoShop or Live Picture (if you have won the Lotto and can afford it)</td>
</tr>
</tbody>
</table>

Coupled with the Macintosh Easy Open control panel, PC Exchange makes it a snap to load and use files on a DOS disk.

Of course, all of this is dependent upon whether you have an application that is capable of reading and using the DOS files. So if you tell PC Exchange to use PageMaker to open a DOS Lotus 1-2-3 file, it won’t work. PC Exchange can’t give PageMaker the magic capability to read a file type it doesn’t recognize.
Don Crabb Bottom Line Tip  PC Exchange does not turn your Macintosh into a DOS or Windows machine. It does not enable you to run DOS or Windows software on your Macintosh (for that you need a software utility like Insignia's SoftWindows, an add-on PC board like Apple's PC Board, or a network-control connection to a nearby PC [you can establish this with Farallon's Timbuktu Pro]). PC Exchange enables you to mount DOS (and ProDOS and Windows) disks on your desktop. Once you mount the disks, you can use its files only if you have the proper Macintosh software. PC Exchange does not allow you to connect PC or Windows external hard disks to your Macintosh either, so don't try it.

Using the Improved Find Application

The old Find File desk accessory, which was eliminated in System 7.0, is back as a System extension/application under System 7.5.5. You can use this to search for file criteria as shown in table 2.1.
Table 2.1  Find Parameters and Criteria

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>contains, starts with, ends with, is, is not, doesn't contain comparators</td>
</tr>
<tr>
<td>Size</td>
<td>is less than, or is greater than comparators, with the byte size settable</td>
</tr>
<tr>
<td>Kind</td>
<td>is or is not comparators</td>
</tr>
<tr>
<td>Label</td>
<td>is or is not comparators</td>
</tr>
<tr>
<td>Date Created</td>
<td>a slew of comparators so you can pinpoint a date or date range</td>
</tr>
<tr>
<td>Date Modified</td>
<td>a slew of comparators so you can pinpoint a date or date range</td>
</tr>
<tr>
<td>Version</td>
<td>is or is not comparators, and a field to hold the version</td>
</tr>
<tr>
<td>Comments</td>
<td>contain or doesn’t contain comparators, and a field to hold the comments</td>
</tr>
<tr>
<td>Lock Attribute</td>
<td>either locked or unlocked criteria</td>
</tr>
<tr>
<td>Folder Attribute</td>
<td>is or is not comparators, and the field attribute of empty, shared, or mounted</td>
</tr>
</tbody>
</table>

You access the Find command from the File menu or by pressing ⌘-F. System 7.5.5's Find command is more powerful than the variant under System 7.x, because it enables you to search for multiple file criteria simultaneously. In addition, its find windows are "live" Finder windows; a live Finder window allows you to open the found item (or another item in the Items Found path) by double-clicking it. That is, in a word, slick.

Unfortunately, unlike some third-party file finders (Claris's Retrieve It! and On Technologies On Location come to mind), Find only looks at file names and characteristics (attributes), not at the contents.
You can use Find to locate any file, folder, or disk volume someplace on your Macintosh. You can search for names on locally mounted disk drives or on a network server. Unless you specify otherwise, Find searches all the local disks that currently appear on your desktop. Figure 2.41 shows you the basic Find File window.

![Find File Window](image)

**Figure 2.41** The Find command in action

As you can see from the figure, the Find command's basic dialog is fairly straightforward. You have two buttons to choose from, More Choices and Find. To cancel a Find, close the window or select Quit from the File menu (Find is now an application).

If you're satisfied with looking for a simple text string on all your disks, then simply type the name in the blank text field and hit the Find button. Find looks for this text string, and when it completes the search, all the matches appear in a window titled Items Found, as in figure 2.42.

![Items Found Window](image)

**Figure 2.42** The Find command finds all occurrences of the string "Mac" on the local hard disks
You can scroll this two-part window; the top part contains the lists of found items, the bottom part shows the path to any of those found items (you can see the path by clicking on an item’s name in the upper window). You can open any item by double-clicking it! With this new Find command, there is no reason to lose a file again.

If you want to select other occurrences of the item, use the Find Again command in the File menu or use \( \text{⌘} - \text{G} \); you can use this if you have interrupted the Find command without stepping through the dialogs again.

---

**Don Crabb Bottom Line Tip**  
As with the old Find File Desk Accessory from System 6.x, or the System 7.x Find, you can type in as much information about the item as you know, and Find does its best to locate the item. It’s a good idea to be specific, because Find does a better job locating your item with a more specific search string. Also, Find is not able to locate items that are not currently on your desktop (be it a local or networked disk). For example, this command cannot locate files that are written on disks that aren’t loaded on your Macintosh.

For more complex searches, select the More Choices button in the Find dialog box. A new dialog pops-up on the screen, and it gives you more selection possibilities. In figure 2.43, you see a bunch of possible search parameters, but in real life you get a single new parameter each time you click on the More Choices button.

You can change the parameter in each search parameter box by selecting one from the pop-up list that appears. If you select the “name” parameter, you’ll see a scrollable list that enables you to specify either the name, size, kind, label, date created, date modified, version, comments, lock attribute, folder attribute, file type, or creator of the item (see figure 2.44). Just scroll down the list and select the parameters on which you want to search.
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Figure 2.43 The Find Command with mucho choices

At the bottom of the dialog, you'll find buttons for Fewer Choices (which removes one search parameter for each click on the button), and Find (which starts the Find process).

A similar process is done with the “contains” field (also called the comparative field, since this is how you will compare the search parameter to the criteria). When searching on the “name” parameter, for example, you select how the information you entered for the file name will be compared to the items you are searching through. Don’t worry, it sounds more complicated than it is. You are given as many choices as makes sense for the specific criteria you are searching for.

The “Find items” scrollable menu (at the top of the window) enables you to specify the disks on which Find searches.

Mac Basics
When you use the comments field, for example, be very careful to specify enough in the text field of the Find dialog to make the search worthwhile; otherwise you'll end up finding too many items.
The most interesting of the Find items scrolling menu is the "in the Finder selection" criteria. This allows you to search within a Finder window or icon, or part of a window or folder. This is another nice touch that makes Find a real boost to productivity.

**Don Crabb Bottom Line Tip**  Learn to use the Finder selection criteria method (sorting by kind, date, or name) in order to keep track of project files and folders. Using it will also help you develop a file organization strategy.

**Don Crabb Bottom Line Tip**  Because the Find command can be misused, especially if you cast your search net too broadly, it's good to have a few basic
ideas and strategies in mind before executing a Find. Consider these as the starting points of your Find command solutions:

- If you are trying to find files on a fileserver or another Macintosh, try specifying the “lock” criteria. Shared files are often locked against changes and this will find them quickly.

- The “date Created” and “date Modified” criteria are very useful if you do your own backups. They allow you to find all the files that were created or modified on a specific date. Still, I don't recommend this kind of manual searching/backup routine, since you will likely miss some files this way. It's better to use a dedicated backup system connected to an off-line storage device (like a removable optical disk, a DAT, or 8MM tape drive). I recommend Dantz's Retrospect for backup purposes.

- The “name” criteria should form your default search method. That's why name is the first criteria that pops-up in the expanded Find dialog box. Remember, you don't need to know the file or item's exact name, you just need to get part of the text string correct.

- Searching by “label” is pretty much a waste of time, because you only have eight label types to search. This will make any Find that you do pretty gross in its actions. Naturally, if you don’t use labels to mark all of your files, folders, and disk, then searching by label is a complete waste of time. Labels are useful, though, for organizing files around projects or workgroups.

- You can use the “kind” criteria to help sort applications from documents. I find it especially useful when I am reorganizing a disk's folders according to the purpose of a file.

- I rarely use the “size” criteria in searches, although it would be good for selecting large files, like multimedia, drawings, pictures, and sound files, for compression or offline storage.

continues
• Searching by "comments" only works if you added comments to the Get Info command for a file, folder, or disk. Otherwise, the comments field is empty and there's nothing to search. I've used Macintosh computers since before the machine was announced, and I have yet to do this, but you might want to give it a try. If you are trying to find particular versions of some applications, though (which may have the same version number and creation/modification date), searching on the comments field may be the answer. Don't forget that if you rebuild your desktop, you blow away comments, so you will have none to search for or sort on.

Other Cool Stuff

Here is some other cool stuff you can use with Finder 7.5.5 to make your Mac really hum. Let's take a look.

SimpleText

The elegantly simple and easy-to-use text editor, TeachText, has been replaced in 7.5.5 with the equally elegant and easy-to-use text editor, SimpleText. SimpleText includes such niceties as font control, style control, size control, and a sound menu where you can record and play sounds and audio clips. If you don't need a full-blown word processor, SimpleText works very well, is very small, and very fast. Try it and see what I mean. You can also use SimpleText to play audio clips with a variety of synthesized voices. These voices are fully integrated with the PlainTalk speech recognition and synthesis software.

SimpleText is also wonderful because you can open more than one file at a time, unlike the limited TeachText. It's also a fat binary, which means it will work on any Mac. However, SimpleText only works on documents up to 32K in size.
WindowShade

The WindowShade control panel enables you manage lots of open Finder windows by simply “rolling them up.” Click the title bar (you set the number of clicks required at one, two, or three in the WindowShade control panel) and it rolls up the window so that only the title bar shows. It quickly makes a desktop look clean, without making you resort to minimizing windows or other hacks that are a pain to undo. See figure 2.45 for an example of using WindowShade and a look at the WindowShade control panel. WindowShade works like a charm if you are a desktop slob like me.

Figure 2.45  WindowShade in action and the WindowShade control panel

Scriptable Finder and AppleScript

Since its introduction, AppleScript has provided Mac users with the ability to automate their Macs by writing scripts themselves, or by using scripts other
people have written. But, until System 7.5.5, the Finder itself was not scriptable, meaning that while you could automate actions within scriptable applications, you couldn’t automate system level stuff. This was a big limitation on the usefulness of AppleScript. But, fortunately, System 7.5.5 makes the Finder fully scriptable.

System 7.5.5 includes the Scriptable Finder and the full AppleScript 1.1 implementation—including the Script Editor, Scriptable Text Editor, and a some useful scripts that can control System and Finder actions, including:

- Add Alias to Apple Menu
- Find Original from Alias
- Share a Folder
- Start File Sharing
- Stop File Sharing
- Turn Sound Off
- Turn Sound On
- Alert When Folder Changes
- Change Monitor to 256 (colors)
- Change Monitor to B&W
- Hide/Show Folder Sizes
- Synchronize Folders

These scripts are located in the Automated Tasks folder in the Apple menu as well as in a folder called More Automated Tasks in the AppleScript folder (in the Apple Extras folder). To use one, select it from the Apple menu or double-click its icon. You can also copy all of these scripts to the Automated Tasks folder only, or you can reference them all with aliases from their original folder.

Chapter 3 and chapter 8 discuss more on AppleScript, but if you really want to become an AppleScript guru, buy a copy of *The Tao of AppleScript 2nd Edition*, by Derek Schneider, and read it cover to cover (Hayden Books, 1994). Make sure that you use the sample scripts included (on disks) with the book as you explore scripting.
For now, consider that when you use your Macintosh, you use the mouse and keyboard to open documents and applications, move documents and file folders, enter information, print, and perform any other actions. With AppleScript, you learn a whole new way to work: you can give the computer a list of things you want it to do (a script), and it does everything for you. Because AppleScripts work with Apple Events, they drive your Macintosh directly, while System macro languages (like QuickKeys) work on top of the Finder and System.

You can create a script by simply turning on the AppleScript recorder while you perform a set of actions. AppleScript keeps a record of your actions while the recorder is turned on. When you turn the recorder off, you can see the recorded script. When you run the script, your computer repeats your actions automatically.

You can use many application programs with AppleScript to make your Mac really work for you. For example, a script might format a letter the way you want, save it in a particular folder, and print it.

You can also use AppleScript to combine the capabilities of application programs. For example, a script might use the calculation capabilities of a spreadsheet, and the formatting capabilities of a word processor to assemble an invoice.

**Drag and Drop**

Macintosh Drag and Drop is a collection of system software services (installed with an extension in System 7.5.5) that enable a better interface for applications software.

Once an application includes Macintosh Drag and Drop, you can easily move text or graphics from one document or application to another. Instead of using copy and paste to move information, you can simply point, click, and drag text or graphics to the desired destination. It works very much like the drag and drop supported within certain applications, such as Microsoft Word 6.0.
Macintosh Drag and Drop applications also enable you to move text or graphics onto the desktop (the Finder), save the item (as a Clippings file), and drop the Clippings file into a separate document (see figure 2.46). Drag and Drop is memory-sensitive, however, and the only application that comes with System 7.5.5 that works reliably with Drag and Drop is the new Scrapbook. SimpleText is supposed to be the other, but it often chokes when you try to drag a Clippings file to it, especially if you’re running a Mac with little RAM headroom.

![Figure 2.46 A Clippings file on the desktop](image)

For example, a mailing address or company logo can be saved as a Clippings file and dropped into any document.

**Don Crabb Bottom Line Tip** Utilities within Macintosh System 7.5.5 such as the Notepad, Scrapbook, SimpleText, and Stickies already include support for
Macintosh Drag and Drop. It should also be easy for developers to incorporate Macintosh Drag and Drop in their applications. A slew of applications that have added Drag and Drop (and have also gone native for the Power Macintosh). Most third-party developers have jumped on the Drag and Drop bandwagon.

**Don Crabb Bottom Line Tip**  
Macintosh Drag and Drop provides drag-and-drop software services similar to Microsoft’s proprietary OLE (Object Linking and Embedding) 2.0. However, Drag and Drop is significantly easier to implement (for most developers), much easier to support, requires less memory, and is more compatible with Macintosh system software. In addition, it provides a stepping stone for the forthcoming OpenDoc applications architecture which creates an entire document-centric framework for Drag and Drop to work with.

OpenDoc is Apple’s open component-based architecture for compound document computing (document-centric computing). It will enable you to edit and work with different types of data in one document, without needing to switch applications and copy data (as you do today). It also includes the ability to manipulate that data using drag and drop. Macintosh Drag and Drop, however, provides this latter functionality to today’s applications. And, by incorporating Macintosh Drag and Drop into applications, third-party developers will move the application’s human interface one step closer to the ease-of-use of OpenDoc.

Unfortunately, OpenDoc is still under development and won’t influence application development until 1996. Apple expects to release OpenDoc freely to all its customers—in stark contrast to Microsoft’s proprietary OLE technology. Apple and its partners—IBM, Motorola, Adobe, and others—founded Component Integration Labs (CILabs) to make sure standards like OpenDoc remain available to all. Kudos to Apple.
Macintosh Drag and Drop runs with System 7.5.5 by installing the Drag and Drop extension, but dragging to and from the Finder does not work with earlier system releases that are using the Drag and Drop extension, but it will work with Drag and Drop applications.

Chapter 2 Summary

With all this talk about AppleScript and Drag and Drop, I am reminded that it's time to move on to chapter 3, where I devote some serious time to the issue of customizing your System 7.5.5 environment. In chapter 2, I provided you with some basic information about Finder 7.5.5, and have pointed out the important new features and commands.

From Finder menus through managing your files and using some of the Finder's cool new features, I tried to make chapter 2 as straightforward as possible, while not omitting too many operational details (even at this point in the book). In the chapter 3, I get into customizing and modifying your newly installed System 7.5.5 environments, with an eye toward the critical and strategic realities of these customization tricks.

But before I close chapter 2, here's another short quiz to help you focus on the important stuff in this chapter. Please use these questions as a study guide for this chapter. If you can't answer a question, jump back to that section of chapter 2 and give it another read.

Crabb's Computing Quiz for Chapter 2

1. What are aliases? Why didn't Dr. Richard Kimble use one?
2. What's a Finder menu? Who cares?
3. What's the difference between the View menu and the View control panel? This is getting ridiculous, isn't it?
4. How can labels help you organize your files? How can files help you make use of labels?
5. What's so special about the Trash in System 7.5.5? Oh, pinch me, I must be dreaming!

6. What's new in the Edit menu? Hint: this is a trick question.


8. Where can you get online help in the Finder? Duh...

9. Has file navigation within windows been improved? Will the Cubs win the pennant?

10. What can you do to find the item you are looking for on a crowded desktop? What if you are using Windows95? How about if you have an old Osborne 1 running C/PM?

Answers to Crabb's Computing Quiz for Chapter 2

1. File aliases are placeholder files that you can create with the Make Alias command of the File menu. This is a carryover from System 7.x and still damn useful. Aliases can be used to place file references where you need them, instead of where the original file is stored. Richard Kimble had a true heart and knew he would be exonerated. Besides, Harrison Ford's never the bad guy.

2. The Apple, File, Edit, View, Special, Balloon Help/Apple Guide, and Application menus across the menu bar of the Finder are all Finder menus. They give you the basic control commands of the Macintosh. I care, very deeply. But, then, I have no life.

3. The View menu allows you to select the kind of view a particular window has vis a vis its contents (View by Name, View by Label, and so on). The View control panel establishes control over stuff like default window labels and fonts. You should know this stuff already if you have been using System 7.x. If not, read this book twice and repeat after me: "I love the Macintosh, I hate Windows, I love the Macintosh, I hate Windows."
4. Labels can be used to mark files a distinctive color, with each color representing a category of file. You can then sort your files by their labels and display them in a list view window. Even the Find command works on labels. Too bad labels only come in eight colors. But it's great if you limit yourself to eight ideas (a godsend for many out there). And, of course, by placing those eight cool colors on your files and folders you'll be that much more interested in opening those suckers up everyday. Technology, catch the wave...

5. As under System 7.x, the Trash is now a full-blown folder, so it doesn't go away when you Restart or Shut Down your Macintosh. You can manage it like any other folder, or mismanage it as the case may be.

6. Nothing. Ha! A trick question! Told you so! Man-oh-man, get with it!

7. Yes, it holds the contents of the Apple Menu Items folder, and includes a bunch of new special purpose hierarchical folders, but I refuse to burn down rain forests by relisting those here.

8. Balloon Help, the Apple Guide, and Macintosh Shortcuts, all found under the lovely art nouveau Question Mark/Apple Guide/Balloon Help menu.

9. Yes it has. No they won't. Ever.

10. Use the newly expanded and wonderfully complex and fast Find command in the Edit menu. If you are using Windows95 or NT, you are reading the wrong book. If you are using an Osborne 1 running C/PM you are dead.

How did you do on the quiz? Ask me if I care. What do you expect for $25, a flaming course on the Macintosh!?!?

OK, so I care. If anything didn't make sense, please re-read the chapter and try the Macintosh Guide that comes with System 7.5.5.
In this chapter we'll see how to modify System 7.5.5 and thus your Mac; we'll show you not only how to do it, but give you recommendations to help you make changes right away so you can get the most out of your Mac now.
Under earlier system versions, many users and Mac managers had good reason for wanting to modify the standard environment. Perhaps they wanted to tweak memory management, enhance file dialog boxes, change the Finder's windows, or allow a more personalized desktop. With System 7.x, of course, many of these “needs” were precluded because the features were included in the standard System.

And System 7.5.5, with its additional built-in features, may further preclude the need to monkey with your Mac. The Mac has always been a computer that is easy to modify, and Apple has made it even better under 7.5.5.

Even with System 7.5.5's improved Finder, file manager, third-party add-ons, and all the other improvements (see chapters 1 and 2), you still may want to master the art of “responsible environmental modification” on your own Mac and those of your staff. To do so requires that you recall what you already know about desk accessories, fonts, extensions, and control panels, while modifying that knowledge to work with System 7.5.5’s new rules of engagement.

In this chapter, I'll cover the ways to modify your System 7.5.5 operating environment and I'll tell you what the drawbacks of each method are (some of which are not trivial). However, this is not an exhaustive look at every public domain, shareware extension, and control panel out there. (If you want that info, there are other places to look as well. Look online in America Online, CompuServe MAUG, on the Internet, and the BMUG and B.C.S. BBSs [plus those many largely unsung local BBSs].) Instead, I'll emphasize the reasons that might make you want to modify your system in the first place. In short, I'll try to help you formulate a strategy for customizing your System, instead of just jazzing it up.

Keep in mind that I discuss some aspects of System modification in chapter 1 (where I discuss the overall improvements to the System 7.5.5 and how they can be customized) and chapter 2 (where I cover using the Finder).

In future chapters, you'll also find System modification discussions as they relate to printing, fonts, and QuickDraw GX (chapter 4); multimedia
(chapter 5); networking and collaboration (chapter 6); improving your memory (chapter 7); management strategies (chapter 8); and troubleshooting (chapter 9).

Well enough introduction. Let's get to it!

**Applying What You Already Know**

Although you may not have thought of it this way, you already know how to tweak your Macintosh so it works with you. If you ever used a control panel under System 7.x or any desk accessory, or even the Chooser, you already have some idea of what can and cannot be modified on a Mac.

In general, a Macintosh running System 7.5.5 can be modified in one of two ways. First, you can alter the way that the default System, as installed from the Apple installer, works. Second, you can add additional software, or even hardware devices, to the Mac to give it even more capabilities. While this chapter concentrates primarily on those tweaks afforded by the System software (after all, this is a book about System 7.5.5 and not a general Macintosh book), I'll also touch on some classes of add-on software (and the problems such software might present to a System 7.5.5 user or manager).

Just as under System 7.x, the software with which you can modify System 7.5.5 includes desk accessories, extensions, control panels, and preference files. Some of these customization tools include:

- WindowShade
- DOS and Windows compatibility with PC Exchange and Macintosh Easy Open
- Apple Menu Options (AKA submenus)
- Date and Time menu bar display
- Automating System Tasks with AppleScript
- PowerBook Improvements such as the Control Strip and New PowerBook control panel
- The Extensions Manager
- Audio CD Player control panel
- Auto On/Off control panel
- Button Disabler control panel
- Sound control panel
- CPU Energy Saver
- ColorSync System Profiler control panel
- ATM GX control panel

In addition, some of your old favorites have been improved, including:

- General control panel
- MacTCP and TCP/IP control panels
- QuickTime 2.0 extension

The customization lessons that you learned under System 7.x, especially with regards to the control panels and desk accessories that Apple gives you, hold up under System 7.5.5. With regard to third-party software add-ons, you may find that you don't need as many under System 7.5.5 (because it has more built-in "stuff"), or that you need different ones to adjust to your way of working.

Manager's Tip  Just as with System 7.x, you need to lay out a customization strategy under System 7.5.5. If you manage a group of Mac users, you'll want to put some suggested customization strategies together that address as many of their needs as possible, while still leaving you with a software base that you can support. No matter how good a manager you are, you can't deal with each staffer running dozens or hundreds of shareware and public domain control panels and extensions. No one wants you to be a member of the System Thought Police. You'll have to learn how to draw the line with some of the questionable "modifiers" that are likely to show up in your shop.
What Are Your Customization Goals?

Setting your customization goals is sometimes harder than you think. Consider it both from a personal point of view and from the point of view of any Macstaff you manage.

Manager's Tip  This all leads, then, to sitting down with your staffers and figuring out just what your customization goals really are. This won't be easy and it might even be unpleasant, but you've got to do it or System customization will get out of hand, and you'll end up trying to support every shareware doodad on the planet.

Your Personal Customization Goals

The best place to start this confab is with yourself. Although I hate reducing thought processes to lists, I find that sometimes lists are the only way to keep organized. With that in mind, here's my short list of questions to ask yourself in order to figure out your own personal Macintosh System 7.5.5 customization goals.

Don Crabb Bottom Line Tip

- Did you try System 7.5.5 without adding any non-Apple modifiers? Be honest about this, most people don't even give the default System a chance to work its magic on them before they start twiddling.

In fact, I have found in all my teaching, consulting, and writing over the past 16 years that Mac users want to mess with their computers in ways that users of DOS, Windows, OS/2, or UNIX systems never even imagined. Even diehard CP/M users, who loved to tweak the screen displays of their old Osborne luggables, don't hold a candle to the dedicated Mac tweaker. There is still something about the Mac that draws continues
even novices under its spell and just begs you to change it (perhaps it is because the Mac is so well put together that even the average user can modify it). Rather than trying to hold out against this Siren Song, give in, but only after you've read the caveats and suggestions in this chapter. How can you know what you want to modify if you aren't really familiar with the way the System works “as is”?

- What tasks (not what software) do you use your Mac for everyday? Managing a budget? Designing widgets for machine tools? Publishing the company newsletter? Preparing letters? Building new software? Whatever your answers are, be as specific as possible in defining as many tasks as you can. Each of these tasks can become the basis for the “kind” of modifications you'll want to make. You may even decide that you'll want a set of separate custom environments to meet the needs of each task. If so, you can build a set of scripts, using AppleScript, to set each of these up.

- How reliable must your Mac be? How many restarts or crashes can you endure in a day? Every mod that you make to your Mac multiplies the chance of major and minor disasters.

- Do you share your Mac with someone else? If so, you and your Mac partner will have to come to some modus vivendi vis a vis System modifications. Here's where separate setup scripts might pay off nicely. This is one time where you might be able to have your cake and eat it too.

- Do you frequently use your Mac for demos? Sometimes nonstandard modifications confuse people watching the demo because they've “never seen a Mac work like that before.”

- How much space can you devote to storing DAs, control panels, and extensions? While the Apple-supplied modifiers take up a few megabytes of hard disk space, third-party modifiers can be much larger. I was shocked to learn, for example, that I had more than 40 megabytes of these things under System 7.x. I used the upgrade to System 7.5.5 to separate the wheat from the chaff.
I could go on with this list forever, I suppose, but my editor would kill me. However, these questions are a good place to start. What you should be getting at is how you use your Mac and what your expectations are. And perhaps more importantly, how much pain you are willing to endure to achieve the perfect Mac environment.

Especially for Mac Managers—Managing the Customization Goals of Others

Manager's Tip As tough as it is to come to grips with your own customization goals, getting your Mac staffers to do the same exercise will be tougher. Because unlike you, they've "got better things to do than fool around with their Macs." You'll have to fight that reasoning and insist that each Mac user sit down, go through the five questions, and come to some preliminary conclusions about the tradeoff between customized bliss and reliability.

An effective exercise that I use is to show them just what happens to some Macs when they are overloaded with too many control panels, DAs, and extensions. Show them how long it takes the thing to startup. And show them how many times it crashes, often taking work down the rathole with it. In short, be brutally frank with your staffers. They may hate you now for it (since no one wants to admit that the Mac may not be the coolest doohickey in the office), but they'll love you later on when their Macs are breezing along with few crashes and little histrionics.

Compatibility Issues

The biggest problem that you will have in managing System customization is going to be compatibility. Unfortunately, some of your favorite extensions and control panels from System 7.x just didn't make the ride to System 7.5.5. While most commercial, shareware, and public domain authors have fixed
that, some will never be 7.5.5-compatible. This means you’ll have to learn to live without some of your favorite modifiers, learn to get by with something similar, or master a built-in System 7.5.5 feature.

At least you don’t have to worry about Apple’s contributions to this compatibility problem. All of the utilities (like SimpleText, Disk First Aid, and Apple HD SC Setup), control panels (like Views and Monitors), startup documents (like the Network and File Sharing Extensions), and desk accessories that Apple supplies on the System 7.5.5 installation disks (or disc) are 7.5.5-compatible.

The story is a bit different on the third-party software side of town, though, and that’s where the real work comes. While a number of important third-party extensions and control panels are already compatible with System 7.5.5, a few don’t work. Fortunately, the number of these that won’t work with System 7.5.5 is very, very small.

For example, on the one hand I have found that the versions I had of Symantec’s Norton 3.2, Central Point MacTools 4.0 (now owned by Symantec), and Disinfectant all worked just fine with System 7.5.5. Unfortunately, the same cannot be said for control panels like the NOW Utilities 4.0 (5.0 should fix this), Aladdin’s ShortCut 1.5 (fixed by 2.0), and Global Village’s GlobalFax 2.0.8a (2.0.9 fixes this).

Keep in mind that some shareware authors just don’t have the resources to crank out upgrades quickly, even for important System changes, like those in System 7.5.5. That whole shareware/public domain software acquisition issue, is, of course, made more compelling by the changes necessitated by System 7.5.5. I, personally, don’t intend to stop using public domain (PD) or buying shareware products, but I am quite careful about having my computing labs rely on too many of them. The same strategy might be effective for other Macfolk and Mac managers.
Manager’s Tip  Running the Safe Install Utility on every Mac on your network could be a daunting, even Herculean task. If your staff’s Mac software base is plain vanilla, meaning that every user on the network uses a standard set of software, you may choose to test a representative sample of Macs, then apply the results across your company or department. But most Mac users tend to introduce idiosyncratic software of their own, particularly extensions and control panels, so those kind of management techniques based on homogeneity may not work. If your company or situation falls into that category, you have several options:

- Run the Safe Install Utility on each Mac before upgrading. This can be unbelievably time consuming.
- Train users to run the Safe Install Utility and prepare their system for installation of 7.5.5. This can lead to errors, mistakes, omissions, or other screwups.
- Standardize the software across the network by simply ordering users to do so. This can lead to your own well-deserved lynching. Remember that the Mac has always stood for the individual and personal computing. Stomping your management jackboots on the Mac staffers would be a big mistake. Plus, many Mac users will just ignore your “orders” anyway, so why bother?

None of these options are ideal for all situations, and many Mac managers will need to use a mix of all three strategies, and often a hit of Valium or a cold drink before the process is over. Whichever option you adopt, use the Safe Install Utility first to prepare System folders for installation of System 7.5.5, and to check the compatibility of all your critical software and data files.

You should also test your critical applications under a variety of System 7.5.5 conditions. The Safe Install Utility is Apple’s best effort at supplying compatibility information, but it’s impossible to test every application under every configuration. If a critical

continues
application doesn't work with System 7.5.5, you want to find out before you upgrade the entire network, not after you've spent all those hours working only to run into a nightmare of compatibility problems.

Using Customization Features

Under previous versions of the System, especially System 7.x, you probably installed some of the many initialization resources (extensions), control panels, desk accessories, or fonts that are either available in the public domain or via shareware. You probably also purchased one or more of the growing number of commercial products out there to put in your System folder. You probably already own software like On Technologies' On Location active file indexing system, Inline Software's PopUpFolder, Aladdin's ShortCut file dialog enhancer, Now Software's SuperBoomerang file manager extensions, or... well, you get the idea. Each of these excellent packages provides one or more handy extensions to the Macintosh and can still be used under System 7.5.5 (sometimes you must obtain a 7.5.5-compatible version). Otherwise, when you run the Safe Install Utility, these products will be flagged as potentially incompatible with System 7.5.5.

Apple gets you started on this system modification odyssey. After you have installed System 7.5.5, you'll find that inside your System folder reside several different folders, each holding specific system modifiers: control panels, extensions, fonts (discussed in chapter 4), Apple menu items, preferences, shutdown items, scriptable items, PowerTalk data, and startup items, plus the System itself, among others. Figure 3.1 shows you the organization of the System 7.5.5 System Folder.
Figure 3.1  *The System 7.5.5 System Folder revealed*

Let's take a look at some of the more important folders you will find in the mighty System folder and their contents.

- **Apple Menu Items**: AppleCD Audio Player, Automated Tasks, Calculator, Control Panels, Jigsaw Puzzle, Key Caps, Mail and Catalogs, Note Pad, Recent Applications, Recent Documents, Scrapbook, Stickies, Shut Down, and Speakable Items (see figure 3.2); some of these are aliases (look for italics in the file name)
• **Control Panels:** Apple Menu Options, ATM GX, AutoRemounter, Cache Switch, CloseView, Color, ColorSync System Profile, Date and Time, Desktop Patterns, Easy Access, Extensions Manager, File Sharing Monitor, General Controls, Keyboard, Labels, Macintosh Easy Open, MacLinkPlus Setup, MacTCP, TCP/IP, Map, Memory, Monitors, Mouse, Network, Numbers, PC Exchange, PowerTalk Setup, Sharing Setup, Sound, Startup Disk, Text, Users and Groups, Video (for AV models of the Macs), Views, and WindowShade (see figure 3.4)

![Control Panels](image)

**Figure 3.4** Control Panels, Control Panels, Control Panels

• **Preferences:** AppleMail, Extensions Manager, Finder, PowerTalk Data File, Users and Groups Data File, and much much more (see figure 3.5)
The general way you use these built-in desk accessories, control panels, and extensions hasn't changed under System 7.5.5, you just have more things you can control and your Mac has greater inherent abilities than under previous Systems.

Automatic Modifier Organization

The way the System 7.5.5 System folder works can be figured out just from its "modifier" folders (Apple Menu Items, Preferences, and so forth), by that I mean the logical organization of files in the System folder. Instead of having hundreds of loose unrelated files floating around the System Folder, as was the case under 6.x, 7.5.5 continues the System folder organizational metaphors that originated with System 7.0.
Apple Menu Items hold desk accessories, of course, but it can also hold any other application or document you want to use frequently, including aliases to applications or documents. Just make sure you don't try to add more than 55 items to this folder, or it won't display them all.

Making Up the Apple Menu

Desk accessories and any applications you want to launch easily live in the Apple menu, and you install them by dragging their icon into the Apple Menu Items folder—a subfolder within the System folder. You can also place desk accessories loose on the desktop, or in other folders and launch them by double-clicking. The items show up in the menu as a scrollable alphabetical list (see figure 3.6). No matter how you specify the view in the Apple Menu Items folder (View by Name, Icon, Small Icon, Date, and so on), the scrollable Apple menu list will always display those items in ascending alphabetical order (A-Z). (Note that in the figure, my Apple menu has QuickKeys on it. If you don't have QuickKeys [you should], you won't see these items.)

Figure 3.6 The Apple menu and the Apple Menu Items folder
Desk Accessories and the Apple Menu

Desk Accessories still behave like they did under System 7.x. Since you'll use the System 7.5.5 built-in DAs everyday, now is a good time to familiarize yourself with them. Table 3.1 attempts to set you straight on what the standard desk accessories do. I've been a Macophile since before 1984, and I sometimes forget this stuff too. But it's important to keep it in mind as you upgrade to System 7.5.5. These DAs work similar to the way they did under System 7.x, only their appearance, organization, or placement on your hard disks may have changed.

Table 3.1  Desk Accessories/Apple Menu Items Supplied With System 7.5.5

<table>
<thead>
<tr>
<th>DA</th>
<th>Actions it Performs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm Clock</td>
<td>Gives you a simple clock/calendar with a built-in alarm. If you want something more</td>
</tr>
<tr>
<td></td>
<td>industrial strength and functional, buy PraireSofts’ Alarming Events. System 7.5.5</td>
</tr>
<tr>
<td></td>
<td>also includes Steve Christensen’s menu bar SuperClock that is controlled by the</td>
</tr>
<tr>
<td></td>
<td>Date and Time control panel.</td>
</tr>
<tr>
<td>AppleCD</td>
<td>Makes any Apple-compatible CD-ROM drive that can handle audio into a programmable</td>
</tr>
<tr>
<td>Audio Player</td>
<td>music CD player. Very cool.</td>
</tr>
<tr>
<td>Calculator</td>
<td>Lets you add, subtract, multiply, and divide numbers and paste the result into other</td>
</tr>
<tr>
<td></td>
<td>documents. Get something like Borland’s old Calculator+ (from the SideKick package)</td>
</tr>
<tr>
<td></td>
<td>if you really want a good onscreen calculator. There are dozens of shareware</td>
</tr>
<tr>
<td></td>
<td>calculators (RPN, Binary/Hex, and so on) that you can also try that will work under</td>
</tr>
<tr>
<td></td>
<td>System 7.5.5. Better yet, buy any Hewlett-Packard pocket calculator and just type in</td>
</tr>
<tr>
<td></td>
<td>the calculation results on the screen (it's faster than diddling around with a</td>
</tr>
<tr>
<td></td>
<td>screen calculator anyway).</td>
</tr>
</tbody>
</table>
Chapter 3: Modifying the System 7.5.5 Environment

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<table>
<thead>
<tr>
<th>DA</th>
<th>Actions it Performs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chooser</td>
<td>Selects different printers, file servers, and other network resources (like fax modems, scanners, plotters, and so on). Largely obviated by the much better Catalogs desktop icon of PowerTalk. See chapters 4 and 6 for more details.</td>
</tr>
<tr>
<td>Jigsaw Puzzle</td>
<td>Just what you think it is. You can paste any picture into it and select your difficulty level. A serious time waster. Way to go Apple!</td>
</tr>
<tr>
<td>Key Caps</td>
<td>Displays characters of different fonts so you can preview them before using them in an application. See chapter 4 for more details.</td>
</tr>
<tr>
<td>Note Pad</td>
<td>Gives you eight pages of electronic scratch paper to doodle on. Supports Drag and Drop under 7.5.5.</td>
</tr>
<tr>
<td>Scrapbook</td>
<td>A way station for frequently used graphical and text elements. Supports Drag and Drop under 7.5.5. Other third-party products, like Solutions, Inc.'s SmartScrap are about a million times better, with more functions, features, and usefulness.</td>
</tr>
<tr>
<td>Stickies</td>
<td>Electronic Post-It notes. Work well, give 'em a try.</td>
</tr>
<tr>
<td>• Shut Down</td>
<td>A separate software shutdown switch in the Apple Menu, in case you forgot where the other Shut Down is located (in the Special menu). Shut Down (either here or in the Finder menu bar) will also run any scripts or applications that live in the ShutDown Items folder in your System folder.</td>
</tr>
</tbody>
</table>

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Not Desk Accessories and the Apple Menu

Besides DAs and applications, you can also place folders, documents, aliases, and anything else that is launchable into the Apple menu, where they can be
used directly (without having to search through folders to find it). This makes the Mac a nice place to work, and makes it easier for you to keep the files you use most often in one handy location. Keep in mind, though, that the Apple menu is limited to displaying 55 items. If you install more than that in the Apple Menu Items folder, not all of them will be displayed. The menu will not display items in reverse alphabetical order, so if item number 56 was XMODEM DIALUP in your Apple menu, it would not be displayed.

If you need to extend the Apple menu, there is third-party launching software available. My favorite is from Now Software, and it’s called Now Menus, part of the Now Utilities (make sure you are running at least version 5.0). This program does a lot more than just extend the Apple menu, though, so you’ll need to check it out for yourself.

**Installing DAs, Control Panels, and Extensions**

You don’t need to drag your System 7.x third-party carryover DA’s into the Apple Menu Items folder after 7.5.5 installation, since the 7.5.5 Installer won’t touch your existing DAs unless the Safe Install Utility finds them incompatible. Even then, all that Utility will do is move them to a folder named “May Not Work With System 7.5.5” that is placed on your startup hard drive.

The 7.5.5 Installer also leaves your existing third-party extensions and control panels in the Control Panels and Extensions folders. If you do a clean install, you create a new System folder with only the Apple items in it (and thereby renaming the existing System folder Old System folder). A clean install is initiated by holding down the \text{⌘}-K keys while launching the 7.5.5 Installer (this is an undocumented feature).

**Using System Extensions and Control Panels**

Like System 7.x, using extensions (INITs) under System 7.5.5 is pretty much a no-brainer. Extensions are installed in the Extensions folder within the
System folder (see figure 3.7). From there, they execute automatically during startup. You control their actions in a simple on-off manner. If you want them on, leave them in this folder. If you want them off, then move them to another folder (I use the folder "Extensions (disabled)" to hold mine, as this is what Extensions Manager creates).

Figure 3.7 The Extensions folder

The same thing works for Control Panels, which also get executed at startup time. The difference with Control Panels is that they can also be opened once your Mac is running. This lets you change whatever the particular control panel does. For example, take a look at figure 3.8, showing the Easy Access control panel. Here you can set up your keyboard to function in lieu of a mouse, by turning sticky keys (the kind of modifier keys that will make changes, like the Option key) on or off, the delay of keyboard/mouse keys, and the overall speed of keyboard/mouse operations.

Figure 3.8 The Easy Access control panel
Controlling Extensions at Startup

As I have mentioned before, you can choose to bypass all your extensions at startup by holding down the Shift key during the startup sequence. This can get you out of a jam (if you’ve left a funky extension in your 7.5.5 System folder by mistake) by turning off all the Startup documents for this one startup sequence. If you want more control of your extensions, though, you’ll want an extension manager.

In the past, you had to rely on third-party products for this, with shareware like Init Cdev or commercial products like Inline Software’s Init Picker and the truly excellent Conflict Catcher II from Casady & Greene. You can still do that with their 7.5.5-compatible versions, or you can use the freebie that Apple provides with System 7.5.5. The Apple brand extension manager is called, cleverly enough, Extensions Manager, with an extension (EM Extension) and a control panel (Extensions Manager) to provide the service.

The Apple Extensions Manager enables you turn “off” or “on” the code that executes at startup in certain “extension documents,” such as control panels, Chooser devices, and extensions. Figure 3.9 shows the Extensions Manager control panel.

![Image of Extensions Manager control panel](image.png)

*Figure 3.9 The Extensions Manager control panel*
The main features of the Extensions Manager are:

- System 7.5.5 folder structure-aware so it finds the right folders inside the System folder where extensions live
- Context-sensitive help (Balloon Help)
- Startup icons do not get scrambled into generic ones when disabling a system extension
- It's updated as necessary by Apple (for free)

Some older (pre-System 7.5) extension managers turn off extensions and control panels by changing their file types to xNIT and xdev, respectively. If the System folder contains extensions that have been turned off by such an INIT Manager (changed to file types xNIT and xdev), the Safe Install Utility won't see them for what they are. Turn on all extensions and control panels before running the Safe Install Utility to avoid problems later. The Safe Install Utility can't flag or fix what it can't find.

Control Panels, logically enough, are installed in the Control Panels folder within the System folder (what a concept!). In the following discussion, I will give you an annotated list of all the control panels supplied by Apple with System 7.5.5.

Keep in mind, however, the big difference between extensions and control panels. To get an extension's functionality, you leave it in your Extensions folder. You cannot alter how extensions work once they load. With control panels, they also load if the System finds them (in the Control Panels folder, see figure 3.10), but once they are loaded, they provide some control mechanisms.

Figure 3.10  The Control Panels folder

- **Apple CD Speed Switch** sets the speed of Apple two-speed CD-ROM drives so they can accommodate older CDs that don't work at the faster speed.
- **Apple Menu Options** sets whether submenus are active in the Apple Menu and how many recent documents, applications, and servers are remembered by the Recent Documents, Recent Application, and Recent Servers folders in the Apple Menu Items folder (see figure 3.11). The maximum for each is 99 items.

![Apple Menu Options control panel](image)

**Figure 3.11** The Apple Menu Options control panel

- **ATM GX** turns the Adobe Type Manager GX on and off to make Adobe Type 1 screen fonts look nice. You can set the font cache with this (see chapter 4 for details) and also set line spacing and the character-shape preservation characteristics that ATM will use (see figure 3.12).
Chapter 3: Modifying the System 7.5.5 Environment

Figure 3.12  The Adobe Type Manager control panel

- **AutoRemounter** can be set to automatically remount shared volumes after System shutdown, restart, or sleep (on PowerBooks only, see figure 3.13).

Figure 3.13  The AutoRemounter control panel

- **Brightness** sets the screen brightness on Macs that lack actual screen controls. Works with few Macs. Sometimes, you can over-engineer things a bit, if you aren’t careful. Brightness is such an example, since all monitors ought to have hardware brightness controls. Also works to set screen brightness with shareware screen savers, like Twilight.
• **Cache Switch** turns the 68040 cache on or off on Macs equipped with that processor so that software that is incompatible with the 68040 (precious little at this point) can be used (see figure 3.14). If your Mac does not have a 68040 CPU, you don’t need this control panel. If you do have a 68040 CPU (check your owner’s manual), only adjust this if you are having trouble running some software (that might be incompatible with the 68040—because it does things a bit differently than the older 68030 CPUs).

![Cache Switch Control Panel](image)

*Figure 3.14  The Cache Switch control panel*

• **CloseView** is a screen magnifier for sight-impaired Mac users (see figure 3.15). It lets you magnify the screen from two to 16 times its normal dimensions (to highlight part of it for easier viewing). You can also invert the displayed colors on the screen for improved visibility.

![CloseView Control Panel](image)

*Figure 3.15  The CloseView control panel*
• **Color** is a lame, but still useful tool for setting the highlight color and the color of some windows. It comes in the form of the old Color control panel. Too bad it doesn’t allow you to customize all of your GUI visual elements. For that, you’ll have to turn to the dozens of freeware control panels that do it.

• **ColorSync System Profile** is used to set the proper monitor type so that colors remain consistent between QuickDraw GX documents and the colors that appear on your monitor (see figure 3.16).

![ColorSync System Profile control panel](image)

**Figure 3.16** The ColorSync System Profile control panel

• **Control Strip** displays and controls critical PowerBook functions, including battery life and charging, turning AppleTalk on and off, turning filesharing on and off, changing the battery saving characteristics, making PowerBooks sleep, setting the sound level, and others. Third-party control strip drop-in modules are available; one of the most useful is the PBTools 2.0 Control Strip from VST Systems. If you are adventurous, you can hack the Control Strip with ResEdit and use it on non-PowerBooks. (In fact, there is already a version of this floating around called, creatively enough, Control Strip.)

• **CPU Energy Saver** lets you shut down the computer automagically if you can turn the power on and off with the keyboard (some Centris, Quadra, Power Macs, PowerBook 500 series, and other later models). You can pick the shutdown time when you are idle for a particular period of time, or for a specific time of day on one or more days of the week. You can also set conditions that will prevent the Mac from shutting down, such as when you are connected to a shared disk, when the serial ports are in use, or if a sound is playing.
• **Date & Time** sets the, get this, here it comes, TA-DA, date and time (see figure 3.17)! Incredible. Hear the chorus of hosanna's? It sets the current date, current time, time zone, and controls the menu bar clock (AKA SuperClock).

![Date & Time control panel](image)

**Figure 3.17 The Date & Time control panel**

• **Desktop Patterns** enables you to set the pattern of your desktop (see figure 3.18). This also makes the General Controls control panel less crowded (desktop patterns used to be part of that one). Personally, I liked it better the old way. Why, in my day, we walked 500 miles to go to school with no shoes... Oops, sorry. Anyway, you have 50 to 70 (depending upon Mac model) desktop patterns to choose from, including such edifying screen backgrounds as Teddy Bears, Kitty Cats, and Vomit. How lovely. Cycle through them and you will be amazed at some of the stuff Apple thinks you'd actually want as a background to your desktop. You can add third-party patterns to this, such as the excellent Wallpaper patterns.
Easy Access lets you control the Mac from the keyboard, without using a mouse. It’s also great for some disabled Macintosh users. Easy Access sets up three different kinds of alternate keyboard/mouse control options. You can choose Mouse Keys, Slow Keys, or Sticky Keys, and you can turn on or off their sound alert.

Sticky Keys let you type in different keystroke combinations (like those Finder shortcuts I talked about in chapter 2) one key at a time, since some users may not be able to type more than one key at a time.

Mouse Keys control the mouse pointer and its operations (clicking and dragging) from the numeric keypad, instead of by using the mouse. The 5 key on the keypad is your mouse button, while the other numeric keys surrounding it move the mouse pointer in any direction, according to the key’s physical orientation on the keypad (the 8 key, for example, moves the mouse pointer up). You can lock down the mouse button with the Period key on the keypad, and Clear turns off Mouse Keys. Remember that Mouse Keys only works with the numeric keypad, not with the number keys above the QWERTY row on your keyboard.
Slow Keys change the speed with which the System recognizes keystrokes, so that very slow or erratic typists get many of their errant keystrokes removed before they hit the System.

- **Extensions Manager** enables you to turn extensions, control panels, and other startup programs on or off at startup (to reduce memory requirements, troubleshoot, customize the Mac, and so on). You can also save different sets of startup programs for various scenarios. Extensions Manager is useful, but limited. For much better control of startup programs, use Casady & Greene's Conflict Catcher II (which has loads of other features that make it worth the extra cost).

- **File Sharing Monitor** monitors all of your current file sharing activity (see figure 3.19). Serious network administrators will need better third-party monitoring utilities like Farallon's Network Manager's Pack (with products like Checknet, Netwatch, and others), TechWork's GraceLan, Pharos's Status•Mac, or Dartmouth University's MacPing 3.0, to keep on top of their file sharing. As you've probably guessed by now, I spend a lot of time in chapter 6 talking about file sharing, including using this control panel.

![File Sharing Monitor](image)

**Figure 3.19** The File Sharing Monitor control panel

- **General Controls** sets desktop parameters (whether the desktop is shown when in the background or the Launcher is shown at System startup), insertion point blinking speed, menu blinking speed, the shut down warning (that tells you during the next startup if the Mac was "perhaps" shutdown improperly), whether to protect the System folder
and Application folders against change, and document defaults (when opening or saving a document, either automatically takes you to the folder containing the application, the last folder used in the application, or to the default Documents folder [created on your desktop by clicking this checkbox]). In short, the General Controls panel is a jam-packed little dealie-bop (see figure 3.20). Start playing with it now.

![General Controls Panel](image)

**Figure 3.20** *The General Controls control panel*

- **Keyboard** sets the keyboard repeat key speed and the keyboard layout for international users with all those wacky, but cool, international characters (don't confuse this with the KeyCaps DA).
- **Labels** lets you set colors and customized labels for icons within the Finder. (You can find more information about this in chapters 1 and 2.)
- **Launcher** enables you to setup a special desktop venue for launching applications. The Launcher has been borrowed from Apple's At Ease! idiot-level Finder add-on. I never use Launcher, maybe you will.
- **Macintosh Easy Open** allows you to setup how your Mac handles open non-Mac files and disks (see figure 3.21). Works with the PC Exchange control panel and the MacLinkPlus Setup control panel.
Macintosh Easy Open

Automatic document translation: On Off

Translation Choices Dialog box

- Always show dialog box
- Include applications on servers
- Auto pick if only 1 choice

Figure 3.21 The Macintosh Easy Open control panel

- **MacLinkPlus Setup** sets the default file translators provided by DataViz and used by Macintosh Easy Open.

- **MacTCP** controls Mac access to TCP/IP networks (Transmission Control Protocol/Internet Protocol, see figure 3.22). Allows your Mac to access the Internet via an Internet service provider and some additional software. Absolutely critical for Mac wide-area networking. You must use the TCP/IP Control Panel and Open Transport 1.1.1 if you have a PCI-based Power Mac. Use the Network Software Selector to select between Mac TCP (Classic AppleTalk) and Open Transport networking and then reboot to establish the change.

Figure 3.22 The MacTCP control panel
• Map seems to do nothing useful! (I hate this one!) But Apple thinks it helps by letting you set a physical location for your machine and a time zone to keep your times straight. I am dubious of that!

• Memory is a very useful control panel, my friends (see figure 3.23)! This little Memory dude (AKA the Modern Memory Manager on Power Macs) puts you in direct control of three or four important aspects of your Mac's use of memory. For more on memory, check out chapter 7, "Improving Your Memory."

![Memory control panel](image)

**Figure 3.23** The Memory control panel

First, you can control the size of the Disk Cache in RAM (which is always on). This speeds up disk accesses by keeping junk in memory that normally would be left on the disk. The minimum setting for Disk Cache is 16K. A good value to use is 32K times the number of MB of RAM you have installed. So, if you have 10 MB installed, you'd set the Disk Cache to 320K. The Disk Cache speeds up disk accesses by letting more of your temporary data live in fast silicon instead of in relatively slower magnetic disk platters.

The maximum is determined by how much RAM you have installed. You can't use virtual memory as part of this RAM disk cache. And the best rule for setting the cache is the 32K rule I discussed above. Hey, sometimes Macintosh computing is NOT an exact science, OK?
The next thing you get to set is Virtual Memory. You get to pick which disk is used for disk paging, also known as temporary RAM, and how big that virtual memory segment on disk will be, plus whether or not the whole thing is even turned on. If you have lots of RAM like me, you don’t need to waste your time fiddling around with this setting, but if you don’t, it might help you run some very large applications that you can’t run without it. Better yet, get a very good virtual memory extension from Connectix, called appropriately enough, RAM Doubler. It really works.

Don’t set virtual memory to more than one-half of your real memory, or you will pay for it with glacial performance. Virtual memory only works with Mac II class and better machines that have a Paged Memory Management Unit (PMMU) installed, or contain it as part of the main CPU (any 68030 or 68040 Mac has this feature). The SE/30, IIX, IICX, IIsi, IICI, IIfx, Classic II, and later Macs, including the Power Macs, all have this capability. The Mac II can add it with an Apple or third-party PMMU (get the one from Connectix, since you can also get its very good MODE32 utility that lets your Mac II use 32 bit addressing). The 512KE, Plus, Classic, Portable, and LC cannot use Virtual Memory.

The second to the last memory setting (on some Macs, modern Macs don’t have this setting) is for 32-bit addressing. Here is where you turn on your Mac’s ability to address real memory (SIMMs, that is) above the old limit of 8 MB, set by System 6.x’s 24-bit addressing mode. With this you can address up to 256 MB of real RAM, depending upon your Mac. You need a modernish Mac to use 32-bit addressing, such as a IIfx, IICI, Centris, Quadra, Performa, LC II or LC III, or Power Macintosh. Most modern Macs run in 32-bit addressing all the time. Other Macs can’t work with 32-bit addressing because their ROMs weren’t designed to understand it. But for the Mac II anyway, there are third-party workarounds (like the Connectix MODE32 product I mentioned earlier). Others are bound to hit the market too. There is
no chance that Apple will come out with 32-bit clean ROMs to work on all those old Macs with 68020 or 68030 chips in them (II, IIX, SE/30, IICX). If you want 32-bit addressing on your Mac II, IIX, SE/30, or IICX, you better look for third-party product help, or better yet, buy a new, modern Macintosh.

Finally, the Memory control panel will allow you to setup a RAM disk. This can be used to hold important applications and data to make a PowerBook run faster and to cut down on battery use (because the hard disk doesn't spin all the time). Keep in mind, however, that the contents of RAM disks don't get written through to the hard disk every time you issue a save command. That means that with a RAM disk, you could lose data if the machine failed while the RAM disk was active, and before files were saved onto the hard disk. You can check on whether or not a file has been saved to disk simply by issuing another save command and seeing if the hard disk spins.

Desktop Mac users, who want to run a RAM disk (if you have lots of RAM) to speed up the System and to keep some disk-intensive applications always loaded into memory, should turn to third-party RAM disks to meet their needs.

- **Monitors** sets the color depth of your monitor (see figure 3.24). You can choose 1 bit (Black and White), 2 bit (very limited grayscale—4 levels or 4 colors), 4 bit (better grayscale—16 levels or 16 colors—like an IBM PC CGA monitor), 8 bit (256 grays or colors—better still), 16 bit (thousands of colors), or 24 bit (16.7 million grays or colors—Zowie! photorealistic images!). Your options, of course, are limited by the capabilities of your Mac's display card or display monitor built-in port.
Unfortunately, the more pixels that you "turn on" on your monitor, the more RAM the system needs to keep it running, and consequently the slower the whole shebang runs. That's why utilities like DepthKey, which let you set or change color depths for different applications and documents (after all, there's no need to waste 16.7 million colors on a word processed text document, is there?) are so handy. Some applications, like games or graphics, require a certain bit depth to display their images properly.

Besides the performance penalty that grayscale or color brings to the party, don't forget that you can't even invite them if you don't have a grayscale or color compatible monitor and video card. The Mac 512KE, Portable and Portable II, PowerBook 140, 145B, and 170, Plus, SE, SE/30, and Classic, and Classic II are strictly black and white machines using their built-in monitors (not that you will install 7.5.5 on these anyway!).

Virtually every other Mac can support color or grayscale monitors using built-in video or Nubus video cards to drive them. The Monitors control panel also lets you specify the positions for multiple monitors. So, for example, if you have the hot new SuperMac/Radius, Sony, NEC, or Apple 2-page color displays hooked to your Mac, you can hookup an...
old 13" Apple RGB monitor and use it to display some tear-off menus from applications, along with all your disk drives and network disks, without wasting any of that great 2-page display.

- **Mouse** sets the mouse tracking speed and its double-clicking responsiveness. If you use a non-Apple cursor controller, like a trackpad, trackball, or digitizer tablet, it will probably come with its own control panel.

- **Network** tells your Mac which network cabling system (LocalTalk/PhoneNet, EtherTalk, or TokenTalk) you'd like to use at any given moment (you can be connected to more than one, but the Network control panel only lets you use one at a time, see figure 3.25).

![Network control panel](image)

**Figure 3.25 The Network control panel**

To get around this limitation, to say, connect to an EtherTalk and a LocalTalk network simultaneously, you will need a third-party utility program, like Farallon's Liaison, which is a network bridge/intelligent gateway software utility. Remember that regardless of which physical cabling system you choose to run or connect to, you are running AppleTalk protocols since that is the Mac's built-in networking system. Third-party systems that don't work through the Network control panel, like Novell's NetWare Mac, are handled much differently. Please see the documentation that came with your third-party network to
determine how it is interfaced with System 7.5.5. You should also read chapter 6 to get the full scoop on System 7.5.5 networking issues.

- **Numbers** defines the kind of default format, separators, and currency notation used to display numbers on the screen.

- **PC Exchange** allows you to open and use DOS, Windows, and ProDOS (Apple II) disks and files (see figure 3.26). You can assign specific applications to open each type of DOS, Windows, or ProDOS file with this panel.

![PC Exchange control panel](image)

*Figure 3.26  The PC Exchange control panel*

- **PowerBook** controls the use of battery power (and the resultant performance) of your PowerBook. You can choose from a single slider control for this (Easy configuration) or a multiple slider control for screen dimming, hard disk use, and processor speed (Custom configuration).

- **PowerBook Setup** sets up and controls whether you have an internal or external modem installed, whether a phone call can wake up your modem and PowerBook, and the SCSI disk number if you are using your PowerBook as an attached SCSI hard disk to another Macintosh.
• **PowerBook Monitors** allows you to use external monitors connected to your PowerBook's external video port. You may mirror your built-in display's image on the monitor, or use the monitor as an extension of your display's video space (in which case, you can use the Monitors control panel to establish which monitor is the primary one—where menu bars and other goodies are displayed).

• **PowerTalk Setup** turns PowerTalk collaboration services on or off (see figure 3.27). It also can automatically lock your PowerTalk Key Chain, and force you to enter your PowerTalk Key Chain password upon Mac startup. You also use this control panel to change your Key Chain password and change the services that you can reach through your keychain.

![PowerTalk Setup control panel](image)

*Figure 3.27  The PowerTalk Setup control panel*

• **Screen** is used by Macs without screen controls to set screen display characteristics. Also used by some third-party screen saver programs.

• **Sharing Setup** is an important control panel under System 7.5.5 (see figure 3.28). It registers your Mac on the network(s) to which you are connected, while letting you start or stop file sharing, specify a master password for your Mac, and turn on program linking (interapplication hotlinks). It is so important, in fact, that chapter 6, “Networking vs. Collaboration (Welcome to the Workgroup),” discusses it in much more detail.
Sound lets you choose an alert sound and volume, record a new alert sound (on Macs with a microphone), choose a sound input source (such as microphone or internal CD player), set sound output parameters (such as rate, size [8- or 16-bit on AV Macs for example], and stereo or mono), set relative volume levels (between the internal speaker, external speakers, and headphones), and choose various parameters for Macs using AV monitors (such as microphone level sensitivity).

Startup Disk sets the disk drive that your Mac will be booted from at start-up or restart time.

Text sets the behavioral characteristics of the default screen text (affects text sort order, case conversion, and related characteristics).

Users and Groups enables you to administer file sharing (see figure 3.29). You can set the names and passwords of users who will share your files and folders. It works like a much stripped-down version of the AppleShare Administrator program. Chapter 6 gives you the details.
Figure 3.29  The Users and Groups control panel

- **Video** controls and defines video sources on an AV Macintosh.
- **Views** enables you to customize the way that icons and Finder window information is displayed. This one is discussed in detail in chapter 2.
- **WindowShade** turns the WindowShade feature off or on, and lets you set the number of mouse clicks and select which (if any) modifier keys that will cause the window to “retract.” When a window is retracted, all you see is the window’s title bar (see figure 3.30). You can also turn the WindowShade sound on or off.

Figure 3.30  The WindowShade control panel

**Using Multiple Programs**

One of the best ways to customize your Mac is to decide which applications you will use regularly and want to keep open simultaneously. Keeping multiple applications open at the same time can really be a time saver, but
there are some drawbacks to doing so. Let's take a look and figure out the best way to use this capability for you.

**Setting a Startup Configuration**

As long as you have enough memory (a big concern), you can keep many applications open and ready for use at all times. In order to set this configuration everytime you startup your Mac, place aliases to the applications that you use each day (don't toss in the stuff you use only occasionally, because the more items you have open during the startup process, the longer startup will take and the more RAM that will be in use) into the Startup Items folder within the System Folder (see figure 3.31).

![Startup Items](image)

**Figure 3.31** *The Startup Items folder*

Each file that you place in the Startup Items folder opens everytime that you start your Mac.

**Doing Two (or More) Things at Once**

Once they are opened, applications can be made active by selecting them from the Application menu at the top right corner of the Finder desktop (see figure 3.32).

![Application menu](image)

**Figure 3.32** *The Application menu*
You can make an application active (also known as bringing it to the foreground) simply by clicking on the window of the application with which you want to work. Keep in mind also that this built-in multitasking capability works for some Finder commands, too, most notably the Copy command. If you already launched some applications and want to do a large file copy while still working in one of those apps, you can do so with System 7.5.5.

You can jump to the Finder using the Application menu, issue the Copy command, then jump back to your application (again using the Application menu) and continue working in it while the copy takes place. This is especially handy when copying large numbers of files from a FileShare or AppleShare volume. Don’t forget, though, that this background copying activity will slow down things in the foreground (every time you press the mouse button, for example, the background process is interrupted). Also, if you haven’t already launched the applications that you want to use when you invoke the Finder command in the background, you will not be able to launch them while the copy or find is in progress.

The key to successfully managing multiple applications under System 7.5.5 is to recognize that most of them are dead when you don’t have their windows active. Some applications, like spreadsheets or communications programs, may be able to carry on tasks in the background while you are doing something else in the foreground (like recalculating a large spreadsheet or downloading a file), but most of them cannot.

Even if you choose to run some applications in the background that are background-aware (for example, you might want to download a file from CompuServe’s ZMac forum while you are editing another file), this will affect your foreground application’s performance. The more system resources that the background application needs, the slower and more sluggish the application in the foreground runs. And you might even abort the background operation accidentally by using too many system resources in the foreground (you might try to render a 3-D object using Alias’s Sketch program for example, while doing a file download under Synergy’s VersaTerm Pro).

I’ve run into this problem repeatedly since I started using System 7.5.5. If you expect to do anything critical in the background, you might as well bring that application to the foreground and let it complete its task unhindered by
any other application. The Mac, even under System 7.5.5, is not a true
multitasking computer, like a Pentium PC running Windows 95. You have to
remember this fact when launching and using multiple applications. If you
don’t, you’ll get one nasty surprise after another.

**Setting Memory Requirements**

You also need to be careful about setting the preferred and minimum
memory requirements for each application that you run, especially in a
multiple application environment. As figure 3.33 shows, every application
comes with a factory setting for the default amount of memory it needs to
run (called the Suggested size). Don’t believe these numbers. You’ll almost
always have to set them higher (by changing the preferred and minimum
size numbers), from 10 to 50 percent higher, unless you *like* to watch the
application abort with Type 1 errors. The only way to determine this amount
is by the old saw of trial and error, I’m afraid. For myself, I’ve settled on
giving most applications 25 percent more RAM than the minimum they
require (again, this is the Suggested size) as a starting point. Some memory-
intensive applications, like *nuBASE* (for which 2000K is suggested) get 50
percent more (3000K) than it asks for, just to keep down the number of
uninvited memory errors.

![Figure 3.33 Setting application memory](image-url)
You can, of course, choose to run with only the memory minimums. But don’t be too surprised when you start getting odd application aborts when running several large applications simultaneously.

Applications simply need a bit more memory breathing space under System 7.5.5 than they did under 7.x. If you don’t have enough RAM to give it to them in a multiple application environment, consider running a smaller number of applications simultaneously.

## Setting System Preferences

Besides the control panel preference settings that affect the desktop, System 7.5.5 includes a folder called Preferences that you’ll find under the System folder. Here, Apple and third-party vendors place various preference and customization documents for controlling different parameters (see figure 3.34).

![Preferences](image)

**Figure 3.34  The Preferences folder**

Other than copying third-party preference documents to this folder, you don’t have much control over it. That’s likely to change under System 8, however, as the System moves more towards a modular, object orientation. For now, though, there’s not much need to sweat this one.

## Automating Your Work with AppleScript and AppleEvents

When you use your Mac, the mouse and keyboard open documents and application programs, move documents and file folders, enter information, print, and perform any other actions you want. AppleScript and the System 7.5.5 Scriptable Finder allow you to give your Mac a list of things you want it to do—a script—and let the Mac do everything on the list.
You can create a script simply by turning on the AppleScript Script Editor recorder and performing a set of actions (see figure 3.35). AppleScript keeps a list of what you do while the recorder is on. When you turn the recorder off, you can see and edit the recorded script. When you run the script, your computer repeats your actions automatically.

![AppleScript Script Editor recording a script](image)

**Figure 3.35  AppleScript Script Editor recording a script**

Once you have recorded some actions, you can use AppleScript's scripting language to give the script some special controls or to turn it into an executable application. You can also write a script directly without recording anything. A script might look like the following:

```plaintext
on open x
    tell application "Scriptable Text Editor"
        open x
        set charCount to 0
        set wordCount to 0
        set paraCount to 0
        repeat with i from 1 to number of documents
            set charCount to charCount + (number of characters in document i)
            set wordCount to wordCount + (number of words in document i)
            set paraCount to paraCount + (number of paragraphs in document i)
    end tell
end open x
```
Once you write the script, you can save it as an executable drag-and-droppable application (a so-called Applet).

This script counts characters, words, and paragraphs in all text documents dropped onto it using the Scriptable Text Editor (this is a sample scriptable application that is included with System 7.5.5). You can use many application programs with AppleScript, as well as Finder 7.5.5 (using the Finder Scripting extension). Scripts can make the programs do many things for you. For example, a script might format a letter the way you want, save it in a particular folder, and print it. You will need to check the documentation of your favorite application to find out if it is scriptable.

It is also important to note that you won't be able to record a script in an application unless the application is AppleScript aware.

You can also use AppleScript to combine the capabilities of applications together, into sort of a mega-application. For example, a script might use the calculation capabilities of a spreadsheet and the formatting capabilities of a word processor to assemble an invoice.

**Getting the Most out of AppleScript**

To get the most out of AppleScript as a System 7.5.5 modification and automation tool, you've got to adopt some strategies. In short, you have to decide just what you intend to do with AppleScript, and what you expect it to do for you. And if you are a Mac manager, you will have to pick some AppleScript strategies that work for your staffers and that you can afford to support.

To develop such strategies, you need to consider just what scripting automation can do for you.
Manager's Tip  Systemization is the straightforward process of assigning reachable goals, doable methods, and realistic timetables to any business problem. And it's been around since the Flintstones. But what Mr. Slate didn't have was today's Macintosh (Rockintosh?) technologies to help him. As a result, his efforts at systemization often failed.

Simply put, Mr. Slate and other Stone Age managers lacked a good scripting engine. Scripting, as we know it on Macs, is a control system for applying the same methods, commands, tools, and so on over and over again. Or to process different data with the same methods repeatedly. Or to attack similar problems with a predefined set of responses. All automatically.

Fortunately, we Mac managers have a good scripting engine thanks to Apple's Open Scripting Architecture (OSA), AppleScript 1.1, and System 7.5.5's Scriptable Finder. Our problem is that few of us are taking advantage of it.

The proper use of AppleScript and OSA can reduce the headaches of managing changing staffs who don't always know how to use their Macs for basic housekeeping. To make it work, you need to figure out some scripts that help your staff get its work done.

Consider these starting points towards what are best called systematic scripting strategies:

- Learn how to script yourself. While Mr. Slate would have given the task to Fred, don't make the same mistake. Read *The Tao of AppleScript, 2nd Edition* (Hayden Books, 1994) and the AppleScript 1.1 manuals (from the Apple Scripter's Kit) and start scripting. Try working with the Scriptable Finder. Surf the Internet and check out the MacScripting mailing list (find it on LISTSERV@dartmouth.edu) for specifics on implementing AppleScript and Frontier scripts.

- List the top five menial tasks your staff does each week.
• Try to automate at least one of these immediately with a script tied to the necessary applications. Good candidates for systematic scripting include the obvious, like full and incremental backups, as well as the not so obvious, like network optimization, (including regular server, gateway, router, and star rebooting to clear networking "state" slowdowns), and redundant or dead file removal and archival.

• Pick the two most important weekly tasks your staff does and automate as many of them as possible with scripts. Even if they don't use the scripts each week, the scripts will give them a starting point to automate their own work.

The beauty of these kinds of management scripting strategies is that they can easier be scoped down to the personal level; the only difference is that you are managing yourself. Give it a try and see what I mean.

AppleScript, System 7.5.5, and You

System 7.5.5 gives you the Scriptable Finder (the Finder Scripting extension), Script Editor (an application you use to open and run scripts, make new scripts by recording or writing them, and save scripts), Scriptable Text Editor (a scriptable text editor) that you can use to practice making scripts, and some sample scripts (in the Automated Tasks folders within the Apple Extras folders). If you want more help with scripting (and to get really good at it), you will need to buy some additional software:

• AppleScript Scripter's Kit, which includes the FrontMost application (a sort of AppleScript application development environment).

• Scripter from Main Event Software. The best AppleScript editor and development environment you can buy.

For now, let's take a trip through AppleScript, shall we?
Script Editor Basics

The easiest way to create a script is to use the feature of the Script Editor called the recorder. The recorder records your actions and makes them into a script.

To record a script that opens the Scriptable Text Editor and types a message, follow these steps:

1. Open the Script Editor by double-clicking its icon (see figure 3.36).

   ![Figure 3.36 The Script Editor icon](image)

   A new script window opens.

2. In the Description window, type a description of your script.
   
   I called mine, Don's First Script (see figure 3.37). You can use this description to tell what your script does or to explain something about the script.

   ![Figure 3.37 Describing a script in the Script Editor](image)

3. Click the Record button to start recording your script (see figure 3.38).
As long as the recorder is turned on, the Script Editor keeps a record of the things you do. While recording, the Apple icon in the menu bar alternates with a recording icon that looks like a cassette tape—this serves as a reminder that the Script Editor is recording your actions.

4. Choose Finder from the Application menu.
   Do this step in order to open the Scriptable Text Editor (see figure 3.39).

5. Open the Scriptable Text Editor by double-clicking its icon (see figure 3.40).
When you open the Scriptable Text Editor, an empty text window opens.

6. In the Scriptable Text Editor window, type the message *I am in control here!* (see figure 3.41).

7. Select the word *control* and then choose **bold** from the Style menu (see figure 3.42).
That's the last action to include in the script. Now you'll switch back to the Script Editor and turn off the recorder.

8. Choose Script Editor from the Application menu (see figure 3.43).

![Figure 3.43 Choosing Script Editor from the Application menu](image)

9. Click the Stop button in the script window (see figure 3.44).

![Figure 3.44 Stopping the recording of a script](image)

When you stop recording, the Script Editor adds one last command to your script. Your script window should now look like that in figure 3.45.
You are now done recording your first script! Next you should quit the Scriptable Text Editor (not the Script Editor) so you can see what happens when you run your script (do that by selecting Scriptable Text Editor from the Application menu and quitting the application).

To run your script from the Script Editor, simply click the Run button.

When you run your script, the Scriptable Text Editor opens, displays a new window, types *I am in control here!* in the window, and changes the style of the word *control* to **bold**.

Congratulations, you've made and run your first script!

You use the same Script Editor to edit the scripts that you create by recording (to give them additional capabilities or to alter the sequence of events you have recorded) or you can create direct AppleScripts by writing them, just as if you were writing a HyperTalk script or Pascal program. Of course, to do this, you really need to become an AppleScript developer, but this is not as foreboding as it sounds, so don't start breaking out into the sweats. Being an AppleScript developer simply means being equipped with some goodies you don't get with System 7.5.5 and then starting to script regularly. For all of that, you will definitely need the Scripter's Kit, a copy of Main Event's Scripter, and a copy of *The Tao of AppleScript, 2nd Edition* (Hayden Books, 1994).
Saving Your Scripts

You should save your scripts, but you do have a choice as how you want to save them. This choice depends on what you want to do with your script later. As such, you can either save your script so that you can: run your script by itself as an application (without opening the Script Editor), open your saved script in the Script Editor, or open your saved script as text in another program (for example, in the Scriptable Text Editor).

Use the first format if you have locked in what the script is going to do, know that it works, and want to save it. Use the second format if you still need to tinker with the script later on. Use the third if your script is going to become part of a much larger script, or if you are using it as an illustrative example for others (like in-house documentation).

Using the Script Editor Everyday

You can use the Script Editor to open any script except those that have been saved as run-only scripts. To open a script:

- Choose Open Script from the File menu.
- In the dialog box that appears, select the script you want to open and click Open. Of course, you should always save a copy of a script in editable format in case you want to modify it later on (which is double-click editable from the Script Editor).

An application is scriptable when you can use AppleScript to control it. It is recordable when you can use the recorder with it. And to make things really confusing, an application can be scriptable without being recordable. You can tell the difference by trying the apps out or by checking with your software vendors.

Now, having said all that, not all actions are recorded (you knew this was going to get complicated, didn't you?). If you move the mouse in circles, for example, it won't be recorded in your script. That's because moving the mouse doesn't result in a change in your document. The recorder records only things you do that change your document in some meaningful way. For example, typing a message in a text window is a meaningful change, because
it makes something about the document different. Saving a file also results in a meaningful change. Clicking somewhere in the document doesn’t result in a change in the document and isn’t recorded.

To start recording your actions as a script you need to:

• Click the Record button in the active script window, or you can choose Record from the Controls menu.
• Open a scriptable application and perform the actions you want to record.

To stop the recording, you need to:

• Click the script window to make it active (or choose Script Editor from the Application menu).
• Click the Stop button, or choose Stop from the Controls menu.

**Script Editing and Formatting for Fun and Profit**

You edit a script much as you would edit any text document on your Macintosh computer. Taking a few minutes now to fiddle with the editing environment of the Script Editor will make it easier to use later on. The basic editing actions are shown in table 3.2.

**Table 3.2 Script Editor Commands**

<table>
<thead>
<tr>
<th><strong>Action</strong></th>
<th><strong>Result</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Click</td>
<td>Places an insertion point in the text at the location where you clicked.</td>
</tr>
<tr>
<td>Click and drag</td>
<td>Selects the portion of the script and then drags it.</td>
</tr>
<tr>
<td>Double-click</td>
<td>Selects a word.</td>
</tr>
<tr>
<td>Triple-click</td>
<td>Selects an entire line.</td>
</tr>
<tr>
<td>Press arrow key</td>
<td>Moves the insertion point in the direction of the arrow.</td>
</tr>
<tr>
<td>Option–Left Arrow key</td>
<td>Moves the insertion point to the beginning of the line.</td>
</tr>
</tbody>
</table>
### Action | Result
--- | ---
Option—Right Arrow key | Moves the insertion point to the end of the line.
Option—Up Arrow key | Moves the insertion point to the beginning of the script.
Option—Down Arrow key | Moves the insertion point to the end of the script.
Option—Return | Inserts a line-continuation character \( \Rightarrow \)
Shift—Return | Moves the insertion point to the beginning of the next line.

After you have recorded and/or written your script, you need to check it to see if its syntax is correct (yes, you are doing a kind of computer programming here). You can use the Script Editor to check the syntax of a script (just click the Check Syntax button). If the syntax is correct, the script is compiled.

When you record a script and don't make any changes to it, the Check Syntax button is not available. This is because the Script Editor does not record scripts with incorrect syntax. When you make a change to a recorded script, or when you write a script, you can use the Check Syntax button.

The Script Editor identifies the first syntax error it finds for you by selecting the text that appears to contain the error. When the Script Editor finds a syntax error in a script, it does not apply any formatting to the script. Of course, you will need to study scripting in some detail (see *The Tao of AppleScript*) in order to write truly interesting and useful scripts.

Checking syntax won't find all the problems a script can have, but it will identify AppleScript expressions that are put together incorrectly. A script containing syntax errors can be saved only as text, not as a compiled script or script application.

When you write a script, all of the terms you type appear in the same font and size (the default is 10-point Courier). When you check the syntax, the
Script Editor applies different fonts, sizes, styles, and colors to the different kinds of terms in your script.

Scripts have a number of different parts, including operators such as “+” and “=”, keywords, comments, and more. The Script Editor keeps track of these different parts for you, and applies formatting to help you identify them.

You can change the fonts, sizes, styles, and colors used for parts of scripts. The changes you make apply to all of your scripts, not just the active script.

If you want to change this default script formatting, you need to:

- Choose AppleScript Formatting from the Edit menu of the Script Editor.
- In the dialog box that appears, click a script element to select it.
- Use the Font and Style menus to choose a font, size, style, and color for the script element you selected.

Table 3.3 is a short list of the kinds of terms you can format with the Script Editor.

<table>
<thead>
<tr>
<th>Category</th>
<th>What It Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>New text</td>
<td>Any portion of a script you type before saving, running, or checking syntax—or an entire script that will not compile due to syntax errors.</td>
</tr>
<tr>
<td>Operators</td>
<td>Operators perform actions (“operate”) on values. For example, the “+” operator adds two values together.</td>
</tr>
<tr>
<td>Language keywords</td>
<td>The scripting terms built into AppleScript and available to all scripting applications.</td>
</tr>
<tr>
<td>Application keywords</td>
<td>The scripting terms specific to an application.</td>
</tr>
</tbody>
</table>
### What It Means

<table>
<thead>
<tr>
<th>Category</th>
<th>Comments</th>
<th>Values</th>
<th>Variables</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comments</strong></td>
<td>Explanations about things in your script. You can use them for yourself and for people who read your scripts. The Mac ignores comments.</td>
<td>A kind of data (information) that AppleScript can use. Numbers can be values.</td>
<td>Terms that are used as containers for values (such as a number or a word).</td>
<td>Phrases that specify an object that a script can identify. For example, “word 2 of document 1” is a reference. Reference formatting is applied only in the Result window, not in the script window.</td>
</tr>
</tbody>
</table>

---

**Don Crabb Bottom Line Tip**

To format a script, you must use the AppleScript Formatting command; you can’t just select part of a script and choose an item from the Font or Style menus. This is so the formatting is consistent throughout the whole script. You can, however, use the Font and Style menus to format text in the description area of the script window. If you save the script as an application, the formatting you apply to its description appears in the script’s startup screen.

In addition to formatting your script by choosing fonts, sizes, styles, and colors, the Script Editor automatically indents some lines of your scripts. All lines within compound statements are indented. (A compound statement is one that takes up more than one line and includes other statements within it.)

You can use the Tab key to indent lines in your scripts. If you use the Tab key in the middle of a line, however, the tab will be replaced by a space when you check syntax.

*continues*
To indent your scripts automatically, press Return at the end of each line.

To force the next line of your script to begin at the left margin, hold down the Shift key and press Return.

Lines in a script are sometimes too long to fit in the active window. You can make a line shorter by breaking it up into two lines with the continuation character. To insert a continuation character into a line in your script, hold down the Option key and press Return. A line broken into two or more lines with a continuation character is treated as a single line when you run your script.

You can save a script as one of three kinds of documents:

- as a text file, for opening in the Script Editor or other Macintosh applications;
- as a compiled script, for opening in the Script Editor;
- as an application, for use by itself, without the Script Editor.

You can save a script in a format that can be run but cannot be opened in the Script Editor (or any other application). This is called a run-only script. When you save a script as an application, two additional buttons appear in the dialog box:

- **Stay Open**  Choose this option when you want your script to remain available after it runs (instead of quitting automatically). This can be useful when you want to send commands from another script to the open script.
- **Never Show Startup Screen**  Choose this option when you don’t want the startup screen to appear. The startup screen displays the description of the script you write in the top part of the Script Editor window.

### AppleScript Dictionaries

Every scriptable application (including the Finder, which is an application) has its own dictionary, which is a set of AppleScript terms that you can use
with it. You can open an application's dictionary in order to find out what terms are available and their syntax.

A suite is a set of AppleScript terms that are related. The required suite is the most basic set of AppleScript terms. The standard suite is the set of terms that every scriptable application should support. Most scriptable applications (such as the Scriptable Text Editor) also have their own suite of commands.

The terms available in an application's dictionary are organized into suites. For example, the Scriptable Text Editor Dictionary includes the required suite, the standard suite, and the Scriptable Text Editor suite.

You can also use the Script Editor to write scripts for scripting systems other than AppleScript, but that is way outside the scope of this short introduction, and the purpose of this book.

But to give you some brief familiarity with other scripting systems, you should know that a scripting system is software that lets you write scripts. You write scripts using a set of terms put together according to rules of syntax that support Apple's Open Scripting Architecture (OSA). AppleScript has one set of terms and syntactic rules. Other scripting systems offer different terms and rules.

To use a different scripting system, you must first install that system. To find out how to install a specific scripting system, see the documentation that came with it. To use the Script Editor with an installed scripting system, choose the scripting system from the pop-up menu at the bottom of the Script Editor window. For more information about a scripting system you have on your Macintosh, see the information that came with the scripting system.

**Showing the Results of a Script**

When a script runs, some of its expressions can produce an outcome or a result. For example, the expression "2 + 2" produces the result "4." When a script produces a result, it appears in the Result window of the Script Editor. Some error messages also appear in the Result window.
You can open the Result window at any time when you use the Script Editor. To open the Result window, simply choose the Show Result command from the Controls menu of the Script Editor.

**Using References in Scripts**

You can use the Paste Reference command (in the Edit menu) to paste an object reference into your script. An object reference is an AppleScript phrase that identifies an object in an application program. For example, the phrase "word 3 of document 1" identifies an object in the Scriptable Text Editor.

You can paste references only from applications that support this particular feature; an application can be scriptable and recordable without allowing pasting of object references. You will need to check on the scriptability of any application you want to control in this manner.

**Script Editor Commands**

The Script Editor supports the commands shown in table 3.4 (yes, I know this is boring and pedantic as all get out. But you will note that The Macintosh System 7.5.5 Upgrade Guide documents none of this!):

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In the File menu:</strong></td>
<td></td>
</tr>
<tr>
<td>New Script</td>
<td>Opens a new script window in which you can write or record a new script.</td>
</tr>
<tr>
<td>Open Script</td>
<td>Opens the script you select.</td>
</tr>
<tr>
<td>Open Dictionary</td>
<td>Opens a window containing all the AppleScript terms you can use with an application you select.</td>
</tr>
<tr>
<td>Close</td>
<td>Closes the active window.</td>
</tr>
<tr>
<td>Save</td>
<td>Compiles and saves the script in the active script window. If you have not saved the script before, choose the format in which to save the script,</td>
</tr>
<tr>
<td><strong>Command</strong></td>
<td><strong>Function</strong></td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Save</strong></td>
<td>Saves a copy of the script in the active script window. You specify a name and a location and choose the format in which to save the script. The new copy becomes the active script.</td>
</tr>
<tr>
<td><strong>Save As</strong></td>
<td>Saves a copy of the script in the active script window. To save a script without compiling it, hold down the Shift key while you choose the Save command.</td>
</tr>
<tr>
<td><strong>Save As Run-Only</strong></td>
<td>Saves a copy of the script in the active script window as a compiled script, or an application that cannot be edited. You specify a name and a location in which to save it.</td>
</tr>
<tr>
<td><strong>Revert</strong></td>
<td>Returns the script in the active script window to the way it was the last time you saved it. Any changes you made since the last time you saved the script are lost.</td>
</tr>
<tr>
<td><strong>Page Setup</strong></td>
<td>Opens a dialog box in which you can choose page size, orientation, and other printing options. The options you can choose depend on the printer you selected in the Chooser.</td>
</tr>
<tr>
<td><strong>Print</strong></td>
<td>Prints the script in the active script window. The name of the script and its description are also printed. Different parts of the script are printed in the font, size, style, and color that you chose in the AppleScript Formatting dialog box.</td>
</tr>
<tr>
<td><strong>Set Default Window Size</strong></td>
<td>Sets the size of the active script window as the default. New script windows that you open (by choosing New Script from the File menu) are automatically opened at the default size.</td>
</tr>
<tr>
<td><strong>Quit</strong></td>
<td>Quits the Script Editor.</td>
</tr>
</tbody>
</table>

continues
Table 3.4 Continued

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Edit menu:</td>
<td></td>
</tr>
<tr>
<td>Undo</td>
<td>Reverses the effects of your last action. If you choose Undo while recording a script, the last line you see in the script window is removed.</td>
</tr>
<tr>
<td>Cut</td>
<td>Removes selected text and places a copy on the Clipboard.</td>
</tr>
<tr>
<td>Copy</td>
<td>Places a copy of selected text on the Clipboard.</td>
</tr>
<tr>
<td>Paste</td>
<td>Places a copy of the text that’s on the Clipboard at the location of the insertion point, in either the description area or the script area of the active script window.</td>
</tr>
<tr>
<td>Clear</td>
<td>Removes selected text without placing a copy on the Clipboard.</td>
</tr>
<tr>
<td>Paste Reference</td>
<td>Pastes an AppleScript expression from the Clipboard into the script area of the active script window (at the location of the insertion point). The AppleScript expression is a reference—a phrase that identifies something in an application program. For example, “word 2 of document 1” is a reference that might be used with a scriptable word-processing application. You can use the Paste Reference command only with application programs that support it.</td>
</tr>
<tr>
<td>Select All</td>
<td>Selects all the text in the description area or script area of the active script window, whichever contains the insertion point.</td>
</tr>
<tr>
<td>AppleScript Formatting</td>
<td>Opens a dialog box in which you select the font, size, style, and color of text indicating various parts of scripts.</td>
</tr>
<tr>
<td>Command</td>
<td>Function</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>In the Controls menu:</strong></td>
<td></td>
</tr>
<tr>
<td>Record</td>
<td>Starts recording your actions as a script. Choosing Record is the same as clicking the Record button in the active script window.</td>
</tr>
<tr>
<td>Run</td>
<td>Checks the script in the active script window for syntax errors, and if no errors are found, compiles and runs the script. Choosing Run is the same as clicking the Run button in the active script window.</td>
</tr>
<tr>
<td>Stop</td>
<td>Stops a script that is currently running.</td>
</tr>
<tr>
<td>Show Result</td>
<td>Opens the Result window. The Result window displays the outcomes of some types of expressions in scripts. (For example, a script with the expression &quot;2+2&quot; would display &quot;4&quot; in the Result window.)</td>
</tr>
<tr>
<td><strong>In the Font and Style menus:</strong></td>
<td></td>
</tr>
<tr>
<td>Font, Size, Style, and Color</td>
<td>Changes selected text in the description area of a script window, and changes text indicating different parts of a script when used with the AppleScript Formatting command.</td>
</tr>
</tbody>
</table>

Any changes you make to the formatting of the text in the description area also appear in the startup screen when the script runs.

**Using Third-Party Products to Enhance Your AppleScript Environment**

Over the last couple of weeks, I've been putting it all together. How to get the most out of Apple's current system software, that is. For my money, that currency lies in a combo platter of scripting, agency, and automation. The Apple technologies that offer these capabilities, of course, are AppleEvents, AppleScript, and PowerTalk/PowerShare.
But tying them together in productive ways has proven elusive, thanks in large part to an appalling lack of scriptable applications, the late arrival of the Scriptable Finder (with System 7.5.5), and to scriptable toolkit widgets.

**PowerAGENT**

Thankfully, a tiny company, .i.SouthBeach Software Corp.;SouthBeach Software Corp., has attacked that last part of this problem with aplomb. Its program PowerAGENT, which I've spent the months abusing, points the way to using Apple's core automation technologies together.

PowerAGENT (third-party Applescript utility);PowerAGENT uses AppleEvents scripting and the email built into PowerTalk to automate those important but tedious daily tasks. The software also works directly with CE Software’s QuickMail as well as the other 70 or so AppleScript-aware applications, like Excel 5.0, QuicKeys 3.5, TouchBase Pro 4.0, PageMaker 5.0, QuarkXPress 3.5, and others.

But the really useful PowerAGENT connection is its support for Claris’s FileMaker Pro 3.0. With that connection, you can run FM Pro scripts on a timed basis, making it a breeze to update an FM Pro view into a larger server database every hour, every day, or every week. Later versions of the software will support the full Database Suite of AppleEvents for other software.

Unlike some other automation agents I have used and found beneficial, also the first agent that's completely intuitive to setup and use.

To create a PowerAGENT job, you run the PowerAGENT front-end application from a very straightforward job list window that catalogs each job via a job card. The PowerAGENT system extension runs in the background and keeps track of timed events so they go off when needed. The PowerAGENT Messenger program actually processes the jobs, sending AppleEvents, processing scripts, and provides the PowerTalk control features.

PowerAGENT lets you build a list of automated tasks. You define each task and you also define how to accomplish it. PowerAGENT can handle five different kind of jobs: sending alerts to networked users or to yourself, printing messages, sending email (messages and faxes, too), executing simple or complex AppleScripts, and executing a FileMaker Pro script.
Chapter 3: Modifying the System 7.5.5 Environment

The last two kinds of jobs really give PowerAGENT its control and connection flexibility. The scripting control, for example, allows you to automate database data retrieval, package that data into an AppleMail or QuickMail enclosure, and blast it out to your key staffers who need this info-update regularly.

PowerAGENT also shines with its PowerTalk control. For example, it was easy to setup a job to drive a pager gateway to send pages to a Newton MessageCard.

The problem with PowerAGENT is that it's still a rare product. We need many such automation widget tools and we sure need more than 70 scriptable applications. PowerAGENT costs $159 list, and approximately $99 on the street. SouthBeach Software Corp. is at 2631 Lincoln Ave., Coconut Grove, FL 33133. Phone (305) 858-8416; fax (305) 857-0420.

**Cron Manager**

In order to execute AppleScripts or AppleScript applications in a timed manner, execute important System functions, or open System documents when you want them to execute (talk about customizing your Mac!) you can use PowerAGENT, or an even simpler utility like .i.Cron Manager (third-party Applescript utility); Cron Manager. Here's how Cron Manager works.

It’s 11:30 on a Tuesday, and you’ve got to give a big presentation in two hours. Fortunately, you’ve also got Cron Manager, a helpful little utility program for your Apple Macintosh from Orchard Software. Cron Manager automatically launched your presentation program an hour after you turned your Mac on this morning, reminding you to get cracking. As a result, you're flying high and ready to dazzle your boss.

Cron Manager is one of those important utility programs that is so easy to use, so intuitive, and so helpful that you wonder why Apple doesn’t include it with System 7.5.5. Fortunately, since it costs only $26.95 (plus two bucks for shipping), you can afford to buy it yourself.

To use Cron Manager, you create file aliases for the files or applications (like your saved AppleScripts) you want to open at specific times and on specific
days. That takes about two seconds. Then you rename the aliases to reflect the days and times you want those files or applications to open. That takes another two seconds. Then place the renamed aliases into the Cron Events Folder that gets installed when you install Cron Manager on your Mac.

Another two seconds. And that's it. Now that is some serious System 7.5.5 modification with no sweat invested.

The files and applications that you aliased with Cron Manager will open automatically (assuming that your Macintosh is turned on, of course!) at the time and on the day that you specified in their names. For example, suppose you wanted that presentation to open on April 11, 1997 at 9:00 A.M. You would rename the alias file of the presentation “4/11/957 9.00”. Cron Manager then knows that this file must be opened on April 11th, 1995 at 9:00 A.M.

Or suppose you wanted to open that presentation every day at the same time. You could name it “9.00”. Or if you want it to open every Monday and Tuesday at noon, you’d name it “Mon Tues 12.00”. Get it? It’s so darn simple, you have to really try to mess it up.

Cron Manager (which is really a version of a standard utility found with the UNIX operating system) is a control panel on your Macintosh and it works like a smarter version of Apple’s own Startup Items folder. The Cron Events folder expands upon that by allowing you to pick any day and any time to automatically open files or applications.

The program can do a lot more to help you manage your time better and to use your AppleScripts automagically. It can open a file repeatedly, say every hour during the day for three days a week (Mon Wed Fri *60), or open it every four hours but only during April of 1997 (4/-1997 *240). Or, open the file two hours after you start your Mac each morning (+ 120). All you have to do is make the file alias, copy it to the Cron Events Folder, and then rename it with this abbreviated date and time syntax.

If have any trouble naming your automatic files, Cron Manager comes with succinct online help. The program, blessedly, doesn’t need much memory and it won’t slow your Mac down. The beauty of Cron Manager is that it sits there in the background, completely unobtrusive, just waiting to launch
your AppleScripts, your files, and your applications according to your instructions.

You can also get Cron Manager with another clever utility program called CLImate, which is a command line interface and scripting system that works parallel to AppleScript, for those of you who feel the need to make your Macintosh work like a DOS machine (with the command line prompt blinking at you). That bundle costs $59.95, plus three bucks for shipping. Cron Managers is from Orchard Software, Inc., P.O. Box 380814, Cambridge, MA 02238-0814, 617-876-4608.

Chapter 3 Summary

Before I complete this chapter, and move on to a discussion of QuickDraw GX, fonts, and printing in chapter 4, it's time once again to summarize our discussion and the personal use and management issues you should be thinking about. I've put together some issues to reflect on before you move to this chapter's computing quiz and the next chapter.

The key issues raised in this chapter with which you should now be conversant include:

- Modifying your Mac under System 7.5.5 is just as easy as it was under System 7.x.
- Deciding on customization goals won't be easy, since it will involve compromises, but it's necessary if you're going to be happy with System 7.5.5's performance and utility.
- Managing your Mac staffers on the customization issue will be even tougher, since you'll have to figure out how to create the custom computing environment they want, without creating a support headache for you.
- Control panels, extensions, DAs, and Apple Menu items can improve the way your Mac works, as long as you remember not to overload your Mac with too many of each.
- You may still need good third-party control panels and extensions to reach your customization goals.
• When moving to System 7.5.5, check the compatibility of System 7.x extensions and control panels using the Safe Install Utility.
• How to create, save, and use AppleScripts.

Crabb's Computing Quiz for Chapter 3

With the many customization issues in mind, consider each of the questions below in the context of your individual Macintosh installation:

1. What do you expect to get out of adding Chooser extensions, startup documents, and control panels to your Macs or your staffer's Macs?
2. What don't you or your staffers like about the standard 7.5.5 environment? Will AppleScript make it easier for you to modify?
3. What startup goodies did you have installed under System 7.x? Do you know what they did to your System?
4. How much memory did they all take up? Getting the point here?
5. How much memory will the third-party control panels and startup documents use under System 7.5.5? See what I mean?
6. Have you checked the compatibility of these system modifiers with the Safe Install Utility? What about the compatibility of the desk accessories and applications that you want to drag into your System Folder's Apple Menu Items Folder? Do you even know what the Safe Install Utility is?
7. Where can you go for help in determining System modifier compatibility?
8. How important is stable operation to you and your Mac staffers? How often are you all willing to put up with rebooting your machines? The more you modify your Mac, the more you will make it crash, no matter how reliable and compatible the modifiers might be.
9. What's the difference between a startup document, a control panel, and a Chooser extension?
10. What happens to your third-party extensions, control panels, and desk accessories when you install System 7.5.5?
If you are stumped by any of these questions, you should reread this chapter. Even a quick perusal of this chapter will put you in better shape to make decisions about your personal Mac environment and about the environments of your staff.

One final point: **Remember that every change made to the standard Mac System makes it inherently more unreliable**, and since System 7.5.5 defines the virtual desktop across the network quite well (with capabilities like PowerTalk, filesharing, aliasing, and IAC hotlinks), System changes made on one Mac may influence many others. That whole issue, of course, the "sociology of virtual desktop features" is really the core of this book, and I'll be discussing it fully in chapter 6.

In the meantime, if you've got some System 7.x modifiers lying around that you want to use under System 7.5.5, you've got some compatibility homework to do. Reread my "how to" steps in this chapter; read the details on using the Safe Install Utility in *The Macintosh System 7.5.5 Upgrade Guide*, and then roll up your sleeves and get to it. But don't sweat it!

**Answers to Crabb's Computing Quiz for Chapter 3**

1. You better expect a changed Mac environment, because you are editing the System at startup time with every startup document, extension, and control panel. If you can't answer this quickly and cleanly, you've got potential problems. Will you be surprised if you crash the Macs by adding too many of these "goodies?"

2. It's pretty darned good out of the box this time, so try to live with a standard System 7.5.5 environment for a while. If you are expecting perfection, you will be disappointed. AppleScript will let you build a bunch of custom AppleScripts and Applets to make your Mac spin on the head of pin if you want (more or less.)

3. How would I know? I am not clairvoyant (although I do read Jean Dixon everyday, don't you?!) But you better find out before you install System 7.5.5.
4. Ditto.
5. Ditto times two.
7. The Safe Install Utility and your third-party vendor. Probably in that order.
8. It better be really, really important, unless you like stomach acid.
9. Gimme a break, you know this stuff!
10. They are still there, and will cause problems if they are incompatible.
With the release of its long-awaited QuickDraw GX architecture as part of System 7.5.5, Apple has a very good shot at revolutionizing the world of Electronic Document Preparation. (For those who like to follow these things, "Electronic Document Preparation" or EDP is the new, politically correct euphemism for the now passé term "Desktop Publishing." Aren't you glad you're enlightened?)
Whether it be EDP or DTP, QuickDraw GX will have a profound effect on desktop computing. However, for now, if you are already familiar with System 7's method of handling fonts and printing, you will immediately feel at home in System 7.5.5. On the surface, little has changed. Beneath the surface, though, there's a whole new world waiting to be explored...

This chapter will show you how, why, and when to use QuickDraw GX and GX fonts, what has happened with Adobe Type 1 and TrueType Fonts, and how to use and manage printing and imaging resources with System 7.5.5.

Which fonts are included with System 7.5.5 and what's the deal on them? And, why should you care about them? How will they influence the way that you and your Mac users print documents? Let's install them and see what's happening. But before we do that, it's a good idea to remind ourselves about Apple TrueType font technology that carries over from System 7.x (and if you are new to the Mac, you need to know where we came from to get to QuickDraw GX and GX fonts).

**TrueType Fonts**

The term TrueType fonts, like any other "font" type on the Macintosh, refers to a way of generating type both on the screen and on output devices like printers. If you know anything about printing and publishing, you probably know that the term "font," as it has been used from the days of the first Macintosh, is an incorrect usage of a well-worn printing term.

What Apple and the Macintosh world calls "fonts" are really typefaces—designed groups of letters, numbers, and symbols that have a particular "look." Although typeface names can be copyrighted, their look cannot. This is especially important for Macintosh users who might consider buying new TrueType versions of fonts they already own, but are in other font formats (like PostScript fonts or Bitstream fonts—more about these later).

So while the font (typeface) called Garamond, which is sold and copyrighted by Adobe Systems, has a particular look, the look is not copyrighted, only the name is. Nothing prevents another font company, like Bitstream, or even Apple, from producing a Garamond-looking font so long as they call it something else.
OK, enough of that stuff, (it gives me a headache too), but you need to keep this in mind throughout this chapter. Let me get back to my original question: What is a TrueType font?

TrueType is a font technology that Apple invented (and Microsoft licensed). It's an outline font technology, which means that the System 7.5.5 software uses mathematical descriptions (algorithms) to draw fonts on the screen, rather than using an exact picture of each font in each size (which is what bitmapped fonts are).

TrueType also uses the same mathematical descriptions to create fonts on output devices, like printers, that are TrueType-compatible. (Any printer that can print PostScript fonts is also TrueType compatible.) In fact, I can't think of a single printer in Mac shops that is unable to use TrueType fonts and Apple’s method of printing them.

What this means for Mac users is that their existing printer hardware will work just fine with System 7.5.5 TrueType fonts (which is also true for QuickDraw GX fonts). In fact, ancient dot matrix printers, like ImageWriters and ImageWriter IIs suddenly take on higher resolution aspects as they are driven to their maximum dot matrix potential (144 dots per inch for the ImageWriter II) with TrueType fonts.

TrueType fonts can be rendered at the maximum resolution on any output device, thanks to the way that Apple implemented them in System 7.5.5.

The basic font set provided with System 7.5.5 includes both TrueType (AKA standard) and QuickDraw GX fonts. The TrueType fonts include Chicago, Courier, Geneva, Helvetica, Monaco, New York, Symbol, and Times fonts; I've listed the GX fonts in the next section.

## Installing Fonts

Apple expanded its font offerings with System 7.5.5 to include several new GX fonts—Apple Chancery, Hoefler Text (regular, bold, italic, and bold-italic), Hoefler Ornaments, Skia, and Tekton Plus (Adobe's hugely popular Tekton typeface). System 7.5.5 installs these fonts along with the standard TrueType fonts (when you install QuickDraw GX). QuickDraw GX works with these and all TrueType fonts without modification.
however, you do not need to install QuickDraw GX to use these new GX fonts, but you do have to run the QuickDraw GX Installer to place them in your Fonts folder. After you install the fonts, you will be able to use them, even if you are not running QuickDraw GX (say, for example, you have turned it off with the Extensions Manager to save RAM or because you don’t have any GX-compatible printers or applications). But you will lose GX’s graphics and typographic manipulation capabilities vis-à-vis these fonts if you don’t have GX running.

OK, let’s get started...

The first step is to run the System 7.5.5 and QuickDraw GX Installers. It’s simple, the Installers do all the work. The System 7.5.5 Installer places Apple’s standard fonts into the Fonts folder (found in the System Folder), and the QuickDraw GX Installer does likewise for the new GX fonts. The QuickDraw GX Installer also installs Apple’s QuickDraw GX extension and GX-compatible printer drivers, along with Adobe’s ATM GX.

Don Crabb Bottom Line Tip  Unless you have more than 8 MB of RAM on a 68K Mac and 16 MB of RAM on a Power Mac, don’t bother trying to run QuickDraw GX. It just won’t work properly. Even if it works, it won’t work well and it will slow down your Mac.

You should know that if you are installing System 7.5.5 (see figure 4.1) over an existing System, the QuickDraw GX installer automatically “enables” any PostScript Type 1 fonts it finds already installed. Type 1 PostScript printer fonts should be enabled before they are used with ATM (Adobe Type Manager) GX version (which is included with System 7.5.5). However, your original Type 1 fonts are protected. The installer places backup copies of them in an *Archived Type 1 Fonts* folder in the System folder, so you can reinstall them if you remove or disable the QuickDraw GX extension.
Installing additional fonts under System 7.5.5 is easy. You install them the same way you did with earlier versions of System 7. First, quit all running programs and then drag your font suitcases and PostScript printer fonts onto the closed System folder (see figure 4.2). The Mac will automatically put them where they belong (after asking you if it can do so, of course).

**Figure 4.2 Dragging a Font suitcase to the System folder**

Even though the Mac does the installation on its own, you can always choose the Macintosh Guide command from the Help menu and let System 7.5.5 walk you through the procedure (see figure 4.3).
If you forget what any font looks like, open the Fonts folder in the System folder and double-click on the font suitcase. In the window that appears, double-click on the dog-eared icon that has three little "A's" pictured on it. A font window appears displaying text in three different type sizes (9, 12, and 18 point type) as in figure 4.4. The phrase "How razorback-jumping frogs can level six piqued gymnasts!" contains every letter of the alphabet, so you can see how your font will look when you use it in your documents.

**Figure 4.3** Using the Macintosh Guide to learn how to install an remove font

**Figure 4.4** The Font display window
Chapter 4: Fonts and Printing

Basic Usage—Fonts 101

So what's the big deal? Why all this fuss over fonts? Well, other than the fact that Apple would be out of business right now if it had not embraced DTP (and now, EDP) early on, and other than the fact that Mac remains the best EDP computer you can buy, fonts are very important!

The point is, fonts, typography, and printing all make a big impact on the documents you produce everyday and what people think of them (and, as a result, think of you).

Of course, every printed document consists of text or graphics, and usually both at the same time. A single picture may proverbially replace a thousand words, but it's generally the words themselves that must convey the actual message (consider, for example, the relationship of text to graphics in the

Figure 4.5 Using ResEdit to change the text in the Font display window

Mac Masters
To display a more representative text sampling in the font window, create a copy of the Finder. Open the copy in ResEdit and open String 14516 in the STR# resource. Replace the existing text with your preferred text (see figure 4.5). Save your changes and quit ResEdit. Replace the current Finder with your modified version and restart your Mac. Your text will now appear in the font window instead of the original razorback-jumping frogs text.
book you are reading). Using a wrong typeface is like wearing a tuxedo to a mud-wrestling match, gym sweats to a formal dinner, or a bikini to bar mitzvah. Wear the wrong outfit and you’re likely to make an undesirable first impression. Making a good impression is what using fonts and typography is all about.

Choosing complementary fonts to dress up your words is like picking the right clothes for any occasion. After all, you wouldn’t send out engraved wedding invitations printed in a chunky stenciled font like that used on packing crates, would you? OK, you might, but you’d guarantee yourself lousy attendance (even from the reception-freeloading third cousins) and years of behind the back carping from your mom about “those cheesy-looking wedding invitations.”

To get to the real basics of fonts and typography, consider the many typographical niceties that have developed over the last several centuries of printing. Such things as ligatures, proper fractions, and kerning all help polish your documents because the visual impact matches the intellectual content.

Let’s agree, then, that it’s a good idea to select the right typeface (font) for the job and that it should look good as well. That’s why Apple includes so many new fonts with System 7.5.5—more fonts equals more ways to communicate in print. That’s also why these new fonts are GX fonts. Apple’s new GX architecture allows developers to create individual fonts containing all the possible characters you could ever wish for—ligatures, special symbols, old-style numerals, and so on—up to as many as 65,000 characters in all (see figure 4.6)! That’s a boatload of characters, mon frères.

GX supports diverse non-Roman languages, such as Japan’s Kanji, that contain thousands of symbols. GX also handles languages that read right-to-left instead of left-to-right, as well as down-to-up instead of up-to-down. Each GX font can contain detailed information about kerning, tracking, ligatures, stem widths, character weights, special punctuation, character accents, and more. GX fonts can also include alternate characters, small caps, old-style numerals, superior and inferior numbers, fractions, swashes, ornaments, and... well, the list is a long one that’s limited only by the font designer’s imagination.
GX font technology is one of the reasons that System 7.5.5 and QuickDraw GX will be more important to developers initially, rather than to users, because developers will be leveraging this stuff to give us the cool products, font libraries, and so on, that GX makes possible.

Using GX Fonts

The possibilities for type enhancement under QuickDraw GX are probably more than you could ever explore and certainly more than you can use. But here are a few possibilities, just to tickle your fancy.

So what if GX fonts include features like built-in kerning? Who wants to do manual kerning anyway? And, you might ask how you are expected to find—much less type—65,000 characters on your keyboard?

Before QuickDraw GX, if you wanted to include ligatures in your documents, you needed either a complementary styled font that contained the
ligatures, or you had to know how to type the correct keystroke combinations for the font you were using. The use of proper fractions required that you super- and sub-script the individual numbers, and maybe even resize them for better appearance. Kerning of text generally entailed buying a capable desktop publishing program and then manually adjusting the spacing between letter pairs. Pretty involved stuff, huh? That’s why nobody, except desktop publishing experts and graphic designers, bothered with it, and it’s why so many DTP docs produced by folks like me didn’t look so good.

But with GX—even if your program doesn’t normally support kerning—so long as it is GX-compatible, you’ll be able to choose a kerning command from a styles menu or set a preference in a dialog (much like you set the “Smart Quotes” option today), and Apple’s QuickDraw GX type engine will apply the proper kerning pairs for you automatically. No manual steps necessary. In the same manner, you’ll be able to choose a ligatures command to have the correct ligatures substituted on the fly.

Soon you’ll be able to adjust the stem thickness of letters to produce different degrees of boldness. You’ll also be able to set optical alignment automatically (optical alignment is where rounded letters are adjusted so that they look as if they lie on the same baseline as their neighboring flat-bottomed cousins). When using stylized lettering, such as that produced by script and calligraphic typefaces, you’ll be able to do context-sensitive substitution of characters, replacing otherwise standard letters at the beginning and ending of sentences with flourishes (smart swashes).

In each case, all you have to do is choose among the various menu or dialog options and type normally. In short, your pages will shine with typographical excellence even if you are little more than a novice! GX fonts can be very cool indeed.

**QuickDraw GX and Your Printer’s Memory**

To avoid overloading printer memory with a lot of unnecessary information, QuickDraw GX downloads only the actual characters you use in your documents, not the entire fonts. So, not only will you be able to print more complex documents without your printer balking, but your files will be smaller, which saves disk space and reduces telecommunications costs when
you send them to others by modem. That’s a big improvement over a non-
GX Mac environment.

**QuickDraw GX Fonts—Today and Tomorrow**

Unfortunately, many of QuickDraw GX’s capabilities aren’t immediately
available to you, because GX-compatible applications, device drivers (for
printers and fax modems), and related products are still few and far be-
tween. Apple has given us a whole new GX world. But now it’s up to the
software program developers, font designers, and hardware engineers out
there to see what they can make of it for us.

Until more GX-savvy application programs become available, you may not be
able to access the many extra characters built into GX fonts. You’ll only be
able to use the first 256 characters as you do now with non-GX fonts.

Furthermore, GX fonts as such will remain scarce for awhile. While several
font companies, including Adobe Systems, Linotype-Hell, Monotype Typog-
raphy, and Bitstream are working on GX versions of their fonts, it will take
some time to build up their libraries. Plus, there’s still no generally agreed-
upon standard for GX fonts. Until an industry standard is established, you
may be enticed by fonts that claim to be GX, but which fall far short of
expectations. Watch for reviews in publications like *Publish, MacWEEK,*
*Macworld,* and *MacUser* before making any buying decisions.

**Using Adobe’s Type 1 Enabler**

System 7.5.5 doesn’t initially change the way most existing programs use
fonts. Fonts still appear alphabetically in Font menus, and you can use either
TrueType or PostScript fonts in your documents. One change, though, is
that System 7.5.5 includes ATM (Adobe Type Manager) GX. ATM is a utility
that renders PostScript Type 1 outline fonts smoothly on screen, eliminating
the “jaggies” so common with fixed-size screen fonts. (TrueType fonts have
never had this problem.)

To use ATM GX with your existing Type 1 PostScript fonts, those fonts must
be “enabled.” There’s no way to tell in advance that a given Type 1 font is
ATM GX-compatible. So, you might wish to run Adobe’s Type 1 Enabler that
comes with System 7.5.5 on all your Type 1 fonts (see figure 4.7).
Adobe's Type 1 Enabler is an application program. Double-click to launch and choose the Type 1 fonts you want to enable. Both the outline fonts and the screen font suitcases must be in the same folder, but be sure not to include any TrueType fonts in the folder or the Enabler won't work. In the dialog window, only the screen font suitcases are listed for selection, not the actual printer outline fonts.

You can choose individual fonts for processing, or you can process them all at once by selecting the entire folder. The Type 1 Enabler creates new font suitcases and saves them wherever you wish. When you are done, install these new suitcases by dragging them to the System folder.

Adobe's Type 1 Enabler utility is NOT installed automatically when you install either System 7.5.5 or QuickDraw GX. To install the Type 1 Enabler, launch the QuickDraw GX Installer and choose Custom. Click the QuickDraw GX Utilities checkbox and then click Install (see figure 4.8). Apple's Installer will place the Type 1 Enabler utility at the root level of your hard disk.

Don Crabb Bottom Line Tip  When processing a folder of fonts, Adobe's Type 1 Enabler stops working if it encounters a TrueType font or a Type 1 font that has already been enabled. If this happens, select the fonts you want to enable and use the Enable command in the File menu to process them one at a time.

Don Crabb Bottom Line Tip  When processing a folder of fonts, Adobe's Type 1 Enabler stops working if it encounters a TrueType font or a Type 1 font that has already been enabled. If this happens, select the fonts you want to enable and use the Enable command in the File menu to process them one at a time.

Dealing With Many Kinds of Fonts

If you have been using a Mac for a while, you probably have assembled what I usually call the "font files from hell." Most Mac users, even the novices, are packrats. We tend to save every little bit of Macintosh software that we get,
because too many of us remember when each new Macintosh application announcement was practically an Apocalyptic event. Fonts, along with clip art, have long been a staple of Macintosh enthusiasts' ditty bags. If you are a new Mac user, you may think I'm kidding about this, but check your Mac in about six months and then tell me I'm wrong!

**Figure 4.8  Custom Installing the GX Utilities**

It's likely that many of you already have dozens, maybe even hundreds of fonts on your hard disks. Your network file servers may be loaded with hundreds more. Even the poor soul just down the hallway who you hired last week has to put up with a gigantic Font menu in MacWrite Pro that would frighten most keyliners.

If you get and use a font utility such as SuitCase II, you can organize this mess. I recommend that you do that when you make the upgrade to System 7.5.5. In fact, you might want to work out some standard suitcases of font families, load them onto the file servers, and advise your users of their whereabouts and how to copy them for their organized use. The key, though, is to get serious about dynamically-loading only the fonts that you really need. Usually, those conditions are dictated by document requirements, or by workgroup constraints and future design plans. Whatever the case, though, you may have to sound like a broken record to some of your...
users to help get their fonts under control. System 7.5.5 makes this process easier, but it also makes it more likely that abuse will occur, so Mac managers and users have to be aware of the potential problems.

Another thing to watch for when using styled fonts, like the Adobe screen fonts, is how you specify a Style from within your application. System 7.5.5 can style any font by *slanting* it for italics, *bolding* it for bold, condensing it for condensed, and many other effects. It can even display the font in *outline* style, which should not be confused with an outline font (which refers to the way the font is drawn on the screen, not it's actual appearance as an outline).

But when you choose to let the System style your fonts for you, you won’t be getting the exact bitmap of the prestyled font (like Garamond Italic). Instead, the System will take the plain version of Garamond and style it to italics by slanting it—which makes for a much uglier font and a differently sized one, to boot.

If you must have the precisely-styled bitmap on the screen that you loaded in your System suitcase, you have to specify it from the Font menu of your application, rather than selecting the plain style of that font and letting the System style it for you.

One trick to managing lots of different styled bitmap, GX, and TrueType fonts installed is to keep your Key Caps desk accessory (found in the Apple menu) open all the time. This gives you quick answers when you (or someone else) wonder why you can’t find the registered trademark symbol in the Palatino 12 font (there is no trademark symbol in Palatino 12). If you have Key Caps open all the time, you can verify this by simply selecting Palatino 12 from the Key Caps menu, and noting the lack of a registered trademark symbol (®) under any combination of modifier keys (Control, Option, Command, and Shift).

Key Caps also gives you visual access to all the special characters on the Mac keyboard that require multiple key combos to create, such as accent keys (grave, acute, circumflex, tilde, and umlaut) that are used with the Option key acting as a dead key (which lets you type the accent symbol, keep the cursor in the same location, and then type the letter you want to accent).
Key Caps also lets you use the characters it displays since it supports the Clipboard and the standard Cut, Copy, and Paste commands. This can be handy if you have a nonstandard keyboard (like those on the Outbound Portable or a third-party keyboard), or if your keyboard starts to get old and experiences sticky or failing keys. (Of course, cutting and pasting characters from KeyCaps into a document can get pretty tedious. The bottom line with a bum keyboard is that you should get it fixed—quickly. You can’t operate a Mac well from a failing keyboard.)

**GX Compatible Programs?**

By the time you read this, there should be several programs available that are fully GX-compatible. These include Ready, Set, Go! from Manhattan Graphics, a high-powered, low-priced desktop publishing program; Font Chameleon from Ares Software; and Nisus Software’s extraordinary word processor NisusWriter.

Most existing font utilities work with GX fonts, although some will require updates to be fully compatible. SuitCase II 4.0p, for example, works fine, but PopChar bombs whenever you try to view a GX font. Other shareware font utilities like the popular desk accessories ASCII Chart and FontView can only display the first 256 characters of a GX font. Fontgrapher 4.04 can access and manipulate all the characters in a GX font.

Unfortunately, several major developers in the Mac community, including Adobe Systems and Quark, have indicated that they won’t take the plunge unless they encounter a backlash of public opinion. This is primarily due to a desire to ensure full cross-platform compatibility with their PC-Windows products and, to keep development costs down (in the case of Adobe) to avoid cannibalizing sales of its Acrobat graphics file interchange program (which, for some, is rendered superfluous by QuickDraw GX’s PDD Maker). Remember that Windows has no GX equivalent.

You might recall that these same companies a few years ago similarly resisted Apple’s introduction of TrueType. Yet TrueType fonts have shown themselves to be superior and far easier to use than PostScript fonts. Time proved these companies wrong once. And so it will again. QuickDraw GX is a heck
of a good idea (though by no means perfect), so much so that any companies who shortsightedly fail to support it may get left in the dust.

QuickDraw GX is also a moving target. Apple is not standing still with this first release. One future development will be the inclusion of Ares' Chameleon Technology (in the Font Chameleon application) in the Macintosh System software. Apple has already licensed this technology from Ares Software.

Font Chameleon is a revolutionary product that uses a library of user-modifiable descriptor files to morph a single master font outline to produce literally billions of different fonts. An entire library of descriptors can reside on a single floppy disk. In a future implementation of QuickDraw GX, the master font outline will become a System INIT, and the list of descriptors will appear in the font menus of programs.

If you own Font Chameleon, you'll be able to extensively modify the original descriptors and create new ones (see figure 4.9). Ares Software also plans to release additional libraries of descriptors in the coming months. A fringe benefit of using descriptors is that you will be able to embed them in your documents for viewing and printing by others without any significant increase in document size. Each descriptor file, after all, is only about 4K, whereas a typical font may average 200K-300K or more in size.

Figure 4.9  The Font Chameleon editing window
In short, Apple plans to eliminate the need for traditional fonts as we know them today. Of course, whether GX pulls this off for Apple is the $64,000 question. Right now, I give Apple a 50/50 shot of making it happen; that percentage would move higher if Apple shows us that it has finally learned how to market its hot technologies. For example, this opens up some pretty cool opportunities for speedier digital transmission of documents through the rapidly expanding Information Highway, and it flags Apple as an emerging leader in this arena.

For the present, System 7.5.5 is a reasonable first step. As more and more GX-compatible programs become available, either as updates or new releases, you will be able to take greater advantage of the many font-manipulation features QuickDraw GX offers.

**Printing with System 7.5.5**

Here's the good news... Printing with System 7.5.5 offers radically expanded capabilities that will change the way you use your Macintosh. What I'm talking about here is a whole new printing interface. Drag-and-drop icons, print queue management, customized output via printing extensions, printer sharing with password protection, Portable Digital Documents (PDDs), consistent color matching between devices, and more.

Now here's the bad news... While many of these GX capabilities are immediately available (especially if you have Apple branded printers), developers must add support to their programs via new Print dialogs or special printer-driver utilities, and, as I just said, several major companies have declined to do so, at least for the time being.

**QuickDraw GX or Not?**

Like the proverbial Shakespearean quotation "To be, or not to be," one must decide whether to install and use QuickDraw GX for printing—or not.

The pluses are these: improved printer dialogs and greatly improved printer control (no more need for the lousy PrintMonitor!), portable digital
documents, desktop-based iconic printing, and greatly improved typography. The minuses, however, are not to be sneezed at: it has a big RAM footprint (1.7 MB for the GX extension), it conflicts with some existing fax modem software (you simply can’t use GX if you have an older fax modem and want to use fax software until you upgrade it to a GX-compatible version), it has few GX compatible applications, and it has few GX compatible imaging devices (pretty much only Apple printers now, more later). You will want to weigh these factors before deciding to use GX now or hold off on it until more devices and applications support it.

Even though access to many of QuickDraw GX’s print functions must wait for new program updates from software developers, many other functions are usable now. These include intuitive drag-and-drop printing and control of the print queue without using the Chooser or Print Monitor. They also include the ability to generate Portable Digital Documents so other users with QuickDraw GX can view and print your files without the original program or fonts.

You also have immediate access to a variety of custom printing enhancements via third-party GX printing extensions such as Peirce Software’s recently released Peirce Print Tools. And you have the ability to share and password protect any and all printers on the network, including serial devices like ink-jet, dot-matrix, and personal laser printers.

Apple’s ColorSync color management software is also now an integral part of System 7.5.5. This helps achieve consistent color rendering among diverse hardware devices. Color matching between scanners (input), monitors (display), and printers (output) is handled transparently by the operating system to ensure that you work with accurate color profiles at all stages of production.

QuickDraw GX is also compatible with most current programs. The various GX printer drivers included with System 7.5.5 support most printer types, including ImageWriters, StyleWriters, personal laser printers, and PostScript laser printers (both Level 1 and Level 2). Notable exceptions include label
printers, such as those from CoStar and Seiko, non-Apple color printers (both low-end like the HP 1200c and high-end like the Canon color lasers and the Tektronix wax deposition printers), and fax modems. Until GX-compatible drivers for these devices become available, you will have to restart your computer with QuickDraw GX disabled whenever you print labels using driver-dependent labeling software, print in color, or fax documents using your modem.

Other than these specialty output devices, you should have little, if any, difficulty printing documents from almost any brand of printer. You might notice (by looking at some of the figures) that I use an HP LaserJet 4MP printer. Even though Hewlett Packard has not yet released GX drivers for its printers, Apple’s GX printer driver for PostScript laser printers works just fine. Anyway, most printer manufacturers simply license Apple’s printer drivers and customize them for their own use. HP did this with the LaserWriter 8 driver, and I expect they’ll do likewise with the GX driver.

So far I have painted a pretty rosy picture. But there are still some serious incompatibilities between popular application programs and the new GX printer drivers. Depending on which programs you use, you too may encounter occasional printing difficulties when using the new GX drivers. You will want to harangue your software and hardware vendors to releasing GX-compatible drivers so you can get your work done. Since the momentum for GX is finally starting to build, it’s likely that Adobe, Quark, and others will jump on the bandwagon.

To deal with this issue, Apple includes a QuickDraw GX Helper extension with System 7.5.5. This extension lets you turn off desktop printing temporarily in the Apple menu so you can use a non-GX printer driver (see figure 4.10). That way, while software vendors busily scramble to update their programs, you can still use QuickDraw GX for most of your work, and switch to an older printer driver whenever necessary.
Figure 4.10  Turning off desktop printing in the Apple Menu

Be advised that once you turn off desktop printing, it remains off until you turn it on again. Also, when you turn off desktop printing, Apple’s QuickDraw GX Helper extension looks for an equivalent non-GX printer driver. It won’t allow you to choose a different non-GX printer driver until you first select the corresponding GX version (see figure 4.11). If you don’t have the corresponding GX driver installed, the only way to print with an older printer driver is to restart your computer with QuickDraw GX disabled.

Figure 4.11  Without an equivalent non-GX printer driver installed, you get this message whenever you try to turn off desktop printing

More good news is that the number of printer vendors that have announced future GX drivers is growing, including HP, Brother, Canon, LexMark/IBM,
Panasonic, and others. By the time you read this, you may be able to find GX-compatible drivers for your printers.

You can get around your faxing problems if you’re using Global Village’s TelePort Mercury and Platinum by installing the newest GX-compatible TelePort software.

Another strategy, if you own more than one Mac, is to dedicate one of those Macs to non-GX compatible functions (like non-GX printing and faxing) with the other one dedicated to GX printing. You can keep your file systems copacetic and up-to-date between the machines by using filesharing and any AppleTalk network (which is what I do).

These problems, as I’ve indicated, will be different for different situations. For many, the use of GX will be a no-brainer because you don’t have incompatible printers and don’t use a fax modem. For others, switching back and forth between GX and non-GX will be a major pain in the rear, and they will probably want to avoid that scenario. My advice for everyone (who has the minimum required 8 MB of RAM on a Mac and 16 MB on a Power Mac) is to install GX and see whether it works for you (as is with your current hardware and software). You can always turn the sucker off if you decide it’s a bust.

**GX Printing and Dialogs**

With System 7.5.5, Apple has introduced yet another desktop metaphor—the “desktop printer.” A desktop printer is nothing more than a Finder icon that remains on the desktop. It represents a real printer, much like a hard disk icon represents a real hard disk.

You can have as many desktop printers as you like. To switch printers, just select a different icon and choose Set Default Printer from the Printing menu (see figure 4.12). You no longer have to use the Chooser to make printer selections. (Incidentally, the Printing menu appears in the Finder whenever a desktop printer is selected.)
When you first install System 7.5.5, it creates a desktop printer for the printer you selected with the Chooser. To create additional desktop printers, open the Chooser and click on a printer icon. Select the printer name that appears in the window at the right and click the Create button (see figure 4.13). System 7.5.5 creates a desktop printer icon for that printer and installs it on your desktop.

Figure 4.13 Creating a Desktop Printer icon with the Chooser
Desktop printers are drag-and-drop capable. This means that if you drag a file to a desktop printer icon, your file prints automatically. You don’t have to open the program and choose the print command. Of course, you can still print from within any application, and as more programs become GX-savvy, you will be able to select a destination printer directly from a pop-up menu in the Print dialog.

With QuickDraw GX, you can also drag multiple files to a desktop printer for automatic printing, or drag the same file to multiple desktop printers (see figure 4.14). What could be more convenient?

![Desktop Printer icons](image)

**Figure 4.14 Desktop Printer icons**
Printer Sharing

Under System 7.5.5, any printer or output device (serial or otherwise) can be shared without the need for servers or special network hardware or software. The only requirement is that you install a GX printer driver for each independent device.

Setting up sharing for desktop printers is just like setting up file sharing. Click on the desktop printer and choose Sharing from the File menu. This brings up the Printer Sharing dialog (see figure 4.15). Here you allow access to users and groups, extend guest privileges, and specify who may view, print, or change files.

![Printer Sharing dialog](image)

Figure 4.15 The Printer Sharing dialog

You can also password-protect any shared printer. The trick is to uncheck the "Non-QuickDraw GX systems may also use this printer" checkbox in the printer sharing dialog. This effectively removes the printer icon from the Choosers of all non-GX users (there's no other way to limit their access). GX-equipped users gain access by choosing "Server" from the "Connect via" pop-up menu in their Chooser dialogs and entering the correct password.

Printing Control and Spooling

"The Print Monitor is dead. Long live print monitoring!"

Yes, Virginia, it's true—you can still monitor the printing of documents in System 7.5.5. But rarely will you have to suffer the irascible behavior of the often unpredictable and underpowered Print Monitor, that is, unless you
encounter a problem printing and get an alert message. Print spooling is automatic now, and there's no longer a button to turn off background printing. All printing normally takes place in the background. That is (again), unless you stop printing altogether by choosing the Stop Print Queue command from the new Printing menu, or place items on hold by selecting them and clicking the Hold button in the print queue.

To view or change the status of any print job, double-click on the appropriate desktop printer icon. A print queue window appears that shows not only all jobs for that printer, but also the number of pages remaining to be printed, number of copies, assigned priority, and status of the printer itself (see figure 4.16). Double-click on any job to preview how it will print.

![Print Queue Window]

**Figure 4.16  The print queue**

**Don Crabb Bottom Line Tip**  To check the status of printing while working in a program that obscures the desktop, create aliases for all your desktop printers and place them in the Apple menu. That way you can access any print queue directly from the Apple menu without leaving your program.
To change the printing order, drag individual jobs up or down the list in the print queue window. You can also use the Set Print Time command in the Printing menu to assign job priorities of urgent (moves a job the head of the queue) or normal, or to set a date and time for printing to occur (see figure 4.17).

![Set Print Time window](image)

**Figure 4.17  The Set Print Time window**

You can also set print priorities from within any GX-savvy application by choosing Print from the File menu (figure 4.18). The new GX Print dialog supports extensible printing. Printing extensions appear at the left of the dialog window. To set the print time, click on the Print Time extension and make your selections from the Print window. System 7.5.5 (on CD-ROM) also includes a couple of the Peirce Print Tools to get you started with printing extensions (the extensions let you print “watermarks” [Peirce Watermark] and save paper by printing multiple images on the same page [Peirce PaperSaver]). You’ll find those tools on the CD in the QuickDraw GX folder inside the CD Extras folder. Of course, you can buy the full Peirce Print Tools set, which also includes Peirce Log, Border, Pamphlet, InkSaver, DoubleSider, BacktoFront, and CoverPage. Each tool does pretty much what its name would lead you to believe.

While a job is actually printing, a small page icon is added to the desktop printer icon. This icon also appears in the print queue window. If you have a problem printing, this icon changes to an alert symbol. This is the only flag you’ll get of a printing problem, so you’ll want to keep the print queue window open when printing large or multiple jobs.
Print

Set the print time priority to: 1.0
- Normal: print now
- Urgent: print before other documents
- Print at: 6:00 AM 11/14/94
- Hold document in printer "HP LaserJet 4MP"

Show alert:
- Before printing starts
- After printing finishes

Fewer Choices  Cancel  Print

Figure 4.18 The new Print window with the Print Time extension selected

To keep a document from printing, select the document in the print queue and click the Hold button. To remove a document from the queue, click the Remove button or drag the document out of the window. The print queue is a window, so you can drag documents to the trash, the desktop, a folder, or another disk.

Don Crabb Bottom Line Tip
If you encounter a printer jam or PostScript error while printing, the System puts your job on hold. Once you solve the problem, use the Printing menu's "Resume on Page" command to continue printing. If you find that the problem lies with the printer itself and you have another printer available, simply drag the job from one print queue to the other and resume printing.

To stop all printing, choose Stop Print Queue from the Printing menu. A small stop sign icon is added to the desktop printer icon (see figure 4.19). The stop icon also appears in the print queue window.
To delay printing documents until a printer becomes available, such as when traveling with a PowerBook, select a desktop printer and choose Stop Print Queue from the Printing menu. As you print your documents, they stack up in the queue. When you gain access to a printer, choose Start Print Queue from the Printing menu and your jobs will print normally. If the printer is different from the one you had planned to use, open both desktop printers and drag your documents from the first print queue window to the second. You can also use a third-party tool, like Connectix's On The Road, which will automatically reconnect your PowerBook to networks and reestablish printing when you have access to a printer.

**Figure 4.19 Desktop Printer icons change appearance to reflect the status of printing**

**Portable Digital Documents (PDDs)**

One of the most exciting features of System 7.5.5 is the ability to produce electronic files called Portable Digital Documents (PDDs). These PDDs need neither the creating application program nor the original fonts in order to be viewed and printed. You open them using the SimpleText application program provided by Apple. The only requirement is that you have QuickDraw GX installed and turned on. PDD files carry with them all the information necessary to produce output documents that are virtually identical to the originals.

Of course, there are competing virtual document technologies, including NoHand's Common Ground, Farallon's Replica, and Adobe's Acrobat (the clear leader). Will GX displace these? Probably, for basic virtual document interchange. And since the Common Ground and Replica products have had little success in the market, they just aren't major players. But Acrobat is. And the Acrobat document reader is now shareware, which will tend to counteract System 7.5.5's inclusion of GX PDDs and its resulting instant large market (by virtue of the sell-through of System 7.5.5 to much of the Mac-installed base).

What I see happening is this: GX PDDs will become the default virtual document architecture for low-end, basic documents. Acrobat will become the default for the middle- to high-end documents (especially since Acrobat 2.5 includes QuickTime 2.5 support). Of course, you still have to buy the Acrobat Maker application, which isn't free. This is one of those situations that will be interesting to watch over the next couple years.

Well anyway, back to our story...
Once upon a time, not so very long ago, if you sent out a file to be printed by a service bureau, you ran the risk of the service bureau not having the same application or fonts. That meant they would be unable to process the file. Even if they had the same program and fonts, subtle version differences in System software might produce a reformatted document—not at all what you hoped for.

The use of PDD files eliminates all uncertainty. You get exactly what you expect every time. You can even send documents electronically, and the recipient can view and print them as if they were the originals.

PDDs cannot be edited. They are for viewing and printing only. Apple has indicated that editing is possible, but has left the task of producing the tools to do it up to third-party developers.

To generate a PDD, drag the original document to the PDD Maker GX desktop printer icon (which you can add to your desktop with the Chooser). A dialog appears asking you to name the file and specify a disk location for saving. Apple's PDD Maker does the rest. If you use your GX-savvy program's Print command, a pop-up "Include" menu in the dialog window lets you indicate whether to include all fonts, no fonts, or just non-standard fonts in your PDD document. Unless you are sure the recipient of your document has the same fonts installed in their System, it's best to include all fonts.

To view the resulting file, double-click the PDD icon (see figure 4.20). To print the file, drag the PDD icon to a desktop printer.

Figure 4.20  The way-cool PDD icon

Don Crabb Bottom Line Tip  Some application programs currently do not produce workable PDD documents, because they misbehave with GX's

continues
Any print-documents you drag out of the print-queue window behave just like PDD files. You can make copies of them, store them for later printing, transmit them to others, and view their contents by double-clicking. In cases where you find that you cannot create a viewable PDD file (some programs like Nisus 3.4 produce unviewable documents that generate PostScript errors when you try to print them), try the following: Select a desktop printer, choose the Stop Print Queue command in the Printing menu, print the file by dragging it to the desktop printer, open the print queue window, and drag the file to the desktop.

PDDMaker. To be on the safe side, each time you generate a PDD, double-click the resultant file to view it on screen. This allows you to verify that you have, indeed, generated a document that is both viewable and printable.

**GX Printing Extensions**

As I said earlier, one especially useful feature of QuickDraw GX is its ability to do extensible printing. Background printing extensions can be accessed directly from within the Print dialogs of GX-savvy applications. This provides the customized printing of files once the host program has finished with them. Previously, you had to rely on software companies to include any special printing capabilities. No more, though. QuickDraw GX printing extensions can be used by all GX-savvy applications, so you get to choose the capabilities you need and customize your system as you see fit.

To check out how printing extensions work, open any SimpleText document and choose Print from the File menu. You see the dialog in figure 4.21.

![Figure 4.21 The General print dialog](image)

The icons at the left are printing extensions. You install printing extensions like you do System extensions—just drag them to the System folder. Once installed, printing extensions are available for use by all your desktop printers.
Notice that the General extension is selected, and General choices are shown in the Print dialog window. The pop-up “Print to” menu, for example, lets you switch printers without using the Chooser or going to the Finder to select a desktop printer. Go ahead. Give it a try. Neat, huh?

The pop-up Destination menu lets you print to your printer or save your document as a PostScript file to disk. Other pop-up menus, fields, and checkboxes, of course, give you additional options. You can hide the extensions at the left and reduce the number of selectable options by clicking the Fewer Choices button.

To control what extensions a desktop printer uses and in what order, select the desktop printer in the Finder and choose Extension Setup from the Printing menu (see figure 4.22). You can turn extensions on or off and drag them up or down to change their order of execution.

![Extension Setup window](image)

*Figure 4.22 The Extension Setup window*

If your printer uses different paper sizes, you can tell each desktop printer what size to print to by choosing Input Trays from the Printing menu. Use the pop-up menu to select a particular paper size (see figure 4.23).
Figure 4.23  The Input Trays Setup window

Additional control over paper handling is provided by the Paper Match extension in the Print dialogs of GX-savvy programs. Here you can ignore paper matching for a given document, and you can tell your desktop printer to automatically crop, tile, or scale pages to fit the chosen paper sizes (see figure 4.24).

Figure 4.24  The GX-Savvy Print dialog with the Paper Match extension selected
Third-Party Printing Extensions?

Let me point out that PostScript Printer Description files (PPDs), text files that contain information about printer specs, default resolution, and so on, cannot be used with QuickDraw GX. Printer manufacturers need to provide GX printing extensions to access these settings. If designed properly, these extensions should eliminate the need for constant updates with hardware or system changes (as was often the case previously with PPDs). Beyond that, look for vendors to offer a slew of third-party printing extensions to access QuickDraw GX's many capabilities.

The first such utility package specifically tailored for use with QuickDraw GX is Peirce Software's Peirce Print Tools, a single printing extension that boasts nine different tools (discussed earlier in this chapter). These include custom watermarks, page borders (with previews), editable cover pages, bi-fold pamphlets, double-sided and reverse-order printing, ink and toner reductions, printer-usage logs, and thumbnails.

You can turn any setting on or off, and you can save groups of settings for different job requirements. You can also save settings as desktop printer defaults. Server settings and overrides are supported. A separate utility lets you view and export the print logs, and create your own watermarks and cover pages.

Peirce Print Tools replaces at least half a dozen separate utilities available for earlier non-GX Systems. As the first in what could become a flood of customizable printing extensions, it also gives you a glimpse of what the future holds for GX printing. As I mentioned previously, if you buy the CD version of System 7.5.5, you'll find the Peirce WaterMark and Peirce PaperSaver tools as freebies to get you started.

Future GX printing extensions will deliver many new printing enhancements. Apple's QuickDraw GX architecture includes more than a 100 standard functions that can be called by third-party extensions. This means that you can look forward to such capabilities as: automatic tracking of print jobs across a network with controlled access and automatic links to accounting or billing systems; high-end color separation and trapping for graphics users and desktop publishers; variable sizing and placement of thumbnails on a page; and multiple page formatting for, well, all of us.
Ah, yes! Just think of how nice it will be to tell your printer to output a series of horizontal pages appropriately collated within a vertically oriented document, then finish by printing the required letterhead cover sheet and matching envelope, _all with a single print command_... Well, hang onto your mouse, 'cause it's coming sooner than you think!

**Additional Printer Utilities from Apple**

Included with System 7.5.5 are two printing utilities that you may not use often, but are absolutely priceless when you need them. The first is LaserWriter Utility, a small application program that lets you adjust the settings of your laser printer.

With the LaserWriter Utility, you can control everything from turning the startup page on or off to specifying print density, photograde, and fine print settings. You can download fonts to your printer's memory or hard disk, and also PostScript files for printing. You can request a current page count, change printing zones, rename your printer, restart it remotely, and so on (see figure 4.25).

**Figure 4.25 The LaserWriter Utility menus**

The PaperType Editor, on the other hand, has only one purpose. It allows you to customize paper types for unusual printing requirements. You can set different margins, print areas, and so on (see figure 4.26). This is particularly
helpful when you have a need to print odd-size paper specifications. With the PaperType Editor, you can adjust the print dimensions and then save the settings for future use.

![PaperType Editor](image)

*Figure 4.26 The PaperType Editor*

**Finder Printing**

Apple knows a good thing when it writes it. And it often knows how to get a little bit extra out of that good thing. That's certainly the case with System 7.5.5’s Finder printing shortcut.

As in past Systems, you can print multiple documents from the Finder simply by selecting them by and then choosing Print from the File menu. Feel free to select documents from as many different applications as you have memory to launch simultaneously.

Remember that you will NOT get the Page Setup dialogs from the applications that are launched by the Finder. You will only see the Print dialogs for each application and document, allowing you to select the number of copies, front to back printing, pages to be printed, and so forth. But if the specific applications that are launched to print your documents have
inappropriate Page Setup values set, those will be reflected in your printed document.

That's why Finder printing is not everything Apple cracks it up to be. When the multi-print job is done, the Finder will return control to the desktop and close all the applications that it launched. It will NOT, however, close any applications that were already open when the multi-print job was started.

Managing Multiple Serial Printers and Modems

What happens when you also have a modem connected and you want to use a serial printer with your Mac on the same port? You could switch the plug for the printer and modem when you want to use each device (which is a pain and will eventually break or bend the connectors), you can stop using the modem (which is probably not a valid option), you can decide not to print (even worse), you can buy a modem that connects to your AppleTalk network, or you can buy a serial switchbox.

The switchbox is probably the best and cheapest solution, since one from a vendor like Data Spec will cost you only about $40. To hook it up, connect the switchbox to your modem port via a supplied cable. Then connect your modem to the switchbox and your serial printer. Then, when you want to use the modem, you just press the switch and voilà, you're telecommunicating with the best of them. When you want to print, shut down your telecom session, switch the modem out of the serial connection and switch the printer in. Then print away.

You can probably even keep your modem connected during this switchover, without having to redial the line (most online services will hang you up automatically, however, if they don't detect any activity after a certain length of time). I've been very successful using the switchbox solution to keep a MacroMedia MacRecorder, a Global Village TelePort Mercury modem, an Apple StyleWriter II printer, and a Tektronix serial scanner, all connected to the same accelerated Mac IIci serial ports. I can keep connected to online services via the modem and its phone line, even when I punch up the
scanner. Just remember not to change the switch setting during the printing operation, or you will lose pages of output. The System will think it’s printing away, even though it’s sending your document to the great Bit Bucket in the Sky.

A better solution, of course would be for Apple to give us more than two serial ports on a Mac (one on a PowerBook 500 series machine or Duo). You can opt, however, to buy a serial port Nubus board (if you have a Nubus-capable Mac) to plug into your Mac to add more serial ports.

Chapter 4 Summary

And so I’ve finally come to the end of chapter 4. I’ve shown you why it pays to install QuickDraw GX and get started using it now. I’ve also highlighted several important new printing capabilities that you can take advantage of immediately. Plus, I’ve gone out on the limb (it’s a very stout tree) and painted a fairly bright picture for the future of computing with QuickDraw GX. In the next chapter, I’ll dive straight into Multimedia and all that leading-edge visual stuff made possible by QuickTime 2.5. Stay with me and I’ll even show you how you can turn multimedia to your advantage for fun and profit!

But first (you guessed it) here’s another short quiz designed to test your ingenuity, if not your patience!… Enjoy!

Crabb’s Computing Quiz for Chapter 4

1. Why did Apple call its font technology TrueType?
2. How many fonts does it take to produce a ransom note?
3. What would you use drag and drop for?
4. How would you summarize all the printing improvements offered by QuickDraw GX (fewer words earns more points)?
5. Is GX (a) the name of a new sports car, (b) slang for a newly discovered disease, or (c) an acronym for a new secret weapon?
6. How much memory do you need to run System 7.5.5 with QuickDraw GX installed?
7. Does QuickDraw GX support virtual reality?
8. What's the best improvement offered by QuickDraw GX?
9. What's the most dubious improvement offered by QuickDraw GX?
10. Why are some vendors not yet updating their products to include QuickDraw GX capabilities?

Answers to Crabb's Computing Quiz for Chapter 4

1. Because FalseType was already a well-known trademark of politicians.
2. Twenty-five, which just so happens to be the number of fonts (including style variations) that ship with System 7.5.5. Think of the possibilities!
3. Bad habits. (Just checking to see that you've been doing your homework... This question was part of the chapter 1 Computing Quiz.)
4. Oh, my, they are too numerous to mention!
5. Youthful Apple engineers will claim (a) is the right answer. Microsoft, of course, will think (b). But true Mac enthusiasts will correctly guess (c).
6. If you have to ask, you don't have enough...
7. No, but you can bet Apple's working on it. Of course, figuring out how to sell it is another matter...
8. Portable Digital Documents (PDDs). I mean, just look at the ultra-cool icons. You know this has got to be gee-whiz stuff!
9. Adobe's Type 1 Enabler... Continually patching Type 1 PostScript fonts to work almost as well as TrueType must be keeping a lot of Adobe engineers gainfully employed. Don't you love the politics in the computer business?
10. They mistakenly guessed that (b) was the correct response to question 5.
In this chapter, we'll discuss some of the basics of using the multimedia resources and tools provided by System 7.5.5. In addition, I will take a stab at giving you some examples of how I have used multimedia resources, and give a few examples of the third-party products you will need to use them.
Before we get started, let me define multimedia. Multimedia is any combination of graphics, text, pictures, sounds, music, video, animations, and related data that can be manipulated and presented with a computer—in our case with a Macintosh. Interactive multimedia adds control over these media so that you can decide when, where, how, and in what form they are presented. Interactive multimedia also assumes that you can stop and start the media data stream at will.

Unlike other parts of System 7.5.5 where the enabling technologies (AppleScript, Apple Guide, and PowerTalk) include built-in or sample applications (for example AppleScript's Script Editor and Scriptable Text Editor, Apple Guide's Macintosh and PowerTalk Guides, and PowerTalk's DigiSign and AppleMail), the basic multimedia technology of System 7.5.5—QuickTime 2.5—comes with no built-in or sample applications to show you how to use the technology in your work or play.

That's a mistake on Apple's part, but it's an omission that is easily rectified thanks to the plethora of third-party multimedia authoring and user tools. This chapter will discuss some of those that will get you started, as well as point you to other books and sources of third-party multimedia help.

The good news, however, is that unlike the "year of networking," the "year of multimedia" (that has been coming real soon now ever since Apple's release QuickTime 1.0 in 1991) is finally here. The reasons? QuickTime 2.5, QuickTime for Windows, and Apple's wise decision to include QuickTime 2.5 with the System 7.5.5 release. This chapter will celebrate our resulting good fortune.

While I have tried to cover as much ground on multimedia and System 7.5.5 as necessary to get you started, this is not a book on multimedia resources, authoring, or the related techniques of creating presentations, capturing video and audio, or the multimedia creative process. In short, this chapter is anything but exhaustive. Consider it a multimedia appetizer for your Mac palate.

What I want to do here is get you started with System 7.5.5's multimedia prowess, suggest what is possible (and what is not possible), show you how to attack multimedia for fun and profit, and then leave you to your own resources.
So, to get at these basic multimedia issues, I've divided this chapter into five sections, QuickTime 2.5, Using Multimedia Applications for Fun and Profit, Summary, Quiz, and Quiz Answers.

**QuickTime 2.5**

According to Jim Armstrong, one of Apple's multimedia gurus, QuickTime adds capabilities that allow your applications to integrate graphics, sound, video, and animation into your documents just as if they were any other data type, like text or numbers. In fact, Armstrong says, "Because QuickTime provides a standard way for all Mac and Windows PCs to control multimedia data, it gives any user interested in multimedia the foundation to attack their real problems—creating interesting and enriching multimedia content."

The critical thing to remember, says Armstrong, is that QuickTime is NOT an application. "It's an extension of your computer's system software, so that it allows you to work with media data types, but it does not give you the tools—the applications—to do that work. For that," he says, "you will need specific multimedia applications for authoring or for playing back previously created QuickTime movies."

**What Is QuickTime?**

QuickTime 2.5 is a Macintosh system software extension (actually, it is more than one extension—there is the QuickTime 2.5 extension, the QuickTime PowerPlug extension for Power Macs, and QuickTime for Musical Instruments for recording and playing back high-quality audio).

QuickTime has been enhanced versus earlier versions (1.x). This version includes the ever-popular improved performance, sound, and graphics, but it also offers improved capabilities for your multimedia applications. More about this in a moment. In addition, portions of QuickTime are now native on the Power Macintosh, so it can be bloody fast!

QuickTime 2.5 for Macintosh computers is the pervasive industry standard for CD-ROM and Internet content authoring, playback and deliver. It's also a multiplatform architecture for storing, editing and playing synchronized
video, sound, music, graphics and text. The QuickTime 2.5 release addresses specific requirements of content creators for broadcast, music, film, and the Internet.

"Apple's contributions to the computer industry for multimedia, Internet content creation, professional video, and music continue to push the envelope in innovation with this new version of QuickTime," says Ellen Hancock, Apple's chief technology officer and executive vice president of research and development. "QuickTime makes it easy for broadcast professionals, CD-ROM developers and Internet content creators to manage and repurpose their content for new markets, thereby receiving a greater return on their investments."

With the release of QuickTime 2.5, Apple has expanded QuickTime's capabilities to include an enhanced music architecture; multiprocessor support; support for 3D Objects; a Graphic Importer Component; support for Closed-Caption capture APIs; an enhanced primary data handler; asynchronous JPEG and raw codecs on Power Mac; and a new Clock component. Apple plans to continue innovating and expanding the multiplatform capabilities of QuickTime with a strategy to support the universal creation, distribution and playback of all time-based and spatial media types.

"Digital technology is blurring the lines between traditional media markets, professional film and video producers, consumer multimedia developers, and Internet content creators. This has created a significant challenge for the creative world: the lack of a unified standard that meets the needs of all content creators, enabling them to handle the creation, storage and delivery of their information in one simple, straightforward way, regardless of platform and eventual means of distribution," says Carlos Montalvo, director of products and technologies for Apple's Interactive Media Group. "Creative developers need a rich set of Application Programming Interfaces (APIs) and a "universal container" for holding digital media, guaranteeing that their tools work together and that their content can be delivered and viewed everywhere—QuickTime provides this today."

Over the last five years, QuickTime has evolved into the standard, multiplatform architecture that allows multimedia software tool vendors, content creators and production staffs to create stunning content for delivery anywhere. Today QuickTime supports multiple data types, including
Chapter 5: The Multimedia Is the Message

video, sound, graphics, animation, text, music/MIDI, MPEG and sprite 3D, with the ability to synchronize all the media types to a common time base.

QuickTime 2.5 Features:

Interchangeable M-JPEG File Format

Motion JPEG (M-JPEG) is a compression standard for video professionals that is implemented in a distinct way by each different video capture product. Files created in one system typically cannot be played back or edited by another system. Through a QuickTime developer working group, Apple and leading digital video solution vendors have agreed to a fully interchangeable M-JPEG file format. Apple has implemented this new format in QuickTime 2.5, allowing video professionals and editors to work with M-JPEG files independent of the hardware solution originally used to capture the media. QuickTime will also include a software interchangeable M-JPEG codec, allowing editors, and others involved in the creative process to view M-JPEG compressed files on any Power Macintosh with no additional hardware required.

QuickTime Music Architecture

Significant enhancements to the QuickTime Music Architecture (QTMA) now enable title developers to easily enhance their content by creating their own musical identity. With the introduction of the QTMA, Apple made it easy for computer users to work with MIDI music by providing a software synthesizer and a library of Sound Canvas instruments licensed from Roland. The enhancements in QuickTime 2.5 build on the QTMA by allowing music and synthesizer developers to deliver their own custom software synthesizers, instruments and libraries of musical instruments through QuickTime. Title developers can use these components to embellish their content with music and create a distinctive aural experience.

The enhancements to the QTMA will also benefit professional musicians and music enthusiasts who use the Macintosh to create music. In addition to playing through the computer built-in speaker, QuickTime 2.5 can rout musical information to external MIDI devices and effects processors working directly with music industry standards such as Opcode's Open Music System (OMS).
Multiprocessor Support
For power-hungry video professionals needing real-time editing capabilities and requiring faster media compression, Apple has also enhanced QuickTime 2.5 to support multiprocessing hardware such as the Genesis MP from DayStar Digital.

QuickTime to Support 3D Objects
Apple has enhanced QuickTime to use Apple QuickDraw 3D engine for rendering 3D objects in real time within a QuickTime movie. Now video professionals can synchronize, composite, and animate workstation-class 3D objects with other media types such as video, audio and music.

Graphic Importer Component
QuickTime 2.5 for Macintosh includes a new graphic importer component allowing for import of a variety of diverse file formats. With this feature, any application that is QuickTime aware is able to import file formats such as GIF, MacPaint, Silicon Graphics Inc., and Photoshop directly into their application.

Support for Closed-Caption Capture APIs
Traditional closed-captioned simply displays the accompanying text as an overlay graphic to the video (and thus the captured movie). The closed-captioned text embedded in the video is lost for any useful purpose other than viewing. Along with video, sound, and music channels, closed-captioned text can be captured and embedded into a QuickTime movie’s text track. This allows for fast searching and cataloging of stored media.

Enhanced Primary Data Handler
QuickTime’s primary data handler has been updated to allow for higher performance playback. The data handler has been modified to maximize throughput resulting in noticeable performance improvements.

Asynchronous JPEG and Raw Codecs on Power Mac
The JPEG and Raw codecs are now asynchronous allowing QuickTime to continue processing data while the codecs simultaneously compress or decompress video.
New Clock Component

A new Clock component now guarantees enhanced synchronization of video and sound, and simplifies the problem of synchronizing these data types across the diverse array of sound and video hardware configurations supported by QuickTime.

QuickTime and the QuickTime Architecture

QuickTime (QT), which began shipping to all Apple customers in 1991 as version 1.0, is now a certifiable breakthrough technology. It’s doing to video and sound what PostScript did (and now QuickDraw GX will do) for printing and graphics. QuickTime 2.5 is included as a standard part of the System 7.5.5 software, and all customers get it free.

System 7.5.5 also includes the Sound control panel, Sound Manager 3.0 (for 16-bit stereo quality sound in multimedia applications), Apple CD Audio Player control panel, CD-ROM extension, and PlainTalk extensions (for controlling your Mac via voice commands) as its basic multimedia system underpinnings (for more information on PlainTalk, please see appendix B, “PlainTalk”).

Don Crabb Bottom Line Tip

System 7.5.5, however, does not include any multimedia authoring or editing tools. It does not include, for example, HyperCard 2.2 or even the HyperCard Player. You have to buy third-party tools and applications to do multimedia authoring or editing, as well as additional hardware for your Macintosh.

The bottom line is that QuickTime 2.5 is the System software architecture for the integration of dynamic media for Macintosh computers (a separate QuickTime for Windows allows some of these capabilities for Windows computers, too).

QuickTime 2.5 allows third-party developers to integrate dynamic media—such as sound, video, and animation—in a consistent and seamless fashion across all Macintosh applications. Apple expects that any Macintosh
application that supports graphics today under System 7.5.5 will eventually support all other multimedia data as well. QuickTime provides the technology base for making that happen in a rational way.

QuickTime also provides a standard integrated dynamic platform for all Macintosh development, enabling developers to extend the capabilities of current applications, plus create new categories of applications (which will alternately benefit and frustrate Mac managers and users). Categories of software products that are now taking advantage of QuickTime include: videoconferencing, store-and-forward video mail, low-cost video editing, and dynamic CD-ROM magazines.

The QuickTime architecture consists of four major components:

- System Software
- File Formats
- Apple Compressors
- Human Interface Standards

These components form an integrated software architecture that is extensible, open, and offers cross-platform standards for dynamic data exchange. This means that Mac users and managers have a better way to make their cross-platform networks operate, but it also means a big increase in network traffic, because video and sound are not dainty even when compressed. If you have used previous versions of QuickTime and have a Mac LAN, you know what I mean.

QuickTime 2.5 gets installed automatically when you upgrade to System 7.5.5, so you can immediately take advantage of its capabilities. Eventually, with some later release of the System, QuickTime may be built into the main System code, rather than being a startup extension.

**System Software**

The system software component of QuickTime incorporates these three chunks:

**The Movie Toolbox**

Apple uses the term "movie" to denote dynamic data such as sound, video, and animation. The QuickTime data type is MooV (get it?). The Movie
Toolbox is a set of system software services that make it easy for developers to incorporate support for movies in their applications.

**The Image Compression Manager**

The Image Compression Manager (ICM) shields applications from the intricacies of individual compression and decompression schemes (which can be nightmarish—just look how difficult it is sometimes to compress and decompress a static file of text and graphics using a solid program like Aladdin's Stuffit Deluxe). All it takes is one bad bit to junk a compressed file. Video and sound make the problem worse because of the sheer volume of the stuff. For example, multiply 44,400 (the digital sampling rate of a compact disc) by 240 (an average number of seconds for a song on the pop charts). What do you get? 10,560,000—more than 10 million bits just to sample and play back a single short pop song. Even at ten-to-one compression ratios, we are still talking about a data storage problem. And video increases the number of bits needed by several orders of magnitude.

The ICM allows software and hardware developers to take advantage of numerous compression schemes—such as DVI, Group 3 fax, JPEG, and MPEG—in their applications, without having to make modifications.

**The Component Manager**

The Component Manager (CM) allows external system resources, like digitizer cards, VCRs, and system software extensions, to register their capabilities with System 7.5.5 so that any application can access these capabilities. Application developers who want to take advantage of features from a hardware product, such as a digitizer card, had to write custom software for that card and update their software each time the hardware was updated. With QuickTime 2.5, the hardware is transparent to the software application, and developers can concentrate on the capabilities they would like to offer their users. This ultimately makes it easier for users to use and for Mac managers to manage.

**File Formats**

File formats are standard descriptions for a piece of data such as text and graphics. Formats like EPS, TIFF, PICT, PICT2, HDM, and PIC files all use standard methods to describe the way the data they hold is represented and
stored. (These standard descriptions are supported by most applications, thus allowing users to "cut and paste," "Drag and Drop," or "Publish and Subscribe" data between applications and documents.)

With QuickTime 2.5, you get the MooV format, also known as a QuickTime Movie. A QuickTime Movie refers to any and all dynamic data, such as a presentation slide show or a dynamic graph of lab data. The MooV file format is a container for this time-based data. Apple has published the full specifications for the MooV file format, providing developers of cross-platform applications with a standard way of exchanging dynamic data from one computing environment to the next.

In addition to QuickTime 2.0's MooV file format, Apple extended the PICT file format with QuickTime 1.0 and continues this with 2.5. The PICT file format will now support image compression, allowing you to open any compressed still image from within any existing application. The PICT file format also offers preview support, allowing applications to save a small "thumbnail" of a picture along with the image itself (this saves disk space in a big way for serious dynamic media users). These thumbnails allow you to quickly browse through still image libraries in the same way you currently browse through files in a folder.

**File Compression under QuickTime**

With QuickTime 2.5, Apple supports a basic set of software compression/decompression schemes that meet a range of compression needs for still images, animation, and video. It includes the Joint Photographic Experts Group (JPEG) compression scheme as a standard part of QuickTime. JPEG is a high-quality still image compression scheme that offers compression ratios ranging from 10:1 to 25:1 with no visible picture degradation.

QuickTime's Animation Compressor is based on run-length encoding principles to compress computer-generated sequences from 1 to 32 bits in depth. This compression scheme displays animations, such as a PowerPoint or Persuasion slide show or a Claris Resolve dynamic bar chart, at acceptable speeds on most Macintosh computers (if you own an old Mac II, you'll see that acceptable is a relative term).

In addition, the Animation Compressor allows complex animations—such as 32-bit scientific visualization data (like that generated by the outstanding
Spyglass software)—to be previewed on any Macintosh, thus saving users the time and expense of having to lay the animation to videotape one frame at a time.

Apple’s Video Compressor allows digitized video sequences to play back from a hard disk or CD-ROM drive in real-time on a Macintosh with a 68020 or higher processor and the proper 8-bit or higher display card (but you need 24-bit to get photorealistic [NTSC TV-like] color).

The Video Compressor offers compression ratios ranging from 5:1 to 25:1. The video playback size is typically less than 1/3 of the computer screen size, which helps improve perceived resolution by hiding missing detail in the small screen size. QT 2.5 also supports full screen playback at decent quality.

**Human Interface Standards**

Apple has also provided human interface guidelines for dynamic media software developers and content providers with QuickTime 2.5. These guidelines will allow ease-of-use and consistency across applications when dealing with dynamic media.

Apple provides a standard movie controller (MoviePlayer) that gives you a consistent way to control movies (on the System 7.5.5 CD only). MoviePlayer lets you turn sound on and off, play or stop a movie, move to different segments in the movie, step-forward and step-reverse through the movie, and it indicates where you are in the movie.

QuickTime 2.5 also offers developers a preview option for use inside applications. Application developers can now incorporate into their products a dialog box that includes a preview window for still images and movies.

Taken altogether, the improvements in QuickTime 2.5 help lock it in as the best for dealing with data, be it text, graphics, screen animation, sound, or video.

**Using QuickTime—What You Need**

According to Jim Armstrong, you need either a multimedia PC (MPC) or “virtually any modern Macintosh” to use QuickTime as a QuickTime player. If you are using a PC, it must be at least a 20MHz 386 machine with
Windows 3.1 or higher installed, as well as a compatible color high-resolution video card. You'll also need at least 4 MB of RAM, plenty of hard disk space (to store QuickTime movies), and a CD-ROM drive to access commercial movie sources. Of course “more RAM, a faster 486 (DX or DX2), and hard disk space are a must for comfortable QuickTime use in the PC world,” Armstrong advises.

If you plan to author with QuickTime (create your own QuickTime movies), then “you'll need to be able to manipulate video and audio sources with your computer,” Armstrong continues. “You'll need a faster 486 machine, a video frame grabber card, a high-resolution sound card (16-bit sound) and sources of audio and video to control, like those from a laserdisc player, VCR, or camcorder.”

Mac users will need at least a Mac IIx with a 256 color monitor for QuickTime. “But you will be happier with the performance of any modern Mac, from the 68040-based Performas up through the new Power Macs, as well as the older Quadra series,” Armstrong told me. “Playing QuickTime movies takes up processor horsepower, as well as hard disk space,” he says, “and you also need a CD-ROM drive, plus a minimum of 4 MB of RAM. If you plan to play big movies, or author your own movies, then you will need a minimum of 8 MB of RAM, and double that on a Power Mac,” Armstrong continued. (You can also play movies directly from a CD.)

Using QuickTime—What You Get

If you buy the CD-ROM version of System 7.5.5, you will get a folder of what Apple calls “QuickTime Extras.” In reality, these are the MoviePlayer from the old QuickTime Starter Kit and some sample QuickTime movies (animations, sound clips, and a few video clips). If you buy the floppy-only version of System 7.5.5, you get only the QuickTime extension, QuickTime for Musical Instruments, and the QuickTime PowerPlug extension—but no MoviePlayer and no sample movies.

That means that with the floppy version of 7.5.5, you can do exactly nothing with QuickTime unless you already have a QuickTime-compatible
application (a movie player, authoring tool, animation program, video grabber, sound generator, spreadsheet, database, whatever) or unless you go out and buy one. At least with the CD-ROM version you can launch the MoviePlayer and fool around a bit with the CD movies and with movies you can download (watch out for those download charges, as MooVs can be large!) from the Internet.

Don Crabb Bottom Line Tip

Note that the file name extension SCAN reflects the kind of file it is. SEA files are compressed self-extracting archives, you do not need a decompressor to use them since they decompress when opened. SIT files are Stufflt Archives and you must have a copy of Aladdin's UnStufflt, Stufflt Classic, Stufflt Deluxe, or UnStufflt Expander (a fabulous freeware decompressor) to decompress them. GIF files are PC or Mac graphic format compressed files, and you must have a program like the shareware GIFConverter to decompress and use them. ZIP files are PC ZIP-format compressed files and you must have a copy of UNZIP, Stacker, or another decompressor that can read ZIP files to decompress and use them. BIN files are in the BINHEX format, you need the BINHEX decompressor or other compatible decompressors (such as Stufflt Expander) to decompress and use these files. TXT files are text files that can be read with SimpleText.

Using the MoviePlayer

If you have the MoviePlayer, you probably want to use the sucker. Here's how, step-by-step (assuming you have the 7.5.5 CD):

1. Open the QuickTime Extras folder on the System 7.5.5 CD and copy MoviePlayer to your hard disk.
2. Launch MoviePlayer (see figure 5.1).
Figure 5.1 Launching MoviePlayer

3. Open the File menu and bring up the Open dialog as in figure 5.2.

Figure 5.2 Using the MoviePlayer Open file dialog

4. Open one of the QuickTime sample movies from the list available in the QuickTime Extras folder on your 7.5.5 disc (see figure 5.3). (For best performance, you should copy the movie from the CD to your hard disk first.)
Figure 5.3  Opening a QuickTime movie with the MoviePlayer

5. You now have a window displaying the first frame of the movie. Click the sound control at the bottom of the screen, and make the sound as loud as possible (assuming the movie you chose includes sound), as in figure 5.4.

Figure 5.4  Adjusting sound volume in MoviePlayer

6. Play the movie by clicking on the single right arrow in the controller at the bottom of the window as in figure 5.5.
Figure 5.5 Playing a movie with the MoviePlayer

7. Sit back and be amazed.

8. Monkey around with the slider control and the left and right fast forward arrows to see their effects. Adjust the side of the window to see how lousy the picture gets when you make it bigger.

9. Boy, we are having fun now, huh?

10. Welcome to the world of Macintosh Multimedia!

OK, the MoviePlayer won't exactly turn you into Cecil B. DeMille, but it's not supposed to. It's only there to show you what a QuickTime movie looks like. In order to really use QuickTime on your Mac with System 7.5.5 you are going to need two things:

**Thing Number One:** A reason for doing it!

**Thing Number Two:** An application that can that read, read and write, or read, write, and edit QuickTime movies.

More about both of these, next.
Chapter 5: The Multimedia Is the Message

Using QuickTime—What You Don’t Get

Although 7.5.5 includes the basic QuickTime extension, and the CD-ROM version includes the MoviePlayer and some QuickTime movie clips, System 7.5.5 lacks the following kinds of software that you need to do multimedia authoring, creation, and editing:

- Multimedia Authoring tools, like MacroMedia Authorware and Director.
- Multimedia Editing tools, like Adobe Premiere and VideoFusion.
- Multimedia Audio and Video controllers, like Abbate's VideoToolKit.
- Object Graphics tools like ClarisDraw, Adobe Illustrator, or Macromedia FreeHand.
- Photo composition and retouching tools like Adobe Photoshop, Macromedia XRes, or HSC’s Live Picture.
- Presentation makers like Microsoft PowerPoint, Aldus Persuasion, or Claris Impact.
- Animation utilities like Morph and GraphixPlus.
- MIDI (musical instrument digital interface) software.
- Software capable of using QuickTime MooV format files in a meaningful way (other than the Scrapbook) as a data type.
- Any mention of QuickTime or PlainTalk in the Macintosh Apple Guide.
- Any real help in using PlainTalk (see appendix B for my attempt at this interesting, if highly-flawed voice control technology that is an afterthought extra supplied on the 7.5.5 CD-ROM).
- Any real mention of multimedia resources in the Apple Guide or Upgrade Guide.

What all this means is that if you really want to create multimedia resources with your System 7.5.5 Mac, you are going to have to spend time and money, as you will see in the next section, on training, software, and hardware.
Using Multimedia Applications for Fun and Profit

Why do you want to manipulate multimedia materials? If you can’t answer this question, you might as well jump to chapter 6 and read about PowerTalk, collaboration, and networking. But if you can answer the question honestly, then maybe you do need to set up your Mac as a multimedia system.

Some reasons for using multimedia materials include the need to:

- Make your presentations more dynamic and persuasive.
- Communicate computer-generated information better.
- Advance your career with a new skill.
- Become more productive with your Macintosh.
- Incorporate archival video, audio, or animation clips into presentations for training.
- Create a good training program in a non-computer subject.
- Express your artistic side via music, video, and graphics authoring.
- Be totally cool. And let’s face it, working with multimedia materials can be totally cool.

To that list you might want to add a hundred or so of your own more specific reasons, all of which probably have some validity. Far be it for me to rain on your multimedia parade!

In any case, decide what you expect from multimedia materials so you can learn how to use them and to put together the right Multimedia Mac—both hardware and software. The bottom line here is that if you plan to create, edit, or author multimedia presentations, productions, or content of any kind, you will need to buy considerably more software than System 7.5.5 provides, and you will need much more Macintosh hardware.

If you aren’t prepared to spend the additional thousands of dollars (not an exaggeration) to do this, then spend your time fooling around with the MoviePlayer (included in 7.5.5) so that you can at least see the impact that
QuickTime and multimedia can have on information conveyance. If you are prepared to spend the bucks, and have definite multimedia goals in mind, then read on to see what I have been doing with multimedia (and what you can do with it), and what I think you need to really do multimedia with System 7.5.5.

Don's Video Fun House

My multimedia needs are pretty much confined to three areas:

1. Multimedia data used to help explain programming concepts to my students at the University of Chicago.
2. Multimedia data used to jazz-up presentations I give.
3. Multimedia data (mostly video) used on the TV shows I work with or appear on.

I am not a primary multimedia author, by any means. Nor am I a musician (although I do play a mean trumpet), so what I know about using a MIDI keyboard could be easily stored on the head of a pin. Likewise, I am not a media artist, graphic designer, fine artist, or any of those other noble creative professions. But I am a writer, a teacher, and sometimes a radio and TV performer who needs multimedia data the same way I do text and numbers. I suspect many of you are in the same boat. Let me look at my third need (mostly video, with some audio) to show you what I am up to, why I picked the software and hardware that I picked, and how it might apply to you. Of course, your mileage may vary.

Audio/Video 101

I've been working on a number of projects that use QuickTime movies and real time external audio and video. I use these to see if Apple's planned multimedia desktop really makes sense, and if it can be made to work for me in an instructional setting. In addition, I have had to do plenty of real time video rough-cut editing—and for that, I have turned to the Macintosh.

Naturally, I've been culling the software and hardware bins looking for the goodies to get these media projects underway. I couldn't afford to chuck my trusty old Mac IIci (with its 40MHz 68040 Daystar accelerator and 64 MB of
RAM) in favor of an 840AV. I also couldn't wait to buy a PowerPC Mac 9100/150AV in 1995. Instead, I looked for two things: a digitizer/frame-grabber board to handle the conversion (digitization) of source audio and video to QuickTime format, and software to handle the control and editing processes.

I started first with QuickTime 1.6.1, then moved up to QT 2.5, which is measurably faster, smarter, and better than 1.6.1. QT 2.5 fixes problems with the earlier versions and supports higher and more accurate frame rates at large resolutions, so the media you intend to manipulate and digitize can be worked with effectively. Over the last couple of months I moved all my work to System 7.5.5 so I could take advantage of its general reliability improvements, plus the Sound Manager 3.0 and other media goodies.

**A Real Media Desktop**

For a digitizer, I chose the Radius VideoVision Studio Pro (with the merger of Radius and SuperMac, who knows what this product will be called in the future, maybe the Diameter VideoVision Super Studio Pro!). It's not cheap at about $4,000, but it can handle the Hi-8, SVHS, and laserdisc video and audio inputs with which I need to work. While the board comes with its own basic editing software, I opted for three other packages to supplement it: Adobe Premiere 4.0 (which you all have read tons about), VideoFusion 2.5 (also extensively reviewed in *MacWEEK* and *MacUser*), and Abbate Video's VideoToolKit (about which you have probably read zilch).

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**Don Crabb Bottom Line Tip** VideoToolKit (v 2.5), is one of those small products that the Mac is justly famous for fostering. The program comes with a set of control cables that can control up to three external audio/video sources (two for playback and one for recording). It essentially turns your multimedia Mac into a desktop video editing console, which also supports QuickTime digitizing, without having to buy an editing console from Sony or Panasonic (that would set you back $600 to $50,000 depending on its fanciness).
With VideoToolKit software, you can log, edit, and assemble your own videotapes just as if you were sitting in front of a $20,000 professional editing console. But unlike that console, VideoToolKit can also record directly to QuickTime (rather than a target VCR), through your Mac's digitizer board (in my case, the Radius board).

I'm pretty psyched by VideoToolKit, as it's proving to be a daily companion for me. It's allowed me to do rough cut edits of the "MacTV" and "Personally Computing" remote footage I've produced, as well as work on video projects for some other clients, and produce video clips for my introductory programming course. In addition, it's become my basic tool for assembling QuickTime movies of all kinds, since it also allows me to easily create and edit those movies with a simple 8mm camcorder.

The reason I'm so high on VideoToolKit is that it leverages the Mac's desktop and its media capabilities, rather than trying to replace them, as some products do. I've looked at dozens of programs over the last year that purport to make it easy to produce offline edited videotapes and to record QuickTime movies. I've also found most of them to be either way too complicated for everyday use or way too restrictive in the third party audio/video sources with which they'll work.

VideoToolKit suffers from neither of these problems. Installation is a breeze and, once you fire it up, you'll have little trouble using it, even if you don't know a camcorder from a can of peas. As you can see from figure 5.6, the software is controlled by a basic window for establishing the two VCRs (one that holds your original uncut video [source] and other holding the blank tape you want to record edited video on [record] and their operating characteristics). You also have separate control panels for the tape transports on your source and record machines.

continues
To use VideoToolKit, simply look through the straightforward manual, hook up your source and record VCRs or camcorders, patch in the connections to your Mac's digitizer or to an external video monitor, and you're ready to roll. The manual teaches you, step-by-step, how to log a source tape (so you know what's on it), how to select the scenes you want to use in your final "movie," and how to assemble those scenes automatically.

Once you've created a scene edit list, VideoToolKit gives you a set of note fields to annotate each scene—these notes are automatically displayed while you are creating the edit list. It also gives you windows to display QuickTime stills, marking the starting and stopping points of a clip (the so-called In Points and Out Points in video editing parlance), you can simply press a screen button and the program will make the finished movie for you. You decide whether you want it recorded to tape or digitized as a QuickTime movie, and then save it to your hard disk or to a large removable disk (like an optical disk).
The beauty of this is that you're never taken far from the desktop to do it. Unlike other systems where you still have to do a fair amount of monkeying around with your audio/video hardware, VideoToolKit requires no such intercession. Using a special version of the product that "plugs-in" to Adobe Premiere, you can complete all this media editing from within Premiere, another considerable advantage, since Premiere is the top-selling full metal jacket QuickTime movie editor (I use it to arrange QuickTime scenes and to cut and paste QuickTime movies a frame at a time).

VideoToolKit 2.5 works with just about any source and record camcorder or VCR you can think of, controlling it with one of a number of industry-standard control schemes (LANC [Control-L], Control-S, Pana M, ViSCA [Sony's Video System Control Architecture], Vbox L, or Vbox S) through the special control cable it supplies. You simply hook this cable to one of your Mac's serial ports, and connect the control pins to the source and record VCR's and/or camcorders, and off you go. I used a Sony CCD-TR81 Hi-8 camcorder as my source deck during tests (this was also the camcorder I used to record scenes I would later digitize and/or edit), and a Sony EV-C100 Hi-8 VCR as my record deck.

The program can also be used when working with professional video, and if you expect to really integrate media into your Mac's desktop, this is a big plus. For example, I used my test setup to do rough cut editing of remote interview footage (which I produced for "MacTV" and a local news show) of my pal Roger Ebert chatting about his life with the Macintosh.

The dubbed Hi-8 source tape (dubbed from a BetaCAM SP professional original) I was working with used professional RC time codes, which VideoToolKit handled with ease (the program can also use real time counters or ordinary VCR reel counters to position the tapes while editing). In a matter of a few hours, I had put together a 15-minute tape that contained a half-dozen continues
segments that were composed of a bunch of original video. I also chunked out several short video bites, lasting from 30 seconds to three minutes.

While I don't expect that many of you need to do rough cut editing of professionally produced video, I do know that having that additional capability makes VideoToolKit 2.5 a more usable tool in a number of different Mac shops. I suspect, for example, that folks producing in-house training tapes, sales demos, or marketing reports, will find the program extremely useful. And for Macfolk who are trying to come to grips with how desktop media can really benefit them, VideoToolKit 320 is precisely the kind of software they should be looking for.

Abbate Video, Inc. is located at 14 Ross Avenue, Floor 3, Millis, MA 02054-1544. Phone it at 508-376-3712 or fax it at 508-376-3714. The VideoToolKit plug-in for Premiere lists for $99. The full version of VideoToolKit 2.5 costs $199.

As you can see from this brief coverage of my use of VideoToolKit and Premiere, the manipulation of multimedia data (whether you create it yourself with a camcorder, MIDI device, or microphone; or whether you "borrow" it from a music CD, videotape, audiotape, or laserdisc) is making more and more sense with the power of Macintosh.

If you can think of similar needs, including the creation of complete multimedia materials using a multimedia authoring system like Macromedia's Authorware or Director (especially including animations), then read on to get the full picture of how these needs are met by System 7.5.5, and what else you will need to buy.

Towards a Multimedia System—The Nuts and Bolts

OK, so System 7.5.5 gives you the software underpinnings to do multimedia in the form of QuickTime 2.5, the Sound and CD Audio control panels, and related bits. But as you have learned, you need more than that if you plan to
either edit or author multimedia materials. For that, you need applications software that I talked about in the preceding section, and you need some additional hardware and authoring software, which I will talk about now.

If you plan to build a professional multimedia Mac (the only kind I recommend for serious media work), you are going to need the following:

- **A Powerful Mac with AV Support.** This could be a Quadra 660AV or 840AV or a Power Mac 6100/6200AV, 7100/7200AV, or 8100/8200AV or later Power Macs with the AV option. The AV option lets you display and use video images from sources like a TV camera, camcorder, laserdisc player, or VCR, as well as audio sources like CDs, tapes, and microphones.

  The AV option on Macs includes both composite and S-Video inputs and outputs (S-Video is a high quality format that separates the luminance from the chrominance signals, resulting in crisper colors and better-defined images). SVHS, BetaCam-SP, and Hi-8MM format VCRs all typically supply S-Video inputs and outputs, as well as some higher-end laserdisc players. If you have S-Video sources, make sure you use them. The AV options adds between $700 and $1,000 to the price of any Mac on which it is available.

  **The AV option** enables you view or capture (digitize or frame grab in video parlance) video that you input to the card. You can view it on your main monitor in a window, view it on an attached second monitor, or digitize it to the hard disk. Apple provides a simple application called the Video Monitor with its AV boards that you can use for simple viewing.

  **The Video Monitor** application also allows you to digitize a single image displayed in the video monitor window on your screen. In order to digitize an entire movie (in order to frame-grab an entire video source and turn it into a QuickTime movie), you need a third-party program, like Adobe Premiere, VideoFusion (shipped with AV Macs), Adobe After Effects, Macromedia Director, Abbate Video ToolKit 3.0 Plug-in Pack, or Apple's Movie Recorder.
Alternatively, and if you want a higher-end system, you could take any high-end 68040 or Power Mac and couple it with a third-party AV board installed, like the Radius/SuperMac VideoVision Pro, which I have used extensively.

You could also use the older Radius VideoVision Studio, SuperMac DigitalFilm Deluxe, RasterOp's MoviePak2 Pro Suite, Data Translation Media 100, or Avid's Media Suite Pro (very high end and very expensive). These third-party boards cost between $3,000 and $16,000.

- **Lots of RAM and Fast SCSI/2 Disk.** To work with digitally sampled audio and video, you need lots of CPU horsepower, very large and fast SCSI/2 hard disks, big removable random access media like optical drives, and lots of RAM.

  My minimum recommended multimedia Mac is a 660AV with 64 MB RAM, 2 GB of SCSI/2 hard disk space (up to 20 GB is preferred), a CD-ROM drive, 19" high resolution color monitor with an accelerated color card, and a separate 13" high resolution color monitor connected to the S-Video output of the AV board for viewing direct and captured video.

- **Speakers and More.** You will also need at least two shielded two-way stereo speakers, and the other Mac media basics like a stereo microphone. If you plan to move QuickTime movies around, you will need a big removal/rewritable optical drive or an Ethernet network (and lots of time).

- **Audio and Video Sources.** Use only high quality sources of video and audio, including CDs, MiniDiscs, MIDI instruments, DAT tapes, analog audio tape decks with Dolby C or Dolby S noise reduction, and VCRs, camcorders, and laserdiscs that supply S-Video and digital audio outputs. For basic semi-pro use, that will largely mean S-VHS or Hi-8MM VCRs. If you have access to professional video sources like half-inch (Umatic) or professional tape machines (one inch reel-to-reel or BetaCAM-SP), these can also be used to drive AV and frame-grabber boards for making QuickTime movies.
• **Authoring Software.** If you want to create multimedia, you need content. You can get that content by borrowing it or by creating it. In either case, you need authoring software to put it all together into some coherent stream with a beginning, middle, and end. The top authoring packages include MacroMedia Authorware and Director, the Apple Media Kit, and Apple's HyperCard 2.2.

• **Graphics Software.** To create the graphics that you will use, consider either Macromedia FreeHand, Adobe Illustrator, ClarisDraw, or Fractal Design Painter.

• **Photographic Software.** You will want to manipulate photos as part of any multimedia presentation or project. That means you need Adobe Photoshop, Macromedia XRes, or the awesome and very high end Live Picture from HSC Software.

• **Video/Audio Editing Software.** A fancy AV board and frame grabbers won't get you squat without the right software to edit the audio and video you have captured or borrowed. To do that editing you need Adobe Premiere, VideoFusion, and Abbate Video's VideoToolKit (see previous section for my Bottom Line Tip).

• **Training in Multimedia Authoring and Editing.** This stuff does not come naturally! You need training to figure it out. Consider courses offered by area colleges and universities and from national centers like the Center for Creative Imaging. You might also latch onto a well-run local cable TV outlet that is willing to teach you the basics of audio and video production, which is really what learning multimedia on a Mac is all about. To this end, there are some books that are must-reads (most include CDs that are must-looks, too):

  * **How to Digitize Video** by Nels Johnson (John Wiley and Sons, 1994).

*Virtual Playhouse for Macintosh* by Jonathan Price (Hayden Books, 1994).

*How to Create Multimedia CD-ROM* by Jasmine Multimedia (Jasmine Multimedia, 1994).


**Apple Promises the Future of Multimedia**

Apple has promised us that media of various stripes (audio, video, still images, QuickTime movies, and so on) will eventually be as important to us as our beloved spreadsheet, database, and word processing documents. To date, however, most of the Macfolk using multimedia have either been viewer/listeners (which is why CD-ROM has finally become a big deal) or hard core media buffs (producing their own QuickTime features) using very expensive hardware and software.

With the introduction of the System 7.5.5, Power Mac AV Macs, the improvements offered by QuickTime 2.5, the ability to share and catalog media sources as e mail attachments fostered by AOCE, and the ability to interact with the Mac using voice commands à la PowerTalk, Apple’s finally poised to make the desktop and Finder a real multimedia experience. Clever third-party products like Abbate Video’s VideoToolKit 2.5 promise to keep pushing Apple in that direction. Jump in, the multimedia’s fine!

**Chapter 5 Summary**

Multimedia on the Macintosh has gotten better, faster, and easier to use with System 7.5.5 and QuickTime 2.5. Even if you have no need to use, create, or edit multimedia data now, you will in the future; I guarantee it. That’s simply the way computing is heading. Multimedia data represents a more reasonable approach to portraying reality, and reality control is what the emerging Mac interface is all about.
If you want to jump ahead and consider more of my thoughts on the next general Macintosh user interface and how multimedia resources will play a big part in that, make a quick jump to chapter 10 and read the section on The Future of Macintosh.

In the meantime, here's a summary of what I think that future Mac will look like. You will see that multimedia data plays a huge part in this conception.

**The Multimedia/OpenDoc Desktop**

The future of the Macintosh Desktop will reside in something I call Open desktop Architecture (ODA)—as Apple ought to articulate it and we ought to use it in the form of a new Multimedia/OpenDoc desktop.

Back in May of 1994 at the WorldWide Developer's Conference, Don Norman—Apple Fellow and Interface Guru Extraordinaire—told us about one possible future Mac interface (AKA Finder) based on Apple Guide, that would become truly active in its assistance features and orientation. My Open Desktop Architecture relies on this same active assistance to make it fly, but it adds the OpenDoc document-centric idea of computing (see chapter 6 for more details) and the liberal use of multimedia data.

**The Omniscient Sage**

To start with, though, we need a basic interface metaphor in mind for our new desktop. I call my metaphor The Omniscient Sage. Corny sounding? You bet. But highly descriptive. The Omniscient Sage watches what you do on your Mac without being judgmental.

The role of the Omniscient Sage is to watch, assimilate, correlate, and then assist. Active assistance based on observation, analysis, and planning at a level as far above Apple Guide 1.0 as the it was above Balloon Help. Active assistance based on the artificial intelligence work that's been modeled and executed over the last five years. Active assistance based on a world of OpenDoc files and apps.
The Future System for the Future Multimedia Interface

But before we can build The Omniscient Sage and its Multimedia/OpenDoc desktop, we have to know what operating system services we'll have to build upon.

For ODA, I'll presume we have these System features as our minimum infrastructure (in System 8, 9, or whatever):

- Full preemptive multitasking for applications and processes so that we can use multiple apps and parts of apps in some sort of harmony.
- Protected memory, so this harmony doesn't decay into sour notes.
- Demand paged virtual dynamic memory, so we don't have to worry about memory segments and their nil effects.
- User profile information so that multiple users can work with the same Mac, yet have protected files, access paths, and initialization scripts.
- Fully implemented Open Transport Architecture for networking.
- QuickTime 3.0 with 50:1 full motion video compression, built into ROM.
- PowerTalk, AppleScript, and QuickDraw GX 2.5 built into ROM.
- Apple Guide 2.5 built into ROM.
- PlainTalk 2.5 that actually is worth using, and is built into ROM.
- OpenDoc 2.5 as the document standard. You guessed it, ROM-based and very fast.

It might seem that giving us all of this infrastructure will keep Apple busy for years to come. Too busy to conceive and create the Multimedia/OpenDoc desktop with The Omniscient Sage.

If Cupertino was still the HQ of the Old Apple, I'd agree. But the New Apple has shown an ability to actually finish systemware and sell it in semi-realtime. That ability is still nascent, but if we nurture it, maybe we'll get lucky. My ODA scenario assumes as much.
Crabb's Computing Quiz for Chapter 5

This chapter seems like a very good place to use one of my reflective computing quizzes to get my major points summarized and to help you establish some multimedia goals for System 7.5.5. I urge you all to use the opportunity provided by System 7.5.5 to reflect on your current Mac multimedia needs, the manner in which the Mac is becoming more of a multimedia system, and then go ahead and get your feet wet with multimedia.

You should read each of these questions carefully and then write down your answers. These answers should form your basic set of strategies for handling your System 7.5.5 multimedia goals.

1. What's a VCR? Camcorder? Laserdisc?
2. How about S-Video? Know anything about it?
3. What do you want to use multimedia resources for?
4. What does QuickTime do?
5. What does System 7.5.5 give you to author and edit multimedia data with?
6. Besides QuickTime, what other multimedia software does 7.5.5 include?
7. Do you have the hardware necessary to play QuickTime movies?
8. Do you have the software necessary to play QuickTime movies?
9. Do you have the hardware and software necessary to create QuickTime movies?
10. How many copies of idiotic Simpsons, Ren and Stimpy, Duckman, and Beavis and Butt-head QuickTime movies have been uploaded to CompuServe in the last five minutes?
Answers to Crabb's Computing Quiz for Chapter 5

1. It gets harder from here.
2. See, I told you so. Do the words chrominance and luminance mean anything to you?
3. Yikes, now we are talking tough questions. You can always fall back on the "it's way cool so why not" theory of multimedia.
4. Works faster than SlowTime (a Microsoft product)...
5. Hint: this is a trick question, bunky.
6. Let's see, there was the SuperWhizBangMediaDingusWhatchAMaCallit Extension and then there was the...
7. Hey, how would I know?
8. Duh...
9. Time to reread that part of the chapter, eh?
10. Your Mac cannot handle integers that large!
Networking vs. Collaboration (Welcome to the Workgroup)

The Mac initially boosted individual productivity with its easy-to-use interface and built-in networking. Today, the Mac is supplying the technology to increase the productivity of groups as well as individuals. System 7.5.5 is the means for those workgroup productivity gains. Because of the intense competition in today's business world, the
need for effective communications and, more specifically, effective teamwork has become acute. It's so important, in fact, that it can provide companies with the competitive edge that can spell the difference between profit and oblivion.

With System 7.5.5, Apple addresses the need to move beyond individual productivity and energize workgroups. In short, System 7.5.5 lets Apple throw down the gauntlet to its biggest competitor (Microsoft Windows) and address the real problems that hinder effective collaboration: all the multiple file formats and competing communications services and standards, as well as the sheer bulk of information that people must manage personally and as workgroups.

To provide advanced collaborative solutions, strong and consistent networking capabilities must be built directly into the operating system, which is the case with System 7.5.5. Using System 7.5.5, you can deploy systems, applications, and services and have them transparently take advantage of the appropriate network protocol—thanks to the inclusion of TCP/IP (Transmission Control Protocol/Internet Protocol) software (MacTCP and/or TCP/IP when using Open Transport networking)—as well as personal file sharing, network support for AppleTalk (LocalTalk, EtherTalk, TokenTalk), and the core of 7.5's collaboration architecture (Apple Open Collaboration Environment, AOCE) PowerTalk.

In this chapter, I'll examine how Macs reach out to file servers (and each other) to trade files across a network, how program linking, publish and subscribe and, eventually, OpenDoc, can move beyond file sharing, and how PowerTalk and PowerShare can condense the web of network and external email packages into a central repository well-integrated into System 7.5.5. In short, I'll show you how the virtual desktop that debuted in System 7.0 has matured in System 7.5.5.

**Collaborative Competition**

To the base of networking and collaboration technologies, Apple has announced it will grow its overall communication architecture (and replace
the ubiquitous and painfully inadequate Communications ToolBox) with the Open Transport Communications Architecture—an architecture that allows all networking protocols (AppleTalk, IPX, IP, DECnet, and more) to function at a high level in the Macintosh networking world.

In contrast, networking in the Windows world is complex, with multiple, competing implementations of the same protocol and no unifying architecture for developers or users.

In developing PowerTalk (and the server software, PowerShare), Apple realized that in order to get all the advantages of Mac-based collaboration and communications, electronic mail services (supporting media-rich data, including graphics, animation, sound, and video) needed to be integrated directly into the operating system—not provided as a separate utility—and mail should be gathered from different sources into a single desktop mailbox. The result is a unified PowerTalk mailbox and a simple mail utility, AppleMail.

PowerTalk provides an open back-end to facilitate the integration of gateways providing access to a variety of mail environments, such as the Internet, CompuServe, and QuickMail. AOCE works at the simple peer-to-peer level for small workgroups with the built-in PowerTalk of System 7.5.5, but medium and large workgroups will want to buy the extra-cost AOCE server, PowerShare, to provide the power necessary for larger groups as well as adequate backup and security of collaborative data and messages.

Additionally, whether your collaborators work across the hall or across the country, you need Digital Signature Verification (DSV) so that your electronic collaborations can be trusted and kept secure. PowerTalk and PowerShare provide DigiSign for exactly that purpose. They also allow you to customize and automate collaboration; being able to use AppleScript to control processes is a big win with System 7.5.5. AppleScript lets you take off-the-shelf programs and weave them together into custom workflow solutions.
PowerTalk and PowerShare vs. Windows

PowerTalk is the first comprehensive collaboration product for individuals. Its built-in electronic messaging, catalog, security, and digital signature capabilities make it easy for you to communicate and work with other individuals or groups on a network.

PowerShare Collaboration Servers handle the team-oriented collaboration platform approach and work seamlessly with System 7.5.5’s built-in PowerTalk services, but they cost extra ($995 list for each server that handles 50 to 100 users). The PowerShare Collaboration Server software is designed to: reduce management overhead and costs through the consolidation of system administration, improve network security, and facilitate the creation of systems with large numbers of PowerTalk users on an AppleTalk network. It provides server-based mail, catalog, and privacy services for PowerTalk users.

Apple has approached the whole issue of collaboration differently from Microsoft. Take a look at table 6.1 which compares System 7.5.5 and Windows for Workgroups (whose networking features will encore in Windows95) and see what I mean.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Macintosh System 7.5.5</th>
<th>Windows for Workgroups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop mail</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Peer-to-peer LAN mail</td>
<td>✓</td>
<td>Limited</td>
</tr>
<tr>
<td>Point-to-point dialup</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Server independent</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>(open back-end extensibility)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single log-in</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>(key chain)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th>Feature</th>
<th>Macintosh System 7.5</th>
<th>Windows for Workgroups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple directory services</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Server based</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Rich data content</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Digital signatures</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bidirectional authentication</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Scriptable</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Extensible catalog</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Privacy</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Integrated into O/S</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Third-party support</td>
<td>✓</td>
<td>Limited</td>
</tr>
<tr>
<td>Available for PowerPC</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

### Moving Toward the Future—Cyberdog and OpenDoc and Apple’s New Internet System Strategy

#### Intranet Access

Apple is committed to delivering Macintosh clients that are intranet-ready and can be easily integrated with intranet services and corporate networks. With an intranet as with its network architecture, a corporation gives its users the ability to choose the computer that best serves their application needs, while plugging into an organization’s horizontal enterprise.
applications. The key is that the horizontal enterprise applications are based on the same intranet that is native to any department’s specific client platform, giving users the best of all worlds.

An intranet can connect everyone in an organization to all of its electronically stored information, whether in text files, web pages or databases. And Apple’s Open Transport networking software, included with System 7.5.5, provides the networking underpinnings for the Internet, intranet, WWW, LANs, and even simple AppleTalk networking. Information can be browsed, queried, or viewed in a variety of ways using System 7.5.5, Open Transport, OpenDoc, and Cyberdog. But until now, it was necessary to develop special software for each method of accessing each store of data. Apple is proposing a new Internet standard, the Meta Content Format (MCF), that addresses this problem. MCF opens up a new market for “data-independent viewers.” Because MCF is an open standard, software developers can create a wide variety of such viewers. Database and web site administrators can describe their data once in MCF and automatically make that data available for access through any compliant viewer.

Apple’s Advanced Research Laboratories in working on an MCF initiative called “ProjectX.” One ProjectX viewer offers a 3D information navigation system that allows users to effortlessly “fly-through” any web site, database, or desktop folder structure for which an MCF description is available. The other ProjectX viewer allows the same information to be browsed using a 2D outline similar to that of the Macintosh Finder.

A new intranet feature that’s included with the 1.1 version of the Cyberdog Internet software suite included in System 7.5.5 is the ability to allow users to browse AppleTalk networks and save items such as Zones and AppleShare files as live “Cyberitems.” It is ideal for mixed TCP/IP and AppleTalk networks, and integrates Internet and intranet access into a user’s desktop.

To improve delivery of information on intranets, Apple provides easy-to-use servers for departments and Information Services (IS) applications. Apple’s
scaleable server products for Internet and intranet solutions are easy to install and maintain, and range from easy-to-use, inexpensive solutions to industrial-strength UNIX-based servers.

NetFinder, a Mac OS asynchronous common gateway interface (ACGI) for distributing documents via the World Wide Web works with the new Open Transport and Cyberdog software. NetFinder lets administrators and webmasters of Mac OS servers distribute documents via the Web, including software and product documentation, using Apple's familiar folder structures.

Previously, users connected to a server had to use FTP, Gopher or custom-designed Web pages to retrieve these documents. Now, with NetFinder installed on a server, users will see an automatically generated HTML page that looks like a Macintosh desktop folder. Users can open folders and download documents by simply clicking on familiar icons. Apple server customers can download NetFinder from the Apple website free of charge.

**Intranet Creation**

For creating intranet content, Apple is delivering creation platforms and tools that make it easy for IS to leverage the new rich media enabled by the intranet. With an intranet, corporations can introduce media-rich communications into the corporate network environment to increase the effectiveness of communication for improved productivity and corporate participation.

Some such authoring tools include Adobe PageMill and Claris Home Page as examples of how Macintosh developers are bringing Apple's ease of use to the Internet/intranet. Claris Home Page is a new web authoring application that hides the complexity of HTML by automatically generating HTML code when text is entered and items are selected from pull-down menus or the Toolbar. Advanced users can choose to edit their HTML code for more sophisticated authoring, as well as developing dynamic, interactive sites that call applets (using Java or JavaScript) and CGI applications.
Apple’s Internet and New Collaboration Technologies
At a Glance

Networking Infrastructure Apple is supporting industry standard TCP/IP protocols as a core component of the Mac OS. The first step of this move has been the introduction of Open Transport, which makes TCP/IP an equal peer to AppleTalk and is now available as part of Apple’s latest Mac OS release, System 7.5.5. Apple also recently announced plans to extend support of TCP/IP protocols to its remote access product line (AppleTalk Remote Access).

QuickTime Media Layer Today, QuickTime is already established as the de facto standard for multimedia content on the Internet. A recent survey of 2,000 multimedia web sites found QuickTime to be the No.1 multimedia format.

More than 20,000 web pages today use Apple QuickTime content and more than 5,000 use QuickTime VR, including industry leaders such as CNN, Tower Records, Warner Brothers, Disney, MTV, BMW and Atlantic Records, according to a search from the Alta Vista Web Index. Apple intends to proactively drive adoption of QuickTime as the industry-standard multimedia format for the Internet. Apple recently announced the invention of QuickTime “fast start” movie play-back, which allows users to begin to view a movie while it’s still downloading.

Additionally, the VRML virtual reality movie language 2.0 moving worlds standard, sponsored by Netscape and SGI, has adopted Apple’s 3DMF, a 3D file format. Netscape has also recently announced that it will be bundling QuickTime with its upcoming Navigator 3.0 release.

OpenDoc This industry-standard component architecture allows Apple to merge otherwise disparate software such as Cyberdog, Java applets, and Netscape plug-ins.

Java Apple and Sun Microsystems recently announced that Apple has licensed Java. Apple plans to embed Java across a range of Apple products
and technologies, including Mac OS, OpenDoc, Cyberdog, HyperCard, Newton, Pippin and Apple Web servers.

**Cyberdog: Up Close and Personal**

Cyberdog is the code name for Apple's newest way to explore the Internet. Based on OpenDoc, Apple's new component software technology, Cyberdog provides a set of internet browsers, data viewers, and communication tools to do what you want to do on the Internet.

Cyberdog 1.1 is the first really solid user release of the software first introduced as betaware back in late 1995. If you are a Mac OS user you can download and install the software for free by linking to the Cyberdog Web site, http://cyberdog.apple.com/.

The big advantage to Cyberdog is that it offers the first set of Internet programs with a common look and feel—so you don’t have multiple browser, email, and other Net software interfaces to learn and memorize. Instead, Cyberdog works by offering simple drag-and-drop control across different Internet services while working seamlessly with other Macintosh and OpenDoc software. As a result, Cyberdog’s Web browser, mail reader, Internet address notebook, and news reading software are integrated with one common interface to accomplish your different Internet needs.

Because Cyberdog’s is integrated with the Mac OS and Mac applications, integration, Internet connectivity becomes an extension of the Finder desktop. You can, for example, drag and drop a live URL to your desktop, driving Internet links from the Finder and Mac OS rather than from a separate browser. Essentially, Cyberdog puts the Internet into everything you can do on a Mac.

Cyberdog is based on Apple’s cross-platform (Mac and Windows) component software technology called OpenDoc. OpenDoc is an open standard that is available to third-party developers for free to instantly make their applications interoperable with other OpenDoc applications, as well as Internet-enable them with a link to Cyberdog. The benefit of OpenDoc is that it gives you the freedom to replace one or all of Cyberdog’s software
components with those offered by a third-party — like, for example, substituting the popular Netscape Web browser for the one provided by Cyberdog. This lets you customize the way you use the Net without any artificial software limitations.

Cyberdog includes DocBuilder, an OpenDoc application that supports the inclusion of Cyberdog components, along with text and graphics. With Cyberdog’s DocBuilder, and any OpenDoc-enabled word processor, you can create intelligent documents that combine text, graphics, data and information from the Internet. You can build a single document that can contain previously-disconnected combinations of sound, real-time Web site links, graphics, text, and pointers to specific newsgroups. This document can then be shared among Cyberdog users as “live” text which can be used to directly access the Net. That’s pretty darn slick.

Such Cyberdog/OpenDoc documents then become powerful communications tools because they easily organize and distribute Internet information and resources. A small business owner, for example, could use these documents to direct their customers to those Internet resources they considered valuable.

In addition to a browser for the Web, a Gopher search engine, and an FTP (file transfer protocol) browser; Cyberdog provides a telnet terminal application (for directly connecting to a remote computer), online notebooks for storing Internet addresses, and a log for tracking all the sites you’ve visited. Cyberdog also includes a handy email and news-reading program.

Cyberdog can manage multiple email addresses, letting you manage incoming mail from various mailboxes. Mail handlers can identify prioritized and unwanted mail, and categorize it for you. The software also includes a sophisticated search mechanism that helps find email messages by content, and can also archive Internet News Group Information.

Other Cyberdog 1.1 features include the ability to import bookmarks from Netscape Navigator and mail and addresses from Qualcomm’s Eudora. A new HTML embed tag also allows OpenDoc components to be included in Web pages and viewed with the Cyberdog browser, so you can prototype Web pages without publishing them.
The software currently runs only on Macs and PowerMacs and Mac OS clones and you must also download OpenDoc (also free from the Cyberdog Web site) and install it. Apple has promised a version of OpenDoc and Cyberdog for Windows 95 and NT for "sometime later during 1997."

Numerous developers are already actively developing or enhancing applications to work with Cyberdog. Making an application "dog savvy" is as easy as supporting OpenDoc, and instantly makes applications Internet-ready.

For example, Macintosh word processing software vendors such as Claris, WorldSoft and Digital Harbor are supporting Cyberdog to enable their applications to develop "live" documents that link to Internet resources.

In addition to Cyberdog-enabled "live" documents, developers are offering a host of capabilities to Cyberdog users. Addison-Wesley is developing interactive CD-ROM titles that use Cyberdog to retrieve content from the Internet; Corda Technologies offers a graphing component that uses Cyberdog to graph information directly to web pages; and OnBase Technology is offering users an alternative to the standard Cyberdog notebook.

For developers, third-party suppliers are offering several tools to promote OpenDoc and Cyberdog add-ons. Spyglass is offering a Web Technology Kit (WTK) that offers components for making applications, services or devices web-wise.

The Spyglass WTK supports Cyberdog as well as HTML browsers, giving users the option to plug in their preferred browser. ResNova software has announced the development of a Java applet viewer for Cyberdog called "CyberJava." This component enables the user to play Java applets within any OpenDoc document, not just Cyberdog components. Kantara Development is offering developers "PartMerchant," an online source for buying and selling OpenDoc components that are based on Cyberdog.

**Cyberdog 1.1 Features In Depth**

**Mail Browser** The mail component offers many new features, including the addition of a tool bar to the mail browser window to provide easier access to commonly used functions. Also added to the mail window is the number of
total unread and unsent messages to display message status. An option has been added to allow mail to be downloaded, but still left on the server—a useful function for users who want to access their mail from two different machines. The mail system can now read and send standard Japanese character encodings. A pop-up menu lets users select MIME or ASCII encoding for their mail and newsgroup messages. Users can now send messages with graphics and styled text to others using Cyberdog and other products that support the full MIME standards, or send ASCII text that can be read by Cyberdog and all other mail and newsgroup systems.

Web/FTP Browser The Cyberdog 1.1 web browser supports embedding and client-side image maps. Through user feedback, many improvements have been incorporated to improve the user experience. The browser component also allows users to browse local AppleTalk networks as well as the Internet, and save these paths as Cyberitems—live links to information whether it resides on the Internet, intranet or AppleTalk network. From within the browser interface, a user can locate and mount shared volumes and folders on AppleTalk or AppleShare networks and also save the shared volumes as Cyberitems. In addition, a webmaster can use AppleTalk Cyberitems to embed hot links within intranet web pages to give users direct access to shared servers. This is a faster way than the chooser for selecting and mounting a shared volume. With the HTML embed tag and the Cyberdog browser, a web site can include an FTP site directory for file downloads, a newsgroup for messaging or an AppleTalk server to connect directly to the local network.

DocBuilder The Cyberdog DocBuilder now provides support for background colors, patterns and pictures as well as improved alignment and editing capabilities. Better support has been added for grouping and ungroupping of objects and users can create multi-page documents and better control display size and position. This provides users greater control and customization over the total document environment.

In addition, Cyberdog 1.1 components now run in a single process, reducing memory requirements on a user’s machine.
Cyberdog: Incorporating Internet Access into the OS

Cyberdog is the first full-featured Internet/intranet suite of products with a common look and feel. Different tools no longer have to be used to access the Internet or intranet. With Cyberdog, one application can be used to access information on the Internet, intranet and now, local area AppleTalk or AppleShare networks. Cyberdog also includes many built-in data-type viewers, such as GIF or JPEG files or QuickTime movies, so the user does not need to install additional applications.

Cyberdog is tightly integrated with the Mac OS. For example, a user can take a CyberItem in the web browser and drag it to the Finder. This CyberItem can then be used to launch Cyberdog from the desktop and access that particular resource. With Cyberdog, users can take information found on the Internet or intranet and embed these resources directly into documents created with OpenDoc-aware software such as Cyberdog’s DocBuilder—which allows users to construct custom documents or personalized Cyberdog front-ends. This capability allows users to build live hotlinks to Internet information into documents they create.

Moving Toward the Future—Open Transport Networking

Open Transport is the new modern networking and communications subsystem for the MacOS. Open Transport is based on industry standards and brings a new level of networking connectivity, control, and compatibility to Macintosh customers, while preserving and enhancing the MacOS built-in support for easy-to-use networking.

Networking and communications technologies are mission critical, so reliability is a base-level requirement. Organizations require interoperability in heterogeneous environments; full compliance with standards is necessary. High performance is also key. Increasing file sizes—often related to the rich media types found in graphics and publishing, multimedia, video
production, and technical markets—create a demand for effective use of higher bandwidth communications technologies such as ISDN, FDDI, fast Ethernet and ATM.

Apple began with two key assumptions: that networking is inherently a multi-platform, multi-protocol proposition; and that customers cannot start over to achieve networking interoperability. This lead us to adopt five key design goals:

- Open Transport must protect customer and developer investments in existing network infrastructure and applications.
- Open Transport must be based on existing cross-platform industry standards.
- Open Transport must provide users with an easy to set-up, easy to use abstraction of the underlying complexity of multi-protocol networking.
- Open Transport must also provide a complementary abstraction of networking and communications services for applications developers.
- Open Transport must offer a flexible run time model—one that lets a specific protocol be configured and selected at run time, rather than statically linked at compile time.

Open Transport/TCP is supported over Ethernet, 802.3, Token Ring, and AppleTalk (as MacIP). It is also supported over serial lines when using backward compatible MDEV support (for example, MacPPP and InterSLIP).

- Open Transport/TCP is configured using the TCP/IP Control Panel. Configuration may be done manually, or via a BOOTP, DHCP, RARP, or MacIP server. The steps to follow using each of these methods are detailed below.

By default, the TCP/IP Control Panel comes up in basic mode. Advanced or administration mode may be entered via the Edit menu. These modes allow expert users additional choices as well as the ability to augment information
returned from a configuration server or to fill in gaps in the returned information.

The TCP/IP Control Panel may be used at any time to reconfigure the system. However TCP will not notice the new configuration until it has unloaded from the system. By default, this takes about 2 minutes after the last application using TCP or UDP has gone away.

**Fields in the TCP/IP Control Panel:**

*Connect via* This is where you select the interface the system is going to use. This can include, but is not limited to, Ethernet, Token Ring, AppleTalk (MacIP), and MacPPP.

*Configure* This is where you select how the system will obtain its IP address. The choices are Manually, BootP, DHCP, and RARP.

*IP Address* This is where you enter the systems IP address if you have configured it to obtain its address manually. If BootP, DHCP, or RARP were selected for the "Configure:" field, the text "<supplied by server>" will be displayed.

*Domain name* This is the default domain name used for domain name searches. For example, if a domain name of "apple.com" is configured, a search for "scott" would initially search for "scott.apple.com." It is not always necessary to fill in this field when configuring from a BootP or DHCP server since it may be returned along with the IP address. It is not necessary to have a domain name entered in this field.

*Admin domain* In Advanced User mode only, you may enter an Admin Domain. This is used to allow implicit searches. For example, if my domain is tech.support.apple.com, and my Admin domain is set to apple.com, a search for the name "scott" would first look for scott.tech.support.apple.com, then for scott.support.apple.com, then for scott.apple.com. Implicit searching will not be done unless an Admin Domain is explicitly setup and the default domain is a subdomain of the Admin Domain (per RFC 1535). If the name "scott" is not found here and Search domains are present, they are searched as well.
Search domain names In Advanced User mode only, you may enter Search domains. See the "Domain Name Resolver Information" for complete details on how searching and the DNR work.

Domain Name Resolver Information When a client of the DNR requests a name-to-address mapping, the DNR checks for a "." at the end of the name. If it exists, the name is assumed to be fully qualified (see RFCs 1034 and 1035 for an explanation of the Domain Name System). Otherwise, if the name contains at least one "." internally, it is considered to be provisionally fully qualified. Otherwise, the name is assumed to be partially qualified, and the DNR will begin a search for that name in the domain name in the "Domain name:" field. If it is not found there, and there is an Admin domain configured, implicit searches will take place as described in the "Admin domain" section. If the name is still not found, the Search domains are searched. For each search domain, the configured name servers are contacted in the order specified. If the name is resolved in the first search domain, that answer is returned. If an authoritative answer that the "name-does-not-exist" is returned, the DNR begins the search in the next configured search domain. The search continues through the domains, and if no match is found, the DNR will search the root domain if it makes sense to do so. The DNR has an overall timeout of 2 minutes after which it will abandon its search.

Subnet mask This is for the subnet mask for the network the system is connected. For example, on a class C net which uses 4 bits of the host field for subnetting, the subnet mask should be entered as "255.255.255.240".

Router address This is for the IP address of the default IP router located on the network the system is on.

Name server addr This is for the IP address(es) of one or more Domain Name Servers.

Configuring Open Transport/TCP:

Manual Configuration To manually setup Open Transport/TCP, follow these steps:
1. Select the interface to use, or pick “AppleTalk (MacIP)” to run over AppleTalk on the interface selected in the AppleTalk control panel.

2. If an Ethernet interface is selected, a check box will appear offering the use of 802.3. By default, Open Transport/TCP uses Ethernet rather than 802.3.

3. Select “Manually” as the configuration method.

4. Fill in the IP address in dot notation (for example, 128.1.1.1).

5. Fill in the default domain extension to be used on name searches.

6. In Advanced User mode only, you may enter an Admin Domain. This is used to allow implicit searches.

7. Fill in the subnet mask in dot notation.

8. Fill in the IP address of the default IP router.

9. Fill in the IP address(es) of one or more Domain Name Servers.

10. In Advanced User mode only, additional search domains may be entered. See the preceding description of the Domain Name Resolver operation for details.

11. If a Hosts file is required, select it using the Hosts file button. For details about the Hosts file, see the description which follows.

**DHCP Configuration**

To use a DHCP server to setup Open Transport/TCP, follow these steps:

1. Select the interface to use in the AppleTalk control panel.

2. If an Ethernet interface is selected, a check box will appear offering the use of 802.3. By default, Open Transport/TCP uses Ethernet rather than 802.3.

3. Select “Using DHCP” as the configuration method.

4. In Advanced User mode only, you may enter an Admin Domain. This is used to allow implicit searches.
5. In Advanced User mode, a subnet mask may be entered but is not required. If a value is entered, it will be used if no subnet mask is returned from the DHCP server. Otherwise, any value entered is ignored.

6. In Advanced User mode, the manually entered IP addresses of routers are attached to the end of the (possibly empty) list of IP routers returned by the DHCP server.

7. In Advanced User mode, the manually entered IP addresses of Domain Name Servers are attached to the end of the (possibly empty) list of Name Servers returned by the DHCP server.

8. In Advanced User mode only, additional search domains may be entered. See the preceding description of the Domain Name Resolver operation for details.

9. If a Hosts file is required, select it using the Hosts file button. For details about the Hosts file, see the description which follows.

**DHCP Address Leases**

DHCP provides a network administrator with the ability to configure a host's IP address either for an unlimited or for a limited period of time. The limited lease period is under the network administrator's control and is non-negotiable. Leases may, however, be renewed at the option of the configuring server.

**Open Transport/TCP** fully supports DHCP address leases. Should an interface's IP address lease expire, the interface will be closed down. However, Open Transport/TCP will automatically attempt to renew any address lease that reaches its Renewal Interval, which defaults to half of the lease's lifetime, but may be configured to a different interval by the configuring server. Renewal will be attempted regardless of how many times the lease has already been renewed.

**BootP Configuration**

To use a BootP server to setup Open Transport/TCP, follow these steps:

1. Select the interface to use, or pick “AppleTalk (MacIP)” to run over AppleTalk on the interface selected in the AppleTalk control panel.
2. If an Ethernet interface is selected, a check box will appear offering the use of 802.3. By default, Open Transport/TCP uses Ethernet rather than 802.3.

3. Select "Using BootP" as the configuration method.

4. In Advanced User mode only, you may enter an Admin Domain. This is used to allow implicit searches.

5. In Advanced User mode, a subnet mask may be entered but is not required. If a value is entered, it will be used if no subnet mask is returned from the BOOTP server. Otherwise, any value entered is ignored.

6. In Advanced User mode, the manually entered IP address of the router is attached to the end of the (possibly empty) list of IP routers returned by the DHCP server.

7. In Advanced User mode, the manually entered IP addresses of Domain Name Servers are attached to the end of the (possibly empty) list of Name Servers returned by the DHCP server.

8. In Advanced User mode only, additional search domains may be entered. See the preceding description of the Domain Name Resolver operation for details.

9. If a Hosts file is required, select it using the Hosts file button. For details about the Hosts file, see the description which follows.

**RARP Configuration**

To use a RARP server to setup Open Transport/TCP, follow these steps:

1. Select the interface to use, or pick "AppleTalk (MacIP)" to run over AppleTalk on the interface selected in the AppleTalk control panel.

2. If an Ethernet interface is selected, a check box will appear offering the use of 802.3. By default, Open Transport/TCP uses Ethernet rather than 802.3.

3. Select "Using RARP" as the configuration method.

4. Fill in the default domain extension to be used on name searches.
5. In Advanced User mode only, you may enter an Admin Domain. This is used to allow implicit searches.

6. Fill in the subnet mask in dot notation.

7. Fill in the IP address of the IP router.

8. Fill in the IP address(es) of one or more Domain Name Servers.

9. In Advanced User mode only, additional search domains may be entered. See the preceding description of the Domain Name Resolver operation for details.

10. If a Hosts file is required, select it using the Hosts file button. For details about the Hosts file, see the description which follows.

**MacIP Server Configuration**

To use a MacIP Server to setup Open Transport/TCP, follow these steps:

1. Select “AppleTalk (MacIP)” as the interface to use. TCP will now run over AppleTalk on the interface selected in the AppleTalk control panel.

2. Select “Using MacIP Server” as the configuration method.

3. Select the zone the DDP/IP Gateway is in using the “Select Zone” button.

4. Fill in the default domain extension to be used on name searches.

5. In Advanced User mode only, you may enter an Admin Domain. This is used to allow implicit searches.

6. If a Hosts file is required, select it using the Hosts file button. For details about the Hosts file, see the description which follows.

**Hosts File**

Open Transport/TCP supports a Hosts file that may be used to supplement and/or customize the Domain Name Resolver’s initial cache of information. The Hosts file is found in the System’s Preferences folder. This file is parsed when Open Transport/TCP is initialized. As in MacTCP, the supported Hosts file features follow a subset of the Domain Name System Master File Format.
Supported features include blank lines, comments (indicated by a semicolon), and data entry. Comments may begin at any location in a line; they may follow data entry on the same line. A comment extends from the semicolon to the end of the line. Data entry must follow the format:

```
<domain-name> <rr> [ <comment>] 
```

where `<domain-name>` is an absolute or Fully Qualified domain name (which, however, need not be terminated by a dot, but must contain at least one dot internally) and where

```
<rr> = [<ttl>] [<class>] <type> <rdata> OR [<class>] [<ttl>] <type> <rdata>
```

The only class currently supported is IN (Internet Domain); `ttl` (time to live; indicates the record's configured lifetime) is in seconds; and `type` can be A (host address), CNAME (canonical name of an alias), or NS (name server). If `ttl` is not present the entry is assumed to have an infinite lifetime; this may also be indicated by specifying a `ttl` of minus-one (-1).

$INCLUDE and $ORIGIN are not supported.

Examples of valid data entry lines including comments:

```
apple.com A 130.43.2.2 ; address of host apple.com
foobar CNAME barfoo.apple.com ; canonical name for the host
 ; whose local alias is "foobar"
mit.edu.86400 NS achilles.mit.edu ; name server for mit.edu
 ; domain,

```

Open Transport/TCP's Hosts file support is somewhat more stringent than that of MacTCP. MacTCP permitted violation of the Fully Qualified requirement for `<domain-name>`, and this feature was often used to avoid the necessity for entering CNAME records by associating an address directly with a non-fully qualified name. For instance, this format:

```
freddie A 128.1.1.1
```

which was acceptable to the MacTCP DNR, is no longer permitted because of the use of domain search lists in Open Transport/TCP (charlie could
potentially exist in any or all of the configured domains). If such a line exists in your hosts file, kOTBadNameError will be returned when the Hosts file is read. To accomplish the same effect, use this format instead:

freddie CNAME myhost.mydomain.edu
myhost.mydomain.edu A 128.1.1.1

This associates the local alias "freddie" with the fully qualified domain name "myhost.mydomain.edu" and resolves it to the address 128.1.1.1. Use of local aliases is limited to CNAME entries; NS and A entries must use fully qualified domain names.

In general, use of the Hosts file is discouraged, as it often simply wastes memory by permanently configuring data that may only rarely be accessed. It is also highly susceptible to misuse by users who try to configure far too much information internally in order to avoid accessing DNS servers. Besides tying up memory, this practice is exactly the reason that the Domain Name System was developed in the first place—to eliminate the performance degradation caused by use of enormous hosts files.

Should a Hosts file be used, every effort should be made to keep it as small as possible and to only include entries that will be accessed frequently.

**Bootp and Open Transport Configuration**

The most common issue with Open Transport TCP/IP configuration is, the bootp server has not been configured to return a domain name, and no domain name was specified in the Open Transport TCP/IP control panel.

In order to permit the resolution of partially qualified domain names, Open Transport TCP/IP requires a domain name to be configured, either in the control panel, or from your BOOTP/DHCP server. This corresponds to the default domain in MacTCP. In order to use the DNR at all, Open Transport TCP/IP also needs the address of at least one domain name server, but it can also be configured or returned from a server. This information was included in the Open Transport documentation, but did not get included in balloon help.
Either configure the bootp server to return a domain name, or enter a domain name in the TCP/IP control panel. You must be in Advanced user mode in the Open Transport TCP/IP control panel to do this.

If you have problems with TCP/IP application after installing new networking software, open the Control Panels folder and look for the MacTCP control panel. If one is there, remove it from the Control Panels folder and restart your computer. Each time you install new networking software, you may want to verify whether the software’s installer also installed MacTCP, and follow this procedure. You should use the Networking Software Selector Application to choose between “Classic AppleTalk” (MacTCP) and Open Transport (TCP/IP).

**PowerShare Mail Server**

There is a known compatibility problem between Open Transport and version 1.0 of the PowerShare Mail Server. If you set up the PowerTalk Universal Mailbox to read mail on the same machine on which the PowerShare Mail Server is running, the Mail Server may crash some time later, usually on shutdown. The work around is to use another machine to read mail. This problem will be fixed in PowerShare Collaboration Servers version 1.1.

**Moving Toward the Future—Collaboration**

As we speed toward the end of the millennium, one of the dominant computing trends will be a shift from individuals working with standalone applications to teams of people working with collaborative applications. The fanfare heralding the golden age of collaborative computing has been playing for many years; Steve Jobs’ initial marketing spin on his ill-fated NeXT workstations centered on “interpersonal” computing. Apple even had the chutzpah (some would say they had a stroke!) back in 1985 to declare the Macintosh Office as the predecessor technology base for future interpersonal computing. Of course, in 1985, they had nothing to go with the name except a LocalTalk wire!
However, the Internet's explosive growth and the emergence of groupware products such as Lotus Notes and SoftArc's First Class are showing that information sharing and reuse are starting to play a larger role in the life of desktop computing today, and make-believe solutions like Macintosh Office don't cut it.

Against that backdrop, Apple realizes that collaboration must go beyond an isolated application to be an intrinsic part of the computing experience. I've already discussed how PC Exchange and Macintosh Easy Open have made it easier than ever to trade files with those PC users down the hall. But by including MacTCP, AppleScript, and PowerTalk in 7.5.5, Apple has kept the Mac at the forefront of seamless information sharing, while building on the gains made in System 7.x: peer-to-peer file sharing and the concept of the virtual desktop.

**The Virtual Desktop**

Previous versions of the System were moving in the direction of a "virtual desktop," but System 7.5.5 really kicks the sucker into high gear. The concept of a virtual desktop refers to the idea that not all of the control menus or device icons that you see on your desktop necessarily represent physical devices attached to your Macintosh.

A good example of a virtual icon carries over from previous versions of the System—the AppleShare icon. Even though the AppleShare icon represents a physical device—in this case a hard disk drive—the physical device is not directly or locally connected to the Macintosh displaying the icon. The icon represents a virtual entity (in this case, a logically defined device) that just doesn't happen to be directly connected to the Mac.

Even though this disk is not directly connected, though, the Macintosh can access it as if it is. You can double-click the icon to open it and manipulate the contents of that disk as if it is locally attached (assuming, of course, that if the AppleShare disk is password protected, you know the password!). Files can be copied, deleted, modified, or added just as if it were a local disk (and
again, assuming you have the necessary security/password clearance). That's what I mean by a virtual desktop.

The Mac can control and work with devices or applications that are hundreds of feet or even thousands of miles away from its geographical location, just as if they were directly connected in the same room. System 7.5.5 expands the Macintosh definition of the virtual desktop to include all of the collaboration technology defined by PowerTalk, including catalogs, AppleMail, DigiSign, and service gateways.

Each of these features helps Apple extend the dynamics of the virtual desktop and help make System 7.5.5 one of the best operating systems for hiding the dirty work (making it all appear so seamless in its execution) required for collaboration.

The Sociology of the Virtual Desktop

A lot has been written about the "future" of workgroup computing on Macintosh computers. I've even done my share. But precious little has been written about what is happening today. In fact, few writer/analysts have even done a good job of defining what the devil workgroup computing is. Never one to back down from a challenge, it's time for me to take a shot at doing so.

Part of the problem with writing about workgroups is that no one can agree what they are. One person's workgroup is another's loose project confederation. This confusion about workgroup computing and its special technology needs has led to a jumble in the marketplace that needs to be sorted out. And as you will see, the Macintosh provides some defining technologies with System 7.5.5 that should make workgroup computing a definable reality.

The best place to start is with a generic definition of workgroups: any group of people working together on a common project. Those could be carpenters, cab drivers, certified public accountants, or almost any other profession. The groups need not be homogeneous, as many projects are composed of different people with different talents.

In general, and with the Mac in particular, workgroups most often are composed of the ubiquitous "knowledge workers." The reason is that
knowledge workers manipulate information as their "workstuff" and computers are a whiz at manipulating data.

With this brief exegesis, then, we have an operational definition of workgroup computing: special tools and software that make it easier for knowledge workers to manage their *shared information*—report on it, store and retrieve it, edit and present it, and a thousand other allied tasks.

While the sharing implies a network, workgroup computing is a lot more than just another name for an AppleTalk network. The key is in the combo of shared information and effective group software tools. The hoped-for end-result of this information/software synergy is something called a *compound document*. For a workgroup, a compound document is a document that contains local and remote sources, yet it's accessible by every member of the workgroup as if it were their private file. Even though a compound document might have many sources to it (from computers scattered over a large network), good workgroup software should take care of that management task automatically.

To date, few new software products have tried to pull this definition off in any more than a rudimentary way (with a product like Lotus' Notes being a strong exception that proves the rule).

Notes defines a set of tools and methods for working for certain kinds of shared workgroup data. Its raison d'être is the management and reuse of existing information, and the assistance in the creation and management of new shared documents. The beauty of System 7.5.5 is that by including all the peer-to-peer networking of System 7.x, and adding the collaboration capabilities of PowerTalk, you've finally got a Mac OS that can really support workgroup computing.

**A Lineage of Linking**

It looked innocent enough, but the printer port on the very first Macintosh hosted a bold advantage—integrated networking—something that the PC world is still struggling to build into its system. In contrast to the web of cards, cables, and servers that PC users must endure to string together even
a few computers, all Mac users need to form a network are a few PhoneNET connectors, and some phone cable-like wire. Of course, larger Mac networks demand faster speeds, dedicated servers, and centralized management. Generally, though, if you’ve got two Macs within a few dozen feet of each other, you’re about 20 seconds away from a network. Slower if you have my bad knees.

As Apple has advanced the Macintosh, integrated networking has blossomed into a client that fits smoothly into nearly any network scenario. Macintoshes can connect to virtually anything—from the IBM AS/400 minicomputer running the corporate accounting program, to the Sun SPARCstation running a World Wide Web server on the Internet. Macs can connect to servers from Apple, Novell, Banyan, Artisoft, IBM, and Microsoft. Macintosh computers can also take advantage of virtually any kind of network cabling, from a basic unshielded twisted pair to fiber-optic cabling. Apple Remote Access has become a model of convenience that Apple’s competitors have scrambled to mimic. Rarely does any part of the Macintosh advance without due thought being given to network access.

System 7.5.5 provides TCP/IP, an alternative to the Macintosh computer’s native AppleTalk protocol, which lets Macs cruise the Internet to its fullest. MacTCP is the train tracks that enable you to tour the Internet using friendly Macintosh implementations of ftp (Fetch), news (NewsWatcher, InterNews, and Nuntius), archie (Anarchie), and, the current darling of electronic publishing, the World-Wide Web (through Netscape Navigator and Microsoft Internet Explorer).

Don Crabb Bottom Line Tip Many of these programs are freeware and can be found in Adam Engst’s excellent book/CD-ROM combo: Internet Starter Kit for Macintosh, 4th Edition (Hayden Books, 1996). You can also pull this software off of many online services and local BBSs. See chapters 9 and 10 for more information on these sources of information and software.
Apple is also working hard with Novell to bring the native protocol of Novell's industry-leading NetWare—IPX (Internetwork Protocol Exchange)—to the Macintosh soon, allowing Macs to have equal footing with PCs using Novell's services. IPX will be part of the Open Transport Communications Architecture, and is likely to be initially implemented via a control panel called MacIPX.

**Using File Servers**

Part of the beauty of AppleTalk is that Mac users need to learn how to connect to a server volume only once. As long as a server supports the AppleTalk Filing Protocol, Mac users don't need to know or care whether the file server they are accessing comes from Apple, Novell, Microsoft, Banyan, or a number of other vendors.

Here's how:

1. Select Chooser from the Apple menu.
2. Click on the icon labeled AppleShare.
3. If necessary, select the appropriate AppleTalk zone from the list.
4. A list of file servers will appear on the right.
   - Server problems, heavy network traffic, and other problems may interfere with a server volume appearing.
5. Select a server and click OK, or double-click the name of the server.
   - The standard AppleShare login dialog box appears (see figure 6.1).

![Figure 6.1 AppleShare login dialog](image)
6. If you are a registered user of the server, enter your name and password, and click OK. Otherwise, select the Guest radio button and click OK (see figure 6.1). (This only works if your server allows Guest access—which might not be the case. Check with your local server administrator to find out.)

A list of available volumes appears. Volumes can be multiple hard disks attached to a server, or different folders or partitions on the same hard disk. You can select multiple volumes by Shift-clicking.

7. Click OK.

The volumes appear on your desktop.

By selecting the checkbox to the right of a volume when connecting to a volume, you can indicate that you want to automatically connect to the volume every time you start your Macintosh. You have the option of having the Mac automatically remember only your login name, or both your name and password. If you consistently need access to a given volume, having an automatic login may be convenient. Having the Mac remember both your name and password, though, is an open door to whomever starts your computer. Not only can the person access all your local files, but your network-based files as well. For this reason, many managers consider it a security risk to enable password remembering.

Network Zone Strategies

Strategies for putting Macs and servers and printers into different AppleTalk zones haven’t really changed with System 7.5.5 either—you might want to place Macs and printers that are physically close in the same zone, or you might want to create zones according to the needs of departments or workgroups.

In any case, unless you have a third-party bridge, router, gateway, or router software on a Mac, you cannot create AppleTalk zones with System 7.5.5 unless you are connected to EtherTalk or TokenTalk networks. Standard LocalTalk has no features for creating AppleTalk zones, even under System 7.5.5. But remember that the AppleTalk Phase II protocols can support up to 32,000 nodes (Macs, printers, fileservers, and so on) on a single network, so you don’t need zoning to break the old AppleTalk barrier of 32 nodes per network.
You will need a third-party routing product like Farallon's Liaison or Apple's AppleTalk Router to create an AppleTalk zone that would display in the Chooser. Or, you could use a hardware router, like the Cayman System's Gatorbox, to create a zone. The setup and use of such devices, however, hasn't really changed under System 7.5.5. You'll need to check with your third-party network vendor to get the specifics on any changes in configurations, or if there are any special needs because of System 7.5.5's PowerTalk and MacTCP capabilities.

Most Mac sites use EtherTalk as the protocol to link large numbers of Macs. Sometimes, if you have been using a PowerBook, or if you have lost your Ethernet network connection, the Mac will default to its native LocalTalk protocol. In this case, you will not see your zones or other Ethernet resources. To remedy this, open the Network control panel and choose EtherTalk.

**A Debt to Doohickeys**

Occasionally, Apple makes available free utilities that provide a quick fix to problems that may be addressed better by future releases of system software. While these utilities are often handy, they are often unsupported. Apple, or even the author, asks that you not contact them for technical support. Nevertheless, unsupported utilities can be valuable tools when the risk they entail is managed properly.

One of the unsung heroes among these tools is a package of network utilities called FSID—File Sharing Improvement Doohickeys. The utilities consist of three programs:

- **AppleShare Setup**—This conglomerate of controls lets you make specific AppleShare alerts dismiss themselves after a set amount of time, disables all AppleShare alerts and greeting messages, and lets security-conscious administrators disable some auto-mount features (see figure 6.2).
Figure 6.2  Setting Alerts

- **Server Remote Control**—This is a pair of applications that allow you to start or stop a file sharing session from a remote machine. It's but a shadow of the commercial remote server control application offered by TechWorks, but this humble pair of applications is an excellent example of the power of program linking.

- **UnMountIt**—This small application can reside on the desktop and can be a godsend in removing removable devices such as SyQuest cartridges or a CD-ROM. System 7.5.5 often reports that these devices are being shared even when no one on the network is accessing them. If you drag-and-drop captive removable media to the UnMountIt icon, it checks for users accessing the media.

You can get these nifty doodads from authorized Apple dealers and resellers.

**Peer Prudence**

With System 7, Macintosh computers gained the ability to share files with each other by using the same interface and access restrictions found in dedicated AppleShare file servers. This “peer-to-peer” file sharing does not require any additional software, or a Macintosh to be used exclusively as a file server—so it is much less expensive than having a dedicated server.
Unfortunately, it also lacks the security, ease of backup and access, and speed of a dedicated file server. In addition, it will slow down every Mac on which it’s enabled, especially if you allow lots of colleagues to use your Mac as a fileserver.

Peer-to-peer networks are easy to set up after you’re familiar with the procedure, but they grow unwieldy as the size of the network increases. Since critical files are invariably spread among different Macintosh computers, having any link in the chain go down can cause havoc. Peer-to-peer networks are also difficult to manage, and multiple versions of the same document often appear to further befuddle users.

I’ll first give you the short version on how to do 7.5.5 file sharing, then explore the methods, ramifications, and collaboration strategies that you should consider after you know the basics.

**Sharing Setup 101**

To share files using the built-in file sharing feature, you need to launch the Sharing Setup control panel (see figure 6.3). Once launched, you should name your Macintosh under the Network Identity part of the dialog box, and also give your machine a password and owner name (typically your own given name). Then, to allow your Mac to share some or all of its files (use the Users & Groups control panel to select which ones you will allow to be shared) with other Macs on your network, press the “Start” button under the File Sharing part of the Sharing Setup dialog.

To allow for Publishing from and Subscribing to documents on your Mac, you need to travel on down the Sharing Setup dialog and click “Start” the Program Linking. That’s it, as far as starting these processes rolling. But now you need to make some decisions about who can use which files and for what purpose. For that you’ll need to access the Sharing command in the File Menu and the Users & Groups control panel.
Chapter 6: Networking vs. Collaboration (Welcome to the Workgroup)

Figure 6.3 Sharing Setup control panel

Sharing Command

To share any folder or disk (but not floppy disks, only hard disks and CD-ROMs) with other Macs on your network, follow these steps:

1. Make sure that file sharing is turned on.
2. Select the folder, hard disk, or CD-ROM to share (you cannot share an individual file by selecting it, but you can create a shared folder and place files in it that you want to share).
3. Select the Sharing command from the File menu.
4. Click on the box labeled "Share this item and its contents."
   The access privileges for this item will be those that are set in the Users & Groups control panel (See Folders, See Files, or Make Changes).
5. Close the Sharing command window. Then click Save in the dialog box that pops up to save your changes.
   After this, the icon of a shared folder will change slightly to show that it's shared (see figure 6.4).
Drag as many files and folders that you want to share over the network into your new shared folder or disk (in fact, a good strategy is to create a folder on your desktop called Shared Folder [kind of like the old Claris Public Folder INIT] that you use to hold the files you want to share with others).

Watch out for confusion between the Owner Name and Macintosh Name when setting up and using file sharing. This holds especially true among longtime Macintosh users accustomed to the “Chooser Name” (as if it’s not frustrating enough that they moved it to the Sharing Setup control panel!).

Indeed, Owner Name is simply the new term for the old System 7.x “Chooser Name” under System 7.5.5. This is the name that normally identifies you on the network and on the cover sheets of your print jobs. You should probably use your real name for this field. Macintosh name, on the other hand, is the name that other people see only when connecting to your Macintosh—the name of your personal "filesver."

Users & Groups Control Panel

Unless you modify the default settings, any disk or folder that you share will automatically give everyone on the network full access to that file. If you want to control this access, however, you need to fire up the Users & Groups control panel (see figure 6.5). You can also use this control panel to create user groups, too.
To get started, follow these steps.

1. Choose New User from the File menu (`⌘N`), which is only active when you have the Users & Groups control panel open.

2. Replace the name "New User" with the name of the user who will be using the shared folders and disks (this name must correspond exactly to the name that the user has set in his Sharing Setup control panel).

3. If you want to set up a password for this user, or create a customized (restricted access) view for them, open the user icon you just renamed.

4. After the dialog opens, type in a user password (see figure 6.6). If you want that user to be able to connect to you for file sharing, check the box marked "Allow user to connect." If you want that user to be able to remotely change their access password to your Mac (*this can be a dangerous privilege, so be careful about assigning it!*), check the box labeled "Allow user to change password."

5. Close the window, then click Save in the dialog box that pops-up to save your changes.

6. You must repeat this procedure if you want create more users for filesharing on your Macintosh. Unlike the administrative tools in AppleShare, System 7.5.5's filesharing setup is a bit more labor intensive, which should remind you that it is intended only for the casual and limited sharing of files and folders. It should not be considered a replacement for a more robust fileserver, like a centralized AppleShare, UNIX, or Novell fileserver.
Figure 6.6 Setting access for Eileen

7. When you are finished setting up users, close the Users & Groups control panel.

Creating User Groups for the First Time

File sharing under System 7.5.5 also has the ability to create groups of users (sort of like a much-limited AppleShare server would do). To name a group of users and give them particular access to files and folders on your Mac, the steps are simple, and not unlike what you have learned previously:

1. Open the Users & Groups control panel.
2. Choose New Group from the File menu.
3. A new icon called "New Group" will appear in the Users & Groups window. Replace the "New Group" name with the name of a group as you would like to call it (such as Committee Members).
4. Drag the user icons of each person you want in this new group into the new group's icon (see figure 6.7).
Figure 6.7  Defining the group Committee Members

You may shift-click user icons and drag them simultaneously to speed this process up. You may create as many groups as you like, and you may drag the same people’s user icons into as many groups as you choose. Thus, John and Mary might both be in the new group, “Accounting Files,” while John and Louise are also in the new group “Review Files,” and Mary and Louise are in the new group “Budget Data.”

5. That’s it. If you want to check which folks are in the group you just created, all you need to do is double-click the group icon to get a window showing its members.

If you want to restrict the access of a shared file or folder to just a single person or group, you can do so from the Sharing command in the File menu. Again, follow these quick steps:

1. Turn on file sharing.
2. Select the item to be shared.
3. Select the Sharing command from the File Menu.
4. Check the box marked “Share this item and its contents.”
5. Select a user or group from the User/Group pop-up menu.
6. Select which privileges you want to give to that user or group: See Folders, See Files, or Make Changes (see figure 6.8).
Clicking on the checkboxes and leaving an "X" will enable the access privilege; clicking on the box again will remove the "X" and disable access privilege. Be very careful about which users and groups you give sharing access privileges to, since it means that they can view or alter files, folders, or disks on your Macintosh.

In my own experience, you'll likely need to modify the access privileges of individuals and groups fairly regularly, depending upon how your needs change. Remember though, that file sharing is NOT AppleShare and it is not intended to provide centralized, secure fileservice. Don't expect fileshare's access controls to be as robust or as configurable as AppleShare's.

You can even let others access your Macintosh remotely from another Mac either on a direct network or via a network dialup modem (look back to figure 6.6).

**On Users & Groups**

Users & Groups is technically a control panel, of course, but like its System 7.5.5 cousin, the Launcher, it resembles no traditional members of its genre. Opening the Users & Groups control panel appears to open a Finder window.
The Owner's User icon has a bold outline. Its preferences window lacks the password field because the owner enters her or his password in the Sharing Setup control panel itself. As the Macintosh owner, you can always control all the contents of any shared folders. Selecting the Allow user to see entire disk checkbox, though, allows you to see all items on a disk, even those in folders that are not shared. It's Apple's way of saying that ownership has its privileges.

Philosophically, groups consist of people who need to share work. Realistically, they provide a shorthand way of allowing and denying access to a number of people simultaneously. A folder's owner must be confined to a single user or group that can completely access a folder and change the access privileges to a folder.

You can, however, define an additional user (individual or group) that can access the folder, but cannot make changes to its access privileges. Were it not possible to prevent users from changing these privileges, people whom you let use your files could easily prevent you from using them. This scenario would create administrative nightmares, to say nothing of opportunities for disgruntled co-worker revenge.

Now that you know how to set up your users and groups, it's time to prepare your hard disk for your guests' arrival.

**A Privileged Class**

For years, AppleShare administrators have lived by a three-by-three grid that determines access privileges for folders. If you have used folders on a fileserver, you already may be familiar with access-restricted folders, but if you're planning to be a remote access host, you should definitely know about them now.
While the AppleShare security regime does not provide the depth of control of competing file servers such as Novell NetWare (a key reason for the popularity of that DOS-based server's success in the Macintosh world), it is relatively easy to learn and administer. Three kinds of access privileges may apply to a folder. Each gives you an added measure of control over its contents.

The See Folders privilege provides only the most basic access. If you have only this access to a folder, you may peruse its hierarchy and sometimes gain access to files at deeper levels. If you do not have the ability to see folders in a folder you can open, its window displays a crossed-out folder in the left side of the window's status bar (see figure 6.9).

![Figure 6.9](image)

**Figure 6.9** A folder window in which you cannot see folders

See Files bestows the ability to see files not only in the folder, but to see their contents as well by opening them. If you cannot see the files in a folder that you can open, its window displays a crossed-out document icon in its window's status bar (see figure 6.10).

**Make Changes**, the final privilege, enables users to add or remove files from a folder and includes the capability to change or delete the files within it. You only should grant this privilege to your most trusted users and to those who need to collaborate on files. Other users can copy files from folders with the See Files privilege.
Figure 6.10  A folder window in which you cannot see files

Make Changes allows a user or group free reign to do whatever they want to the contents of a folder—short of changing the access privileges themselves. If you cannot make changes to the folders and files in a folder that you can open, its window displays a crossed-out pencil icon in its window’s status bar (see figure 6.11).

Figure 6.11  A folder window in which you cannot change the files and folders within that folder

These privileges can be combined to create four folder types, all of which have distinctive icons (see figure 6.12). These icons appear as the privileges for the folder’s change (unless the folder has a custom icon). Note that a user or group must have the ability to make changes to a folder in order to give it a custom icon under System 7.5.5, because the icon resides in an invisible file within the folder itself.
Folders that you own and those that you typically create have a "label" across their tab (top left in figure 6.12).

Folders that you can open (those for which you have See Folders or See Files privileges) have a normal folder icon (top right in figure 6.12).

Folders for which you have no privileges have a locked belt around them (bottom left in figure 6.12).

Although Make Changes generally confers more authority over a folder than See Folders or See Files, you can grant the former privilege without the latter two. In this case, the user can add to the folder but cannot see or delete anything within it. This type of folder is called a drop box. (System 7.5.5 includes a handy script that automates the creation and deletion of a drop box with Guest access turned on with its Share a Folder script, located in the Automated Tasks folder in the System Folder.)

Folders that act as drop boxes (of course, with PowerTalk you don’t need drop box folders as you can do this directly with your Desktop Mailbox and Catalogs) have a belt and an arrow indicating that you can put stuff in the folder, but once you do, you won’t be able to access it again (bottom right in figure 6.12).

Still, drop boxes can be an extremely handy use of AppleShare privileges—especially if you don’t expect to install PowerTalk for a while (because of RAM constraints or because you just don’t need it for collaboration). Drop boxes can be used as a primitive form of electronic mail in which folders
Chapter 6: Networking vs. Collaboration (Welcome to the Workgroup)

and files can be added to a folder without knowing what else is in it. To reflect the loss of control over a file after it is deposited into a drop box, the Macintosh displays a dialog box that tells you that you won’t be able to see the item after you place it in the drop box.

**Share and Share Alike**

Choosing Sharing from the File menu allows you to view the privileges of a folder that’s already being shared, as well as set the privileges of folders shared on your hard disk.

When you see a folder’s privileges, you easily can determine which of the three user types or categories has which three privileges. The Owner is generally the person who created the folder and retains administrative control. The User or Group indicates who has access to the folder—probably with more limited access.

The third group, Everyone, means that access privileges are available to anyone who connects to your Macintosh across the network or with Remote Access, as a Guest or otherwise. If the folder’s contents contain data that should be kept privy to a certain user or group, you should make sure that you do not set privileges for “Everyone.”

There are two additional settings under your control for shared folders. “Make all currently enclosed folders like this one” (runner-up for the Longest Checkbox Name Award) is a command rather than a privilege. Selecting this setting results in all folders inside of a folder inheriting the same privileges. You always can go back to any enclosed folder(s) and set privileges independently after you use this command on a folder.

The “Can’t be renamed, moved, or deleted” checkbox helps limit the power of the Make Changes command. If this checkbox isn’t checked, other users can rename, move, and delete any files or folders within a folder.

How do you know if someone is accessing your shared folders? When you first share a folder, its icon changes to reflect its network status. When someone is connected, however, the icon changes yet again to reflect that
people are accessing it and that it has been mounted on someone's desktop. Occasionally, you may see two small arrows flash in the left corner of the menu bar to indicate your Mac is communicating with the network.

**Monitoring FileSharing Activity**

Although Apple insists that the increased networking usage that users of file sharing, publish and subscribe, PowerTalk, and file aliasing across networks will foster won’t slow down your networks all that much, common sense dictates that you at least be cautious in how you implement file sharing among your Macintosh computers. At the very least, even if you go whole hog and give everyone the capability to do full-metal file sharing and collaboration from the day that System 7.5.5 is installed, you’ll need to keep a handle on file sharing traffic.

If you have anything more than a basic LocalTalk network, you’ll need to buy third-party network monitoring utilities, such as those sold by Farallon, Stratus, Technology Works, and others. But for basic monitoring of file-sharing activities the File Sharing Monitor that is part of 7.5.5 works OK (see figure 6.13).

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**Figure 6.13**  *The File Sharing Monitor in action*

This monitor gives you a scrollable list of all your shared folders and disks and who is currently sharing them. It also allows you to disconnect any individual user (with or without a timed delay). A small bar chart indicates
how much file transfer work your Macintosh is doing. As you may expect, the more people who access files on your computer, the more your local operation slows down.

**Nok Nok is No Joke**

For those wanting more bells and whistles, Nok Nok is just what you need. Nok Nok began inside Apple, but is now being sold as commercial software by The Ag Group. Nok Nok provides many ways of notifying you when someone has connected to your Macintosh and enables you to set a time limit for all users—not just remote ones. Nok Nok also can tell you who is accessing your machine—even if they log on only as a Guest.

**Program Linking**

The bottom of the Sharing Setup control panel is devoted to Program Linking (see figure 6.14). Clicking Start allows other users to connect to applications on your Macintosh. This must be turned on for other applications to remotely send and receive AppleEvents (which are powerful interapplication commands that enable programs to control other programs).

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**Mac Basics**

If you try to stop file sharing (or restarting or shutting down) while other people are accessing your computer, you will see a dialog box that asks you how long you want to wait before disconnecting. As “network administrator” of your Macintosh, give a reasonable amount of time for people to log off properly and stop using items on your Macintosh before your machine shuts down. Otherwise, you may end up with some very unhappy campers.

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**Figure 6.14 Program Linking in Sharing Setup control panel**
Now that System 7.5.5 includes AppleScript and the scriptable Finder, the formerly neglected AppleEvents should enjoy a renaissance, particularly among savvy network administrators who are looking to create economical scripts that handle some functions of sophisticated network inventory, distribution, remote control, and file synchronization programs.

**The Mac Is a Telephone**

One of the little known additions to System 7.5.5 is MTA (Macintosh Telephony Architecture). With MTA, developers can create applications that integrate telephony functions into the Macintosh. Products that already use MTA include Jabra's innovative EarPhone, a small device placed in the ear that works like a telephone earpiece and mouthpiece. Another is Cypress Research's PhonePro, an application that allows you to create full-featured voice mail applications on the Macintosh. Other applications that will integrate telephony into the Macintosh include PhoneBridge, which will allow the Macintosh to act as an integrated fax repository, voice mail system, and full-feature telephone.

Apple itself has furthered the integration of telephony into the Macintosh through its use of the GeoPort, a high-speed successor to the original serial port that can accommodate a variety of external adapters. Using the Macintosh Quadra 660AV, Quadra 840AV, or any Power Macintosh, the GeoPort Telecom Adapter can work with the Macintosh computer's processor to emulate a 14.4 modem.

Much has been made about the reliability of modem emulation versus a real modem. The truth is you're not saving a lot by buying the GeoPort Adapter and it is often problematic. (I have two of them—I am an easy sell—and use neither.) Modem emulation, however, is just a sample of the GeoPort's flexibility. It also can be adapted to support other kinds of communication interfaces, such as ISDN (Integrated Services Digital Network), which is a high-bandwidth dial-up protocol that is enjoying some success in wide-area settings. If Apple gets the driver software for the GeoPort to work reliably on all AVs models, then all of its potential benefits may translate into real benefits. For now, the GeoPort remains an unrealized Apple advantage.
Don Crabb Bottom Line Tip

If you plan to use a GeoPort with System 7.5.5 on a Power Macintosh AV machine, you will have to wait until Apple updates the GeoPort software, which is currently scheduled for late 1994. GeoPort now supports v.34 28.8, but still not ISDN. Until then, DON'T USE THE OLD VERSION. Trust me on this.

A Publisher's Clearinghouse

We talked about file sharing and program linking, but those aren't the only (or best) ways you can share data over a network. Other ways exist now (Publish and Subscribe), but the good stuff is yet to come (OpenDoc).

Publish and Subscribe

Introduced with System 7.0, Publish and Subscribe extends the capabilities of copy and paste to "live" data that can be automatically updated. In other words, with Publish and Subscribe, the data that you paste into a document can be updated easily (automatically if you would like) without repasting it everytime something changes.

Unfortunately, few vendors or users ever got on the Publish and Subscribe bandwagon, led by Apple's amazing apathy towards this signature System 7.0 technology. Still, there are dozens of applications out there that support Publish and Subscribe (virtually everything in the Claris inventory, for example), so in the name of completeness, I'll cover it briefly. But in truth, I never use it and it essentially will be pushed aside by AppleScript and OpenDoc.

To publish and subscribe data:

1. Select some text or graphics in a System 7-savvy application.
2. Choose Create Publisher from the Edit menu. (It may be in a hierarchical menu.)
   A Save dialog appears.
3. Name the edition file that will keep track of the live data and click Save.

4. While in a different document, choose Subscribe To from the Edit menu.

An Open dialog box appears and a special alias highlights the last edition file used. A preview appears to the left of the file list.

5. Select the edition to which you want to subscribe and click Subscribe.

A copy of the data is inserted into the document.

Note that the document can be in the same application, a different application, or an application across the network. As long as the application can access the edition file, Publish and Subscribe will preserve the links. Saving a document automatically updates all editions created from it, and applications provide controls for manually updating editions and getting the latest versions of an edition (see figure 6.15). Subscribed data can be selected and moved within a document, but you must launch the publishing application in order to fully edit it.

![Figure 6.15 Selecting updating options](image)

If you have Publish and Subscribe-compliant applications, Publish and Subscribe can be valuable for ensuring your workgroup stays in sync—particularly when multiple people need access to changing data. For example, someone creating a magazine ad often needs to work with graphics, logos, body copy, and headlines. Using Publish and Subscribe, a copywriter working in Microsoft Word could update a document to reflect the latest whim of a client. When she saves the updated file containing additions, her editor, who has subscribed to the text, can be instantly given the latest
version, while the person composing the ad will have the latest revision as soon as she reopens the PageMaker file containing the published text.

Despite its utility and flexibility, however, Publish and Subscribe has been hampered by too many steps, it generates too many files, it works slowly with many users (you can have 30-40 users tops), and uses too much terminology. Keeping track of the edition files can be a chore. Apple is aware of its deficiencies, which is why the AppleScript/OpenDoc combo platter will write the Publish and Subscribe epitaph.

**OpenDoc 101**

There have been numerous battles as the Mac has evolved such as TrueType versus Type 1 fonts, CISC versus RISC, and so forth. One of the fiercest battles now, though, has spilled over from the Macintosh into the software industry at large—that of OLE versus OpenDoc.

Object Linking and Embedding (OLE) is a technology created by Microsoft that allows objects from one application to exist within the file of another. Embedding is easier and more convenient than the data linking in Microsoft’s DDE or Apple’s Publish and Subscribe. OLE 2.0 offers several improvements over the original specification, such as the capability to edit an object without opening a new window for it. OLE is supported by many prominent Windows applications and is used by the Macintosh versions of Microsoft and Aldus applications as well.

Apple, however, has proposed a rival standard for object sharing called OpenDoc, which has attracted a large industry following, including IBM, Borland, Xerox, and Lotus. OpenDoc leapfrogs even OLE 2.0. With OpenDoc, you can switch editing tools in a “container” application simply by clicking on a “part.” Parts can be virtually any kind of data—text, graphics, QuickTime movies, sounds, even data types of which we haven’t yet conceived. The effect is similar to the transparent switching of editing tools in Claris’ superb integrated package ClarisWorks. However, OpenDoc allows you to edit any data type with your choice of best-of-breed editors.
Unlike OLE 2.0 objects, OpenDoc parts support network access, running in the background, and irregular, overlapping shapes. Not surprisingly, Microsoft claims it is working on network support and irregular shapes for the next version of OLE. While Microsoft has a head start in the object wars—even on the Macintosh side—OpenDoc will play an increasingly important role in the Macintosh operating system, driving it from its application-centric origins to a document-centric future.

Unfortunately, OpenDoc is still in development and so we will have to wait a bit for this extremely exciting technology to show up on our desktops. I'm sure we will talk about it at great length in Guide to Macintosh System 8.0.

**Sharing Alike: The Rebirth of AOCE**

OK, I've given you the guided tour through the basics of the virtual desktop, most of which carried over from System 7.x. But all of that is just the overture to the aria that is PowerTalk and AOCE. System 7.5.5 marks the beginning of a new level of collaboration within the operating system and Macintosh applications through the Apple Open Collaborative Environment (AOCE).

AOCE is a broad initiative, the mission of which is to make working with people around the office, or around the world, a part of the applications you use everyday. System 7.5.5 represents a second time at the plate for PowerTalk, which debuted in System 7 Pro.

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**Don Crabb Bottom Line Tip** After you finish reading this chapter, you should go through the PowerTalk Guide (an Apple Guide) that's provided with 7.5.5. It will teach you the hows and whens of using PowerTalk.
Currently, Apple has two major products based on AOCE. PowerTalk is the AOCE client included with System 7.5.5. Like peer-to-peer file sharing, it provides a number of immediate benefits out of the box, including:

- A baseline electronic mail program, AppleMail.
- An integrated Desktop Mailbox through which you can access all manner of electronic mail.
- A standardized way of searching through directories via public and private catalogs.
- A standardized access protocol for collaboration services via the Key Chain.
- Messaging/email capabilities integrated into popular applications.
- Drag-and-drop mail sending.
- Public-key encryption and digital signatures.

The Collaborative Desktop—
Extending the Virtual Desktop

If you were among the majority that skipped over System 7 Pro (because it was too expensive and too slow), the Mailbox and Catalogs icons that PowerTalk added to the desktop will be new to you with System 7.5.5. One of the icons that System 7 Pro installed, the Key Chain, has been moved by default from the desktop to the Apple menu. (You may want to keep its alias on the desktop as I do, for quick access. Apple recommends this also.) The Key Chain is located in the Mail and Catalogs folder.

The Mailbox and Catalogs icons cannot be moved from the desktop, although you can place aliases of them anywhere on the hard disk (see figure 6.16).
You won't see the Catalogs or Mailbox icons unless you choose to install PowerTalk.

Figure 6.16 The Catalogs and Mailbox icons

Controlling the Universal Desktop Mailbox

The first time you open the Mailbox, PowerTalk will prompt you for a name that can be used to identify you on the network (this can be changed later if you need to). After giving a name and password, the System configures the Key Chain to store that information.

Opening the Mailbox presents the letters addressed to you in chronological order (see figure 6.17). By default, the most recent messages to you are listed last, although this can be changed through the Mailbox Preferences dialog box (see figure 6.18). PowerTalk also enables you to customize settings for how you are notified when there's new mail.

Figure 6.17 Opening the Mailbox
Figure 6.18 Setting Mailbox Preferences

Depending on the settings you choose, you will receive some sort of notification when new mail arrives. To see the subject of the letter, open the Mailbox.

The Mailbox window resembles other Finder windows and, to some extent, acts like one. Clicking any of the various column titles, such as Date Sent or Priority, sorts mail by that criteria. Many different data types can coexist in the PowerTalk Mailbox. Any file type the Macintosh supports can be sent through PowerTalk. You can launch files or hear sounds in your Mailbox by double-clicking them. You can file them by dragging them into folders. However, you can’t drag items into the Mailbox window or create folders within it. While the first limitation is intentional, the latter should be resolved in a later version of PowerTalk.

In the interim, PowerTalk provides a feature called Tags that is similar to the Finder’s Labels feature. One good thing about this feature is that you can apply multiple Tags to the same file. You can apply Tags by selecting items in the Mailbox and choosing Tags from the Mailbox menu.

In the resulting window, you can add Tags by selecting them from the popup menu or by creating new Tags; you create Tags by typing in the name of the new Tag and clicking Add. Apply a Tag by selecting it from the popup menu. Note that each Tag you select will be applied to the selected items.
To remove a Tag, select it in the popup menu and click Remove. The Remove button does not delete a Tag, it merely deassigns it from the selected In Tray items. To permanently delete a Tag, choose Preferences from the Mailbox menu and click Edit Tags. Here, you can select multiple Tags and click Delete to remove them.

To filter your mail according to a Tag, open the In Tray and choose with Tag from the View menu. Choose the Tag from the popup menu (or type it in) and click OK. The PowerTalk In Tray displays the number of tagged items along with the Tag name above the list of In Tray items. (PowerTalk’s Tray windows have no Icon view.)

Items that you have opened (and read, theoretically anyway) are marked with a checkmark. With version 1.1 of PowerTalk (included in System 7.5.5), you also can mark items by selecting letters in your Mailbox and choosing Mark Read from the Mailbox menu. Marking items as read stops notification that the unread items exist. If you still want to be notified about read items, select them in the mailbox and choose Mark Unread from the Mailbox menu. The checkmark that denotes whether the item has been read disappears. The Mailbox menu also allows you to copy items on the mail server (if you are using one) to your hard disk by selecting them and choosing Copy Local from the Mailbox menu.

**PowerTalk Clients**

Any Mac that can run System 7 Pro or later can be a PowerTalk client, so mixed-collaborative networks of 7.5.5 and 7 Pro Macintosh computers will work. To enable your Macintosh to collaborate with other PowerTalk users, you must open the PowerTalk Setup control panel, turn Collaboration Services On and restart the Macintosh.

**PowerShare**

Out of the box, PowerShare supports PowerTalk clients for email. PowerShare (a server) can store and forward mail, which means that two
machines need not be running at the same time to exchange email (as they do with PowerTalk), possibly resulting in critical delays. A host of third parties are providing gateways that will link PowerShare servers to other mail servers and collaboration servers.

In everyday use, PowerShare is procedurally similar to using an AppleShare server, but covers more collaboration services. Once you log in to your Key Chain, you have access to all the network services, including other PowerShare servers and PowerTalk-enabled Macintosh computers that appear as just another service on your Key Chain. Traditionally, these have been file servers, print servers, and electronic mail, but will grow to include chat-based and video conferencing, whiteboard, bulletin board, scheduling, and other collaborative applications.

**PowerShare Servers**

Simply stated, PowerTalk is to PowerShare what System 7.5.5 file sharing is to AppleShare. PowerShare acts as a central server for the catalogs and gateways that would otherwise be maintained on each individual Macintosh. As with peer-to-peer file sharing, you probably don’t need a dedicated PowerShare server if you have a small workgroup of 10 or less, but large LANs may need several PowerShare servers. PowerShare is an extra-cost package ($995 list for a single server that can accommodate up to 100 users).

**AppleMail**

AppleMail is often maligned for its lack of features, but it was never intended to represent the last word in electronic mail clients. Rather, you should think of it as the SimpleText of email. After all, one of the ideas behind PowerTalk is to stop thinking of electronic mail as an application and start integrating it into the applications you already use—so in this context, the lack of a million features in AppleMail makes sense.

Today, many popular applications such as Microsoft Word and Excel, WordPerfect, and ClarisWorks allow you to use PowerTalk to send and
receive email. AppleMail was the first and still serves well as “the SimpleText of PowerTalk.” Much of AppleMail looks and acts like a standard Macintosh word processor, but there are some differences.

In addition to styled text, AppleMail can accept PICT files, QuickTime movies, and sounds. You can record sounds directly into an AppleMail document by choosing Record Sound from the Edit menu.

AppleMail enables you to use nice looking electronic letterhead in your email. Choosing Letterheads from the File menu presents a choice of stationery files with some nicely designed PICT files having been provided by Apple.

You can also make and save your own letterhead by choosing Save as Letterhead from the File menu. The resulting dialog box gives you the option to delete any Letterhead or set one as a default for when you create a new AppleMail document. Perhaps the only significant difference between AppleMail letterhead and traditional stationery is that AppleMail letterhead can retain PowerTalk mailer information (of course, the fact that one is electronic and one is paper is also a big, but obvious difference). Thus, they are very useful for people to whom you frequently send mail.

Choosing Preferences from the Edit menu allows you to designate the default font for your missives, and other default options such as if a letter is automatically closed after it is sent; if you are prompted to save a letter after sending it; when the PowerTalk mailer is expanded by default; and how the text from an original letter is handled in a reply (see figure 6.19).

Figure 6.19 AppleMail Preferences
The PowerTalk Mailer

The heart of PowerTalk addressing lies in the PowerTalk mailer, which can be added to PowerTalk-savvy applications by using the Add Mailer command, typically in the File menu. The PowerTalk mailer is divided into four parts.

The From field designates the sender of the message. Naturally, it is initially set to your Mailbox name. Double-clicking on the name, however, allows someone else to log in to a PowerShare server, if one is available, and send mail from a different Macintosh.

The Recipients field lists the addressees for the email (see figure 6.20). Clicking the Recipients button or pressing Return while the field is highlighted, calls up PowerTalk’s addressing window pane which has four buttons on its left side: the Personal Catalog (a book), the Catalog Browser (a globe), Find Address (a magnifying glass), and Type-in Addressing (a pencil). Each of these icons provides a different way of adding an address to your letter.

- The top button allows you to quickly enter an address from your Personal Catalog.
- The second button, the catalog browser, enables you to traverse personal and shared catalogs and even hard disks and file servers looking for addresses to enter.
- The third button, with the magnifying glass, allows you to search catalogs for the address you want.
- Finally, the bottom button lets you type in addresses directly.

If you have a recipient from another mailer available, you can drag it into the recipients’ window.

PowerTalk also supports sending mail to someone directly, as a carbon copy (CC) or as a blind carbon copy (BCC). You can double-click any recipient’s name to change their addressee status from To to CC to BCC.
Figure 6.20  Addressing mail using the PowerTalk mailer

Don Crabb Bottom Line Tip  Like other parts of PowerTalk, the address pane is chock full of shortcuts.

Holding down the Shift key changes the default button from To to CC. Selecting a recipient and pressing Shift-Return will add that recipient as someone to receive a copy of the letter, saving you the step of changing the recipient's status later.

Holding down the Option key changes the To button to Save and the CC button to BCC.
Pressing Tab or Return will close the Address pane.

You also can drag addresses from a Catalog or your hard disk into the Recipients field.

Don't worry about remembering this shortcut madness, however. All is revealed in the excellent Apple Guide for AppleMail, available from the Balloon Help/Apple Guide menu.

The Subject field informs recipients what the message is about before they read it. All PowerTalk messages must have a subject. While PowerTalk can accommodate subjects with long names, keep in mind that many mail gateways can accommodate only shorter subjects labels.

Finally, the Enclosures field allows you to attach files to your messages. To some extent, PowerTalk diminishes the need for enclosures since you can attach a mailer to a document if the creating application supports PowerTalk. Still, PowerTalk's method of adding enclosures is quite slick. Clicking the Enclosures button provides a standard Open dialog from which you can select files or folders.

The System 7.5.5-savvy way of adding enclosures is to drag them from the Finder into the Enclosures field. The System still must copy the files, but it's a taste of the juicy interface conventions that OpenDoc will make commonplace.

The small triangle in the upper left corner of the mailer enables you to expand or collapse the mailer down to one line containing the recipient and subject—a godsend to those who still must make do with smaller screens.

Once you've created your communiqué, choose Send from the Mail menu, or press ⌘-M. The PowerTalk Send dialog box presents you with several options (see figure 6.21).
Figure 6.21 Sending AppleMail

You can digitally sign the letter, you can assign a priority, and you also can choose among several formatting options:

- AppleMail allows other PowerTalk users to open the letter with AppleMail, but fonts will not match if the recipient doesn't have them.
- Snapshot sends an image of the letter that preserves its look, but it isn't editable. Gateways that convert messages to text-only formats cannot use this format.
- In most applications that support PowerTalk, you can send letters in their file format as well. Applications that support XTND filters, such as Claris Corporation's ClarisWorks, will even allow you to send a message in any word processing format ClarisWorks can translate.
- PowerTalk also enables you to send messages in multiple formats, in which case you don't have to make assumptions about which is the best choice.

After sending a message, the letter will close or prompt you to save it—depending on your designated preferences. Messages that have been delivered have a small postmark in the mailer.

If a message cannot be delivered, a problem report will be delivered to your In Tray along with the original letter. A yellow caution sign appears in the In Tray to indicate that there has been a problem. (A common cause of undelivered mail is an unavailable or wrong address.) Opening the problem report will notify you of the recipients who did not receive the message; their icons will be marked with a "thumbs-down" icon. Double-click the bad address to make sure that there wasn't an error entering the address.
If an address is unavailable, it may be because there is a problem with the appropriate gateway. Click the yellow caution sign to discover the nature of the problem and to resolve it if possible.

**Replying and Forwarding**

Not all messages you create will start from scratch. PowerTalk allows you to reply to and forward letters you receive.

- To reply to a message, choose Reply in the Mail menu or press \textasciitilde\textasciitilde-R. The Reply Letterhead appears by default, although you can use the Letterhead command to change it to anything you wish.
- Holding down the Option key will change the Reply command to Reply to All, which directs your reply to all recipients of the original message.
- Choosing Forward from the Mail menu creates a new message with the text of the old one demoted a few lines in order for you to put in a forwarding comment. Unlike a reply, you must address forwarded mail because—by its definition—the Macintosh doesn't know where the mail is going.

**Catalogs (Personal and Shared)**

If the PowerTalk is your computer's way of reaching out and touching someone—Catalogs are its phone books. Essentially, Catalogs are listings of who and what is out there.

You have an AppleTalk catalog that, in some ways, replicates the functions of the venerable Chooser. It allows you to peruse zones and access AppleShare servers. It also enables you to see who else is running PowerTalk and can therefore receive your email.

As PowerTalk becomes a more universally accepted way for Macintosh users to locate resources on a network, we'll likely see it linked to other directory service technologies such as Novell's Bindery in NetWare 4.0 or Banyan's StreetTalk.
As fans of mail order companies like MacWarehouse will tell you, browsing through a catalog can be fun. In the case of PowerTalk, that's true as long as you have only a few machines linked together with LocalTalk. Larger networks, however, make finding disperse resources a chore. Thankfully, Apple provides a minimalist application in the Mail and Catalogs folder that allows you to locate anything a catalog can contain: users, servers, collaborators, and so forth. As PowerTalk matures and searching algorithms improve, we can expect to see this functionality become as slick as the Find File application in System 7.5.5, or perhaps get rolled into it.

Gateways also can add their own catalog resources. For example with QuickMail, the directory can be so large that it is locked to prevent browsing, but it can be searched through the find feature in the Catalog application or the search feature in the PowerTalk mailer. CompuServe is also considering adding a catalog to its gateway, which would presumably link to its member directory search feature.

**Personal Catalogs**

Most network-based catalogs that you encounter will be locked to some degree. Since most users are not administrators, they often can browse and search a catalog, but not modify or delete it. You can view the Privileges you have for a Catalog or Information Card by selecting it and choosing Get Info from the File menu.

PowerTalk also lets you create Personal Catalogs. If Catalogs are the Yellow Pages of potential collaborators—Personal Catalogs are your Little Black Book. Unlike shared Catalogs, Personal Catalogs do not contain folders. However, you can create your own Groups by choosing New Group from the Catalogs menu and dragging electronic addresses into the Group icon. Groups are a shortcut way of addressing items to multiple people using only a single address.

System 7.5.5 comes with a blank Personal Catalog that you can fill up in a number of ways. You can drag users' electronic addresses from other Catalogs into a Personal Catalog; drag electronic addresses from the From
field of letters sent to you; and you can create new entries from scratch by choosing New User from the Catalogs menu. Some gateways, such as StarNine’s PowerTalk/QuickMail gateway, also provide utilities to convert address books into catalogs.

You can create as many personal catalogs you wish, but one must be a preferred Personal Catalog. You can set a Personal Catalog as your preferred personal catalog by selecting it and choosing Get Info from the Finder’s File menu and clicking Set Preferred.

Card-Carrying Netters

Laden with file servers, print servers, mail servers, groupware servers, video servers, and calendar servers, what networks ultimately link is people. Information Cards are PowerTalk’s extensible view of your fellow communicators. As they ship from Apple, Information Cards contain four parts—accessible from a popup menu (see figure 6.22).

![Information Card](image)

Figure 6.22 An Information Card (with Business Card selected)

Business Cards resemble their real world counterpart. You can paste pictures or logos in the picture field on the left, add names, titles, company names, and addresses. Personal Info lets you add comments. Phone Numbers provide up to four different phone numbers. Each of the different phone number types can be dragged into a Personal Catalog or onto the hard disk—although doing so serves no practical purpose yet. Indeed, a product corraling the data in Information Cards could make a good poor person’s PIM.

The last part of the Information Card—electronic addresses—can be extended to include addresses from any of the gateways available (for example,
CompuServe which is included on the 7.5.5 CD-ROM). These addresses also can be dragged into Catalogs and the Recipients field in the PowerTalk mailer.

One use for electronic addresses is to drag them onto the desktop. This makes it simple to send files to other PowerTalk users by dragging and dropping them onto the electronic address icon. Holding down the ⌘ key enables you to drag and drop items onto an electronic address icon while bypassing the confirmation dialog box.

**Key Chains**

If your work requires that you access multiple file servers, then you’re probably familiar with the heartbreak of multiple logins. Even when you have designated automatic logins when you start your Macintosh, you must enter password after password. It’s the sort of inefficiencies that Macintosh users shouldn’t have to endure.

With PowerTalk, they don’t. The Key Chain provides a single password from which you can access all your services, including any AppleShare file servers, PowerShare email servers, and gateway services (see figure 6.23). The Key Chain also allows you to add, remove, or configure collaboration services.

![Key Chain](image)

**Figure 6.23** A crowded Key Chain
After installing software for a new service or gateway, it is registered with the Key Chain. Opening the Key Chain and clicking Add gives you the option of the kind of service you wish to add (see figure 6.24).

![Image of Key Chain window](image)

**Figure 6.24  Making the Key Chain longer**

Once a service is added, it likely will need to be configured. Select the service in the list and click Open. A configuration window will enable you to set options for that service. When the service is configured, click its window's close box. The service should then be usable through PowerTalk.

Should you wish to remove a service, select it in the list and click Remove. Removing a service requires that you immediately restart the machine.

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**Don Crabb Bottom Line Tip**  While the Key Chain represents a convenience, it is a Pandora's box. Anyone who discovers your Key Chain password will have unlimited access to all the services that you have added to the Chain. As careful as you are with any critical password, multiply the caution you exercise by one for every service you have connected to your Key Chain. Don't pick obvious passwords and change your password periodically using the Change Code button in the Key Chain window.

PowerTalk provides several features to help ensure no one poses as you at your machine. The Lock Key Chain command in the Finder's Special menu disables all services until the proper password is entered. The PowerTalk
Setup control panel also includes options for locking the Key Chain after a given interval and the option to force entering the password when starting the Macintosh. You should take advantage of any precautions necessary to keep your password safe.

The Personal In/Out Board

Any company that engineered a mobile computer as successful as the PowerBook understands some fundamentals about computing-on-the-go. Many Macintosh users are simply not chained to a desk all day. That's why PowerTalk provides different service activation options depending on where you are. Easy to overlook, the "I'm at" command in the Finder's Special menu allows you to select different PowerTalk services—depending on whether you're at work, at home, or on the road (see figure 6.25).

![Image](image-url)

**Figure 6.25** Letting your Mac know where you are

For now, all you can do is activate or deactivate different services. A short look into the crystal ball, though, reveals that it's only a matter of time before you'll be able to establish different forwarding rules depending on your location. It will be great to have our mail follow us around for once instead of jumping through hoops trying to get in touch with it.

AOCE Gateways

If PowerTalk's Mailbox is to realize its mission to create a central in-box for all manner of correspondence, it will need the help of gateways to communicate with existing mail systems. There are two kinds of gateways for
PowerTalk: client-based and server-based. Client gateways are installed on local machines while server gateways are installed on PowerShare servers.

The System 7.5.5 CD-ROM includes client gateways for sending mail to alphanumeric pagers and to CompuServe, as well as demo versions of StarNine's gateways for QuickMail and the Internet. Quarterdeck also provides gateways for Microsoft Mail and SMTP (the Simple Mail Transfer Protocol popular in UNIX environments). Other client gateways on tap will provide links to voice mail.

If PowerTalk takes off as it should, the growth of gateways will be nothing short of exponential. They offer new levels of integration for email and messages from every possible source.

The Microsoft Connection (MAPI)

One of the most significant server gateways will link PowerShare to Microsoft Exchange (the Windows NT-based communications server that Microsoft is implementing to host the next generation of Microsoft Mail and other Windows-based communication services). With this gateway, both Macintosh and Windows users will be able to use their native email systems to communicate with each other—a benefit that we owe to delicate negotiations between Apple and Microsoft.

Furthermore, Microsoft is working on its own universal electronic mailbox for its forthcoming Windows95 release called the InfoCenter, which provide similar features. Indirectly, this is good for PowerTalk, because it provides competition and legitimizes the concept. Cross-platform developers also have corresponding technologies to work with, so they need not worry about appearing to favor a given platform.

The Communications ToolBox vs. Open Transport Communications Architecture

System 7.5.5 includes the Communications ToolBox of System 7.x, but all that is going to change over the next year with Apple's newer (and better, we
can only hope) and more modern networking and communications architecture for the Mac—Open Transport. Open Transport will provide a superset of the features of the Communications Toolbox for your synchronous and asynchronous connections needs (so that your favorite telecommunications or online connect software can work with your modem as well as on LANS and WANS). It also will provide networking services such as FTP and AppleTalk, which are currently provided with System extensions and control panels such as MacTCP and AppleTalk. In short, OTA promises to rationalize the way networking and communications are provided as Macintosh operating systems services, which can only improve the delivery of collaboration services like PowerTalk.

The Communications Toolbox, like other Apple Toolbox-style operating system services (the Thread Manager and the Drag and Drop Manager are two other examples), lives in the System. You no longer install it separately as you did (using the Apple Installer) under Systems prior to 7.x.

In fact, don't try to run the old Installer to install the old Communications Toolbox under System 7.5.5, should you have some older communications applications around. If you do, you will cause problems that are often hard to diagnose. Under System 6.x, the Installer (or the person who is doing that job manually), would place communications tools (like specialized software for certain modems or other kinds of communications hardware) in the Communications folder within your System Folder.

When you want to use additional communications tools (that may come with a communications program like VersaTerm Pro), you simply drag the tool into the Extensions folder, or onto the closed System Folder and the System will place them in the Extensions folder automatically.

A System 7.5.5-compatible Installer that may come with your communications programs also would do the same thing. If you have older third-party communications program documentation that refers to the Communications folder, just substitute the Extensions folder as you read to keep it clear under System 7.5.5. You'll also want to note those changes for your staffers using those products.
MacTerminal and Third Party Asynchronous Applications

Apple’s own asynchronous communications application, MacTerminal 3.0, works fine under System 7.5.5. Most other third-party communications programs such as VersaTerm, VersaTerm Pro, MicroPhone Pro, and SmartCom will all work fine with System 7.5.5, if they worked fine with System 7.x.

Chapter 6 Summary

System 7.5.5 packs considerable networking power and even more collaboration capabilities into its 14 floppies and one CD-ROM. Its virtual desktop easily beats Windows 3.1, Windows for Workgroups 3.11, and Windows 95. In addition to using the power of AppleScript to simplify peer-to-peer file sharing, PowerTalk and/or OpenDoc/Cyberdog provides a deep and robust peer-to-peer collaboration and messaging environment. Applications that take advantage of PowerTalk, including the screen sharing product Timbuktu Pro and Crosswise’s Face to Face, are extending the notion of network collaboration beyond simple file and print sharing.

You can send messages using the AppleMail application or third-party applications that support the PowerTalk mail capability.

If you buy 7.5.5 on CD-ROM, you also will get some third-party software that takes advantage of PowerTalk—which is a very good way to figure out if you need it and how you can use it.

Several of the products are PowerTalk personal gateways, which provide transparent access from the universal mailbox to other mail and messaging services. The best of these freebie gateways on the CD is the CompuServe Mail Gateway. Give it a try if you have a CompuServe account. Once you fiddle with it to get it to work with your modem, it really does integrate your CIS mail into your PowerTalk mailbox.

In addition, the 7.5.5 CD-ROM contains 60-day trial versions of PowerTalk gateway software from Quarterdeck, which lets you exchange email...
messages with users of QuickMail and the Internet. Both work OK, but require lots of setup tinkering.

And that's really the whole point of System 7.5.5: collaboration. PowerTalk is still one of those technologies that is just young enough to require lots of monkeying around on our part to figure out if it really does make our work easier—especially if we collaborate with others in a workgroup. My advice is simple: dive into PowerTalk and start monkeying. But before you do that you'd better take my quiz and see where you stand.

Crabb's Computing Quiz for Chapter 6

1. What two icons does PowerTalk place on the desktop when you first install it? Why doesn't it place a PowerTalk icon on your desktop?

2. What is the most important characteristic among PowerTalk, AppleTalk, LocalTalk, PlainTalk, EtherTalk, and TokenTalk?

3. What is it about System 7.5.5 that may enhance program linking? Why does it need enhancing?

4. What services does PowerShare support out of the box? Why do computer writers always say stuff like "out of the box?"

5. What slick feature does Remote Access Aliases provide? Can you say Remote Access Aliases three times fast?

6. Name the three network protocols Macintosh computers running System 7.5.5 can support. Which one's the coolest?

7. How can you see a listing of active PowerTalk gateways? Why would you want to?

8. What's the easiest way to create a drop folder in System 7.5.5? What about a drag folder?

9. What do you call the files that track the latest version of a published selection? Why would you care?

10. How can you change the default order in which mail is sorted? Why would you change the default order in which mail is sorted?
Answers to Crabb’s Computing Quiz for Chapter 6

1. Catalogs and Mailbox. Because that would be too easy to figure out.

2. Too much talk, not enough action.

3. The inclusion of AppleScript and the Scriptable Finder. Because exactly three people on the planet actually used program linking under System 7.x. Of course, four people used Publish and Subscribe, a much bigger success!

4. Email, digital signature verification, and network catalogs. ’Cause we are geeks of the first order.

5. It will dial the modem to retrieve a remote file or server when its alias is double-clicked. Depends on your current state of sobriety.

6. AppleTalk, TokenTalk, and TCP/IP. Gimme a break, coolness for network protocols? Not a chance...

7. Choose Key Chain from the Apple menu. Because you’re a conscientious virtual desktop aficionado!

8. Run the Share a Folder script from the Automated Tasks folder in the Apple menu (ooh, tough job, eh?). Cross-dress as appropriate for your gender and then sit on a file folder.


10. In the Mailbox Preferences dialog box. Because you’re choosy about your email and choosy emailers choose...oh, forget it.
In this chapter, we will take a look at how to add and manage both memory and disk space, while improving the way that you use your RAM and disks under System 7.5.5. I will discuss 7.5.5's memory constraints and will talk about how to use Apple's improved Memory control panel to set the size of the always-on disk cache, use virtual memory, select the addressing
scheme (24-bit or 32-bit, if applicable), and use the RAM disk (on PowerBooks).

The important management lessons to be learned here are fairly straightforward, but I always find that the simple stuff is what screws me up.

**Memory Strategies 101**

Let's cut through the confusion and get straight to some strategies for managing our hard disks and RAM.

- **You never can have enough RAM or disk space.** Never believe Apple or any third-party vendor when they tell you that “it will run fine with xK.” How do they know? Have they tried it on YOUR machine attached to YOUR network? No way. Generalized memory advice that emphasizes the minimalist nature of things is almost always worthless. Because many applications have become both feature-heavy and bloated with extra code they may never need, they take up more disk space and use more memory than earlier versions. Expect to add memory to accommodate these increases and to handle System 7.5.5’s increased load.

- **Keep virtual memory use as low as possible.** Virtual memory, as implemented under System 7.5.5 is S-L-O-W. It’s nothing like the demand-paging algorithm implementations that some of you may be familiar with on a mainframe IBM machine or a hot UNIX workstation. Repeat after me: I won’t use System 7.5.5’s virtual memory unless I need to run a large application that wouldn’t run otherwise. Now, don’t you feel better?

- **If you want to add RAM but can’t afford it, buy RAM Doubler.** RAM Doubler 2 (from Connectix) does just what its name suggests and it works with any modern Macintosh. Install it and forget it.

- **Disk space is cheap, so have lots around.** You can buy 500 MB of fast, reliable hard disk space for what 250 MB cost you just a few months ago. There’s no longer any reason for Macintosh users and managers to skimp on disk space. If you can afford Macintosh
computers, you can afford the necessary hard disk space to get the most from your investment.

- **Partition hard disks into smaller logical volumes.** This will help prevent logical disk failures from zapping everything on a big disk (when the directory blocks get wonked, for example). I've used partitioners from Symantec (Norton Utilities 3.2), Alsoft (MultiDisk), IDS (IDS Express), FWB (Hard Disk Utilities), and others. I like the FWB product the best, because—for my needs—it offers the most flexibility in setup and use. Plenty of others work well too. One reasonable strategy here is to simply buy one that has the features that meet your needs.

- **Back up your hard drives early and often.** Use Dantz's Retrospect. Buy an APS DAT drive. Save your sanity. They are simply outstanding in concept, design, and execution. (Yes, the price could be lower, but that's always the case.) We use them as the standard backup software/hardware combo at the University of Chicago. Many other backup programs also work well and you'll find dozens to choose from—regardless of your backup media.

- **Don't expect a networked fileserver disk to do the work of a local one.** This is really a by-product of my caveat on buying large hard disks. Buy them and use them—large hard disks, that is—where individuals have lots of data on which they (exclusively) work. Don't use those same disks for shared data (workgroup) files. Also, don't use them for shared applications, unless the application really works well that way (few do).

- **Buy your memory SIMM chips and hard disks from reliable vendors.** Sounds like a sophomoric no-brainer, right? Ask all those people who bought from the old Jasmine and Mirror companies (before they went bankrupt) and now have broken disks that should have been covered by the warranty, what they thought about Jasmine and Mirror at the time they purchased the products. Today's "reliable company" is tomorrow's chapter 11 headline. Selling hard disks is a tough business. Profit margins are razor thin. Support is hard to provide, because it narrows those margins even more.
Before you buy, ask yourself how long the company has been in business and how long you think it will stay that way. Consider buying from vendors who make more than hard disks (their diverse product lines may keep them in business longer). Also consider the kind of drive mechanism you are buying and how costly it may be to repair in the absence of the original vendor.

If you don't have expertise in this area, then you'll want to read hard disk and memory chip reviews and feature stories that frequently are carried in *MacWEEK, Macworld, MacUser, InfoWorld, BYTE*, and other computer magazines. You occasionally will find hard disk and memory tutorial articles in *MacUser* and *Macworld*, and disk technology tutorials in *BYTE* and *PC Magazine*. Depending on your interest and tolerance for the bits and bytes, you also may consider reading the technology "white papers" that hard disk and memory manufacturers occasionally publish. Also, check into local user groups, as well as BMUG and B.C.S., to see what they have to say about memory and disk vendors. For my money, however, APS is the only vendor to buy hard disks from (they are ultrareliable, fairly priced, and offer great service). For RAM purchases, buy mostly by price.

**Whether to Install It at All**

If you, like some Macintosh users, are contemplating the installation of 7.5.5 on a Macintosh with 8 MB of RAM, you need to make some hard decisions as to whether to install PowerTalk and GX or not. The obvious clues don't make for automatic decisions. You may think, for example, that not having a Macintosh connected to a network would make leaving out PowerTalk a no-brainer. (Of course, PowerTalk does shine when you're connected to a LAN.) However, PowerTalk gateways for CompuServe, faxing, and paging make it useful on a stand-alone Macintosh as well.

You should also consider the RAM question before you install system extensions, control panels, and so on. These can eat up RAM in a hurry. Ask yourself if the RAM penalty is really worth the utility (or entertainment) that the latest software doodad will provide. Plus, the more "stuff" you have
installed, the more likely conflicts and other nasty problems are. So, make intelligent decisions about what you put in your machine and be aware of the trade-offs that you are making.

Of RAM and ROM

As with System 7.x, you have two primary data and application storage areas with System 7.5.5: RAM (random access memory) and disks (floppy and hard disks are two primary types). System 7.5.5 also uses memory on your computer that you can’t change: the ROM (read-only memory). The ROM contains the startup code for your Macintosh and holds much of the so-called ToolBox code for things like QuickDraw and different System services.

RAM is where all the volatile stuff (including the parts of the System that are loaded from disk) is stored while your Macintosh is turned on. The second that you turn off the machine or the power is lost, everything in the RAM goes away. Floppy and hard disks, of course, don’t lose their contents when the power is cut, because they rely on magnetic effects to hold your data.

This much hasn’t changed since System 7.x. But Apple has improved the ways that RAM and disks are used, and it has improved memory performance as a result.

Every time that you switch on a Macintosh, the System gets loaded from the startup disk. Each application that you launch also gets stuffed into RAM, until you quit that application. Even if you hide the application using the Hide command in the Application menu, the program stays in RAM.

Because of this, you can fill all of your available RAM under System 7.5.5 in a hurry. Earlier today, for example, I was wondering why the Macintosh 660AV I was using was acting so sluggishly. So I opened the Application menu and was astonished to see that I had several applications running. I had forgotten to close the ones I wasn’t using, having hidden them instead with the Hide command. When I used the About This Macintosh command in the Apple menu, I found that I had almost no free RAM space left, which contributed to my machine’s sluggish behavior (see figure 7.1).
Even though System 7.5.5 gives you good control over the use of your RAM and allows you to supplement it with virtual memory, you should remember that RAM is still precious. Abusing it will almost always cause you problems—ranging from the slowdowns I just mentioned to more serious ones.

One of the benefits of the System 7.5.5 installer is that it makes it easy to install only the parts of the operating system you want and remove those you don’t want. Two of the major features of 7.5.5, PowerTalk and QuickDraw GX, have separate installers, because of the realization that they add significantly to the operating system’s RAM requirements. Of course, if you’re determined to squeeze 7.5.5 onto that 4 MB machine, PowerTalk and GX are prohibitively RAM-hungry.

Remember that System 7.5.5’s significant number of extensions—which run the gamut from AppleScript to WindowShade—do part of the work that third-party extensions used to accomplish. You can, of course, scale back on...
these using the Extensions Manager. On the other hand, System 7.5's extensions have not been so complete as to shut out innovative third parties. If you're determined to run the best-of-breed utilities from Norton and Now, remember that these, too, suck up RAM.

After you've honed System 7.5.5 to a RAM consumption level in sync with your computer's RAM capacity, you should turn your attention to applications. The good news is that, one day, Macintosh users won't have to worry about allocating memory to applications; they will dynamically take what they need. Until then, you are relegated to the application's Get Info window, which provides information on Suggested, Minimum, and Preferred application size.

**Of RAM and Macs**

If you read chapters 2 and 3, you already have a pretty good idea how the Memory control panel works to control System 7.5.5's RAM and virtual memory. Even so, because this chapter lives and breathes memory, it seems a good place to review the Memory control panel one more time. If you or your staff don't understand its use, you will likely shortchange either your use of applications or your performance.

**The Disk Cache**

The Memory control panel gives you direct control over three or four different memory-related system functions: the disk cache, virtual memory, control of the RAM disk, and 32-bit memory addressing (see figure 7.2). (You may notice that in figure 7.2, you don't actually see a control for memory addressing. That's because the machine I was using at the time always uses 32-bit addressing. So, depending on the machine you are using, you may or may not have control over this. If you don't, don't worry about it; that means you have a modern Mac and so are better off than some.)
The disk cache, which is always on under System 7.5.5, has been improved from the old System 7.x cache. The disk cache creates an area in RAM where it stores frequently used data and parts of programs that would otherwise be pulled from the disk. (RAM is always faster than disk—thus the theoretical speedup when using a disk cache.) The smallest disk cache size that you can create is 16K. The largest size depends on how much real RAM (you can’t use virtual memory as a disk cache, because that wouldn’t make any sense), that you have installed on your Macintosh. The maximum disk cache size—if you have 32 MB of real RAM—is 7680K. Sixty-four megabytes or 128 MB of real RAM would allow even larger disk cache sizes.

A controversy has raged for years concerning the use of the disk cache, probably because of the poor performance of the old disk cache under System 6.x. Plenty of the Mac-wise are advising that only the default minimum cache (16K) be used. They claim to have better read- and write-through performance with the minimal cache than with anything above the 16K level. While I certainly would be the first to join the “bashing the disk cache” bandwagon if I thought it were warranted, in this case it isn’t.
I have performed timed tests under a variety of circumstances on a variety of my own Macintosh computers and those in our labs. I also have performed the same with some of my consulting client’s machines and I’ve seen the results of Apple’s own tests. The numbers don’t lie. For the vast majority of users and Macintosh configurations, the bigger the disk cache, the better the performance. Apple has said so publicly in its own System 7.5.5 literature, in magazine interviews, and through postings online. This time, I agree with Apple. Crank that disk cache up as high as you can, without taking away valuable RAM needed for applications. A good rule of thumb is to increase the cache by 32K for every 1 MB of RAM you have installed.

It doesn’t make much sense, of course, to steal RAM for the disk cache if you have to turn around and use virtual memory to get enough contiguous RAM space to run a large application.

Another case where a large disk cache may be counterproductive is with third-party SCSI and SCSI/2 NuBus controller cards. These cards (the excellent ones made by DayStar Digital top my list) already contain their own high-speed burst cache memory to help accelerate the rate at which they can read and write data to disks attached to them.

By setting System 7.5.5’s own disk cache to anything but the minimum 16K, you will slow down these cards. Keep in mind, however, that to get the maximum speed benefit from such SCSI cards you will have to make sure that all of your external hard disks are attached to the card’s SCSI chain. If you use the Macintosh computer’s built-in SCSI, you won’t get the benefit of the SCSI acceleration, nor will you have the improved performance offered by the System’s own disk cache (because you will have turned it to 16K when you install the SCSI card).

The real bottom line is much less straightforward. Expect to spend some time fine-tuning the disk cache on your own and your Macintosh users’ machines to get them the best combination of fast disk access and enough RAM to run major applications without a virtual memory assist.
Virtual Memory

I discussed virtual memory earlier in chapters 2 and 3, but I'll go into some detail here about its use under System 7.5.5. Virtual memory refers to using your hard disk in such a way that it acts like an extension of your physical RAM. The operating system process for accessing this virtual memory is called variously paging, demand paging, or disk paging. The name refers to the process of taking stuff from the hard disk and putting it back, with the operating system and all of its applications acting as if it were the real McCoy (RAM).

Because the process is a little more complicated than that, let me try to explain it. In fact, understanding virtual memory will give you some important insights into how System 7.5.5 works. System 7.5.5 is probably not the first time that many of you have been exposed to virtual memory on the Macintosh. Several application vendors have built virtual memory implementations into their software so that their programs would run without using all of your RAM.

Remember that physical RAM comes from Single Inline Memory Modules (SIMMs) installed in your Mac. These SIMMs also can be referred to as real memory—that is, the silicon chips themselves are installed for the express purpose of providing the Macintosh with the instant storage and operating space that it needs to load System 7.5.5 and the application programs that you want to use, plus some fraction of their data.

Real memory is not the same as your hard and floppy disks, however. When you turn off the power on your Macintosh, disks retain their contents because the data has been magnetically encoded on them, but real memory loses its contents. That big spreadsheet you have been working on, for example, will go away if you accidentally pull the plug on your Macintosh, unless you saved it to disk beforehand. While disks are used for the long-term storage of applications and data, real memory is used by the Macintosh for instantaneous operations such as word-processing or spreadsheet calculations on which it is currently working. That's one reason why you have so many megabytes of disk storage, but far less real memory—the Macintosh just doesn't need as much RAM as it does disk space to get the job done for you.
The RAM You Need

But the Macintosh does need more RAM than it did when it was first introduced back in 1984; and System 7.5.5 is the worst yet at sucking down the RAM.

If you recall, those initial Macintosh computers had only 128K of RAM and a 400K floppy disk drive. Yet, despite those small capacities (by today’s standards), you could run System 1.0, a couple of applications (MacWrite and MacPaint—which was pretty much all that existed at the time), and still have some data—all in RAM. Today, of course, you would be lucky to fit an old-style desk accessory into 128K of real memory. System 7.5.5 needs more than 4 MB just to load a basic version with just a few fonts installed!

Fortunately, today’s Macintosh comes with more than the standard 128K of real memory that the 1984 versions sported. In fact, Apple does not sell any Macintosh computers today without a minimum of 4 MB of RAM installed (8 MB for Power Macintosh computers). But even 4 MB/8 MB of real memory, as we have seen, tends to be pretty lightweight when it comes to running System 7.5.5 and applications.

That’s why I recommend a minimum of 16 MB of real memory in every Macintosh that will run 7.5.5, and 32 MB for every Power Macintosh (because of 68K emulation and other features, the Power Macintosh currently takes about twice as much RAM as 68K Macintosh computers to run the same software). This will allow you breathing room for QuickDraw GX and PowerTalk, too.

The VM You Get

But not everyone can afford to upgrade their computers to 16 MB of RAM (and many computers, such as the Macintosh Plus, Macintosh SE, and Macintosh Classic cannot be upgraded beyond 4 MB), because RAM isn’t free (although you can now buy a one MB SIMM for less than $35, installed). Apple realized this, and it also realized that even users of Macintosh models with lots of RAM may occasionally like to be able to increase their real memory space—say to run several very large programs like AutoCAD, Live Picture, and Photoshop.
That's what the virtual memory (VM) implementation in System 7.5.5 is all about—allowing you to get more RAM for the System and your applications without actually having to open the case and install more SIMMs. Virtual memory works this magic by using part of your hard disk as if it were an extension of your real memory. System 7.5.5's virtual memory operates by moving information from your real memory (RAM) onto free space on your hard disk, then pulling the information back when it is needed to continue an operation.

This movement of information back and forth from the hard disk is called disk paging or page swapping. The names come from the mainframe idea that a logical "page" at a time of data is swapped back and forth when virtual memory is used. Virtual memory under System 7.5.5 provides two basic benefits: it frees up real memory for use on more important tasks and thus makes those tasks go faster (because real memory is faster than any virtual memory on a hard disk), and it gives you more memory space with which to work.

The latter is probably the most visible benefit of virtual memory under System 7.5.5. For example, suppose you have a Macintosh Performa 575 with 8 MB of RAM installed. Then, let's say that you want to run Microsoft Word and Excel, Claris' Filemaker Pro, and Acius's 4th Dimension at all times, while occasionally running a couple of smaller applications as well.

With only 8 MB of RAM, you would be out of luck and out of RAM. But suppose you have virtual memory turned on. With virtual memory you could specify a hard disk to be used to extend your real memory space by disk paging, and you even could control the amount of virtual memory you want. The more virtual memory you request, however, the slower things will get. This is because you would be using the hard disk most of the time as virtual memory space, and your hard disk is much slower to read and write than your RAM SIMMs. So you need to strike a compromise between having just enough virtual memory turned on to run all the applications you need, and having too much turned on, thereby slowing down your Macintosh. In fact, if you were to go overboard with virtual memory by requesting some very large megabyte number, you would find that most of the computer's time would be spent paging to and from disk, rather than running your applications.
A good rule of thumb is to never more than double your real memory with virtual memory.

I've yet to be happy on any Mac when I set the virtual memory to be anything larger than half the available RAM. The whole point of virtual memory is to have it available only when it's absolutely necessary to load very large applications or run many applications at the same time. Using it in everyday situations as if it were as fast as real RAM will quickly lead to disappointment and frustration.

Keep in mind that when you set a virtual memory partition of say, 16 MB, in the Memory control panel (which doesn't take effect until you restart), the System actually blocks out a space on the hard disk equal to 16 MB, plus an amount equal to your machine's installed RAM. In the case of my trusty accelerated IICi, which has 32 MB of RAM installed, creating an additional 16 MB of virtual memory results in the System blocking out 48 MB (16 + 32) on the disk for virtual memory. If you are running short of disk space, then virtual memory is certainly not a quick fix for insufficient RAM.

The minimal Macintosh configuration you need to take advantage of virtual memory is a 68K CPU with a paged-memory management unit built-in (68030, 68040), added on (68020), or a Power Macintosh PowerPC CPU.

32-bit vs. 24-bit Addressing

Physical memory addressing (sometimes called RAM addressing) easily can be confused with virtual memory. But the concepts are two completely different means to the same end: getting more application space to run software. On the Macintosh, the memory addressing issue can be reduced to a simple dichotomy: 32-bit addressing versus 24-bit addressing.

There is a lot of confusion about what 32-bit addressing really means. I know that I deal with this stuff everyday and I still can confuse what 32-bit addressing "really means" with what it "ought to mean." The confusion stems from the overuse of the term 32-bit as some sort of performance mantra. 32-bit QuickDraw, 32-bit color, 32-bit this, and 32-bit that are all out there and each has nothing to do with 32-bit memory addressing.
32-bit memory addressing mode simply refers to the use of all 32 bits of address space by any Macintosh CPU capable of it (the 68020, 68030, and 68040), and the recognition of the System that all of those 32 bits are being used to reference addresses in memory. Assuming that everything else can take advantage of 32-bit addressing to the maximum, a Macintosh with 32-bit addressing turned on in the Memory control panel can address up to 4000 MB or 4 GB of memory (2 raised to the power of 32 memory addresses).

All of this is moot, however, because 16 MB SIMMs are generally the largest available today through normal memory vendor channels and 16 MB SIMMs are still expensive themselves. (Not to mention that the cost of installing upwards of 4 GB of RAM would be astronomical if it were even possible.)

Rather than installing anything like 4 GB of RAM in your Macintosh, a better plan is to top out at 128 MB (which should be more than enough to load dozens of very large programs and always keep them open), and use some memory beyond what is required to keep your applications running as a fast RAM disk, which we will discuss in a bit (the DayStar RAM Nubus PowerCards are especially adept at this use). Many good shareware and other third-party, software-based RAM disks also exist, plus the one you get in the Memory control panel.

Don Crabb Bottom Line Tip
Of course, your Mac may not have the capability to install 128 MB of RAM and you may not have the resources to purchase that much for your machine (especially if you are using your Mac at home). Don't worry about it. Many users can get along with much less, such as 16, 24, or 32 MB of RAM, even in work situations. The bottom line is that you should have as much RAM as you can reasonably afford.

The amount of RAM you need also depends on the tasks for which a particular Mac is used. A Mac exclusively (and I do mean exclusively) for word processing can get by with 8 or 16 MB of RAM. But, a Mac used for high-end graphics and video
processing needs to have 128 MB or more. So, as with most things, you have to determine your RAM needs based on your particular situation (tasks, resources, and so forth). But remember the minimums that we talked about earlier. You WILL be very unhappy if you try to scrape by with less than these minimums.

24-bit addressing mode works just like 32-bit, except that only the first 24 bits of a memory address are actually parsed by the CPU and understood by the System. This limits any 24-bit addressing mode on a Macintosh to using no more than 8 MB of memory (machines like the Macintosh Classic have ROM limitations that further constrict this amount), which was also the limit under System 6.x’s 24-bit only addressing mode.

In fact, until the release of System 7.0, Apple’s system software ignored the top 8 bits of any memory address, using only the lower 24 bits, so that 24-bit addressing was the norm. With the release of System 7.0, Apple finally acknowledged the importance of those additional 8 bits of memory addresses. In short, System 7.0 qualifies as being Apple’s first 32-bit clean system, and System 7.5.5 continues that tradition. Initially, Apple made this an option, rather than the default, because some application programs were not 32-bit clean.

To turn on 32-bit addressing (assuming that you have a Macintosh that provides this option), go to the now familiar Memory control panel and check the radio button marked 32-bit addressing. Like all the other controls in this control panel, this change won’t take effect until after you have restarted your computer.

**MODE32**

What if you have an older Macintosh capable of 32-bit addressing, except for its 32-bit dirty ROMs? Connectix has released an updated MODE32 to work with System 7.5.5, and Apple has dropped development for its solution—which never seemed as stable anyway. The 7.5.5-compatible version is called MODE32 7.5.5, and is widely available from America Online, CompuServe, the Internet, and users’ groups.
What Does 32-bit Addressing Get You?

32-bit addressing offers Macintosh users the capability to work with very large data files and applications as well as the capability to run many applications concurrently. On my Macintosh IIci, which has 32 MB of RAM installed, I can run dozens of applications simultaneously—although as a practical matter, I don’t often have more than six programs launched at once.

As such, 32-bit addressing will be most attractive if you’re working with large memory-intensive programs, like computer-aided design (CAD) behemoths such as AutoCAD, color drawing and photorealistic imaging software such as Macromedia FreeHand, Adobe Illustrator, and Adobe Photoshop, relational database systems such as 4th Dimension and FoxBASE, and programming language systems such as MPW/MacApp, SmallTalk, and HyperCard.

While 32-bit addressing may seem to benefit a small percentage of your Macintosh staffers today, users can expect to see powerful “general purpose” tools benefit from 32-bit addressing in the very near future that just weren’t possible to create under smaller RAM constraints.

To sum up the 32-bit issue, consider that in order to use 32-bit addressing you must have either a newer Macintosh with a paged-memory management unit built in (68030 or 68040), added externally (68020), or with a PowerPC CPU. If you have an older Macintosh model with ROMs that are not 32-bit clean (that means they know not to use the top 8 bits of memory addresses for any non-memory purposes), you will also need a copy of MODE32 from Connectix.

OptiMem and RAM Doubler

The good folks at Connectix Corporation have a proud history of beating Apple to the punch on many technologies, particularly in the memory management field. Among Connectix’ credits are the first virtual memory implementation for the Mac (Virtual), the first software that allowed Macintosh users to break the 8 MB RAM barrier (Optima), the first software that “cleansed” ROMs that weren’t 32-bit clean (MODE32), and first-class RAM disk software (Maxima). (The company recently created a sensation with its first hardware product: a $100 grayscale camera that may finally bring QuickTime to the masses.)
Not content to merely have a faster and more efficient form of virtual memory, Connectix created RAM Doubler. In the simplest of terms, RAM Doubler doubles your RAM. If you have 8 MB of RAM, it gives you 16; if you have 40, it gives you 80. There are only a few caveats to its use:

- Your Mac must have a PMMU (paged-memory management unit, either external to a 68020 CPU, internal to a 68030 and 68040 CPU, or internal to any PowerPC). This is required for virtual memory as well.
- You must have at least 4 MB of real RAM.
- RAM Doubler cannot currently double more than 128 MB of RAM.

Is it safe? Astonishingly so. The rule of thumb is simple: if a program works with virtual memory, it practically is assured that it will work with RAM Doubler. As a corollary, RAM Doubler is an effective substitute for virtual memory in allowing you to run more applications than you would normally be able to accommodate. Checking About This Macintosh reveals total memory to be twice as much as your installed RAM when you have RAM Doubler installed (see figure 7.3).

**Figure 7.3** Total memory with RAM Doubler installed

RAM Doubler accomplishes its magic through three techniques. First, it takes memory allocated to, but unused by, applications and makes it available to all applications. Second, it compresses memory used in tasks unlikely to be
repeated by an application, such as code that launches the program. Finally, if the performance hit of compression will be too great, it sometimes puts compressed data on the disk in its own, fast virtual memory scheme.

For sheer convenience and simplicity, RAM Doubler is about the best memory expansion you can get, but if you don’t have a PMMU in your Macintosh (older Macintosh IIs and “classic” 68000 CPUs such as the Macintosh Plus, SE, Classic, and PowerBook 100 models) you may wish to consider Jump Development’s OptiMem. OptiMem allows applications to run in their minimum RAM configuration and grabs more memory out of the remaining RAM as the application needs it. OptiMem requires more configuration than RAM Doubler, and has some compatibility problems with some applications, but it works with every Macintosh from the Plus on up.

**Modern Memory Manager**

The Power Macintosh computers brought with them yet another addition to the growing Memory control panel family—a simple control for toggling the Modern Memory Manager (MMM). When using virtual memory, or better yet Connectix’s RAM Doubler, the MMM takes advantage of the memory management capabilities of the PowerPC, loading fragments of native application code into memory as they are needed, easing the application’s RAM requirement. For example, the native application QuarkXPress requires more RAM when virtual memory is turned off, but drops down when virtual memory is turned on when running on a Power Macintosh.

To determine the savings that can be gained by using the Modern Memory Manager and virtual memory, select the application and choose “Get Info” from the File menu. In addition to the familiar Minimum, Suggested, and Preferred RAM values is a note that the RAM requirements will decrease or increase depending on whether virtual memory is turned on.

Turning off the MMM seems to cure most of the minor compatibility problems applications had in Apple’s otherwise stellar job of preserving compatibility in the shift to PowerPC.
The Modern Memory Manager is also fine-tuned to a RISC processor's memory usage, which yields better performance.

**RAM Disks**

A RAM disk appears on your desktop (see figure 7.4) and is treated like a small hard disk, but it has no magnetic media; its contents are stored in RAM. With RAM several orders of magnitude more expensive than hard disks, why would you want to devote a portion of this precious fast memory to the usually menial chore of storage? It's sort of like renting a Park Avenue penthouse to store the stuff that won't fit into your crowded apartment.

![Figure 7.4 A RAM disk on the desktop](image)

There are two reasons why you might want to use a RAM disk: speed and battery preservation.
First, let’s talk speed. There is virtually no access time required when retrieving information from RAM. Therefore, keeping a document, application, or even a System Folder on a RAM disk dramatically speeds operations such as opening, scrolling, and saving—anything for which the Macintosh would normally slow down in order to access the disk.

Now, the battery reason. While virtually everything in a PowerBook consumes some precious battery life, RAM is far more miserly than hard disks. Placing the System Folder, applications, and documents on a RAM disk virtually eliminates disk access. Using a RAM disk, you then can use the Control Strip or a third-party product such as the excellent PBTools to “spin down” the hard disk and extend your battery life by 20 percent or so.

Apple’s Memory control panel allows you to allocate a portion of your RAM as a disk, but caveat emptor: saving is done to the RAM disk, not to your hard disk or floppy. This means that everything on the RAM disk is vulnerable to a loss of power. Thus, when the power is turned off (whether intentionally or not), *everything* that was on the RAM disk is history, lost forever, I mean gone.

Because of this, you are not likely to make use of RAM disks unless you are using a PowerBook, where the risk may be outweighed by the battery savings. There are a number of third-party utilities to help you work effectively with RAM disks, but let me just say that if you use a RAM disk, be very careful so that you don’t lose your important work.

**Managing Memory**

There are a number of techniques you can use everyday to help you manage your memory requirements. Let’s take a look.

**The Application Heap**

Under System 7.5.5 (and earlier versions for that matter), applications share the total memory heap (RAM, virtual memory, and so on) available. Sometimes you will need to determine how much memory an application should be allowed to use in order to make your Mac work like you want it to.
In order to determine the memory allocation of any application, you should select the About This Macintosh command from the Apple menu (see figure 7.5). This status box displays all of the applications that you are currently running and shows how much memory each is using. It also shows how much memory is available for opening new applications with the label, “Largest Unused Block.”

![About This Macintosh](image)

**Figure 7.5 About This Macintosh revisited**

When you try to open another application that is larger than the “Largest Unused Block,” you will get a warning such as, “Not Enough Memory To Run the Application, Try Quitting Another Application First.” (The advantage to having lots of RAM is that you don’t have to see this message much.)

You can change the amount of RAM that each application requires by using the Get Info command in the Finder’s File menu. To do so, click on the application for which you want to change RAM settings, select Get Info, and you will see a window like that in figure 7.6.

The Suggested size is what the developer recommends to ensure desirable application performance. Of course, developers often have no idea to what obscene lengths you will try to stretch their software, so keep in mind that this means “in normal use.”
The amount of memory used by the System Software is also shown in the About This Macintosh window; this amount depends on several factors, including how many fonts you have installed your System, whether or not you have file sharing enabled, and the number of System extensions you have in your Extensions folder.

*Mac Basics*

The amount of memory used by the System Software is also shown in the About This Macintosh window; this amount depends on several factors, including how many fonts you have installed your System, whether or not you have file sharing enabled, and the number of System extensions you have in your Extensions folder.

![Adobe Premiere 3.0 Info](image)

**Figure 7.6** Using the Info window to change application memory requirements

The Minimum size is the bare amount of RAM that the application needs to launch. This should be generally the same as or slightly larger than the Suggested size unless you are doing something weird with the software. You should avoid setting the Minimum size below the Suggested size. If you do, be prepared for surprises (mostly nasty ones).

The Preferred size is where you get to dictate what the application memory should be—if that much is available. Many applications seem to do well with an allocation that is somewhat higher than their Suggested size. You may need to experiment to determine the right RAM allocations for your applications, but always be aware that shaving the requirements too close to the bone may be an invitation to stripped functionality or stability problems.

The way it works is like so. When you launch an application, but there is less than the Minimum amount of RAM available, you get the ever popular Not Enough Memory message. When you launch the application and at least the
Preferred amount is available, that much is set aside for the application to use. If you launch the application and something between the Minimum and the Preferred amount is available, the application uses whatever is available. Got it?

File Sharing’s Effects on Memory Usage

File sharing requires approximately 268K of extra memory to operate properly. On a 4 MB Macintosh, the System software already uses between 1100-1900K, which doesn’t leave much slack. If you expect to run file sharing a good deal of the time on 4 MB Macintosh computers, then you had better get used to running with a minimal System configuration (few fonts, INITs, and so on) on those machines. A better strategy is to upgrade them to at least 8 MB of RAM (16 MB would be even better).

Resetting Parameter RAM

Every once and a while, you will need to clear all of the settings that have accumulated in your computer’s parameter RAM (PRAM). Things like the repeat frequency for keys or the tracking rate for the mouse may all need to be reset. You can, of course, diddle with the individual control panels for each of these settings to get it back to the Apple default setting, but a quicker strategy is to simply reset PRAM when you restart. Here’s how you do it:

1. Hold down the ⌘, Option, P, and R keys simultaneously.
   This is definitely a two-handed task.
2. Restart your Macintosh and wait until you see the “Welcome to Macintosh” screen. Continue holding these keys while the Macintosh restarts.
3. That’s it. You now have reset the entire PRAM.

Now you can enjoy resetting a whole bunch of stuff. Have fun!

Mac Basics

RAM also may have an effect on application speed. The more RAM an application can access, the greater portion of a document it can keep open and not access from the disk. Some graphics or 3-D applications can consume huge amounts of RAM. Here, the performance gains from adding RAM can be dramatic. For example, Adobe recommends that you have twice as much RAM available as the size of the document on which you’re working.
SCSI Manager

System 7.5.5 extends the availability of SCSI Manager—previously available only for Power Macintosh and AV Macintosh models—to the entire Macintosh line. One of the main benefits of the new SCSI Manager is that it supports asynchronous data transfers, which means that the computer's CPU can turn its attention elsewhere while data is coming from the hard disk. Drives don't need to be formatted with SCSI Manager-aware software in order to work with the new SCSI Manager, but access times may be dramatically slowed if the driver is not compatible.

While you'll want to avoid this slowdown, there aren't many applications that take advantage of the new SCSI Manager yet. Dantz Development's Retrospect is one exception.

The good news is that two of the best third-party formatters now work with SCSI Manager. FWB's Hard Disk Toolkit is SCSI Manager-savvy as of version 1.6, while Casa Blanca Works made the grade with version 3.0 of Drive7 (see figure 7.7). APS PowerTools 3.0, which is based on Drive7, is also compatible. The lesson from the driver sagas is that you should keep abreast of the latest version of your drive formatter, and stay current to minimize problems with new OS releases and hardware.

![Drive 7](image)

**Figure 7.7** Drive7 3.0 is SCSI Manager 4.3-savvy
Working with Disks

As you know, RAM is the memory you use while you are working, but you need to store the results of your labor so that it will be available to posterity (well, at least until you need it again). To store the fruits of your labor, there are several types of "disks" that you will use during your Mac expeditions: hard drives, floppy disks, SyQuest cartridges, and so on. We're only going to talk about hard drives and floppy disks here as the other types are less frequent, but still very useful at times.

On Formats

Every disk has some type of format; the format is, basically anyway, the structure in which the data is recorded in the disk's media. To be usable, each type of disk must be formatted properly.

In the ancient days of the Mac, the format was called Macintosh Filing System (MFS). This format was used for the 400K floppies that were the only media used by Macs in those days (remember, this was before Macs came with hard drives). If you have some really ancient stuff on 400K disks, don't worry about it. Just copy the stuff onto 800K or 1.44 MB floppies. You might have a few troubles, but I doubt it. That's about all you need to know about the MFS.

In more modern times, the Mac uses the Hierarchical File System (HFS) to format disks. Hard disks and floppies both work the same as they did under previous versions of System 7. All you need to do is make sure the driver for your hard drive is updated to be fully System 7.5.5 compatible. Fortunately, this is very easy to do.

Non-Apple Drives

If you have any non-Apple hard drives, you will want to call your hard disk drive vendor to obtain a copy of their latest System 7.5.5-compatible software so that you can update the SCSI drivers on those disks and partition and otherwise manage the drives properly.
Apple Drives

If you have Apple hard drives, you should update all your drives' software before installing System 7.5.5. The process is very simple and painless. Note that this process does not affect the data on your hard drive.

1. Locate the System 7.5.5 floppy disk named “Disk Tools.”
2. Shut down your computer and restart it with the Disk Tools floppy inserted in your disk drive (boot off the Disk Tools disk).
3. Launch the program Apple HD SC Setup.
4. Click the Update button. Make sure you do not use the initialize option. If you do, you will be very sorry you did.
5. When the program is finished, click Quit.

That's it. Now the driver has been updated to be fully compatible with 7.5.5.

By the way, you can move hard drives between Macintosh computers running System 7.x and System 7.5.5. When a hard disk is moved from System 7.x to System 7.5.5, you will see a dialog box during bootup that states “This disk is being updated for new system software.” This process does not touch any data on your disk. The message means that the System is creating a new System 7.5.5 desktop on that hard disk. Afterwards, you may use your hard disk as usual.

When a hard disk is moved from System 7.5.5 back to System 7.x, you will notice a few differences under System 7.x. First, you should rebuild the desktop of the hard disk by holding down the ⌘ and Option keys while restarting the Mac. If you don't do this, the first time you go back to System 7.x, some icons may not appear properly.

Users of non-standard SCSI media, like WORM drives (Write Once, Read Many), Read/Write Optical Drives, Bernoulli Drives, SyQuest Drives, DAT and 8 MM tape drives, and other SCSI storage devices should contact your vendors about obtaining System 7.5.5-compatible drive management, partitioning, and backup software. With the use of file sharing to setup ad hoc workgroups, the use of shared non-standard storage media is likely to
Chapter 7: Improving Your Memory

grow. Now is the time to get everyone and everything on the same System 7.5.5 page.

IDE

Unfortunately, at press time neither Drive7 nor Hard Disk Toolkit could format the internal drives in the Quadra 630, PowerBook 150 and future Macintosh computers targeted toward the budget-conscious. The internal drives on these machines use an interface long popular in the PC-compatible world, but brand new to the Macintosh. IDE, or Integrated Drive Electronics, limits drive size and daisy-chaining more than the SCSI system used since the advent of the Macintosh Plus. However, the interface for IDE is less expensive than SCSI, while the quality and speeds of the drives are virtually the same.

The HD Toolkit now supports IDE drives, SCSI-1, SCSI-2, Fast-Wide, and even RAID (levels 0, 1, and 5) hard disks. If you plan to use 7.5.5 with a Macintosh with an IDE third-party drive, make sure you contact the drive vendor to obtain a 7.5.5-compatible driver.

That’s about all there is to working with disks with System 7.5.5. Easy, ain’t it!

To Upgrade or Replace, That is the Question

Now that you know how to work with your current Mac’s memory, you should think about your Mac’s capabilities. Is your machine (or those you manage) sufficient for what you need to do? Should you not be blessed with the latest and greatest Macs and find that your machine (or machines) can’t quite cut it, you have four basic choices. The first is to upgrade the Mac (or Macs) you have with more RAM, an accelerator, motherboard replacement, and so forth. Second, you can buy new machines. This is often the best option and amazingly enough, not always the most expensive. Then there are always the third and fourth alternatives: not upgrading to System 7.5.5 at all, or running System 7.x on computers that can’t utilize all of 7.5.5’s
features. (But, since this is a System 7.5.5 book, I'm going to assume that number three and four just won't do at all.) What are the compromises involved in each decision?

If you upgrade your current Macintosh computers, you have to decide just how far that upgrade will go and how much you can afford to spend. What's the point of putting lots of expensive, large SIMMs into a seriously aging Macintosh model? Only you can answer that question. Just make sure you consider it carefully.

The single most important management issue in dealing with memory and hard disks is upgrade cost. If you have a Macintosh plant consisting of mostly small hard disk, 4 MB LCIs, for example, you are going to have to bite the bullet big-time, just to upgrade these machines to run System 7.5.5. Upgrading them beyond this basic level of 7.5.5-compatibility, however, really requires a machine replacement strategy and the budget to pull it off.

Because of its many enhanced capabilities, System 7.5.5 provides an excellent opportunity to replace those aging Macintosh models in your office with some more modern and capable silicon. As you do so, try to buy with the following guidelines in mind:

- Buying new Macintosh computers also gets you new power supplies, keyboards, mice, and sometimes new monitors. If you were contemplating the repair of older models with failing components, don't waste the money fixing the old stuff.
- If you buy new computers to take advantage of System 7.5.5's memory enhancements, will your old network setup be sufficient? Consider the load on your LAN and your old AppleShare server. With the increased traffic fostered by PowerTalk, file sharing, and network aliasing, you may need to jump to a LAN with a larger bandwidth (such as EtherTalk) or to an AppleShare server running on a faster Macintosh with larger server disks.

The other issues relating to memory and disk space pale by comparison (at least in terms of cost) to the machine upgrade issue, but it doesn't hurt to keep them in mind as you think about upgrading or replacing your Mac.
Chapter 7 Summary

A key to effective use of System 7.5.5 is knowing how to make the most of your Macintosh's RAM. RAM dictates how many applications you can have open at once; insufficient RAM may limit the size of documents you can work with or the kinds of operations you can perform on them.

Virtual memory and RAM disks can put RAM and hard disks in each other's roles. RAM disks can be useful for optimizing PowerBooks, while virtual memory allows you to open more applications than you normally could. RAM Doubler is a great alternative to virtual memory and works transparently to double your "real" RAM.

Having a hard disk driver that understands the SCSI Manager can have a profound effect on hard disk speed in Quadras and Power Macintosh models. Apple also is beginning to use internal IDE drives in its newer machines which pack plenty of speed at a lower cost, but you need to be careful to use an IDE-compatible driver and disk formatter if you have one.

Crabb's Computing Quiz for Chapter 7

Here's a short quiz to remind you of what you should be remembering about chapter 7. If you can't answer these questions, you know what you have to do.

1. What is a Virtual Memory? Does the MegaMemory course help?
2. What's the minimum amount of RAM you need to run 7.5.5?
3. What is a disk cache? How big should they be?
4. How does System 7.5.5 make it easier to manage System memory resources?
5. What part does Memory control panel play in all this?
6. What is the biggest issue you face concerning memory and System 7.5.5?
7. What alternatives do you have when considering memory and disk upgrades for System 7.5.5?
8. Which Macintosh models can take advantage of virtual memory?
9. Can you share 7.x and 7.5.5 floppy disks freely?
10. How much virtual memory can you safely use before performance takes a nosedive?

Answers to Crabb’s Computing Quiz for Chapter 7

1. The opposite of real memory. Not a chance.
2. 8 MB. 16 MB on a Power Mac. 32 MB to be happy. 4 GB if your name is Croesus.
3. A hunk of RAM that speeds-up hard disk accesses. About 32K for every 1 MB of RAM installed.
4. Haven’t been reading the chapters closely, have you?
5. Get this one wrong and you’ll be forced to buy a Doofus Guide to the Mac.
6. Not having enough of one and paying too much for the other.
7. Buy the RAM and the disk. Now, wasn’t that easy?
8. Hey, look ’em up sport.
9. If not, you’ve got a scoop.
10. 1 jillion bytes, or maybe somewhat less.
In this chapter, I'll discuss some successful management strategies for installing, user training, and support for System 7.5.5. I will try to sort out the different support options that you have available and comment on them—based on my experience and those of my cadre of Macintosh managers. If you are not a Macintosh manager, then you may not...
find this chapter as important as the others in the book. Still, many of the
strategies discussed here can be applicable to individual Macintosh users, so
read on!

While I have tried to cover as much ground as possible here, please know
up-front that THIS IS NOT EXHAUSTIVE! I could write an entire book about
getting, using, and managing Macintosh training and support. Rather, my
goal here is to provide you with enough pertinent information (coupled
with my usual mix of impertinent commentary) to help you sort out how to
deal with System 7.5.5 training and support issues.

I pay special attention to how you and your staff can prevent System 7.5.5
problems from happening by using the training and resources that you
already have on hand. When problems occur that you can’t fix on the spot,
I’ll give you some management strategies for dealing with them in the next
two chapters, chapter 9, "The Art and Science of Troubleshooting System
7.5.5," and chapter 10, "We All Need More Help, So Here's How to Get It."

To get at these support and training issues, this chapter is divided into three
themes: installing System 7.5.5, managing and supporting users, and
training issues. At the end of the chapter, you will find the usual summary,
and my computing quizzes and cheat-sheets (AKA answers).

What to Do Before You Install
System 7.5.5

Before you can train your Macfolk on System 7.5.5, you need to give them
the gospel about what they should do before installing it!

The Minimum System 7.5.5 Macintosh

Begin your pre-installation support by making sure that each of your users
have the minimum Macintosh configuration required to run System 7.5.5.
Check out what Apple says and then what I say. You be the judge.
The Official Version

Apple says those minimums are a Macintosh Plus or later with a minimum of 4 MB of RAM; for PowerTalk and QuickDraw GX, a minimum of 8 MB of RAM and a 68020 processor is required. When installed on Power Macintosh systems, System 7.5.5 requires a minimum of 8 MB of RAM; for PowerTalk and QuickDraw GX, a minimum of 16 MB is recommended. You also will need to be connected to an AppleTalk-compatible network to use most of PowerTalk's features, and you should be connected to a QuickDraw GX-compatible imaging device (such as a printer) to get real use out of QuickDraw GX.

And Now, Crabb's Eye View

Now, let's talk about some more realistic minimums. Your staff won't be happy—or will you for that matter—if it is running aging Macintosh computers (like the Macintosh Plus) as the platform for System 7.5.5. Part of being a good manager, or good Macintosh owner, is to determine when it's time to eighty-six that reliable old Macintosh and buy something more modern. System 7.5.5 presents itself at a very good time to do just that.

You can cut down on support problems later and make your System 7.5.5 training plans more effective by installing a modern Macintosh on everyone's desk.

The minimum Macintosh you should use to run System 7.5.5 is a Macintosh II with the PMMU (paged memory management unit) installed, 8 MB of RAM, and the MODE32, 32-bit memory utility installed (see chapter 7 for details). You'll also want at least 50 MB of free hard disk space so that you have room to grow with additional utilities from third parties.

These minimums mean that the following Macintosh computers—regardless of their configuration—are unacceptable as System 7.5.x engines: Macintosh 128K, Macintosh 512K and Macintosh 512K enhanced, Macintosh Plus, Macintosh Classic, Macintosh SE, Macintosh Portable, and the 68000-based Outbound portable computers. You can run System 7.5.x on a Macintosh
SE/30, but its small 9" monochrome screen makes it useless for QuickDraw GX screen work. The small size of the Macintosh SE/30 computer's virtual desktop also makes it problematic for PowerTalk-based work.

While you can run System 7.5.5 successfully with my suggested minimum Macintosh II configuration, you'll be happier (from a performance point of view) with at least a Macintosh IIcx or Macintosh IIci. And to really get the most out of PowerTalk and QuickDraw GX, you'll need to get a Macintosh Quadra 700 (or better) that is connected to an Ethernet network.

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**Don Crabb Bottom Line Tip**  
System 7.5.5 is also available in non-U.S. localized versions, including French, German, Japanese, and more than 32 other languages.

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After you work out your hardware situation, you must decide whether you will have your users install System 7.5.5 themselves, or whether you will do it for them. There are significant pros and cons to either installation schema. Let's explore them.

### Installation Schemes and You

Regardless of the installation method you choose, you must buy the necessary licenses and copies of System 7.5.5. Don't even think about piracy, you know better than that.

### Getting the 7.5.5 Copies You Need

If you are covered by a corporate, educational site, or right-to-copy license, now is the time to check with your local license administrator to determine the status of that license. You may discover that your specific installation license includes special materials or installation products from Apple (for its very large customers) that will make it easier for you to install a large number of copies of System 7.5.5 in a short amount of time.

If your local license does not include such products, you may want to consider buying a third-party installation aid, like Wave Technologies'
FileWave or Tech Works' NetInstaller. In any case, you need to come to grips with a fair number of System 7.5.5 installations in a more-or-less simultaneous manner. What you do not want to do is delay the installation on all your Macintosh computers for any significant period of time, because if you do, you will have the potential support headaches of both System 7.x and System 7.5.5 Macintosh computers being on the same network.

**User Installations**

In terms of sheer legwork, having your users install System 7.5.5 is considerably less strenuous for you. You need to make sure that each user has a copy of the 7.5.5 installation floppies or CD-ROM, or network access to a server with the 7.5.5 software available. For my money, if you have the network installed and the server space, nothing beats placing the 7.5.5 sources on the server and having users install from there.

If you choose the server method, your Mac users need to follow these steps (and consult the tips found in the section, "Before You Install"): connect to the server by mounting it on the desktop and then drag the current System suitcase into the Trash (but they should not try to empty the trash yet!).

After the server connection has been made and your users have access to the 7.5.5 installation folders, they can run the 7.5.5 installer and follow its step-by-step instructions. When the installation is complete, each user should install PowerTalk and QuickDraw GX in a similar manner (although they do not drag the System suitcase into the Trash), so that they have all the parts of 7.5.5 installed on their computer. Once that's finished, they'll need to follow any customization rules and documentation that exist for your site. After you restart the Macintosh and are running System 7.5.5, empty your Trash and get rid of that old System suitcase.

This installation will place all the new 7.5.5 Apple items in your System folder, removing the older 7.x Apple items. All of your third-party extensions and control panels will remain, however. (Some of these may cause you problems later on. Please reread the front matter, chapter 1, and read ahead to chapter 9 for more information and on using the Safe Install Utility).
Keep in mind that sites will choose not to support either PowerTalk or QuickDraw GX. If that is the case, your staffers will need to turn these extensions off, using either the 7.5.5 Extensions Manager control panel or a third-party INIT manager such as Casady and Greene’s Conflict Catcher II.

It is better, though, to install PowerTalk and QuickDraw and turn it off than not to install it at all. This way, when the needs arise, you know you’ve got to turn them on!

If you have no need for collaboration, email, or messaging, then you can probably turn off PowerTalk. If you don’t have any QuickDraw GX compatible printers or applications, you can certainly turn it off for now.

**Manager Installations**

If you choose to do all this installation dirty work yourself, you’ll need to follow pretty much the same regimen recommended for your users. To speed things up, however, you may want to use one of the previously mentioned third-party network installers (such as FileWave or NetInstaller), or the shareware RevRDist program (available on the Internet, CompuServe, and America Online, among other places).

The advantage to doing the installation yourself is that you can be sure that it was installed correctly! Of course, that may not be much of a concern at your site, especially if you have a pretty savvy bunch of Macfolk, or if your site is pretty much plain vanilla (with few non-Apple services or networks).

If you have a complex network that’s shared by PCs, UNIX workstations, and other non-Macintosh computers, however, you may find that doing the 7.5.5 installation yourself lets you sleep better at night. This is especially true since the use of PowerTalk and AppleScript capabilities can affect the non-Macintosh users of that network (by generating inappropriate network traffic or by hogging shared network resources like modems, printers, plotters, other communications, and printing devices).

Ultimately, it takes more time if you choose to do the installation of 7.5.5 for all your staffers, but you can end up with a group of users who at least start
on the same 7.5.5 page. You have to decide which method works best for you, based on the sophistication of your users, your own experience, and whether you would rather spend more time on installation or support.

In most cases, when users in a large Macintosh network do all their System installations themselves, they make more work for managers and network administrators in the long run. (The managers end up going around restandardizing things after the users have monkeyed with everything during the System installation.)

In the short term, however, user installations take much less management work, so if you are shorthanded or short of time when you need to get 7.5.5 up and running, you may decide to turn it loose on your users and control fallout on the back end, after the installations are done.

Regardless of which installation method you choose, both you and your users should follow my simple “Before You Install” tips outlined in the next section.

**Before You Install**

To ensure a smooth upgrade to System 7.5.5, you should run Disk First Aid and the HD SC Setup on each hard disk on which you install 7.5.5. This ensures that you don’t have hardware problems that will play havoc with the upgrade process or with using System 7.5.5 later. Let good prophylaxis be your guide here.

**Disk First Aid and HD SC Setup**

Make sure you use Disk First Aid to verify the hard disk and HD SC Setup to update your Apple hard disk drivers before installing the system software.

Run the version of Disk First Aid that comes with your System 7.5.5 CD-ROM (it’s in the folder marked “Disk Images,” in the folder marked “Disk Tools”) or on the Disk Tools floppy disk. Use it to verify and repair all of your hard disks (see figure 8.1).
Figure 8.1 Disk First Aid

For your Apple hard disks, run HD SC Setup and update the hard disk drivers (see figure 8.2).

Figure 8.2 HD SC Setup

If you have non-Apple hard disks, use the latest System 7.5.5 compatible hard disk management software that's available from your disk vendor (or a top quality third-party package like Hard Disk Toolkit from FWB) to update the drivers.
Make sure that you don't use a hard disk checker/formatter that is incompatible with System 7.5.5 or your hard disk. Check with your software vendor and with your hard disk manufacturer about recommended use.

Apple's Installation Tips

Here are some installation tips from Apple that are provided in the ReadMe file that is part of the System 7.5.5 software. (Courtesy, Apple Computer).

- If you are installing software on a Macintosh PowerBook 150, Macintosh Quadra 630, or Macintosh LC 630, you should run Disk First Aid to verify the hard disk. You do not need to update your hard disk, as it will already have the latest Apple drivers on it. Doing so, however, won't hurt anything—it will just waste time. Because these Macs have IDE, rather than SCSI drives in them, don't run any third-party disk utilities on them until those utilities have been upgraded to work with IDE drives.

- If you use a RAM disk, turn it off before you install System 7.5.5. When the RAM disk is active during software installation, it uses too much memory and prevents your system from starting up.

- Run the Safe Install Utility. This utility program flags control panels and extensions that it believes are not compatible with System 7.5.5. It will move these items into a folder called "May Not Work With System 7.5.5," that will reside at the top level of your startup disk (see figure 8.3).

- Before you begin installing System software, quit all applications. If you don't, you might lose any unsaved files. Better safe than sorry!

- After you run Disk First Aid, HD SC Setup, and Safe Install, restart your computer and insert the Install Disk I floppy disk. Although starting up from Install Disk I is not required, it uses less memory than starting up from your hard disk.

- If you are installing from floppy disks, make sure that they are locked.
If you install System 7.5.5 from a CD-ROM, you first need to throw your current System folder for your startup disk into the Trash. The Installer will not install System 7.5.5 on top of your active System folder.

Depending on your Macintosh model, installation may take fifteen minutes to about an hour.

There is a compatibility problem with the Macintosh PowerBook 150 computer's internal modem and some communication software programs under System 7.5.5. Apple includes a fix for this problem on the Before You Install floppy disk. After you install System 7.5.5 on a PowerBook 150 with an internal modem, insert the Before You Install disk, drag PB 150 modem Patch to the System Folder icon, and restart your computer.

Anytime you upgrade or re-install the System software, you also should re-install your server or network programs, such as AppleShare, Novell NetWare, or Apple Remote Access. If you have a Workgroup Server 95 (AWS 95), do not upgrade to System 7.5.x. Workgroup Server 95 works only with System 7.0.1 and System Update 3.0.
• After you install System 7.5.5 on a Quadra 900 or 950, it is possible that you may encounter a problem starting up the machine. If you have trouble starting your computer, take these steps to solve the problem:

1. Restart your computer while holding down the Shift key (to start up without extensions).
2. When the computer has finished its startup shtick, open your Extensions folder (inside the System Folder) and drag SCSI Manager out of the Extensions folder.
3. Restart your Quadra again.
4. After you’ve started up successfully, if you need the functionality that SCSI Manager provides (see chapter 7, “Improving Your Memory”), move SCSI Manager back to your Extension folder and restart. Your Quadra should work properly.

Managing and Supporting Users During the Upgrade

The actual installation process is only the beginning of the list of considerations for Macintosh managers upgrading to System 7.5.5. There’s another less cut-and-dried piece to the upgrade puzzle—and that’s the user (your ubiquitous Macintosh staffer) and how she will react to the upgrade. Fortunately, if you already have some version of System 7.x installed, the migration process is not that painful. But if you are upgrading from System 6.x (as many educational institutions may be), you have some psychological issues to deal with. Some are dealt with in this chapter, while others are considered in chapter 6 and chapter 10.

Avoid Haves vs. Havenots

Frankly, once you, as a Macintosh manager, decide to upgrade to System 7.5.x, your next concern should be training your users. (Of course, we all know that won’t really happen—but I’m here to remind you that it should.)
But before you begin training your people, make sure the upgrade you are providing is complete. Don't create a situation of haves and havenots at your sites. If you have Macintosh staffers who lack the proper Macintosh to run System 7.5.5 (any Macintosh less powerful than a Macintosh II with 8 MB of RAM), now is the time to get them some decent Macintosh hardware.

Assuming that all your staffers have System 7.5.5-upgradeable Macintosh computers, make sure that the upgrade hits them all. That process alone will keep your support problems down by not worrying about mixed networks of 6.x, 7.x, and 7.5.5.

**Basic Help for System 7.5.5 Training and Support**

As discussed in earlier chapters, to help users cope with System 7.5.5's new features, Apple created Apple Guides, Guide Maker (an application that allows you to create your own Apple Guides for site-specific online help), and also carried-over Balloon Help from System 7.x. Additionally, the 7.5.5 upgrade packages include a "Before You Install" floppy disk that you should use before installing System 7.5.5.

Those materials are just barely adequate as the first line of training for individuals and for some small businesses, especially where people are not old-time Mac hands. Large businesses probably have enough in-house software dependent on the Macintosh that specialized training materials are essential. Macintosh managers at all companies, however, should be concerned about making their users productive with System 7.5.5. To that end, you need to budget training time as integral to your System 7.5.5 upgrade program. Take the right approach to training and you will dramatically reduce your support problems later. Fail to do so, and you'll really pay for it later.

How, then, will your Mac users learn to use System 7.5.5? Is it by reading the thin manual or working through the Apple Guide to Macintosh provided with System 7.5.5? Do they watch third-party training videotapes, attend Apple or third-party classes, or get help from you or from a colleague? Do they read this book cover to cover? Or do they simply install the software and start exploring?
The answer is all of the above and none of the above. For many people, learning any new Macintosh program—never forget that most of your users will not distinguish between learning the System and learning an application—is a multilevel process that requires a multitude of different training materials and support from Apple, third parties, and materials you generate that document your special hardware and software (and especially your network).

Finding the Right Training Materials

If you’re a manager responsible for System 7.5.5 training, you’ve probably discovered that the quality of some System 7.5.5 training materials—especially the early stuff from some third parties—fell way below acceptable levels. That’s because “the Macintosh System is Ready-to-Use” mystique (still perpetuated by many at Apple, unfortunately), has prevented many people, including those at third-party training companies, from giving adequate consideration to training and training materials.

Fortunately, because System 7.5.5 is largely a features consolidation release with pretty much the same Finder as System 7.x, individual training should be a simple proposition. You will want to give each of your staffers a copy of the Macintosh System 7.5.5 Upgrade Guide as well as a copy of this book. Let them explore the new built-in productivity features outlined in chapter 1, “A First Look at System 7.5.5,” and chapter 2, “Using Finder 7.5.5,” and then, later, they can try their hands at the fancier stuff: using AppleScript (chapter 3), QuickDraw GX (chapter 4), and PowerTalk (chapter 6).

You also want to make sure that each of your users understands the basic vocabulary and features of System 7.5.5. (Check out the glossary at the back of this book for a list of the essential terms and their definitions.)

Know the Terms

You will need to understand each of these terms and features after you have installed System 7.5.5—whether you are a Macintosh manager or Macintosh user.
Adobe Type Manager (ATM)  A font technology that enables Adobe PostScript language outline fonts to be used for both onscreen display and printing on non-PostScript printers.

ATM GX  A version of Adobe Type Manager designed to specifically support QuickDraw GX.

Apple Events  The messaging language of System 7.5.5's interapplication communications technology (IAC), used by applications for sophisticated communication with other applications; it will enable programs to share not only data, but also commands. Apple events can be used by AppleScript to control the Scriptable Finder and Scriptable applications.

Apple Guide  An electronic assistant that is built in to System 7.5.5 that guides you through specific tasks one step at a time. With 7.5.5, Apple provides the Macintosh Guide, AppleMail Guide, and PowerTalk Guide as solid examples of this technology; they are accessible from the Balloon Help/Apple Guide menu in the Finder (the big 3-D question mark on the right of the Finder menu bar). Other Apple-supplied guides, for QuickDraw GX and other System 7.5.5 technologies will be made available later by Apple.

AppleScript  Apple's system software-level scripting system; it provides for the automation of routine or complex tasks and the customization of the user's computing environment.

Coachmarks  Part of Apple Guide, coachmarks provide onscreen visual clues, such as circles, that give the user information about performing a specific task.

ColorSync  A color-matching technology that ensures color consistency between screen representation and color output.

File Synchronization  The capability to synchronize files on two different systems so that they are the same, enabling users to work on two systems without worrying about whether they have the most current file. Apple includes File Assistant as part of System 7.5.5. File Assistant automatically synchronizes files and folders between your PowerBook and your desktop Macintosh. Files also can be synchronized with a server or between two Macintosh systems.
Apple Menu Options  "Nested" menus that make it easier and faster to access items that are several layers below the top menu.

Kerning  Spacing between particular combinations of letters in a word. An automatic function with QuickDraw GX and the new, "intelligent" QuickDraw GX fonts.

Macintosh Drag and Drop  A system software extension that enables you to simply select the data (text, graphics, and so on) that you would like to move and drag it to a new location—without cutting and pasting. System 7.5.5 includes a drag and dropable Scrapbook and the SimpleText text editor.

Macintosh Easy Open  A system software extension that automatically translates data and opens documents in supported applications, even if the application that created them is not available.

Macintosh PC Exchange  A utility that enables MS-DOS, Windows, and OS/2 disks to be mounted and opened on the desktop, along with their data files using compatible Macintosh applications.

MacTCP  Apple's standard software implementation of TCP/IP, which enables Macintosh users to access information on Cray supercomputers, UNIX and Sun workstations, VAX systems, and a variety of other hosts (including the Internet).

Portable Digital Documents (PDDs)  Using the "print and view" technology in QuickDraw GX, you can create portable documents that can be viewed and printed by other users, even if they don't have the application or fonts that created the document.

PostScript Type 1  Adobe Systems' outline font format. Type 1 fonts are based on the PostScript page-description language.

Power Macintosh  Apple's new line of Macintosh systems, based on PowerPC technology.

PowerPC  A CPU based on RISC technology, developed jointly by Apple, IBM, and Motorola.
PowerTalk  A set of collaborative services that enables users to send electronic mail, share files, and “sign” and forward documents from within an application.

QuickDraw GX  A sophisticated graphics and printing architecture that represents a major advance in ease-of-use, for everyday printing as well as high-end graphics manipulation.

RISC  Reduced Instruction-Set Computing. An advanced processor architecture that provides greatly increased performance that is implemented with the PowerPC chip in Power Macintosh computers.

Rotate  A function of QuickDraw GX. Rotate turns a shape about a fixed point.

Scriptable Finder  A version of the Macintosh Finder included with System 7.5.5 that can be scripted with AppleScript, enabling you to automate system-level tasks.

Scripts  Written instructions that enable you to control the actions of your Macintosh computer; they can be automatically created with a “Do It For Me” command or created using Script Editor with AppleScript.

Skew  A function of QuickDraw GX that produces rubber-like distortion of a shape (including text) along two axes.

SoftWindows  An application from Insignia Solutions, Inc., optimized for the PowerPC processor, which emulates an Intel x86 processor and enables Power Macintosh customers to run MS-DOS and Microsoft Windows applications on top of System 7.5.5. For most users, SoftWindows is too slow. You are better off using a System 7.5.5 Macintosh to read and use Windows disks, and leave direct Windows applications to a real PC.


Telephony  The integration of personal computer and telephone functions.
Telephone Manager  System software support for telephony-based applications.

TrueType  Apple’s outline font technology that was introduced in 1990, a year before System 7 debuted. TrueType provides system-level support for the display and printing of scalable type. TrueType fonts are supported by QuickDraw GX.

WorldScript  System-level support for integrated writing systems and languages worldwide that is built in to System 7.5.5.

After this vocabulary and features review, you should move right into using the excellent training resource that Apple provides with every copy of 7.5.5: the Macintosh Guide in Apple’s hot new Apple Guide online document format.

Basic Training with the Macintosh Guide and Apple Guides

Apple Guide, the electronic assistant that goes beyond traditional online help systems (it guides you through specific procedures one step at a time), comes as a standard part of System 7.5.5. With Apple Guide, you can learn how to accomplish new or complex tasks by following onscreen prompts. Apple Guide provides red onscreen “coachmarks” that give visual cues by circling or highlighting items such as menu items (see figure 8.4).

Rather than requiring you to search an electronic manual that covers an entire application, Apple Guide decides which information to provide based on the current context (which window is in front, what item is selected, and so on). For example, Apple Guide will automatically skip a step in a process if you have already completed that step, allowing you to accomplish the task more quickly. It also checks to make sure that you have completed the current step before moving on to the next one (see figure 8.5).
How do I change a program's memory size?

Do This: Open the File menu and choose Get Info.
If you need instructions on choosing a menu item, click Huh? below.
Do this step, then click the right arrow.

Figure 8.4 Apple Guide showing red "coachmarks" to highlight a Finder menu item to open

How do I change the beep sound?

Please wait a moment. Apple Guide is assisting you by opening the Control Panels folder.

Continue

After the folder opens, click Continue.

Figure 8.5 Apple Guide completes an action for you to show you how to do it
Apple Guide doesn't simply offer a text description of various tasks; rather, it prompts you with meaningful queries about specific operations. For example, at the desktop level, it offers queries that apply to Finder and System operations (such as, How do I change the desktop pattern? How do I share a file? How do I empty the trash?); it then provides hands-on instruction for the selected task.

**Apple Guides and Third-Party Application Help**

Since Apple Guide is built into 7.5.5, it will eventually become the standard for providing access to advanced functionality within Macintosh applications. Apple expects the majority of software vendors to provide support for Apple Guide in their applications within a year of 7.5.5's release. Applications that support Apple Guide will lead you through the steps required to perform particular operations. This is especially important as applications add more and more features and functionality.

In a page layout application such as Adobe PageMaker, for example, you or a staff member may want to know how to change a block of text to a different font or import a word processing file into a column. With Apple Guide, you can learn the steps for completing the operation while actually performing the task and getting work done—rather than leafing through a manual, browsing through online help for the relevant topic, or working through a tutorial.

Businesses, schools, and other organizations can reduce training and support costs by creating their own Guides using the Guide Maker application (for more information see appendix A, "Apple Guide and Guide Maker"), to lead users through tasks that are unique to their company or organization. For example, a human resources department could use Apple Guide to assist employees in filling out forms electronically by guiding them through obtaining the correct form from a network server, filling it out, and sending it to the proper electronic mailbox.

**Using Apple Guide and the Macintosh Guide to Learn System 7.5.5**

The place in which every 7.5.5 user (Macintosh managers and staffers alike) should start learning about the new System (after they have read the manual and this book, of course) is the Macintosh Guide. It is part of System 7.5.5
and can be found under the Balloon Help/Apple Guide menu in the Finder (you cannot get to the Macintosh Guide unless you are in the Finder; it does not appear when you are in another application). Figure 8.6 shows you where to look.

![Figure 8.6 Balloon Help/Apple Guide menu](image)

Open the Macintosh Guide from the Balloon Help/Apple Guide menu as in figure 8.6. You will see a screen as shown in figure 8.7. Note that an Apple Guide screen takes precedence on the desktop. It will always float on top of the current application or Finder windows. It cannot be resized, although it can be moved or closed.

![Figure 8.7 The opening screen of Macintosh Guide](image)
At the top level of the Guide, you can search for a particular help topic or you may see a list of topics, or you can bring up a full index to the Guide. You can select topics by clicking a particular button's icon. See figure 8.8 for a scrolling list of topics.

![Macintosh Guide with scrolling topics list](image)

**Figure 8.8 Macintosh Guide with scrolling topics list**

Select Reviewing the Basics and choose an item from the list in the right-hand window as shown in figure 8.9.

Click the topic, "How do I review the basics?" and then click on OK. You'll see a panel that tells you what to do (see figure 8.10).

From this panel, you are told to invoke either the tutorial that came with your Macintosh (it can be found in the Balloon Help/Apple Guide menu or via a separate program called "Basics" in the top level of your hard disk) or that comes with System 7.5.5. Follow the panels carefully, and click the navigator buttons in the lower-right corner of each screen to go to the next panel.
To use your computer effectively, you need to have a few basic skills and understand a few key concepts.

- To learn how to control the pointer on the screen (using a mouse, a trackball, or another device), open the Guide menu (on the right with the ? icon) and choose the "Tutorial" item. (If you don’t see a tutorial item in the Guide menu, use the introductory tour, usually named "Basics," supplied with your computer.)

- To learn about icons, menus, and windows, open the Guide menu and choose the "Tutorial" item. (If you don’t see a tutorial item in the Guide menu, use the materials named "Learning Macintosh" or "Basics" supplied with your computer.)

Read this information, then you’re done.
That's the pattern for all of the Macintosh Guides that come with System 7.5.5. Use it, step-by-step, to show you and tell you how to use the features of System 7.5.5.

Each Guide panel offers you a button that takes you back to the top level of the Guide (Topics), and the navigation buttons (see figure 8.10). This allows you to step forward and backward through each of the informational panels that make up a particular topic. Many panels also offer you a button called "Huh?" that will bring up explanations of terms used in the panel.

Learning to "read" and "use" an Apple Guide, like the Macintosh Guide, is a very good place to start your individual System 7.5.5 training. Once you and your staff have browsed all the information contained in the Macintosh Guide, you will know something about what 7.5.5 can and cannot do, and you will know the basic ways to use those technologies.

The beauty of Apple Guides and the Macintosh Guide are that they are fully extensible. As Apple continues to revise System 7.5.5 (on the way to System 8.0), it can add to the Macintosh Guide, so that we can learn about the new features in additional System releases.

**Training**

Some Macintosh managers and users, of course, will be able to install System 7.5.5 and never look back, much less look at this book, the thin upgrade manual, or the Macintosh Guide. But you've got to remember that this kind of user is probably in the minority. More Macintosh computers have been sold in the last year than in the previous three, so many of today's System 7.x users are not Macintosh gurus or aficionados, or even Mac-enlightened. In fact, many Mac users are befuddled by some of their Mac colleagues (who have a virtual love affair with their Macs), because they see Macs simply as electronic Swiss Army knives.
Why Do You Need System 7.5.5 Training?

Studies completed by a consulting firm, the Gartner Group, for Apple in 1994 are often tossed about as proof that the Macintosh is so easy to use that training isn’t an issue. These studies showed that the Macintosh increased worker productivity by about 40 percent over offices equipped with Windows 3.1-based PCs.

It is interesting to note that few people bother to read that the 40 percent productivity gains were attained after the Macintosh users completed a proper training program, just as the Windows users had attended. The 40 percent figure does not represent the difference in productivity between Macintosh and Windows applications; it represents the differences in operating system functions.

With System 7.5.5, application-specific training takes on special importance, since many of its users won’t begin to “get” the importance of AppleScript, file sharing, PowerTalk, aliasing, publish and subscribe, and QuickDraw GX without some seriously directed training programs. As a result, some of your users will need to be trained on the fundamentals of System 7.5.5 itself; while others will need merely to be given the appropriate comparative context (that being System 7.x) to learn to use all of System 7.5.5’s features.

Adult Learning Problems

A related problem for Macintosh managers is that many Macintosh training programs that have already been implemented in their companies (if not in their departments) don’t take into consideration the fact that adults learn in different ways. Moreover, many such programs don’t recognize that different levels of an application’s use imply different learning problems.

I’ve found that when training users to use System 7.5.5, the best kind of training actively involves the trainee. My materials almost always take a tutorial approach, providing examples that students can work through, step-by-step, at their own pace. This means that they can see the result of their actions, as well as why they would want to do them in the first place. Making sure that my own customized materials track Apple’s manual and Macintosh Guide also helps keep users focused as they are learning.
A Recipe for a Training Program

A quality System 7.5.5 training program should offer multiple training media; this is because the greater variety of learning environments you provide, the greater likelihood that at least one will click with a given person. Your training program should pay particular attention to adult learning problems, as well as present the material in a variety of contexts.

For my money, any good System 7.5.5 training program should include the Macintosh Guide and a customized Apple Guide (that you build with Guide Maker) that simulates the access and use of specific Macintosh files on the network. (Learn how to author with Guide Maker in appendix A.) Your training program also should include a higher-level discussion of the differences between two-dimensional and three-dimensional thinking as it relates to using a Macintosh computer and the Macintosh current GUI (graphical user interface), the Finder.

2-D vs. 3-D Training

Most Mac users think in two dimensions (2-D). In fact, 2-D versus 3-D represents the most important hidden issue in System 7.5.5 training. This is because of System 7.5.5’s virtual desktop metaphors [see chapter 6, “Networking vs. Collaboration (Welcome to the Workgroup)”). In order to use System 7.5.5’s virtual desktop features (PowerTalk, publish and subscribe, AppleScript, file sharing, aliasing), you need to think beyond the 2-D desktop of your local Macintosh computers.

Rather, you must keep in mind that things now work much more transparently across their networks under System 7.5.5 than they did under even System 7 Pro. Thinking of the 3-D topology of their networks and how files may be used over such a LAN is what’s needed. You quite likely need to train your users repeatedly to understand this point. Remind them that they need to reread chapter 6 several times to get the point of this new virtual desktop.

Building a Specific Recipe for Training

Teaching your users to deal with file sharing, email, and messaging across your networks is one such place where learning simulations may really help. This is because they allow a student to pick apart the way they work.
Simulations and direct assistance, as provided by Apple Guide, can easily make the point about the virtual desktop and 3-D learning.

Such in-house System 7.5.5 training materials could come with a set of introductory written tutorial problems that rely on the program for their solution. There also may be a videotape or QuickTime movie excerpts (see chapter 5, "The Multimedia is the Message," for details), that show System 7.5.5 and 7.5.5-savvy applications being used by an expert, while giving an overview of their capabilities.

Other items that you may want to include are an online Apple Guide reference manual (of your specific System 7.5.5 virtual desktop environment). The online Apple Guide reference manual would work with the other training materials and a real textbook. These would pull together the training process for your students and your training coordinator.

Of course, such specialized System 7.5.5 in-house training is expensive and can get outdated easily. For many Macintosh managers, expediency and simple budget pressures will prevent anything so grandiose. For those Macfolk, the need to rely on both Apple’s materials and third-party materials is great.

Using Third-Party Materials to Supplement Your Training Program

Where can you find such third-party materials?

A few third-party training companies (such as MacAcademy) can provide high-quality System 7.5.5 multimedia training, but the cost per student is high. One alternative to third-party materials is using software from publishers that now include high-quality training materials with every System 7.5.5-savvy program they ship. A good example of this is Claris, with its emphasis on Apple Guides for System 7.5.5-savvy applications. Most third-party application vendors will follow Claris’ lead and provide detailed tutorial Apple Guides with their software.

If you need more support than Apple can offer over the phone or through basic System 7.5.5 support and training materials, authorized Apple resellers and other support providers (consultants, Apple Training Providers, and
Apple User Groups), typically offer a comprehensive set of support and training services you may need.

Apple has trained resellers and support providers how to install, use, and support System 7.5.5 so that they have a decent chance to offer help when you can't get it elsewhere.

Many resellers and other support providers who already are providing such services for other Macintosh products are offering support and training services for System 7.5.5. Here are some categories of these third-party products, plus some representative offerings:

- **Services before installing System 7.5.5.** These services include using tools such as Apple's own Safe Install Utility, Pharos' Status Mac, Technology Works GraceLAN, and NOW Software's Profiler (I recommend them all for specific tasks) to evaluate the systems to be upgraded, compiling a list of hardware and software upgrades required to take full advantage of System 7.5.5, and planning the implementation of the upgrade.

- **System 7.5.5 upgrade kits for products.** These services include selling upgrade kits, additional memory, or other hardware upgrades that may be required to take full advantage of System 7.5.5. Only authorized Apple resellers can sell the System 7.5.5 Upgrade Kits and install memory upgrades, but all of System 7.5.5's third-party support providers can offer System 7.5.5 installation services.

- **Upgrading to System 7.5.5 also gives you a good shot at implementing other upgrades** and updates you may think about purchasing that are independent of System 7.5.5, such as upgrading LaserWriter printers, adding hard disk drives, installing new file servers, and so forth.

- **Training and support after System 7.5.5 is installed.** These services include offering ongoing System 7.5.5 support, such as on-site troubleshooting and telephone support. Authorized Apple Training Providers also can offer System 7.5.5 training for your in-house support staff and end users, either at your location or at the training provider's facility (where it may be cheaper, but less convenient).
Once you have evaluated these third-party training materials, you will want to go back to the mothership and check out Apple's offerings (which, at press time, were still evolving).

**Apple Supplemental 7.5.5 Training Resources**

Fortunately, Apple knows you need this help in building a good training program. Apple has created a program called "Technical Coordinator Answerline (TCA)." This is different from the free direct support you get from the System 7.5.5 Answerline (800-SOS-APPL), which is intended to be a one-to-one basic helpline for individual users. Intended for the help desks and networking support staffs of large customers, TCA gives its subscribers direct access to Apple's support engineers for assistance on the day-to-day operation of networks—including those running System 7.5.5—and assistance with upgrades "to some extent," according to Apple.

TCA help topics include installation, compatibility, configuration, product usage, troubleshooting, and system administration in multivendor networking environments, and within all Macintosh operating systems, including System 7.5.5 and A/UX, AppleShare File Server and Print Server software, AppleScript software (with the exception of creating custom scripts), and AppleTalk and other local area network solutions.

Apple's TCA also can give you help with connectivity solutions for Digital, IBM, Ethernet, and Token-Ring environments. TCA pricing is variable. Call Apple at 800-SOS-APPL or 408-996-1010 for details.

Apple also offers an upgraded Information Source CD-ROM disc that gives corporate Mac staffers and managers a library of software and information needed to maintain System 7.5.5 networks. The Information Source CD contains a complete set of system software for all Macintosh and Apple II products, a section called "developer essentials," peripheral drivers, product training, cabling and configuration guides, and a directory of third-party network providers. You do not need to be a registered developer to buy this CD-ROM disc.
In addition, Apple recently made available its Advanced User Techniques disc to all System 7.5.5 users. The CD contains “how-to” information on security procedures, virus prevention and eradication, disk and file encryption, file compression and expansion, and tips and techniques for System 7.5.5. Both CDs are available from local resellers and from Apple directly (if you are one of the few remaining Apple direct customers), or if you are an educational customer.

Apple has made it clear that it cannot support all of its Macintosh users during the System 7.5.5 transition. While its Technical Coordinator Answerline is aimed at large accounts, Apple relies on its resellers to support all but its largest customers.

But not all resellers are either predisposed or equipped to handle these complex networking issues. You should call Apple at 800-732-3131 for names of the Apple resellers in your area. You will need to call these resellers directly to determine whether or not they can provide the technical support you may need.

Apple, of course, has packaged telephone support with its System 7.5.5 upgrade kits; you get basic phone support on an unlimited basis by calling 800-SOS-APPL.

**800-SOS-APPL**

The Apple System 7.5.5 helpline (based on the existing Apple helpline, 800-SOS-APPL) is designed, according to Apple, to provide the following benefits to every System 7.5.5 customer. Naturally, your mileage will vary. The helpline can:

- Help you plan your upgrade, including hardware requirements, software compatibility issues, and back-up strategies.
- Assist you with the installation process.
- Troubleshoot issues that arise as a direct result of the upgrade.
- Ensure that your system is able to recognize and use all Apple peripherals (in your local workgroup) and applications known to be compatible with System 7.5.5, as indicated by the Safe Install Utility.
Apple considers that upgrade assistance applies only to the upgrade process, not the ongoing use of System 7.5.5 features, and only to your immediate workgroup; it does not cover routers, spoolers, hubs, bridges, or unattended servers that are part of an extended computing environment. In practice, however, you will find the SOS-APPL line technicians will try to help you with just about any System 7.5.5 question, as I have discovered during recent use.

Using the helpline works well for supporting you during troublespots and in dealing with critical problems, but you might find that you still need specific Apple training products. Apple gives you a few to choose from, naturally, at an extra cost.

**Apple’s 7.5.5 Extra Cost Training Products**

At press time, Apple provided specific extra cost System 7.5.5 training, support informational items, and classes:

- **Macintosh System Software 7.5.5 product sheet.** Free from any Apple Authorized Reseller.

- **Introduction to Macintosh System Software 7.5.5** (training class). Prices vary based on training location. (This training module assumes that you have experience using the Macintosh.) Teaches you how to use most of the key features of System 7.5.5. The course covers installation, the desktop, the new organization of the System Folder, working with documents, virtual memory, file sharing, QuickDraw GX, PowerTalk, and AppleScript.

- **Supporting Macintosh System Software 7.5.5** (training class). Prices vary based on training location. This course covers System 7.5.5 technology, support issues related to installing the software, interapplication communication (IAC), PowerTalk and collaboration, Apple events and AppleScript, QuickDraw GX, and working with System extensions and control panels. This course is available through Apple in two ways:

  It's available from authorized Apple Training Providers. Contact your local training provider for more information about System 7.5.5 training and course schedules. (Call 800-732-3131 for the name of an Apple Training Provider near you.)
You can purchase the System Software 7.5.5 Training course materials on a CD-ROM disc from any authorized Apple reseller. This CD-ROM will be particularly useful to the in-house training staff of large businesses, education, or government institutions who want to offer System 7.5.5 training to Macintosh users within their organization. For the name of an authorized Apple reseller near you, you should call Apple at 800-538-9696.

- **Software Development Answerline and Technical Coordinator**  
  *Answerline* can be ordered by calling 800-950-2442. Macintosh computer users and managers who develop software for in-house use can get assistance with developing on any System 7.5.5 platform through the Developer University training course described earlier. Support is also available through a new in-house developer support program designed specifically for noncommercial developers.

- **The Software Development Answerline** provides direct access to Apple support engineers via AppleLink or telephone. The Software Development Answerline can give you development assistance with programming tools and languages, guidance in writing code, and help with user interface considerations. Their support extends beyond System 7.5.5, naturally, to include all Macintosh operating systems, including A/UX, Macintosh hardware, Apple networking and communications products, and Macintosh development products, such as MPW and MacApp.

- **Programming with System 7.5.5** is a new Apple course from Developer University designed for developers who have already created an application and would like to now incorporate the new features of System 7.5.5. The course focuses on AOCE, QuickDraw, AppleScript and Macintosh Drag and Drop. The course also covers file system tools, Apple events, human interface issues related to TrueType font capabilities and QuickDraw GX, and virtual memory training for your developers.

This course is offered to all your developers through Developer University, Apple's developer training program. For more information or to register, please contact Apple Developer University or by phone at 408-974-6215.
And naturally, if you are not already an Associate Apple Developer, call Apple at 408-996-1010 and ask for an Apple Developer's kit to become one. For that you will get monthly mailings, including CD-ROMs of the latest System software, as well as an Apple Developer Newsletter, a catalog of Developer University Offerings, access a website from the Apple page (www.apple.com), and the APDA catalog and updates.

**Training Time for System 7.5.5**

Even all the first-rate training and support materials in the world will not make for a successful training program if you don't allow yourself, or your troops, the *time* to do the job properly. Not too surprisingly, Apple maintains that users who are familiar with the Macintosh can begin to take advantage of System 7.5.5 in one to two hours.

That's probably true if you or your Mac staffers are using plain vanilla *standalone* Macintosh computers with no third-party extensions or control panels with System 7.x, and if they have gone through System upgrades before. Many of your users, however, can't begin to uncover the new features of System 7.5.5 in that short period of time. And if you are upgrading from System 6.x, the training time will be extensive if you and your users really expect to use most or all of the System 7.5.5 features.

How long will it really take to learn and teach each of your users to use System 7.5.5? As a rule of thumb, managers should budget 10 hours of hands-on training to get their System 7.x staffers already familiar with the Macintosh operating system to be minimally productive with System 7.5.5.

If you are making the upgrade to System 7.5.5 from System 6.x, count on two to three times that number of hands-on training hours (again, I am talking about the right way to do training, not some half-baked training program).

Of course, some users will need less training, while others will need much more. Try very hard not to underestimate the time needed to do proper System 7.5.5 training. Make sure that your Macintosh users have that training time apart from their regular duties. Otherwise, the training time will be wasted.
Companies that have in-house support staff and extensive in-house software can expect to add an additional 6 to 36 hours on technical hands-on training for its users of System 7.5.5-savvy in-house software.

**Online Services and the Internet**

Other than using Apple’s built in 7.5.5 training, extra cost support materials, and third-party 7.5.5 materials and support, you will want to get some additional help from what I call “the usual sources.” The first of these are online services, including Apple’s own newly-formed eWorld.

You will find support forums for System 7.5.5 on CompuServe’s Ziffnet/Mac forum, CompuServe MAUG (Micronetworked Apple User’s Group), and America Online’s Macintosh fora. Other good online services that offer some quality System 7.5.5 support forums include The Well, and to a lesser degree, Prodigy.

You also can find help by surfing the Internet’s user groups and message fora including those available through Usenet. Since dozens of good books have been written about using the Internet (I recommend the *Internet Starter Kit for Macintosh* written by Adam Engst, since Adam seems to know more about the Internet than any other human on the planet). Keep in mind, however, that Internet surfing is very time-dependent and you have to deal with a very large signal-to-noise ratio: in other words, there is a lot of junk to sort through to find the nuggets of System 7.5.5 wisdom.

Several applications make this sifting easier. To this end, if you snag a copy of World Wide Web, Netscape Navigator, or Internet Explorer along with copies of Fetch (from Dartmouth University), and TurboGopher (The University of Minnesota), to sort through the enormous resources of the Internet, you will have a better chance of finding useful System 7.5.5 information. You will need to consult Engst’s books for details on how to use these programs (and in the case of Fetch and TurboGopher, you will also get the software on disk with the books).

Remember with all online services, however, that the quality of the support is often directly proportional to the religious fervor of your fellow Macintosh users and managers in their help postings. Take all that you read on those
services with a mountain of salt before you try to implement specific support or usage methods they may recommend.

To use an online service, of course, you will need a phone line and a modem, and some bucks for the membership and monthly usage fees. In addition to support for System 7.5.5, you will find that online services also offer you public-domain and commercial software libraries to browse and download from, discussion fora on a variety of computer and non-computer topics, and vendor-supported fora.


**National User Groups**

After online services, you will want to check with the two big national Macintosh user groups, BMUG (Berkeley Macintosh User Group in Berkeley, CA) and B.C.S. Mac (Boston Computer Society Mac forum). Both sponsor BBSs where you can browse downloadable files and get help online. Both also provide some good informational and training programs for all Macintosh users, especially those struggling with System 7.5.5. You'll need to become a paid member of these groups in order to take advantage of all of their Mac-specific training and support activities.

Contact B.C.S Mac at 617-252-0600. BMUG can be reached at 510-549-2684. You can order BMUG products and services (including System 7.5.5 support materials) by calling 800-776-BMUG.

**Local User Groups**

Your own city will likely offer some kind of Macintosh user group, although you may have to hunt for it by calling Apple and some of your Macintosh colleagues outside your company. In my hometown, Chicago, the local Macintosh User Group, called "The Rest of Us," and another area user group, "The NorthWest of Us," have done good jobs in helping its members make the transition to System 7.5.5. Hopefully, your city or perhaps local college or university will offer as good a local Apple Macintosh User group as mine in Chicago does.
You can find out information about your local user groups by calling Apple at 800-538-9696 or 408-996-1010. You also can start your own user group to support your System 7.5.5 users (if you really get the fever!). Call Apple at 800-538-9696, ext. 500 for a free copy of the "Apple’s User Group Connection."

Once you have exhausted the help provided by Apple, third parties, online services, and user groups you still may want to acquire specialized training materials to help you train others to train your staffers in the best use of System 7.5.5. For that, you can turn to the following sources from Apple and other training providers.

**Training Your Trainers**

Six-hour classes aimed at intermediate users range from about $100 to $300 from local computer training companies.

Classes for support personnel will be harder to find. Managers looking for such classes can call Apple’s Developer University at 800-732-3131, ext. 300, for training providers in their area that offer technical support classes.

Other than formal classes, a number of third parties provide self-based tutorials that make use of some combination of disks, audiocassettes, and videotape for the general user population. Personal Training Systems (PTS), of San Jose, CA, for example, offers two $49.95 tutorials, using an audiocassette and a disk for users upgrading from System 7.x to System 7.5.5. One tutorial covers System 7.5.5 installation as well as basics; the other covers advanced features.

MacAcademy, of Ormond Beach, FL, offers a two-hour, $69 videotape explaining System 7.5.5 features to current Macintosh users. MacAcademy also offers three $69 videotapes on System 7.5.5 for beginner, intermediate, and advanced users.

**Summary**

Most computer training is a pain to consider—and even more of a pain to implement. System 7.5.5 is no exception to this rule. Macintosh managers and users alike would prefer to hook their brains directly up to a Macintosh and let the machine teach them everything they need to know.
Unfortunately, despite the big help provided by Apple Guide, with the increased complexity of System 7.5.5, that training wish just isn’t realistic any longer. Macintosh managers who try to finesse the training issue by assuming things will work out, or by assuming that Apple’s own *Macintosh System 7.5.5 Upgrade Manual* and Macintosh Guide materials will be sufficient, are the same Macintosh managers who will be licking their computing wounds several months from now.

Simply put, most of your Macintosh users are going to need some kind of System 7.5.5 training that goes beyond the simple or perfunctory. You need to get on the stick now and plan for it properly, even while you may be installing the software on the Macintosh computers of your most Mac-savvy users.

If you take my main point from this chapter to heart, you will evaluate your staff’s needs individually and design a specific System 7.5.5 training plan for them (or at least help them do that for themselves). To do so, you must take a look at Apple’s support and training materials, along with those from reliable Macintosh training vendors like Personal Training Systems and MacAcademy.

Having done your homework, you will be much better off when it’s time to deliver the training goods for your users. But you know this already. There is no substitute for research and planning when it comes to providing successful System 7.5.5 training and support.

**Crabb’s Computing Quiz for Chapter 8**

I urge you all to use the opportunity provided by System 7.5.5 to reflect on your current Macintosh training needs, and to implement the correct training for each Macintosh staff member you manage.

And now, the quiz. You should read each of these questions carefully and then write down your answers. These answers should form your basic set of strategies for handling your System 7.5.5 upgrade and continuity training:

1. What training did you have in place for System 7.x. How can it be modified for System 7.5.5?
2. How do you train your in-house developers?

3. What is the single biggest training problem now (before installing System 7.5.5)? How will this change for System 7.5.5?

4. How many Mac users do you need to train?

5. Which Macintosh models are they using now and what software do they use?

6. Which of these programs will need to be upgraded to run under System 7.5.5? Which will be upgraded to System 7.5.5-savvy versions?

7. How will that effect your training mix?

8. When was the last time that you interviewed your users about their training needs?

9. What System 7.5.5 training have you taken yourself?

10. How do you expect to integrate Apple's support services for System 7.5.5 into your own in-house support programs?

Answers to Crabb's Computing Quiz for Chapter 8

1. If you can't answer this one quickly and assuredly, you are in big trouble. It's time to make some serious plans for training.

2. How should I know? I don't live in your pocket! But you better know how.

3. It's not likely to change, only to get larger. Concentrate on the issues surrounding collaboration and networking.

4. 1 to 10. 11 to 50. 51 to 100. You get the idea. Count them! They are out there waiting for you...

5. Here's a good time for a serious evaluation of what you're dealing with in terms of computing horsepower. Do you have enough?

6. Better check with the vendors of the software, huh? Here's a tip: Apple's Safe Install Utility can give you the names and phone numbers of most of the application vendors whose wares occupy your hard disk drives.
7. You may have to spend lots of time training people to use System 7.5.5-savvy features, eh?

8. If you can't remember, you better get cracking.

9. None, you say? Yikes. Read the book. Twice! Then repeat after me. I will learn about System 7.5.5 today...

10. This will depend upon your budget, your willpower, and the number of folks you have to train. All of which argue for some outside training consulting help if you have lots of any of these things.
No matter how much of an expert you become with System 7.5.5, you will eventually encounter some errors and problems. No matter how expert your Macintosh users may become with System 7.5.5, they, too, will eventually encounter some difficulties. No matter how much advanced planning, detailed training, fastidious support, and good solid
management that you put into dealing with all the ramifications of System 7.5.5, you will eventually run into trouble of some sort or another. How you deal with these problems is what this chapter is all about.

In this chapter, I will show you some techniques for dealing with all these problems, quirks, and nonsequiturs that you and your Macintosh users will encounter with System 7.5.5. I will also try to give you something of a troubleshooting philosophy for System 7.5.5 to help you deal with the hints, tips, and techniques that can be found in other books, online services, BBSes, and through local and national user groups.

While specific hints and tips can be useful in some cases, they're extremely limited and, in the worse case scenarios, can be downright harmful. If you can't find just the right reference for your particular problem, you're stuck with a hints and tips guide. And, what if you think that you have found the right hint or tip, only to apply it and find that you've just destroyed a file or your disk? Where does that leave you?

The watchword for successful System 7.5.5 troubleshooting is caution. If you get cocky and try to outguess the Apple programmers who wrote System 7.5.5, you could be making a serious mistake—and you'll likely deserve your fate—that will often mean lost data or worse. With that in mind, I would tread very carefully when using System 7.5.5 hints and tips that you gather from sources that aren't interactive (you can't ask questions), including books, magazine articles, and most online service postings. Better that you take the time to really diagnose a problem before acting "decisively" only to find that you've made the problem worse.

But if you understand how to "think" like System 7.5.5 "thinks," then you stand a better chance of fixing the problem(s) that plagues you, or at least you can learn to establish a modus vivendi with them. In short, I will try to sort out the different ways that problems occur when using System 7.5.5 and go over some basic strategies for handling those problems. As always, my experience here is tempered by the experience of "my" cadre of Macintosh managers.
With this in mind, I've divided this chapter into the following topics:

- Preventing Problems by Strategic Thinking
- Installation Troubleshooting
- Different Problems Deserve Different Solutions
- Protection and Prevention are Better than Troubleshooting
- Nobody Knows the Troubles I've Seen

You also will find specific troubleshooting (and trouble prevention) information in the other chapters of this book. Where possible, I have made comments throughout the book that may save you time and money. (See the index for some troubleshooting information cross-references.)

**Preventing Problems by Strategic Thinking**

While we would all like to spend our days brainstorming and perfecting our strategic plans, just the day-to-day activities of Macintosh management usually intrude pretty heavily. It often seems that all we have time to do is to try to keep our staffers happy and productive and fix all the little nuisances that pop up.

But by focusing so heavily on the prosaic, you can miss golden opportunities to implement strategic solutions that would obviate these pesky problems.

A case in point is trying to fix System 7.5.5 management problems as if they were merely separate events—not tied to the way you use your Mac or tied to other anomalies that are the root cause of your problems. What you should strive to do is consider the validity of the entire process of Mac troubleshooting and see it as an opportunity to make some strategic gains. In short, you want to look at troubleshooting from the point of view that each error or problem that you track down and fix serves to build a better way of using the Mac (and it also serves to remind you of hidden Mac resources you've forgotten about).
The Publish and Subscribe Problem

Many users complain about problems trying to use Publish and Subscribe (see chapter 6 “Networking vs. Collaboration (Welcome to the Workgroup),” for more on how Publish and Subscribe works) as a management tool for publishing. For example, a user was responsible for publishing a sixteen volume corporate methodology with, as luck would have it, hundreds of (Freehand) graphics published and subscribed into dozens of chapters (of Microsoft Word text).

What he discovered was your basic management nightmare: subscriptions magically turn to links; subscribed text changes its format; EPS graphic editions display black on the screen... the list of problems goes on and on.

At that point the user made a critical error: Thinking the problem was with the implementation of Publish and Subscribe. Naturally, Apple and Microsoft were called.

Bad move, as you'll see.

"Speaking with Apple resulted in... finger pointing at Microsoft, and Microsoft product support blamed Apple." Meanwhile, this user watched deadlines slip away and the project fall further and further behind.

The Forest and the Trees (Troubleshooting Strategy 101)

That poor user fell into that terra infirma where managers try to fix a project they have been handed, rather than analyzing the efficacy of the project first and then adapting System 7.5.5 technology to suit that project.

In this case, the Publish and Subscribe nightmare itself was the problem—not the implementation, per se. In other words, the whole concept of using System 7.5.5’s Publish and Subscribe to create links among disparate documents in such a large publication makes little sense. Quite likely, when the publishing project was smaller and only involved a few chapters and not nearly so many linked documents, Publish and Subscribe worked fine.

But expanding its scope to a sixteen volume magnum opus probably can never work—no matter how much Publish and Subscribe tweaking is done.
The plain truth in this case is that Publish and Subscribe was never made to handle this level of complexity. There is a reason Apple never gave us real linkage or edition management tools; and that reason is that Publish and Subscribe is not a substitute for using the appropriate dedicated software in the first place, especially for very large heterogeneous documents.

Rather, this is the time to bite the real bullet—a project that has been attempted with the wrong technology—and migrate those Word and Freehand files into a system that is meant to deal with large publications such as QuarkXPress, PageMaker, or FrameMaker.

Of course, there will be considerable pain associated with that migration. (That's usually the reason we shy away from it: because it simply looks too daunting.) However, the alternative in this case—to continue putting bailing wire and spit on a Publish and Subscribe system that can never do what's needed would be an even bigger mistake.

Situations like this can help us become better Macintosh managers, as long as we notice the forest, along with the trees. In order to move toward the strategic and away from the tactical, we need to become better at accessing our tools and determining whether they are up to the solutions we expect from them.

Evaluating Your 7.5.5 Tools Before Using Them and Watching Them Break

Let's generalize this Publish and Subscribe example to extend to more of System 7.5.5. Determining how to avoid System 7.5.5 problems by thinking strategically is, most definitely, a trick worth learning.

In short, you need to evaluate the System 7.5.5 tools and technologies by asking and answering these questions (before you even think about implementation):

- Does the 7.5.5 tool or technology come from Apple or did Apple acquire it from a third party?
• If it's from Apple, is it part of a larger technology that will likely result in more mature tools, or is it a singular implementation?
• If it's from Apple, has it announced any competing or extending technology or tools that may compromise the tool or technology?
• If it's from Apple, does it provide any complex solutions with the tool or technology by special documentation or technology discussions? Does Apple offer special ancillary tools to support it?
• If it's from a third party, is it part of a broad selection of products that try to solve related problems, or is it a "singleton"?
• Regardless of who makes it, what's the word on the street?

Take the answers to these questions and see if you find a pattern. In the case of Publish and Subscribe, if you apply these tests, you'll find answers like the following that would have warned you ahead of time:

• Publish and Subscribe comes from Apple. So far so good.
• Publish and Subscribe is part of Apple's generalized AppleEvents technology, which is supported by AppleScript. Sounds good, since it means Apple was thinking about Publish and Subscribe right from the start when designing System 7.
• Apple is now shipping OpenDoc, its technology for providing compound documents, with System 7.5.5. Eventually OpenDoc will obviate the need for Publish and Subscribe, just as System 7.5.5's Drag and Drop and the use of simple expedients (like network file aliases) are starting to move from application-centric to document-centric. That is a sea of change from Apple.

Oops, now you've got potential problems:

• Aside from the basic documentation on Publish and Subscribe, Apple has done precious little to help us use the tool (no special documentation, no technical discussions). This should be the smoking gun telling you that you have hitched you wagon to the wrong horse.
• Further consider that Apple has done zip since System 7.0 to improve the handling and management of edition files, which are critical to Publish and Subscribe. No new Publish and Subscribe tools come with
System 7.5.5. Even Claris Corporation, which was working on an edition management utility three years ago, dropped the project. If that's not a clue, nothing is.

I don't mean to be flippant about this, but the truth is that it angers me that we have to go through such convolutions in the first place. But they are necessary convolutions if you want to avoid problems with System 7.5.5 in the future.

Now let's apply my little test to the core technologies in System 7.5.5 to see if you can expect problems later.

**AppleScript**
- Yes, it comes from Apple. Whew!
- It's part of Apple's Open Scripting Architecture. You are in good shape here.
- Nope, AppleScript and OSA are it. You are rocking now, dude!
- Yes, the AppleScript Scripter's Kit does just that with more on the way.
- In addition, first rate third-party tools, like Scripter from Main Event Software extend AppleScript prowess. So, for AppleScript, the strategic thinking exercise suggests that if you decide to use it, you can't go wrong.
- The word on the street is good and getting better.

**QuickDraw GX**
- Apple all the way.
- It's the core of Apple's new imaging architecture.
- Nope, QuickDraw GX is the future here.
- Not yet, which is a concern. In addition, not all Apple products work with QuickDraw GX, a big problem.
- Weak third-party hardware and software support so far means that you must look closely as to whether QuickDraw GX makes sense for you, since it may cause more problems than it solves.
- The word on the street is mixed, so caution is advised.
PowerTalk

- Apple city.
- Part of its global Apple Open Collaboration Environment (AOCE) that extends to Microsoft Windows. That’s good.
- Nope. PowerTalk is Apple’s collaborative technology.
- Some with DigiSign and AppleMail and PowerShare, but many more are needed.
- Growing third-party support, including some PowerTalk freebies on the 7.5.5 CD-ROM.
- *Word on the street is favorable, but guarded.* Use PowerTalk carefully—but know it will get better and its use will be more widespread.

Apple Guide

- Apple borne and bred.
- Yes, it is part of Apple’s Active Assistance technology that will make a big impact with System 8.0 and the New Finder.
- No Apple competition.
- Some Guide files already provided; more promised.
- Third-party Guide files promised from a number of vendors.
- *Apple Guide is hot, hot, hot says the street.* Use it with confidence. Use Guide Maker to make your own Guides (see appendix A).

Now, having tried this System 7.5.5 Tool evaluation methodology, try it with other 7.5.5 features and with third-party products that you will use with 7.5.5, to determine if you can intuit their usefulness to you and the danger of them becoming an albatross later.

Installation Troubleshooting

Now that you have analyzed which parts of 7.5.5 you will need, you should read all of the Apple caveats in the upgrade kit before installing System 7.5.5. However, I know that most of you didn’t or won’t. With that in mind, here’s
a summary that you can zip through before, during, and after installation to minimize problems. These steps are especially important in networked settings.

Manager's Tip: If you are a Macintosh manager, the following checklist assumes that you have already tested System 7.5.5 and all important applications and utilities on a separate (non-networked) Macintosh that is representative of those other Macintosh computer on your local area network (LAN).

Taking the following steps will minimize System 7.5.5 installation problems on individual Macintosh computers and for Macintosh computers on a LAN:

1. Make sure that CPUs slated for the 7.5.5 upgrade have at least 4 MB of RAM for a minimum (no PowerTalk and no QuickDraw GX) installation. Install 8 MB if you will use PowerTalk and QuickDraw GX. Double these amounts for Power Macintosh computers and double them again if you expect to really use those computers.

2. Ensure that network devices and services are System 7.5.5 and (if you have Ethernet) AppleTalk Phase 2 compatible.

3. Buy and install required upgrades for important software.

4. Set up any servers with the Installer software from the 7.5.5 upgrade kit.

5. Install System 7.5.5 LaserWriter drivers (and/or QuickDraw GX) on all machines, even if the upgrade will take more than a day, (if you have a lot of Macs to upgrade, it will take you more than a day!) so that you will not have a mixed network of drivers.

6. Free-up at least 8 MB of hard disk space to install the new system on each Macintosh.

7. Make sure that each hard disk has free space that is twice the size of the System folder—especially if you plan to install via the network.

8. Double check that your target Macintosh drives do not have more than one System folder. If they do, remove any extras.
9. Remove file and disk protection from all the hard disks that are slated to be upgraded on the LAN.


11. Run the Safe Install Utility on each Macintosh computer.

12. Allow Safe Install to perform recommended actions, such as moving unknown and incompatible files from the System Folder and placing them in the May Not Work With System 7.5.5 folder.

13. Turn off virus checkers for each Macintosh that is to be upgraded.

14. Restart each Macintosh after you have run the Safe Install Utility.

15. Run the Installer on each Macintosh computer.

16. Test all of the software that the Safe Install Utility does not recognize.

**Different Problems Deserve Different Solutions**

Although the Macintosh is a complicated computer (even by today’s mainframe standards) and System 7.5.5 is its most complicated piece of software, the kinds of things that can go wrong can be anticipated in a fairly straightforward manner. Your task as a Macintosh user or a Macintosh manager is to put yourself in the best position to meet these anticipated problems head-on (and perhaps even prevent them from happening). If you have read this book closely up until now, and have done the same with Apple’s printed and online documentation, then you’re ready to earn your wings as a high-flying System 7.5.5 troubleshooter.

**How Do You Begin?**

The first place you should start with any Macintosh System 7.5.5 problem is to fully describe the symptoms. Carefully observe the anomalous behavior you are witnessing and the exact conditions surrounding the anomaly.

Take notes about everything you observe the Macintosh doing (or refusing to do) and note the application software that is running, the physical
attributes of the Macintosh (RAM, disk space, network connections, non-Apple INITs and cdevs that you have installed, and so on), and any other information that you may think is relevant.

Even if you find this recording process tedious and annoying, DO IT. You can never be a good System 7.5.5 troubleshooter without good evidence from which to work. Anecdotal evidence just doesn’t cut it. Remember, you are trying to gather enough different information about the problem(s) observed so that solutions can be found.

Hardware and Software Problem Triage: Where Does It Hurt?

The reason that you need to collect this information is that you’ll eventually want to perform the first level of triage on any System 7.5.5 problem: diagnosing whether the problem is a software or a hardware error or malfunction. Other than the obvious cases where printers, hard disks, or keyboards are broken (and thus inoperative), many hardware errors and problems do too good a job of masquerading as software problems, and vice versa. Being as careful and precise as possible when recording information about the original malfunction will help to sort out the problem(s).

In addition, if you call 1-800-SOS-APPL or other vendor help lines, you will need to be very specific about what went wrong and when it went wrong. Taking notes is assuredly the way to go.

Most hardware problems will be easy to spot because they will incapacitate a device that you are using. If an internal or external disk drive will not appear on the desktop when you startup your System 7.5.5 Macintosh, for example, the first symptom to eliminate is the hardware itself.

Is the SCSI cable properly connected and terminated? Is the SCSI ID number for the device set appropriately? Is the device getting power? Are there any breaks in the connecting cable? If none of these conditions can be found, then you have eliminated all of the obvious failures that could prevent a disk drive from appearing on the desktop.
You should use the same kind of process to deal with other hardware errors and problems. You should aim to diagnose a problem with enough precision that you can give a repair technician sufficient information to make an intelligent start on the repair process.

When you have eliminated the possibility of faulty hardware, you can be certain that your problems lie with some software fault. Typically, problems in System 7.5.5 are RAM or virtual-memory based (you either don’t have enough of one or the other for a particular application) or those problems that are nebulous, and thus very hard to determine (either their cause or their remedy).

While it is beyond the scope of this book to try to teach you to troubleshoot all of your applications, you do need to grasp some basics about troubleshooting System 7.5.5-problems (problems directly related to the way 7.5.5 does things).

**Software Boo-Boos and Their Tell-Tale Errors**

As with previous versions of the System software, System 7.5.5 can generate a plethora of warning and error dialog boxes. Many of these are harmless and can be ignored (or at least you can click the OK box in the dialog box with impunity), but an entire class of System errors, led by the now infamous Type 1 (see figure 9.1), Type 3, Type 20 and similar errors almost always result in the machine killing at least the open application (and with it all your unsaved data), and sometimes forcing you to restart.

![Type 1 Error dialog box](image-url)
When the System fails completely with a fatal error (one that cannot be recovered from by the tricks discussed in a moment), what do you do next? You need to get your machine back up so that you can go through the arduous process of removing the offending extensions, control panels, corrupted applications, or bad System files that may be the cause. Of course, as you will discover on your own with many of these errors, there often isn’t any discernible cause.

**Those Type One Bad Boys**

With the possible exception of a root canal, child birth, or the pain felt by Cubs fans every year, there are few things in the life of a Macintosh user more frustrating than a Type 1 error under System 7.5.5. Unfortunately, the warning dialog box is worthless—merely telling you that a Type 1 error has occurred and giving you the opportunity to quit the application in which the error has occurred (if it hasn’t quit on its own). In fact, most of the application “Type” errors dialog boxes you receive are mere flags enabling you (with about a 50/50 probability of success) to exit the application and go back to the Finder without crashing your Macintosh.

According to Apple, Type 1 errors are “bus errors,” (for whatever that’s worth to most of us—nothing), which means that some unknown condition has cropped-up in an application (including, occasionally, in the Finder) indicating that it is not “playing fair.” In essence, the application found the contents of a memory address it was using to be nonsensical. Apple calls such applications “run-aways” when these conditions occur, but regardless of the terminology, the question remains: what do you do when the Type 1 problem strikes?

The answer, unfortunately, is not much. Even if you have installed Casady and Greene’s Crash Barrier and Conflict Catcher II products as advised in chapter 7, the best outcome you can hope for when you get a Type 1 error is that you will be able to safely quit the application in distress and go back to the Finder. Occasionally, Crash Barrier will be able to get you back into the application that produced the Type 1 error, at least long enough to save
your files and quit normally. Conflict Catcher II also makes it easier to remove conflicting extensions and control panels that may have caused the error in the first place.

Once you are back to the Finder, restart your Mac (you should always restart your Macintosh after a Type 1 error). If you continue to get the error with a specific application, you should check with the vendor to see if they have a more recent and more 7.5.5-compatible version of their software. If not, you may want to consider switching to a competing application to see if you can avoid the problem.

**Force Quit**

If you are not running Crash Barrier and you get a Type 1 error dialog box, click the OK button in order to return to the Finder. If clicking the OK button leaves your machine hanging and refusing to budge, then you can try the Force Quit command (which is invoked by typing `⌘-Option-Escape` on most Macs).

This should produce a dialog box that asks you if you want to force the application to quit. If you click the OK button, the System will attempt to close the application properly and take you back to the Finder.

In many cases, however, using the Force Quit command is a waste of time, as your Macintosh will likely be frozen from that point on—to which your only response is to turn it off and back on, or hit the programmer’s switch to restart it (NOTE: make sure that none of the hard disk lights are on when you do this. Restarting your Macintosh while a connected hard disk is seeking, reading, or writing, will often corrupt the disk so that it CANNOT BE READ!).

If you Mac lacks a programmer and/or restart switch (many do)—like the new 500 series of PowerBooks—then you can install the software extension called Programmer Key, which allows you to restart by hitting Control-`-Power Key (nice and obtuse, right?). Programmer Key is provided on the System 7.5.5 installation disks and CD.

Force Quit is worth a try, though, if your Macintosh freezes following a Type 1 error episode and you haven’t installed Crash Barrier.
MacsBug and the ROM Monitor

If you have installed the Macintosh system debugger MacsBug (available from APDA or on most Apple Developer's CD-ROMs), and your Macintosh freezes after taking the actions above (or for any reason), you will be thrown into a scary-looking screen full of hexadecimal numbers and a basic command line interface. Hitting the programmer's reset switch will also throw you into MacsBug.

Don't be alarmed, however. Type the command HELP MISC and hit a return. You will get a scrolling list of commands that you can issue to try to get you out of the predicament. Particularly useful are EA (end application), RS (restart application), and RB (reboot the Macintosh). Try them in roughly this order to break the deathgrip on your Macintosh. It's also a good idea to peruse the MacsBug ReadMe files ahead of time so you know what to expect.

If you do not have MacsBug installed and hit the programmer's reset switch, you will pop into an odd dialog box with no dialog and only a greater than sign (>) as a prompt. This is the Macintosh computer's ROM Monitor. From there you can try to restart the Finder by typing G Finder and hitting the Return key. Or you can try to restart the Mac by typing RS and hitting the Return key. If all else fails, hit the Restart switch (if you don't have one, you will need to cycle the power switch or use the Control-\textasciitilde-Power key combo I mentioned previously) and start your error diagnosis.

If you cannot restart your Mac with the Restart switch, Power switch, or the Control-\textasciitilde-Power key combo, then you may have a hardware fault. Leave things alone and give Apple a call at 1-800-SOS-APPL. If you have a PowerBook, one expedient to try for restarting is to disconnect the power supply and then remove the battery or batteries. That should shut the machine down. Reinstall the batteries and the power supply and then reboot.

Adding RAM as a Cure

Another avenue to explore if you get chronic Type 1 errors is to add memory (RAM SIMMs) to your machine and to acquire and use Connectix's wonderful RAM Doubler extension. This will help—sometimes. Predicting those
times, however, is just about impossible. Welcome to the real world of System errors. Fortunately, thanks to the bug fixes and memory management improvements in System 7.5.5, I am getting only about 10% of the Type 1 Errors I got under System 7.1.1.

Fixing Other Errors

Besides the dreaded Type 1 errors, you will see lots of other Type X errors under System 7.5.5, where X is some seemingly arbitrary number. You can reference these numbers in Apple's technical documentation, but don't expect great insights.

For most Macintosh managers and users, it doesn't help one bit to know that a Type 2 error has occurred, or that a Type 2 error is an address error, or that an address error is caused typically by runaway software. None of these scintillating facts will help you fix the immediate problem, nor find a more permanent solution down the road.

Systematic Error Debugging

In short, you are never supposed to see these error dialog boxes. Apple put them in as a last line of defense against a total software blowout. But if you get them under System 7.5.5, you'll need to look beyond them to some basic configuration problems you may be experiencing. If you continue to get these System errors, you should:

- Check how much RAM you have installed and see how much currently is in use (use the About This Macintosh command in the Apple menu).
- Consider adding RAM if you are down to the last 512K of free bytes.
- Check to see if it's the same applications that repeatedly cause problems. If so, try reloading them from their original disks. Your hard disk versions may have been corrupted during the 7.5.5-upgrade process.
- Make sure that all of your SCSI, ADB, and LocalTalk connections are tight. Sometimes loose cables cause intermittent software faults.
• Try using competing software for the stuff that causes you fits. If the offender is the Finder, then try reinstalling it using the original 7.5.5 disks or CD-ROM.

• When all else fails during a System error and you cannot get control of your machine, you can try to reload the Finder with the Force Quit command, or you can hit the programmer's switch (if your Mac has one, or restart the Mac using the Control-\(\text{Meta}\) -Power key combo) and open the ROM Monitor dialog box. This box will have a greater than sign (>) sitting in the upper left hand corner. Type G finder. If by some miracle you get back to the Finder, then close everything down and restart.

• If G Finder doesn’t work, try RS and hit the Return key to restart the Mac. Otherwise, hit the reset or power switch and fire everything up again.

• Install Crash Barrier and MacsBug so that at least your arsenal against System errors is better than Apple's Force Quit and G Finder commands.

• The next time that your Mac has the gall to report to you via a Error dialog box that you’ve a “Type 81 Error—Bad Opcode” you might consider calling Apple’s 7.5.5 telephone support line (800-SOS-APPL) and asking them just what such an error really is and how you fix it and keep it from happening again.

• If all else fails and you keep getting chronic System errors, you can try the old “Crabb System Error Expedient”—pull out the Installer and reinstall 7.5.5. Run the reinstalled 7.5.5 Macintosh with all extensions and control panels TURNED OFF. Sometimes this helps. You may find by adding startup documents gradually, that you will eventually isolate the chronic System error as only occurring when you use your hot new shareware control panel, SuperDuperRAMWaster. If it does, then eighty-six the offending control panel.

• If all of these remedies fail you, then it’s time for Plan B: call someone who knows more about the Mac than you and see if she can help. If you have a local Mac guru, call her. If your user group has a Mac help
line, call it. And if someone else you know has experienced the same problems, call him and see if you can figure out the commonalities that are causing you grief.

- Whatever you do, though, please DON'T CALL ME! I have enough Type X errors to deal with already!

If all of this doesn't help, then you're going to have to learn to live with the errors, or you're going to have to decide if you can stand to live with a Macintosh any longer.

**Starting Up When the System Fails**

Sometimes, you will encounter serious System 7.5.5 problems such that your machine will no longer startup. Turning on the power will either result in the machine hanging when it hits the ToolBox ROM's "Welcome to Macintosh" opening message window or the machine will be so confused that it can't find the startup hard disk, and will flash a blinking "no disk" icon (an icon of a floppy diskette with an "X" drawn through it).

When this happens, you have two choices:

1. Go away and cry for an hour. Then come back and get to work restoring things.

2. Repeatedly smash your first on the table (careful to avoid the keyboard, mouse, and anything sharp) while cursing, "why didn't I buy a PC!"

**Creating and Using a System 7.5.5 Boot Disk**

After you have gotten all of that out of your system (doesn't that feel better now?), it's time to get the gremlins out of your System 7.5.5 Macintosh computers. For that you will need to create a floppy disk from which to boot your machine (since it can't find the hard disk). Of course, you will need to do this before your machine exhibits the problem.

You can create a System 7.5.5 minimal system (without printing or filesharing facilities) on a single 1.44 MB floppy disk (a SuperDrive-compatible disk) by using the 7.5.5 Installer. Or you can use your copy of the Disk Tools disk that comes with System 7.5.5.
Once you have successfully rebooted the failed Macintosh with the floppy disk, you will need to start checking and fixing any files that are currently not *compos mentis*. To do that, you will need Disk First Aid to check the overall disk status and a third-party program, such as Symantec's Norton Utilities for Macintosh 3.2, that enables you check the continuity and status of individual files and that can restore individual files that may be damaged. Apple's own Disk First Aid cannot do this. Norton Utilities for Macintosh 3.2 works well for this task.

**Protection and Prevention are Better than Troubleshooting**

While it's essential to master the strategies and techniques of troubleshooting as outlined previously, it's even more important to protect yourself against System 7.5.5-born Macintosh problems in the first place. And those problems come down to the issues of security, viruses, hardware protection and repair, and backups.

**Security Issues**

On the face of it, System 7.5.5 is no more "insecure" than System 7.x. But there's more to System 7.5.5 than its interface—as you have learned by reading this book. The fact is that while System 7.5.5 continues System 7.x's lack of any encryption, password, or logon interface, it has opened the doors to possible security breaches for your Macintosh network and its users.

Those security breaches are the same things that System 7.5.5 provides as new features: PowerTalk, AppleScript, and the continuation of System 7.x's file aliasing, file sharing, Publish and Subscribe, and program linking. Each of these features makes it easier for someone down the line on your network to accidentally, or with real malice, do "bad stuff" to any individual Macintosh on that network.

Naturally, I am not arguing that you shouldn't use these new features, just that you educate yourself on their potential abuses and security weaknesses.
As such, learning to understand the limited security provisions that are provided with System 7.5.5 is the place to start.

The mechanics for using the user and group access methods for file sharing and PowerTalk catalogs were covered in chapter 6, as well as the general usage parameters for aliasing, Publish and Subscribe, and program linking. That's where you should start in your education process.

### 7.5.5 Security Holes

But even with all of that, you must realize that System 7.5.5, and most Macintosh networks in general, are notoriously unsecure computing environments. If you have sensitive data, don't put it on a network server of any kind unless it is absolutely imperative. You may need to protect it with a third-party encryption or access program, or roll one of your own. Even with these aids, however, you can expect that your Macintosh computers will be full of security holes under System 7.5.5. Apple has never made any claims otherwise. System 7.5.5 is not a closed environment, indeed it fosters extensions. Such openness makes its limited security features quite weak.

### Viruses

As with any computer operating system, System 7.5.5 is as vulnerable to uninvited guests and pests as any. Many of these pests come in the form of viruses or Trojan Horses that are unwanted programs that "infect" your Macintosh computers much the same as a biological virus infects a living body and lives off it as a parasite.

Although it's too early to tell, many of the viruses that infected System 7.x Macintosh computers also have made the jump to System 7.5.5 machines. That means that you will need to be as vigilant about preventing these vermin from destroying data and applications as you were with System 7.x. Viruses can get into your system from just about every possible external source, even from shrink-wrapped commercial software. You can try to cut down the velocity of their initial contact and ultimate spread by instituting some sane antiviral policies:

- Never let a disk from the "outside" onto one of your networked machines until it has been checked with an antivirus program and deloused as necessary.
• Educate yourself to expect viruses in BBS and externally-collected shareware and public domain software.
• Periodically delouse all your Macintosh computers even if they don’t show signs of an active virus.
• Update your antiviral software often to take on new virus threats.
• Even freeware antiviruses like GateKeeper, GateKeeper Aid, and Disinfectant are updated regularly. Make sure you check your source for these (online services, user group disks, or via the Internet) regularly and keep them current!

If you are currently using a shareware or commercial antiviral or virus detection program, you will definitely want to contact the author or vendor about obtaining System 7.5.5-compatible versions (especially since many of the shareware products are System extensions or control panels that may be incompatible with System 7.5.5).

Of course, no single product can protect your System 7.5.5 computers from all viruses or Trojan Horses. You may want to use more than one product to ensure enough overlapping coverage. When you do this, though, make sure that one antivirus program doesn’t conflict with another one. Try to buy or obtain antiviral programs that include automatic free or low-cost updates that try to keep up with all the idiots out there who waste their time and ours by writing viruses.

### Avoiding Data Loss

You should be doing everything you can to physically and logically protect your Macintosh equipment investment. Use power protection devices for all of your Macintosh computers and their networks. You also should enforce strict data backup strategies. Even with these plans, however, you will eventually lose some data that will need to be recreated. Part of a successful data loss prevention strategy under System 7.5.5 is to educate yourself on how losses occur in the first place.
Data losses usually happen for one or more of the following reasons:

- Macintosh computers fail. Backups and replacement machines will usually suffice to get around this problem.
- Hard or floppy disks fail. Backup disks eliminate the severe results of this failure.
- Networks fail. Backups can help here too, but only if the data being transmitted over the network exists on the sending or receiving Macintosh as a disk file. Real time data, like that generated by laboratory instruments connected to a Macintosh network, may be lost forever if the network connection fails.
- People fail. People are the biggest reason for data loss. If you trash the wrong file, or lose a critical floppy disk, or make it easy for your Macintosh to be stolen, vandalized, or infected with a virus you'll again need good backups to bail you out.

Regardless of the direct cause of the data loss, the only real remedy is a reliable set of backup files to replace the data that has been zapped. Other devices and strategies, however, can help minimize these losses. The transition to System 7.5.5 marks a good time to remind yourself just exactly what these devices and strategies are. The most important ones will be covered in the following sections.

**Uninterruptible Power Supplies and Voltage Regulators**

One place to help prevent the loss of data is with your Macintosh and your network’s power supply. Plain old electricity is one of those environmental issues that we can easily control, and so we often ignore it or take it for granted. That can be a serious mistake. Take the time now—during your initial push to System 7.5.5—to get your power systems in order.

At the least, you should protect every Macintosh in your installation with a high clamping voltage, ultra-fast surge protector. A better level of protection would be to connect these machines and their local peripherals to a voltage regulator (which works sort of like a surge protector on steroids).
Every network routing device, server, and network backup device should be minimally protected at a much greater level with an online uninterruptible power supply (UPS) that provides both superior power filtration and battery backup. You then can safely power these units down in the event of a serious power outage or brownout.

**Keep Your Equipment Clean Daily**

Keeping your electricity "clean" is only part of the troubleshooting prevention that you should practice with your Macintosh computers and System 7.5.5. Here's the hardware checklist to follow each day.

- Wipe down the equipment you are responsible for with a slightly-moist soft cloth (don't use harsh cleaners or ammonia-based products—stick with plain old tap water). Pay careful attention to screens and keyboards. Also make sure that the work tables or desks that the equipment sits on are wiped down.

- Make sure that all machine ventilation slots are open. Don't block any of these or you will cook the machine's innards over time.

- Use a screen saver, like Pyro, After Dark, Protector Shark, or Moire if you intend to leave your machines on unattended. Even if you only leave your computers on during the workday, screen savers will live up to their name.

- Turn off all laser printers and monitors. Keep hard disks turned on (assuming that are connected to safe, clean power), since on-off transients cause disks more trouble than constant spinning. Turn off all other peripheral devices, except those that keep network services up (like modems, gateways, bridges, fax modems, and so on).

- Cover the equipment with plastic dust covers if you have them.

- Lock-up all backup disks or cartridges before leaving the office. Make sure than any alarm systems (fire, burglar, smoke, and so forth) are on.

- Follow the maintenance advice suggested in the manuals that came with your equipment.
This simple list seems so obvious that you're probably asking yourself, "why is Don bothering with this stuff?" Because bitter experience has taught me to respect the basics, that's why. If you spend a couple of minutes each day cleaning your equipment it will last longer and you'll get to run System 8.0 on your Macintosh long before it croaks.

**Weekly and Monthly Hardware Maintenance**

In addition to daily cleaning, you also should establish a schedule for weekly and monthly cleaning and maintenance:

- **Vacuum the keyboards.** Buy and use one of those funky little keyboard vacuums that you have seen advertised in the DAMARK, DAK, COMB, and Inmac catalogs. They work and they will keep the crud out of the keyboards.

- **Clean the mice.** Buy and use a mouse cleaning kit from a reliable vendor like Curtis. Usually, you take the mouse apart and squirt some cleaning fluid (usually some kind of alcohol) on a Velcro-covered ball that you insert where the mouse ball usually lives. You then roll the thing around on the supplied Velcro-covered mat and the combination of the scratchy ball and the cleaning fluid will scour the mechanical rollers inside the mouse.

  The same thing will work with most trackballs. If you have an optical mouse, however, aside from cleaning the LED lens you should never try any other type of cleaning on them. Optical mice aren't meant to be "user-serviced" and they don't have any mechanical parts in them that need to be cleaned.

  If you are using Apple mice or most third-party mechanical mice and trackballs, they will benefit greatly by regularly cleaning. Using a mousepad (which you must use with an optical mouse, of course, since they "read" the grid on the pad to generate the cursor's positioning coordinates) will not keep your mice from getting dirty, but it will cut down on the severity of the problem.

- **Clean floppy disk drives.** Buy a cleaning kit from Curtis, Kensington, or Sony and follow the instructions carefully. Usually, it involves taking a special cleaning disk and loading it up with cleaning fluid, inserting it
into the disk drive, and then running some special software utility program that comes with the kit. After approximately 10–15 minutes the cleaning job should be finished.

Remember to wait at least 30 minutes after using one of these kits before using that floppy drive again (so the cleaning fluid can dry completely). Remember to clean all of your floppy drives, both internal and external.

- **Check all UPSes, voltage regulators, and surge suppressors.** Most of these have special warning lights to tell you if their protection circuitry (their varistors) have been cooked.

- **Open all laser printers and shake the toner cartridges.** This ensures that the toner stays evenly distributed and that you get maximum life from a cartridge. Take the opportunity to vacuum out the printer if there is paper dust or spilled toner inside. Make sure that you follow the complete instructions for cleaning (don’t forget the delicate Corona wire) and maintenance directions for your printer each time you change a toner cartridge. You will catch more than 90 percent of all impending laser printer problems this way.

- **Clean out impact printers.** Vacuum paper dust and ribbon residue. Change nylon ribbon cartridges before they start producing seriously reduced images. Perform any scheduled maintenance (such as oiling spindles or tractor-feed mechanisms) that the printer vendor recommends.

  Clean print heads using special impact printer cleaning pads, available from most typing supply houses. IBM, Xerox, Olivetti, and other electronic typewriter vendors make them. They work by rolling them into your printer and then typing repeatedly on them with each key to clean all the impact pins or the characters on the daisy wheel, spin wheel, or print ball.

- **Clean ink jet printers.** Clean out the printing nozzles and vacuum out paper dust. Change old ink cartridges that haven’t been used in some time—they may have congealed.
• *Clean hard disk filters.* After you have powered-down hard disks (also optical disks, tape drives, CD-ROM drives, WORM drives, and so on), remove any washable filters and clean them thoroughly. Replace any damaged filters or those filters that are made to be tossed.

• *Check network cabling and connections.* Check for loose connections and retighten. Check for broken or damaged cables and replace. Don’t forget to check all electrical connections while you are checking network cabling.

• *Spot check your data backups.* Load a backup tape or disk and see if you can read the directory. Make sure that you try this with both your on-site and off-site backups.

You can, if you want, extend this list with more maintenance tasks, or you can condense it to fit your needs. The important point is that you need a maintenance policy even if you are using only one machine, and you should be a bit compulsive about sticking with it.

### Clock Battery Replacement

I easily could have included clock battery replacement in one of my maintenance checklists above. However, I didn’t want it to get lost in the sauce, because it warrants a separate discussion. Every Macintosh has a battery (usually alkaline or lithium) that backs up the machine’s parameter RAM (PRAM) which was discussed in chapter 7, “Improving Your Memory.” The reason for this battery backup is quite simple: unless the Macintosh is powered up, the PRAM doesn’t get any power.

System 7.5.5 can be a very inhospitable place if you have to change the factory default PRAM settings (such as mouse tracking speed and double-click recognition) every time you turn the thing on because your PRAM backup battery has failed. Apple usually calls its batteries “clock batteries,” because they also enable the internal clock to keep ticking when you shut the machine down—but the real point of the backup battery is PRAM, not just the internal clock.

Your Macintosh backup battery can be found behind a user-serviceable door that you can open in order to replace it (like the Macintosh Classic), in a
carrier on the motherboard which you can assess (but that Apple considers a dealer-serviceable item only), or soldered to the motherboard, where you cannot change it directly (and is also considered dealer-serviceable only). If you have a user-serviceable battery, all you need to do is remove the thing while the Macintosh is powered on (so as not to zap PRAM), and replace it with the same battery type.

If you have a battery that is soldered to the motherboard or placed in a carrier there, you’re best served by calling your local Apple dealer and making arrangements for them to come out and replace all of your Macintosh backup batteries at once.

In any case, expect to get 3–5 years from a backup battery under normal service.

Fixing Broken Hardware—The Ultimate in Troubleshooting

No matter how diligent you are, and no matter how good your daily, weekly, and monthly maintenance programs are, you will eventually have to deal with broken equipment. Getting it repaired, though, should be more than just a matter of calling your Apple dealer. If you have planned carefully, you may not need to expend all the time and money on repairs that you may think.

Manager’s Tip You should keep your plans in two general areas: disaster recovery and regular repair maintenance. With any luck, you will never have to use the first set of plans, and the second will only come into play as needed.

I won’t try to kid you about disaster planning and recovery by glossing over it here. Entire multi-volume books have been written on the subject by industry experts such as James Martin. 

continues
and Donn Parker. Rather, do what I have done and consult the experts. Hire a disaster planning and recovery consultant and have them help you formulate a plan for dealing with real disasters: earthquakes, fire, wind damage, water damage, major thefts, and so forth.

This sort of planning needs to cover a lot more than just your Macintosh physical plant, of course, so don't try to segment options. Spend the money now on creating and updating your disaster plans and on buying the backup equipment and leasing the temporary office space you will need to get your Macintosh operations backup and running. End of sermon.

Basic Repair Strategies

Getting back to the easier side of equipment repair, if you haven't already, you may want to consider buying an AppleCare extended warranty for any Apple equipment that you own. AppleCare extends the basic Apple one year parts and labor warranty on an annual basis (you pay for AppleCare each year). For devices that rely heavily on mechanical components, such as printers (especially laser printers, which are also expensive), AppleCare can be a good deal. Unless you can afford to foot major printer repair bills (and take the risk associated with them), take a careful look at your Apple dealer's AppleCare pricing.

For other Apple components, especially for the computers themselves, AppleCare is less of a good deal, since those components tend to fail much less often. In fact, most electronics will fail during the first 96 hours of continuous operation (due to bad soldering or cracked circuit boards or bad power supplies), so buying an AppleCare policy for them may not make sense. If you don't like the idea of "self-insuring" for repairs, though, AppleCare offers a way of getting your yearly maintenance costs out of the ether and into hard numbers. Sometimes annual budgeting goes more smoothly when this is the case.
For your non-Apple equipment, you also can find dealers willing to cover such equipment with annual maintenance agreements (make sure that they kick-in after the standard warranty has expired), but they are less likely to be comprehensive and are more costly than AppleCare. You'll need to read those contracts carefully and ask to have any exclusions explained to you in detail. Remember that every maintenance exclusion may ultimately cost you money.

If you do have to make arrangements for equipment repair, try to work out those deals ahead of time (even if you don't buy maintenance contracts from your dealers). You often can get preferred pricing and guaranteed on-site service if you are willing to sign an agreement to have all of your Macintosh computers and Macintosh-related equipment serviced by the same dealer. Expect discounts over piece-work repairs to average 10 to 15 percent on such contracts.

**Repair Checklist for Your Service Providers**

If you do have broken equipment in for repair, insist on the following from your service provider:

- A promised completion date, including the return of your equipment to your location.
- A solid price estimate that cannot be exceeded without your approval.
- Replacement of broken parts with Apple parts or with recognized industry equivalents of equal or greater reliability.
- Return of all broken or replaced parts with a full explanation of the problems. This will help you isolate use and environmental problems and keep them from recurring.

**Backups**

Anyone who doesn't have a serious data backup strategy already in place deserves their fate: slow agony as the data is recreated. But having said that, I know how backup strategies really work. You don't really formulate one until it's too late and you have been burned.
The same thing almost happened to me five years ago when my computer labs and departmental offices suffered a major theft (naturally, over the Christmas holidays). One of the offices hit was mine and with that hit I lost both my backup disks and originals. Only my networked backups and off-site backup disks saved me from the agony of lost data.

Even if you don’t buy a third-party backup program (which you should!), you can use System 7.5.5 PowerTalk catalogs, file sharing, file organization, AppleScript, and aliasing features to make it easier to save backup copies of important data to some type of removable media or to Macintosh computers located far away from your physical location. Still, even those 7.5.5 improvements can’t take the place of a good third-party backup program used every day with removable media that can itself be duplicated and stored off-site.

The backup bottom line is really no different with System 7.5.5 than it was with System 7.x:

- **Buy a full-featured backup program.** Use Dantz’s Retrospect because it’s the best. It offers all the bells and whistles; it is easy to use and administer; and it can be setup to do automatic unattended backups.

- **Read the manuals carefully and put in place a backup plan for you and your Macintosh users.** If you are a Macintosh manager, you may need to add network file server backups to the duties of your LAN manager or file server administrator.

- **Insist on daily file server backups.** If you are a Macintosh manager, request that your users try to do the same with their most critical local data. Horror stories about lost data may help your strategy.

- **Check backup files as a regular part of your backup strategy.** Backups aren’t worth doodie-squat if your Macintosh can’t restore them following an “event” requiring their use.

- **Review this whole backup shebang about every six months and adapt it to the changing needs of your Macintosh installation.**
Nobody Knows the Troubles I’ve Seen

Although your basic troubleshooting strategy should revolve around how System 7.5.5 “thinks” (so that you can then diagnose individual problems better), you also need to know some basic “hint and tips” to get started with when troubleshooting a new System 7.5.5 installation. Many of the problems that you may encounter with System 7.5.5 are related to odd incompatibilities or anomalies with your installation. The following tips suggest how to deal with those anomalies and how to avoid them. The tips have been organized according to how often you may encounter the problem the tip addresses. Of course, this list is not exhaustive. You should check with the sources of System 7.5.5 information that were mentioned in chapter 8, “Management Strategies for System 7.5.5,” for help in finding more hints and tips. In addition, if you want to come at the problem from a systemic “hint and tip” point of view, consider buying a copy of Lisa Lee’s excellent book, MacWEEK Guide to Repairing and Upgrading Your Mac (Hayden, 1995).

The System 3.0 Update

System Update 3.0 is a set of software enhancements that improves the performance and reliability of Macintosh computers running system software version 7.1, 7.1.1 (System 7 Pro), or 7.1.2 (for Power Macintosh). When you upgrade your system software from any of these versions to 7.5.5, you automatically get the enhancements provided in System Update 3.0. Don’t run the System Update 3.0 on any Macintosh you have upgraded to System 7.5.5!

PowerBook Duo 210 and 230 Battery Usage Problems

When System 7.5.5 is installed, Macintosh PowerBook Duo 210 and 230 models can use Type II batteries. Don’t use Type III batteries in these models without first installing 7.5.5.
PowerBook 200 and 500 Series
Printing Problems

If you have trouble printing to a serial printer that is connected to the Printer/Modem port of your Macintosh PowerBook 200 or 500 series computer, follow these steps:

1. Depending on whether or not your PowerBook has Express modem installed, do one of the following:
   - Open the Express Modem control panel and choose Use External modem.
   - Open the PowerBook Setup control panel and choose Normal.

2. Open the Chooser and do the following:
   - Turn off AppleTalk.
   - Select the serial printer.
   - Select the Printer/Modem icon (or the Modem icon if the Printer/Modem icon is not available).

How to Reconnect to a Lost File Server

When connection to a server is unexpectedly lost, the server's icon remains dimmed on the desktop. If you double-click the dimmed icon or choose the server from the Recent Servers item in the Apple menu, you get a message telling you that the disk could not be opened because "you do not have enough access privileges." Before you can reconnect to the server, you must close any open files, and then drag the server's dimmed icon to the Trash. If you need to save your work on an open file, use Save As to save it on a different disk. If you use the AutoRemounter control panel and set it to automatically reconnect to servers, you will save yourself some reconnect problems by automating the process.
The AutoRemounter control panel is easy to use. When you fire it up, you have three things to consider:

1. Do you want to remount shared disks?
2. When do you want to remount shared disks?
3. How do you want to remount shared disks?

The control panel uses radio buttons to turn the automatic remounting of shared disks on or off. You can do it after each time your PowerBook wakes up from sleep, you can do it always (so that every time a shared disk disappears from the desktop—say when the network goes down—it will reappear just as soon as it is available again), or you can turn it off.

You can choose to do this remounting on full automatic pilot, where the Mac will automatically supply the proper access password (a dangerous habit in a corporate or shared environment if you have sensitive data on the server) or where it will ask you to type in the password before remounting (a better way to do things in the corporate or shared environment where sensitive data abounds).

AutoRemounter will not work in the After Sleep mode on machines that cannot be put to sleep (on non-PowerBooks).

How to Use the Old "Find File" Feature

In System 7.5.5, the Find File program appears when you choose Find from the File menu. If you want to use the earlier Find feature (that was introduced with System 7.x) rather than the Find File program, use the following shortcuts:

- To launch Find, press ⌘-Shift-F.
- To find an item again, press ⌘-Shift-G.
How to Use the Shutdown Items Folder

One way to prevent daily problems with your Mac is to be consistent in how you do things. One way to achieve this consistency is by setting up the Mac to do the automatic stuff for you. So, you can use the Startup Items folder to launch applications and/or documents you need every day, as well as running needed AppleScripts, mounting shared disks, and the like.

But did you know that you can do the same thing when shutting down?

The Shutdown Items folder (inside the System Folder) allows you to specify scripts or programs that will automatically run during the shutdown process.

Using it can help you achieve a consistency in your Mac usage and help alleviate problems caused by too many unique events.

It works much like the Startup Items folder. To specify an item to run during shutdown, put the item or its alias into the Shutdown Items folder. To run the Shutdown Items, choose Shut Down or Restart from the Special menu. (Do not choose *Shut Down from the Apple menu. It will not launch items in the Shutdown Items folder.)

How to Rebuild Your Desktop

It is not necessary to rebuild your desktop periodically. However, when you do need to rebuild your desktop—say, after you have reformatted a disk, or you have made major repairs to a disk using Disk First Aid—pay close attention to the following instructions. Rebuilding the desktop, unfortunately, erases comments in the Get Info dialog boxes and may wipe out the “custom” thumbnail icons Photoshop places on the image files it saves. Fortunately, however, it also restores screen icons to their customized form, rather than showing generic ones.

Some Apple and non-Apple extensions may interfere with rebuilding your desktop. To prevent problems, you will need to turn off all extensions except Macintosh Easy Open (if you turn Macintosh Easy Open off and do a rebuild, some icons will not be restored to their customized form), before
you rebuild the desktop. When you finish rebuilding the desktop, turn the
extensions you normally use on.

To rebuild the desktop, follow these steps:

1. Before you rebuild your desktop, use the Extensions Manager to save a
record of the extensions that are currently on (see figure 9.2).

![Extensions Manager with Sets pop-up menu](image)

**Figure 9.2 Extensions Manager with Sets pop-up menu**

2. To turn off all extensions, open the Sets pop-up menu again and
choose All Off.

3. To turn on Macintosh Easy Open, find it in the list and click it to put a
checkmark beside it.

4. To rebuild the desktop, restart your computer while holding down the
⌘ and Option keys.

5. When you see the dialog box that says “Are you sure you want to
rebuild the desktop file on the disk ‘your hard disk’? Comments in info
windows will be lost,” release the keys and click OK.

6. When the desktop has been rebuilt, open the Apple menu and choose
Control Panels.

7. Open the Extensions Manager control panel.
8. To turn your extensions back on, open the Sets pop-up menu and choose the name you gave your set of extensions in step 1 (for example, "My Extensions").

9. Restart your Macintosh to activate the extensions.

**CloseView and the Apple Video Player**

You can use CloseView to magnify part of the video display up to 16 times. You also can use CloseView to invert the display. CloseView is not currently compatible with the Apple Video Player. If you want to view video in the Apple Video Player, you must turn off CloseView. To turn off CloseView, press ⌘-Option-D or open the CloseView control panel and click the Off button (see figure 9.3).

![CloseView control panel](image)

**Figure 9.3** CloseView control panel

**Express Modem Software**

Any time you reinstall your Macintosh system software, you should also reinstall your Express Modem Software.

**Incorrect “Guide” File Balloons**

System 7.5.5 includes Apple Guide documents which provide the onscreen instructions and other information that can help you use your computer.
However, if you turn on Balloon Help (by choosing Show Balloons from the Balloon Help/Apple Guide menu) and point to a Guide file icon on the hard disk drive, the balloon may give you the wrong information about where the file belongs or what you can do with it. To avoid being misled by incorrect balloons, use the following the guidelines:

- Leave Guide files where the System 7.5.5 installer places them. Some Guide files (for example, the Guide file named "Macintosh Guide") belong in the Extensions folder. Others will not work if they are put into the Extensions folder.
- Keep application programs that have Guide files in the same folder as the Guide file. For example, keep the file named "File Assistant Guide" in the same folder as the File Assistant program. If you move a Guide file that belongs with an application program, help will not be available to you while using the program.

Apple Guide Documents and PowerBook Sleep

If you set your PowerBook to sleep automatically, it will not sleep while an Apple Guide document is open. If you’re not sure whether an Apple Guide document is open, you can check by looking for a window that contains instructions and "floats" on top of all the other windows on your screen. An Apple Guide document window remains frontmost and active—even when you click other windows to make them active. Also, look for a window with rows of dots (rather than lines) in the title bar. To close an Apple Guide document, click the close box in the upper-left corner of the window. The “Quit” command is not available in the menu bar for Apple Guide documents.

Using QuarkXPress with System 7.5.5 on a Power Macintosh

To use QuarkXPress with System 7.5.5 on a Power Macintosh, you must upgrade to QuarkXPress version 3.3.1 or later. For upgrade information contact Quark, Inc. at 1-800-788-7835.
Disk Volumes Larger than 2 GB

Volumes larger than 2 gigabytes (GB) with a multitude of files may show a negative number for bytes used in the Get Info dialog box. An incorrect number of bytes used does not indicate that the data on your disk drive is damaged.

Using ISO 9660 and High Sierra CD-ROM Discs

CD-ROM discs using the ISO 9660 and High Sierra formats have version numbers attached to filenames. Some application programs need these version numbers in order to use the files.

If you have problems using an ISO 9660 or High Sierra CD with a program, follow the following instructions to make the version numbers available to the program—regardless of the kind of CD player you are using:

1. Make sure the application program you want to use with the CD is active.
2. Drag the CD icon to the Trash to eject the disc.
3. Hold down the Option key while you reinsert the disc. Keep holding down the Option key until the disk is inside the player and mounted on the desktop. The program should now be able to locate the filenames on the CD-ROM disc.

Printing Large Fonts with LaserWriter

If you have not installed QuickDraw GX as part of your System 7.5.5 upgrade and your laser printer uses either the LaserWriter 7.2 or LaserWriter 8.1.1 drivers (or earlier versions 8 and 8f), your system may crash or freeze rather than report an out-of-memory error when printing large QuickDraw GX fonts or other large fonts. The problem is fixed in the LaserWriter 8.2 driver that's available by calling 1-800-SOS-APPL.
Problems with the AudioVision 14 Display Software Driven by PowerBooks

If you are using an AudioVision 14 Display software with a PowerBook, you may have trouble with the pointer "freezing" (not responding to the trackball) after you install System 7.5.5. To fix the problem, try the following steps:

1. Shut down your PowerBook.
2. Start up your PowerBook while holding down the Shift key (to turn off all extensions).
3. When the PowerBook is ready, drag the AudioVision extension out of the Extensions folder.
4. Restart your computer to turn on the extensions.

The PowerBook Assistant Toolbox and Non-Networked Printers

If you have installed the Assistant Toolbox extension on your Macintosh or PowerBook, the Print Later option (LaterLaser) will work only with networked PostScript printers. If you print on a non-networked printer—particularly a LaserWriter Select 310, you should open the Extensions Manager control panel and turn off the Assistant Toolbox extension and not use it with that printer.

Losing Your Desktop When You Have an Apple AV Card Installed

You’ve lost your desktop and you can’t get up! If you have an Apple audio-video (AV) card installed in your Macintosh or Power Macintosh, it is possible to lose access to your desktop. If you encounter the problem on your Power Macintosh refer back to the “Troubleshooting” section in your Power
Macintosh manual (the fixes will be different for each Power Macintosh model). If you encounter the problem on another Macintosh model, review the following scenarios and fixes:

• **If you have selected the AV card in the Monitors control panel when no monitor is attached to the port.** This usually happens when the Monitors control panel is set to “Rearrange on close” and you move the menu bar to a video card (such as the Power Macintosh AV Card or a non-Apple video card) when you have not attached a monitor to the card. The Power Macintosh cannot determine whether the AV card really has a monitor attached so when you restart the computer, you do not have access to your desktop. To correct the problem, you will have to remove the AV card and change the primary monitor back.

• **You are using a single monitor that is not attached to the AV card and the AV card is set to greater bit depth than your monitor.** When you start up the computer with the AV card installed, the system thinks that there is a monitor attached to the AV card. For example, if you are using a single monitor that is not attached to the AV card, the system thinks that there are two monitors. The new System 7.5.5 Color Picker tries to display itself using the greatest screen depth available. If the depth of the AV card is greater than the bit depth of your main display, the AV card becomes the main display. To correct the problem, attach a monitor to the AV card and restart your computer, using the Monitor’s control panel to set the AV card to black and white (1 bit depth).

**Macintosh Centris/Quadra 660AV or Quadra 840AV, and Alert Sounds**

If you have a Macintosh Centris/Quadra 660AV or Quadra 840AV, some system alert sounds may not play correctly with the Alert Volume turned
down. To avoid the problem, keep the Alert Volume turned all the way up and adjust the built-in system volume. (To adjust built-in volume, open the Sound control panel and choose Volumes from the pop-up menu.)

Help with the Japanese or Chinese Language Kit

Japanese and Chinese Language Kits version 1.1 or earlier may not be compatible with System 7.5.5. To run effectively, you must upgrade your language kit to version 1.1.1 or later.

Problems with a RasterOps Video Board

Some older RasterOps video boards with ROMs earlier than 2.0 may not be compatible with System 7.5.5. Before installing System 7.5.5, you should determine the ROM revision of the RasterOps video board by:

- Starting up your Macintosh with the RasterOps video board.
- When the RasterOps logo appears, look at the ROM version in the top right corner of the monitor. Boards with ROM revision 2.0 or later should operate correctly with System 7.5.5.

If your ROM is earlier than 2.0, contact RasterOps Technical Support for upgrade information. The RasterOps Technical Support department is available Monday through Friday from 8:00 A.M. to 7:00 P.M. Eastern Standard Time at (317) 577-8788.

Dealing with PC Exchange and Third-Party Software

Some third-party or old Apple programs do not work properly with System 7.5.5’s PC Exchange. If you have one of these combo platters on your Macintosh, pay close attention. Otherwise, you don’t need to worry about it!
Apple File Exchange and Macintosh PC Exchange

The Apple File Exchange software is not compatible with PC Exchange and should not be used when you have installed PC Exchange on your computer. In short, dump Apple File Exchange from your hard disk!

AutoDoubler

To use Symantec's (Salient Software by way of Fifth Generation Systems!) AutoDoubler with PC Exchange, you must first open the AutoDoubler control panel and turn off the "Show DD on Compressed Files" option by clicking the Preferences button and using the dialog that appears (see figure 9.4).

![AutoDoubler Preferences](image)

Figure 9.4 AutoDoubler control panel
ClarisWorks Version 1.0v2 or Earlier

Some versions of ClarisWorks cannot read or write files on DOS-format floppy disks. To open a PC document in ClarisWorks, you must first copy the document to your Macintosh hard disk. You then can copy the document to a DOS-format floppy disk. Contact Claris to obtain ClarisWorks version 1.0v3 or later to eliminate this problem.

Compressed PC Disks and Files

Macintosh PC Exchange does not work with DOS-format floppy disks or SCSI hard disks that have been compressed using Stacker or other MS-DOS or Windows disk-compression utility. Before transferring compressed DOS files to a Macintosh, you must decompress the files and save them to a noncompressed DOS-format floppy disk.

Working with PC-Format Disks that Contain Multiple Partitions

If a SCSI hard disk or removable media cartridge has been formatted for multiple partitions, you can use PC Exchange to mount the Macintosh-, DOS-, or ProDOS-format partitions as individual logical drives on the Macintosh desktop. If the disk contains both Macintosh and DOS-format partitions, PC Exchange will only recognize the Macintosh partition. In addition, PC Exchange will only recognize ProDOS-format partitions on SCSI hard disks that are less than 32 MB.

You can use PC Exchange to erase existing individual partitions on a SCSI hard disk or removable media cartridge, if they have the same format. However, you cannot use PC Exchange to reformat and resize individual partitions contained on the disk. Nor can you format Macintosh-format hard disks or removable media cartridges as DOS-format disks. To resize or reformat multiple Macintosh, DOS, or ProDOS partitions, you need to use third-party software designed for partitioning hard disks and removable media cartridges. My recommendation is to buy and use Hard Disk Toolkit from FWB.
Chapter 9 Summary

This seems like a very good place to stop and seriously reflect on the major points covered, vis-a-vis establishing some troubleshooting goals and strategies for System 7.5.5. I urge you to use the fortuitous opportunity provided by upgrading to System 7.5.5 to reflect on your current Macintosh troubleshooting strategies; see what you can do to improve them, and determine how you can revitalize them in the face of the new power that System 7.5.5 gives to you and to your users.

After this serious reflection, test your knowledge of this chapter and of your evolving troubleshooting plans by taking my chapter 9 Computing Quiz.

Crabb’s Computing Quiz for Chapter 9

1. What systems do you now have in place to deal with the network problems caused by using System 7.5.5?
2. How do you decide to use a System 7.5.5 feature?
3. What is the single most important people issue that you currently have to work with daily? Does System 7.5.5 offer any technological aids in dealing with that issue?
4. How many Macintosh users do you have? Which Macintosh models are they now using? How many of them will require hardware upgrades to run System 7.5.5? How many will you upgrade to System 7.5.5 immediately?
5. What does your current network look like? Does it use LocalTalk, EtherTalk, TokenTalk, or other protocols and cabling systems? How many third-party network devices do you have to upgrade to run System 7.5.5 fully?
6. How many critical applications do you have that don’t work properly with System 7.5.5?
7. What’s a Type I Error? What can you do about them?
8. Which security problems have you encountered in the past year: break-ins or theft, viruses, disk or machine failure, network break-ins, or loss of data?
9. What do you know about Macintosh security under System 7.5.5? Is it better or worse than 7.x?
10. Do you have a backup strategy? What is it? How often?

Answers to Crabb’s Computing Quiz for Chapter 9

1. None you say? Better get cracking by rereading my comments regarding troubleshooting strategies.
2. Can you say, carefully?
3. Sorry pal, I am not sitting on your shoulder so I don’t have a clue.
4. 1-2-3-4-5-6-7-9-10... Count 'em and check 'em out. If your aren't a Macintosh manager, consider yourself a blessed individual.
5. If you don’t know, hold off the 7.5.5 upgrade until you do.
6. Hopefully, not many.
7. It’s a major pain, bunky, and you can’t do squat about it.
8. System 7.5.5 does nothing by itself to help you here.
9. What’s to know? Except for basic (and easily breakable) access methods in file sharing and PowerTalk, it simply doesn’t exist.
10. Get one or you will lose data. I know, I’ve been there.

With a 2 GB drive, creating four logical partitions of 500 MB each is probably a good expedient. You would name each of those partitions a different name, and when your desktop came up you would see them as four different logical disk volumes. The original single logical disk would no longer appear (since partitioning the disk got rid of it). These partitions could be different kinds of volumes, too, depending upon the capabilities of your disk formatting/partitioner, so that you could make one a DOS/Windows partition, one a UNIX partition, one a Mac partition, and one a ProDOS partition.

Keep in mind, however, that you have to decide to partition your large drive into separate logical volumes before you have filled it with data. If you do otherwise, formatting/partitioning will blow away all the data on the drive!

For more information about disks, take a gander again at chapter 7, “Improving Your Memory.”
We All Need More Help, So Here's How to Get It

"All you need is love, da-da-da-da-daaaaaa...." But if you are migrating to System 7.5.5, you need less love and more help, which is what this book is all about. Chapters 1 through 9 provide that help, in fairly detailed measure. This final chapter summarizes additional sources of help, offers a final exam for all the material in this book, and provides
some insights into the future of the Macintosh (which is help we all need!).

In any case, this book only scratches the surface of what a good Macintosh user needs to know about the Macintosh, its newest operating environment, and how to manage other Macintosh users. It would take even more hubris than my inflated ego could produce to say that this book is the last one any of us will need on System 7.5.5.

Of course, I do expect other Hayden Books to provide you with detailed knowledge about using specific applications and hardware with System 7.5.5 and about using some of the core technologies in System 7.5.5 in great detail, including programming for System 7.5.5 using Macintosh Drag and Drop, OpenDoc, Cyberdog, QuickDraw GX, PowerTalk, AppleScript, and Apple Guide.

Although I intend to revise this book periodically to keep it current, there will be other Hayden Macintosh books out there that will help you get a better grip on things Macintosh and how to deal with System 7.5.5 as it evolves into System 8.0.

And, if you want to get a sense of where System 7.5.5 is heading as you implement it and begin to sort it out in your shops, I can think of no better source than reading *MacWEEK*. You may even find that my column, “The Mac Manager”, will give you some new insights on System 7.5.5 and System 8.0, or at least that it will give you a fixed target on which to take aim. In any case, the information and the commentary will be there if you want it.

**Where to Get More Help**

You already know how to get more help with System 7.5.5 if you have read chapter 8, “Management Strategies for System 7.5.5,” thoroughly. If not, time’s a-wasting. Let me reiterate those sources for further help, in the order I expect you’ll want to use them. Keep in mind that you get more ReadMe and related online help files when you buy the CD-ROM edition of the System 7.5.5 Upgrade. Since both the CD-ROM edition and the floppy disk edition have the same price, if you have a CD-ROM drive, the CD-ROM kit is
the way to go. In addition, many of Apple’s supplemental training materials come on CD-ROM as do third-party products, so a CD-ROM player should be standard equipment for any Macintosh owner at this point.

### Table 10.1 Sources of System 7.5.5 Help

<table>
<thead>
<tr>
<th>Source of Help</th>
<th>Price</th>
<th>How to Get It</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macintosh System 7.5.5 Upgrade Guide</td>
<td>Free</td>
<td>Comes with 7.5.5</td>
</tr>
<tr>
<td>Guide to Macintosh System 7.5.5 by Don Crabb</td>
<td>$25.00</td>
<td>You’re Reading It!</td>
</tr>
<tr>
<td>System 7.5.5, PowerTalk, and Upgrade</td>
<td>Free</td>
<td>Comes with 7.5.5</td>
</tr>
<tr>
<td>Macintosh Guide (Apple Guide)</td>
<td>Free</td>
<td>Comes with 7.5.5</td>
</tr>
<tr>
<td>PowerTalk Guide (Apple Guide)</td>
<td>Free</td>
<td>Comes with 7.5.5</td>
</tr>
<tr>
<td>Guide to QuickDraw (GX (Apple DocViewer File)</td>
<td>Free</td>
<td>Comes with 7.5.5</td>
</tr>
<tr>
<td>Guide to AppleScript (Apple SimpleText File)</td>
<td>Free</td>
<td>Comes with 7.5.5</td>
</tr>
<tr>
<td>Online Services (Prodigy, CompuServe, America Online) and the Internet</td>
<td>Varies</td>
<td>See chapter 8</td>
</tr>
<tr>
<td>Local User Groups (BMUG and B.C.S. Mac)</td>
<td>Varies</td>
<td>See chapter 8</td>
</tr>
<tr>
<td>National User Groups</td>
<td>Varies</td>
<td>See chapter 8</td>
</tr>
<tr>
<td>Apple’s Supplementary 7.5.5 Training</td>
<td>Varies</td>
<td>See chapter 8</td>
</tr>
</tbody>
</table>

continues
Table 10.1  Sources of System 7.5.5, Continued

<table>
<thead>
<tr>
<th>Source of Help</th>
<th>Price</th>
<th>How to Get It</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses and Training Materials (Developer University), including CD-ROMs</td>
<td>Varies</td>
<td>(1-800-SOS APPL)</td>
</tr>
<tr>
<td>Become an Associate Apple Developer</td>
<td>$250/yr.</td>
<td>See chapter 8 (call (408) 996-1010 and ask to speak with DTS)</td>
</tr>
<tr>
<td>Third-Party Training and Related Courses and Materials</td>
<td>Varies</td>
<td>See chapter 8</td>
</tr>
</tbody>
</table>

The Future of Macintosh

With the release of Microsoft Windows95, and much misinformation about Apple, the Macintosh, and System 7.5.5 flying around the ether, there's a lot of trepidation, even fear, among Macintosh owners, potential buyers, and managers everywhere. The question keeps coming up: what is the future of Macintosh?

While I don't have a crystal ball, I do get paid to ponder this question regularly and I'll offer these insights.

The future will play itself out in Apple's ability to handle the transition to RISC (Power Macintosh computers), the transition to compound documents and object-based computing and a new user interface, plus Apple's need to make computing collaboration across the Internet more than just a buzzword.

RISCy Business

RISC (Reduced Instruction Set Computing) microprocessor architectures have been commercially successful in the workstation market since the early 1980s. In 1991, Apple, IBM, and Motorola joined forces to bring the benefits...
of this technology to the mainstream personal computing arena. These three companies combined efforts to create a powerful, scalable, and cost-effective RISC-based microprocessor architecture. The result, known as the PowerPC microprocessor, powers the next generation of computers from both Apple and IBM and may be adopted by other computer vendors as well.

According to Apple, the three companies in the PowerPC alliance believe that the inherent advantages of RISC microprocessor technology over microprocessors based on older, 1980s CISC (Complex Instruction Set Computing) technology, are that the PowerPC chip will offer significant—and increasing—performance and price/performance leadership over the competing Intel architecture based on CISC technology. The PowerPC chip derives its price/performance advantage over the Intel CISC architecture through less complex chip design, which translates to a smaller die size and more cost-effective manufacturing.

Intel's Pentium chip, the PowerPC chip's chief competitor, demonstrates the cost and manufacturing burden of having to maintain exact compatibility with the large CISC instruction set.

Since Apple still makes most of its money from selling computers, the move to PowerPC was not only critical—it was vital, as the older Motorola 68K CISC CPUs were running out of gas.

**The PowerPC and Apple's Future**

In addition to the initial PowerPC 601 chip that lives in the first two generations of Power Macintosh computers, the Apple, IBM, and Motorola alliance has announced a series of follow-on PowerPC chips, under concurrent development. These include the low-power, low-cost PowerPC 603 and 603e (designed for use in PowerBook and low-end Macintosh computers), the high-performance PowerPC 604 and 604e (which has replaced the PowerPC 601 in desktop and midrange systems), and the superior-performance, full 64-bit implementation PowerPC G3 and G4 (designed for use in high-end workstations and servers). As a result, the PowerPC architecture offers a well-understood, compelling growth path, something that the 68K architecture simply could not provide.
System X and the CPU

Microprocessors and operating systems have a strong relationship. DOS grew up as the operating system for the Intel 80x86 architecture, and now Microsoft Windows is succeeding to that position.

Although these operating systems have had a commanding role in the CISC microprocessor world, the PowerPC chip’s dramatic, high-volume entrance into the PC market will increase Apple’s market share at the expense of Intel x86/Windows PCs.

Do you believe that I am just suffering a case of wishful thinking? Apple has shipped more Power Macs since March 1994 than all the Pentium machines combined. Soon, IBM will ship PowerPCs that will run the Mac OS, AIX, the WorkGroup OS, and OS/2. From a hardware point of view, Apple has Intel and Microsoft more than a little concerned.

As RISC achieves mainstream status in 1997, the crucial question is which operating system will dominate the PowerPC platform. Several operating systems are jockeying for this leadership position, trying to knock Microsoft and Intel off the mountain.

The operating system vendors (Apple, Microsoft, IBM, and so on), all have different approaches to providing operating system software for RISC-based personal computers. Some vendors require users to adopt a totally new operating system, while others take an evolutionary approach.

Because of the 68K emulation provided by today’s Power Mac, Apple can make the move to RISC fairly easily. Even though more than 70 percent of System 7.5.5 is still written in 68K code, the whole thing runs properly and quickly on Power Macintosh computers because of built-in 68K emulation. The next Mac System, MacOS 8.0, will offer an operating system that is more than 99.9 percent native to the Power Macintosh, which will make it run much faster on Power Macintosh computers than today’s System 7.5.5.

The Applications Puzzle

Because the transition to RISC centers around high performance—and the new capabilities enabled by that high performance—computer buyers like you will also judge operating systems by the breadth of selection of native
applications (applications that offer full RISC performance) available. Software developers must choose a specific operating system for their PowerPC products because, for example, an application ported to System 7.5.5 for PowerPC will not operate on Windows NT for PowerPC. So far, more than 2,000 major applications have been rewritten for Power Macintosh computers and System 7.5.x.

To build the next generation of applications, system software extensions, and user interfaces, designers require robustness, performance, and additional services beyond those provided by today’s personal computer operating systems. High-capacity, high-performance file systems are necessary to accommodate the larger amounts of data generated by new technologies such as multimedia. The full 32-bit operation enabled by RISC performance speeds access to and processing of data and instructions. Preemptive, multithreaded execution will enable the construction of more sophisticated programs; and memory protection will isolate the effects of errant programs in System 8.0 and later.

System 7.5.5 Predicts the Future

System 7.5.5 and previous versions of System 7 have become the industry benchmark for easy-to-use system software. System 8.0 promises considerably more improvement both in terms of system services on the Power Macintosh and in terms of a new Finder.

During the past two years, Macintosh system software has been enhanced to run on the PowerPC microprocessor. With a 68040 software emulator as a standard component, System 7.5.5 for Power Macintosh offers exceptional compatibility with existing Macintosh programs.

A mixed-mode architecture also supports new native applications that run at full PowerPC speeds. Apple has been working closely with the third-party development community to ensure a broad range of native application software for the PowerPC processor-based Macintosh computers. To date, more than 500 companies—including most leading software vendors—have publicly announced commitments to bringing out versions of their applications for PowerPC processor-based Macintosh computers.
Apple also offers migration paths for customers who want to move up from existing IBM PC environments to the PowerPC environment. Already, hardware-based solutions for PC compatibility are available in the Macintosh Quadra line. The PowerPC chip brings a new level of performance to software-based compatibility solutions, rendering them highly practical. Through a partnership with Insignia Solutions, Apple can provide software-based emulation of both DOS and Windows programs through a program called SoftWindows. Apple also provides a hardware solution with a PC CPU card for its Quadra machines (and may provide this same PC CPU card for Power Macintosh models).

Apple is rapidly enhancing Macintosh system software to provide a solid foundation for the future. Although the number of differences in System 7.5.5 for PowerPC are not always noticeable, significant changes have occurred within the core. A new runtime architecture, adapted from workstation-class operating environments, makes application development more straightforward. And subsequent versions of Macintosh system software will add true multitasking capability, memory protection, and enhanced file-system capabilities.

The Macintosh operating system should become the leading operating system for the next-generation personal computers based on PowerPC RISC microprocessors. Because Apple took a fundamentally different approach in moving to RISC than did other companies, Apple can provide what customers want: a mature, easy-to-use operating system with a broad selection of native programs from leading developers and excellent compatibility with existing programs. Driven by the volumes of Apple's hardware business, the Macintosh operating system will offer developers a strong platform for developers and for buyers like us.

**Moving to Object Technologies**

Apple, of course, has not been alone in recognizing some of the problems with computing today and the benefits to be realized from moving to an object-based applications framework. Two major problems can be addressed through the use of object-based technologies: the difficulty of creating documents with varying media and the increasing complexity of applications.
Ten years ago, most of what people did with computers centered around text and numbers. The graphical nature of the Macintosh computer brought a new emphasis to working with graphics on the computer, because the graphics-based user interface enabled easy manipulation, editing, and integration of words and images.

Today, however, many of us engage in the creation of compound documents: documents with parts containing various media, such as text, tables, movies, sound, and graphics in a variety of file formats. Currently, each medium requires users to work in different ways—and often in separate applications or editors—demanding a labor-intensive series of actions to move data from each creator application to the final document. This lengthy and cumbersome process tends to be error-prone and frustrating and, consequently, time-consuming.

In recent years, developers have found that the demands of the marketplace encourage an ever-increasing complexity in successive releases of applications; they are under constant competitive pressure to add more features to their products. The result is paradoxical: As applications become more powerful in terms of features, they also become more difficult to learn and use and, hence, less useful to people. In addition, they require more time and effort to develop, enhance, and maintain.

Welcome to OpenDoc Compound Architecture

Compound document architectures have emerged as the answer to these issues. By reducing the complexity and increasing the flexibility of software for both end users and developers, they offer an evolutionary approach to restructuring software into independent modules, or “parts,” which can be flexibly combined in a variety of ways. The result is an entirely different way of both using and writing personal computer software—one that offers a quite a few significant benefits.

For most Macintosh users, compound document architectures offer the following:

- Easy creation of compound documents
- Editing “in place”
- Powerful document management capabilities
Cross-platform support
Consistency of operation
Uniformity of interface
Scalability
"Plug-and-play" solutions

For developers, compound document architectures enable:

- Faster, more efficient development
- Reduction of application complexity
- Diminished cost and risk of software development

OpenDoc is a compound document architecture championed by Apple and other leading industry vendors. Specifically, Apple is combining its expertise in user-interface technology with WordPerfect's competence in document-centric computing and Novell's skills in collaborative systems in order to define and implement the OpenDoc technology. In addition, a number of other system and software vendors have helped shape the OpenDoc specifications, and many are expected to support OpenDoc in their products and to assist in implementing OpenDoc on their platforms.

The OpenDoc coalition (via the independent Component Integration Laboratories [CILabs]) is working closely with recognized industry associations such as the Object Management Group (OMG), the Open Software Foundation (OSF), and the X Consortium. Apple's says it will make OpenDoc technology not only cross-platform but also truly open—with both systems vendors and independent software vendors able to easily obtain the source code.

OpenDoc advantages include a superior user interface, a simple development model, multiplatform support, and network readiness.

In contrast to OpenDoc, the other major effort along these lines—Microsoft's OLE 2.0—takes a closed and proprietary approach, with the OLE 2.0 source code being held by Microsoft and provided only under Microsoft license. However, a goal of the OpenDoc effort will be interoperability with OLE 2.0, which will enable developers to take advantage of its broader feature set, additional support platforms, and a truly open nature without sacrificing OLE support.
Of course, because OLE is Microsoft's baby and because Microsoft is one big bad baby, they have beaucoup market clout. But on the OLE vs. OpenDoc issue, I see OpenDoc "winning" because its open consortium will coopt OLE and make it easier for developers on both Macs and PCs to develop document-centric applications.

**OpenDoc vs. OLE**

Table 10.2 summarizes the important differences between OpenDoc and OLE, so you can see where I think Apple is heading:

**Table 10.2 OpenDoc vs. OLE 2.0**

<table>
<thead>
<tr>
<th>OpenDoc</th>
<th>Microsoft OLE 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARCHITECTURE</strong></td>
<td><strong>ARCHITECTURE</strong></td>
</tr>
<tr>
<td>Open standard,</td>
<td>Proprietary, single-vendor effort; no</td>
</tr>
<tr>
<td>multivendor effort</td>
<td>announced UNIX or OS/2 support</td>
</tr>
<tr>
<td>Source code available</td>
<td>Source code not available</td>
</tr>
<tr>
<td>Extensible, scalable</td>
<td>Closed architecture</td>
</tr>
<tr>
<td>architecture</td>
<td></td>
</tr>
<tr>
<td><strong>USER EXPERIENCE</strong></td>
<td><strong>USER EXPERIENCE</strong></td>
</tr>
<tr>
<td>Supports irregularly shaped,</td>
<td>Supports rectangular, non-</td>
</tr>
<tr>
<td>overlapping content</td>
<td>overlapping content only</td>
</tr>
<tr>
<td>Multiple-object editing;</td>
<td>Single-object editing</td>
</tr>
<tr>
<td>multiple components</td>
<td></td>
</tr>
<tr>
<td>can stay active concurrently</td>
<td></td>
</tr>
<tr>
<td>Designed for fast switching</td>
<td>Each application boots separately</td>
</tr>
<tr>
<td>among objects</td>
<td></td>
</tr>
<tr>
<td>Verification process for</td>
<td>No announced way to formally</td>
</tr>
<tr>
<td>seamless application</td>
<td>test OLE compliance</td>
</tr>
<tr>
<td>interoperability</td>
<td></td>
</tr>
</tbody>
</table>

continues
Table 10.2 OpenDoc vs. OLE 2.0, Continued

<table>
<thead>
<tr>
<th>OpenDoc</th>
<th>Microsoft OLE 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COLLABORATION</strong></td>
<td><strong>COLLABORATION</strong></td>
</tr>
<tr>
<td>Built-in networking</td>
<td>No currently announced network structure</td>
</tr>
<tr>
<td>Makes collaboration easier by maintaining multiple “drafts” of a document</td>
<td>Doesn’t store multiple drafts</td>
</tr>
</tbody>
</table>

Getting Collaborative

Just as the personal computer initially boosted individual productivity, today the technology is being utilized to increase the productivity of groups working together. In the current competitive and fast-paced business environment, effective communications and, more specifically, effective teamwork can provide organizations with the competitive edge that can spell the difference between success and failure.

Too often in the past, however, we often have been hindered rather than helped by the technology—daunted by multiple formats, competing communications services, and the sheer bulk of information we receive. Increasingly, it’s becoming obvious that merely having information at our fingertips isn’t enough. What we need are technologies that help us to manage information—not just get more of it.

Fortunately for Macintosh folk, Apple has demonstrated that it intends to take the lead in supplying useful collaborative technologies, with its development and release of PowerTalk, PowerShare, and the Apple Open Collaborative Environment (AOCE).

If we are to take full advantage of computer-based collaboration and communications, electronic-mail services should be integrated directly into the operating system—not as a separate utility—and mail should be gathered from different sources into a single desktop mailbox. The architecture should have an open back-end to facilitate the integration of gateways
providing access to a variety of mail environments, such as the Internet and QuickMail. The messaging system should scale from peer-to-peer offerings for small workgroups to server-based systems for large groups and organizations. And the mail service should go beyond simple text to support media-rich data that includes graphics, animation, sound, and video. PowerTalk provides all these capabilities.

True workflow in groups and organizations becomes possible when electronic-mail services are augmented with authentication, digital signature, and privacy services, so that organizations can build systems that are trustworthy and secure. Systemwide scripting is also critical, to enable people to take off-the-shelf programs and weave them together into custom workflow solutions. Apple already provides this with AppleScript and the Scriptable Finder in System 7.5.5.

New developments should continue to help us navigate our piles of information and collaborate with others without concern for the platforms or protocols involved.

To provide these advanced collaborative solutions, strong, consistent networking capabilities must be built directly into the operating system. You should be able to deploy systems, applications, and services and have them transparently take advantage of the appropriate network protocol.

Toward that end, Apple is close to delivering the Open Transport Architecture (one of the underpinnings of AOCE), which is an architecture that enables all networking protocols (AppleTalk, IPX, IP, DECnet, and more) to function at a high level in the Macintosh networking world. In contrast, networking in the Windows world is complex, with multiple, competing implementations of the same protocol and no unifying architecture for developers or users. OTA will eventually replace kludgy Apple developer toolboxes like the Comm ToolBox.

**Passive vs. Active User Interfaces**

In the 1980s, Apple pioneered the concept of the personal computer graphical user interface (after borrowing the idea from Xerox PARC), incorporating features such as windows, menus, icons, and copy-and-paste functionality to simplify the process of working with computers.
Apple has made the interface even richer with the addition of built-in collaboration via PowerTalk, and with speech recognition via PlainTalk software on the Macintosh computers that support Apple AV Technologies, all of which reside in System 7.5.5.

As a result, the power of computing technology is now accessible to more people than ever before. The popularity of the Macintosh system software—and of Microsoft Windows—has demonstrated the relative superiority of the graphical user interface over older command-line interfaces.

But after 10 years of experience, Apple says that it is able to recognize potential limitations of the current, and relatively passive, graphical user interface model. Based on this experience, Apple should be able to evolve the user interface from a passive GUI to one of active assistance that accomplishes specific tasks with minimal direction, and even anticipates user preferences and needs.

In the future, Macintosh computers will incorporate intelligence that will understand what the user is attempting to do and guide her through the task. A logical next step is allowing people to "delegate" complete tasks to the computer, freeing them to focus on other activities. When this technology is in place, the user interface will be transformed from a passive player to an active, "intelligent" assistant. Users will benefit from an intelligent interface that adapts to their way of working.

The technology necessary to implement an active interface is wide-ranging. First, active interfaces will require tremendous power. Advanced natural-interface technologies such as speech-recognition and text-to-speech software are necessary to improve communication with the user. Second, the system software must also have high-level control over portions of itself, as well as over applications.

Apple is actively working toward the creation of such an interface, harnessing the power of RISC and OpenDoc technology to deliver the next generation of system software-based functionality. Already delivered are key technologies such as PlainTalk speech-recognition and text-to-speech software, Apple Events and AppleScript scripting technologies, and QuickTime multimedia software. System 7.5.5 also includes the Apple Guide
technology, which provides step-by-step context-sensitive assistance—even to the extent of showing users precisely how to complete a task.

**Future Shock?**

So, if you add up RISC (Power Macintosh), compound documents (OpenDoc), collaboration (Cyberdog, PowerTalk, PowerShare, AOCE, and OTA), active interfaces (AppleScript, Finder X, and Apple Guide), and improved system services (preemption and protected memory), what do you have? You have System 8.0, which will ship sometime before the end of 1995. But you can get many of these features now with System 7.5.5, which gives you plenty of time to determine your long-term appraisal of Apple and Macintosh and whether it will be thumbs-up or thumbs-down.

Having read the tea leaves, consulted my crystal ball, and dealt the Tarot cards, I give Apple and the Macintosh a pretty solid thumbs-up, despite the irrational anti-Macintosh sentiment alive in the hearts of many PC bigots.

**Chapter 10 Summary**

Well, our mutual System 7.5.5 journey has come to an end. It's party time! But before we start quaffing the bubbly, we need to review what we have learned about System 7.5.5 and how to proceed from here.

**System 7.5.5's Major Features**

Let's review the major features of 7.5.5 to get started with our summary:

- It includes Apple Guide, an innovative help system that interactively helps users accomplish specific tasks. You can make your own Guides with the Guide Maker application.

- It offers compatibility with DOS and Windows data files and support for the TCP/IP communications protocol, so you can network and communicate easily with the non-Macintosh world.

- It gives you enhancements that enable you to tailor your systems and automate complex or routine tasks with your Macintosh computers.
• It rolls in the improved QuickDraw GX graphics/imaging architecture, which provides major advances in ease-of-use for everyday printing as well as high-end graphics manipulation.

• It includes built-in collaborative services through PowerTalk software.

• You also get a number of special enhancements that optimize PowerBook battery life and make mobile computing easier.

What You Know and Don’t Know and How to Tell Me Off!

If you have read this far, give yourself some bonus points for perseverance! But also give yourself some bonus points for knowing more about System 7.5.5 than you did before, which will make it easier to use System 7.5.5 and manage others using it. As I said at the beginning of this book, I have not tried to be all things to all Macintosh users with the Guide to Macintosh System 7.5.5. Nor have I tried to offer an encyclopedia of Macintosh info, tidbits, or other flotsam and jetsam (or his boy, Elroy!).

The point of this book was a critical evaluation of System 7.5.5 that would help you get your work done. I hope it has lived up to that promise.

While I included what I felt was a necessary level of detail to get Macintosh users and managers up to speed on System 7.5.5, there is always more information you should read and other things you need to do.

Having said all that, I hope that when you’ve finished reading the Guide to Macintosh System 7.5.5 that you will have more questions than when you started, since that is my hidden purpose all through the text: I wanted to help you think critically about your Macintosh environment and how System 7.5.5 fits into it. If you are a manager, I wanted you to think about yourself and your users and how you and they will use Apple’s latest and greatest System software.

If you are regular Macfolk, then I want you to send me all your money and repeat after me, “I love System 7.5.5.” Whoops! Sorry, that slipped in from an elegy to L. Ron Hubbard. Anyway, if you are a good old regular Mac user,
you should be thinking about System 7.5.5 too, and what it can and cannot
do for you and what future Systems will bring.

As I mentioned in the introduction, if you have comments, criticisms,
suggestions, brick bats, or bouquets about what you have read in this book,
please contact me. The best way is via electronic mail, and I'd appreciate it if
the mail was sent to my Internet account (decc@cs.uchicago.edu).
Although I do hang out on the different online services, especially in the
ZiffNet/Mac forums on CompuServe, I prefer my mail via the Internet.

As I have often mentioned in my columns, I really value the letters and
messages from my readers, so I look forward to reading your comments and
responding to them by improving future editions of Guide to Macintosh
System 7.5.5. My publisher, editors, and I all have a commitment to keep this
book as current as possible, even when it becomes the Guide to Macintosh
System 25, so look for us to revise it regularly. Expect, for example, a pretty
hot Guide to Macintosh System 8.0, when it comes out, since I have already
been made a member of Apple's System 8.0 development team. Your input
will make that process go much smoother and result in a better book.
Thanks, in advance, for that help.

In closing, let me also add my thanks here to my regular group of Macintosh
manager friends. Thanks to all the members of Crabb's Cracker Barrel Gang
for setting me straight over the past years on most of the important
Macintosh and computing issues. And a special thanks to them for their
input to this book.

**Crabb's Final Exam**

The time has come to test you all on how carefully you've been following my
System 7.5.5 ramblings. I toyed with the idea of an essay question here,
"Compare and Contrast System 7.5.5 with Windows95," but since at the time
of this writing Windows95 is still vapor, you'd have a heck of time writing
anything useful, so I dumped that idea.

Instead, I've put together ten big ones for you to cogitate on: ten questions,
that is!
1. Why does Apple use funny numbers for the released operating systems (like 7.5.5), rather than the cool development names before the products are released (like Mozart).

2. What came before System 7.5.5?

3. How much wood would a woodchuck chuck, if a woodchuck could chuck wood?

4. What's the difference between Apple Guide and Balloon Help?

5. What's the most significant new technology in System 7.5.5?

6. Will you need more Macintosh resources to use System 7.5.5?

7. When will you install System 7.5.5 for your Macintosh folk?

8. Does QuickDraw GX create a problem for you?

9. What does PowerTalk do for you?

10. Does Finder 7.5.5 give you a new interface?

And a bonus question: Will it take longer to upgrade to 7.5.5 than it took to upgrade to 7.0?

Answers to Crabb's Final Exam

1. Does the name Carl Sagan ring a bell? It should, since he threatened to sue Apple for using his name on the unreleased Power Macintosh computers! Maybe Apple is afraid dead composers like Mozart, Copeland, and Gershwin will rise up out of their graves and haunt their Infinite Loop offices in Cupertino?

2. My name is Forrest, Forrest Gump. People call me Forrest Gump.

3. Depends upon how much RAM the woodchuck had installed.

4. Fooled ya—a serious question! If you don't know, reread chapters 1, 2, and 8.


6. Get serious, pal. You always need more resources when Apple revs its
System software. Check chapters 1 through 8 for the specifics.

7. After you have read this book and the Apple documentation that comes with 7.5.5; and after you have figured out what you’ll need to do the job.

8. Yes, if you are running non-QuickDraw GX compatible fax software. Check with your vendors about upgrades. Also, to use GX with your non-Mac printers you will need GX-compatible drivers from those vendors.


10. Unfortunately, no. But it does layer together enough changes to make it better than the previous Finder. Refamiliarize yourself with those changes in chapters 1 and 2.

Bonus Answer: No way. If it does, you have done something wrong.

Bye y’all. See you when System 8.0 comes out!
As I said earlier in the book, Apple Guide represents the most important single piece of technology in System 7.5.5. This is because it signals Apple's movement towards a new user interface and a new Finder; a future Finder that emphasizes active assistance rather than passive online help.

System 7.5.5 includes the Apple Guide extension, as well as Apple Guide files for the
Macintosh (Macintosh Guide), AppleMail (AppleMail Guide), and PowerTalk (PowerTalk Guide) that are accessed through the Balloon Help/Apple Guide menu in the Finder menu bar (see figure A.1).

![Image of Apple Guide menu](image)

**Figure A.1  Selecting Macintosh Guide**

With Apple Guide and the supplied Guide files, you can get active online help in the Finder at any time. But what you cannot do is create your own Apple Guides, either to be used from the Finder or from within applications. The PowerTalk Guide and the Macintosh Guide that ship with System 7.5.5 can only be accessed through the Finder; they cannot be launched from within an application. The AppleMail Guide can be used while in AppleMail; this is perhaps the best example of what application-specific Guides will be like.

To enable developers and others to produce their own Apple Guides, Apple provides the Apple Guide Authoring Kit. To find out how to get a kit, contact Apple (unless you are a developer, in which case you'll get the released version automatically as part of your monthly System software). Once you receive that kit, here's what you'll find and how you'll use it.

**Guide Maker**

The point of Apple Guide, of course, is task-oriented active assistance. Apple Guide gives you both access to explanations of a variety of topics (the content is what you create or re-purpose), as well as an active tour through those topics, showing you precisely how to do something by actually doing it.
The Macintosh, AppleMail, and PowerTalk Guides that ship with System 7.5.5 provide three access buttons that let you search by topic, by key word, or by an alphabetic index. Clicking on one of these buttons brings up a panel of additional choices, including a Search mechanism that lets you search for a word anywhere in the guide. With Guide Maker, the application provided in the Apple Guide Authoring Kit, you can create your own Guide (for use within your custom application, or as an additional Finder-level Guide), you can build the same Guide access pathways, or you can come up with ones that make more sense for the content you’re providing. Everything about the tasks you provide assistance for is up to you. For the most part, however, a good way to get started with Guide Maker is to use the Macintosh Guide as a template for how to design a good Apple Guide, as you can see from figure A.2.

![Figure A.2  Macintosh Guide opened to Using DOS Files & Disks](image)

When you create an Apple Guide, you’ll need to remember that it’s interactive, not just a fancy online guide. The topics and tasks are not just textual (and graphical) explanations of what you can do and how to do it, but an Apple Guide takes you through a series of steps (as finely grained as you choose) to actually complete the task. Each of the milestones or steps can have verification built-in, so that if the person using your Guide makes a mistake, or fails to execute the required step, the Guide will take control and
execute what is necessary. This is head and shoulders above the other online help systems available on other non-Mac OS platforms.

Apple Guide provides you, via the Guide Maker application, the capability to:

- Include direct controls, which include checkboxes and radio buttons.
- Include context checks, which Apple Guide uses to determine if certain tasks or if certain conditions have been met.
- Use red coachmarks that highlight interface elements to “coach” you through steps.

How Apple Guides Are Implemented

Apple Guide is implemented as a system extension that contains the Guide delivery engine, which is made up of an always running portion (with a RAM footprint of less than 20K) and an application portion (RAM footprint of about 400K) that starts up Apple Guide when you request it from the Balloon Help/Apple Guide menu.


When you use Guide Maker, you manipulate Guide Files, also called guides. You create content for your own guides from text files, which can be built with any word processor or text editor, including SimpleText.

Building an Apple Guide

Using your favorite text editor/word processor, you embed Guide Script commands, a process known as “tagging” a text file. The tagged text file—which can define not only blocks of text, but graphics and QuickTime movies—is then compiled into guide files using the Guide Maker application. You tag (or identify) Apple Guide components in your guide file—windows,
panels, buttons, controls—using the Guide Script command language, which is fully documented in the Guide Script Command Reference (available on any recent edition of the Developer’s Reference Tools CD or Apple’s Web Site).

Don Crabb Bottom Line Tip The remainder of this appendix is for folks serious about getting a gloss on how to use Guide Maker (remember, Guide Maker does not come with System 7.5.5; you must order it from Apple). If you don’t want that gloss and don’t have some programming experience already, this stuff is safely skipped. But if you’re interested in really using Guide Maker to build your own Apple Guides, you should read the rest and follow my suggestions at the end of this appendix.

Guide Script commands define the look, content, and navigation path of your guide. In a guide file, each command line begins with a command keyword surrounded by angle brackets (< >); for example, the command keyword <Help Menu> defines the help item name and guide file type.

The Guide Maker documentation defines five types of guide files; you can create any or all of them depending upon your application or your online assistance needs:

- **About Guide File**—An About guide file describes the use and contents of the help system (like the About box in any application).

- **Tutorial Guide File**—A Tutorial guide file describes the basic features of an application, and is intended to bring the user to a basic level of proficiency. A Tutorial guide file can be written to enforce a strict sequential order for the user to follow, or it can merely encourage the user to proceed in a certain order.

- **Help Guide File**—A Help guide file provides task-oriented information, such as step-by-step instructions on how to perform certain tasks. It is often the first place a user goes for initial information about the application—for example, to answer the questions, “How do I do this task?”, “What is this object on my screen?”, and “Why can’t I do this action?”
• **Shortcuts Guide File**—A Shortcuts guide file is intended to contain condensed reference material—for example, syntax rules, keyboard shortcuts, or command lists.

• **Other Guide File**—You should use an Other guide file for information that does not conform to any of the previous categories. An Other guide file can include specialized information—for example, a quick reference guide or a more advanced tutorial for experienced users.

Besides the five basic Guide files, Apple lets you build guide file additions (so-called “mix-in” files) to update existing guide files. If you have an AV Power Mac, for example, you’ll have a couple of these guide file additions for help with AV audio and video functions. Guide file additions don’t appear in the Balloon Help/Apple Guide menu as separate items, but their contents are folded into the existing guide file without recompilation by Guide Maker. Guide file additions work well as quick updates for existing Guides without doing the whole shebang again.

Once you have created and tagged a text file, you have to compile it into a source file with Guide Maker. That compilation process can be summarized by these sequential steps:

1. Plan and design the help content that you want. You will probably want to work with an instructional designer if you lack experience in this area.
2. Create a source file from an existing word-processor file by tagging the file (embedding Guide Script commands into the file).
3. Compile the source file into a guide file, using the Guide Maker application.
4. Test your file using the diagnostic and debugging features of Guide Maker, or by opening it within your application.
5. Carry out any additional steps, which may include integrating the guide file into your application using the Apple Guide API, Apple Guide Apple events, and AppleScript.
6. You (or someone who is an experienced Mac programmer) will need to write source code into your application—that is, if you want your guide to use context checks other than those built into Apple Guide. (Kids, don’t try this at home!)
Apple Guide expects your guide file to live in the same folder as the application to which it's attached. (If you want to put your guide files elsewhere, you have to write an additional routine in your application's source code). Apple Guide predefines one slot in the Balloon Help/Apple Guide menu for one guide file of each type, plus as many "Other" guides as you want. The Apple Guide creation process is summarized by figure A.3.

**Figure A.3  Schematic of Apple Guide creation**

**Guide Files Access Windows**

Each of your Guide files must provide access windows that appear whenever you select a guide file from the Balloon Help/Apple Guide menu. The access window provides a list of tasks, allowing you to select the help that best matches your current problem. Apple Guide supports three types of access windows:

- **Full access windows for extensive guide files**—these allow you to cross-reference your help topics (the Macintosh Guide window shown earlier is an example of a full access window). Full access windows provide three views of the help information: Topic Areas, Index, and Look For.

- **Single list access windows for short lists of tasks**—these are simpler than full access windows and are best for displaying short and focused lists of topics.
Simple access windows—these take you directly to help information. System 7.5.5's Macintosh Shortcuts simple access window provides access to six separate sequences, each accessed through a button in the window (several types of buttons can be defined as guide elements), as you can see in figure A.4.

![Macintosh Shortcuts simple access window](image)

**Figure A.4** Macintosh Shortcuts simple access window

**Guide File Panels**

When you select an item in an access window, a panel appears. A presentation panel is a window that usually contains one step in a procedure or one item of information. A sequence of panels can be used to explain a task, either through a defined series of steps, or by means of a variety of optional paths that you choose. For example, if you select "How do I change a program's memory size?" in the Macintosh Guide access window, you see the panel shown in the Macintosh Guide presentation panel shown in figure A.5.
Figure A.5  Macintosh Guide presentation panel “How do I change a program’s memory size?”

Presentation panels contain several elements, including a title area, content area, navigation bar, prompts, and navigation buttons. As an example, consider the Macintosh Guide presentation panel in figure A.5 showing all of these elements. You’ll also note that the navigation bar at the bottom of the panel includes navigation buttons and a Huh? button. This aptly named button takes you to a Huh? panel (I’m not making this stuff up).

Like the rest of Apple Guide, you get several different flavors of presentation panels. In the current Apple Guide release, these include:

- **Huh?** panels that provide information you must know in order to fully understand the panel. Huh? panels appear when you press the Huh? button.
- **Oops** panels that appear when you do the wrong thing at the wrong time. Your guide can identify such errors if it provides context checking.
• **Continue** panels that offer to do the task for you. In many cases, you can have AppleScript perform the task (you must first determine if it is programmatically possible for Apple Guide to perform the task).

To create a panel, use a simple Guide Script syntax, where you sandwich source-file commands between the commands `<Define Panel>` and `<End Panel>`, and then compile the sucker with Guide Maker. You can give a panel special features such as graphics, three-dimensional buttons, or a QuickTime movie by using the Guide Script commands `<PICT>`, `<3D Button>`, and `<QuickTime>`. Guide Maker uses default settings to automatically place panel text and objects in the panel, or you can specifically place text and objects using format and placement commands. Defaults make Guide Maker easy to use, even if your programming experience is negligible or rusty.

**Coach This!**

Coachmarks are so cool that you'll wonder why it took Apple so long to implement them. Coachmarks provide a graphical and compelling way of drawing attention to the exact part of the screen that needs action—a menu item to be selected, a control panel to be opened, or a radio button to be clicked—and the coachmark highlights the item so clearly that the user can hardly miss what to do next.

Coachmarks do their work by sending an Apple event to the target application. Your application doesn't need to handle the event, but it does need to be able to receive it—which is a good reason to make sure that your application is aware of high-level events. With Apple Guide, you get four built-in coach marks:

- A **red circle** which surrounds a limited or enclosed area to show you where to click (this is the default coachmark).
- A **red underline** which shows you where to input text.
- A **red arrow** which points to a location on the screen.
- A **green X character** to mark something or specify a place for input.
Apple Guide lets you use coachmarks in five different ways: as a menu coach, item coach, object coach, window coach, and AppleScript coach; each name is fairly descriptive of what it offers.

A **menu coach** works in a specific menu, menu item, or command. When Apple Guide opens a panel that includes a menu coach, it uses that coach's style and color (defined by Guide Script commands) to draw a coachmark for the specified menu. For example, in Macintosh Guide, items are identified in the Apple menu by a red, underlined menu coach.

An **item coach** appears as an item in a dialog box or other interface element in a window. When Apple Guide opens a panel that names an item coach, it uses the specified coach style to draw a coachmark for the item; for example, a help balloon that you want to highlight.

An **object coach** is enabled when your application returns a rectangle for the specified object. When Apple Guide opens a panel that names a defined object coach, it sends an Apple event to your application that requests it to return a rectangle for the named object. Object coaches require Apple Guide event handlers in the application.

A **window coach** gets enabled when you specify a rectangle within a window or desktop. When Apple Guide opens a panel that names a window coach, it uses the specified coach style to draw a coachmark in the location of the rectangle. For example, a window coach can highlight the Trash icon on the desktop.

An **AppleScript coach** works with a script (created by any OSA-compliant scripting language, like AppleScript, Userland's Frontier scripting environment, or CE Software's QuicKeys) to determine the location of the object to mark. When Apple Guide opens a panel that includes a command naming a defined coach, Apple Guide executes the specified script. Once the script returns a rectangle for the object, Apple Guide draws the coachmark.

**Context Checking**

Apple Guide, as I have said, doesn't just present cute online documentation, it works with the Mac OS to provide true active assistance. In fact, Apple
Guide's context checking, which can figure out the state of a Mac or application, gives it the power to determine your next step.

Context checking lets you change the Guide's next action, based on the current situation. Apple calls this dynamic conditioning, but the upshot is clear—your Guide reacts to changes in the Mac environment as you use it. That's true active assistance.

These dynamic conditions can either be based on obvious stuff, like the state of certain controls on the panels (such as radio buttons or checkboxes), or on less obvious stuff, like context checks that have been defined elsewhere (typically within external code blocks). Apple Guide evaluates each condition as either true or false, and makes adjustments to the sequence of panels accordingly. You can also attach an Apple event to a control to make your Guide even more reactive. Context checking commands include *Skip If/Show If, If/Else/End If, Make Sure,* and *Start Making Sure/Stop Making Sure.*

As with any programming language, the *If* statements provide conditional branching. The *Make Sure* conditionals determine if the Guide user has correctly completed a step. When the *Make Sure* conditional returns the value FALSE, you see either a special *Oops* sequence to redirect your Guide user to a prior panel, or a continue sequence to perform the task (to use continue sequences, your application must use Apple events).

In the current release of Apple Guide, you get two built-in context checks: one for checkboxes, called (cleverly enough) *checkBoxState,* and the other for radio buttons, called (oooh, now, think hard!) called *radioButtonState.* The check in both cases is a simple on/off. If you want to define your own conditions, you can do that with the *Define Context Check* command.

**What's in Guide Maker?**

Guide Maker compiles your source files into Guide files, but it also provides debugging, diagnostic, and application localization tools. Guide Maker's commands include *Build* (compiles source files), *Look For* (tests your Guide file's tasks), *Diagnose* (shows Apple Guide status messages when you navigate through a Guide file), *Convert* (converts Microsoft's Rich Text Format [RTF] and other non-Apple files into Guide format), and *Localize*
(creates or merges localization files that contain content strings). Guide Maker can extract text from your source files and convert it into resource files. You can also translate the text in the resource files using ResEdit or AppleGlot and then merge the text back into your source files using Guide Maker’s Localize command. Guide Maker also lets you localize any context checks in your Guide file.

**Putting a Guide to Work**

After you have compiled a working Guide, you should place it in the same folder as the application to which it refers. It will then appear in the Balloon Help/Apple Menu Guide menu.

Apple expects Apple Guides to become pervasive, so much so that they’ll likely become the only interface many Mac folk ever see inside of applications, and eventually, for the Finder (and whatever the Finder transmutes into) as well.

**Apple Guide Resources**

As I mentioned, you can get the complete Apple Guide Authoring Kit CD for free (until January 31, 1995, after then Apple expects to charge for it, although this may change). You also can get it from the WWDC 1994 New Technologies CD.

This CD and the Authoring CD include:

- Apple Guide API header file and documentation (Apple Guide 1.2 API)
- Guide Maker
- Apple Guide Debug extension
- Standard include files
- MoGuide application and Assistant Guide file
- Sample Finder Guides: About Help, Macintosh Guide, and Shortcuts
After you’ve started to crank through this stuff, you will want to snag the latest monthly developer mailing CD and pull-up all the *develop* articles written on Apple Guide and read them closely. In particular, you need the Developer CD Series Reference Library CD, along with an article written by John Powers, “Giving Users Help with Apple Guide,” which appears in *develop*, issue 18, and covers how you integrate Apple Guide into your applications.

**The Future of Apple Guide**

Cast this one in concrete: Apple Guide is a big deal and it’s not going to go away. Apple will flog it big time. It’s going to become the cornerstone of future “Finders” and it heralds the real arrival of active assistance. In the coming year, more and more Macfolk will expect their favorite applications to offer Apple Guides, and even locally written apps, shareware, and freeware will also come to include Apple Guides. In fact, Apple Guides will become so pervasive we’ll come to think of them in the same way that we think of today’s Finder basics. If you create your own applications or are responsible for their creation, get to know how Apple Guide works and how to use Guide Maker. It’s one of the first building blocks in how Apple intends to redefine the Mac interface over the next few years.
In the early 1980s, Apple successfully commercialized work done in the late 1970s at Xerox PARC—the concept of the personal computer graphical user interface, incorporating features such as windows, menus, icons, and copy-and-paste functionality to simplify the process of working with documents. Since the first Mac in 1984,
Apple has made the interface richer and more satisfying to use with the addition of built-in collaboration with PowerTalk, multimedia with QuickTime, rational imaging with QuickDraw GX, and speech recognition and speech synthesis with PlainTalk software.

PlainTalk, which comes in the CD Extras folder of the System 7.5.5 CD, was designed to work only on the 660AV and 840AV Macs and on Power Macs. If you don’t have one of these machines, you can skip PlainTalk for now.

PlainTalk is speaker-independent with its speech recognition, so voice training is not required. PlainTalk responds to North American English spoken by an adult, converting speech to text commands (and then executing them with macros, if necessary) via a built-in phonetic dictionary. The key limitation of PlainTalk is that it translates only commands, not dictation. It can open or save a letter, but it cannot type one, for example.

PlainTalk uses special System rules that recognize the names of menu items, dialog box buttons, and any file or alias placed in a Speakable Items folder inside the System folder.

If you want to really rock-and-roll with PlainTalk, you can connect voice commands to speech macros (both AppleScripts and QuicKeys).

Look Who’s Talking Now

PlainTalk also talks to you with its speech synthesis features, replacing Apple’s obsolete and clunky Macintosh technology. By using the Speech Setup control panel, you can set different spoken voices. For the most part, however, the speech synthesis of PlainTalk is controlled by any speech-capable application.

PlainTalk’s text-to-speech feature, implemented by the Speech Manager extension, can handle a reasonable number of oddball syllables and words, including long numbers, national characters, and currency symbols. It can even change the syllabic pronunciation, depending on how a particular word is used. Even with its improvements, though, PlainTalk’s speech synthesis still sounds like the HAL 9000 after Dave Bowman pulled out most
of its higher order functions. SimpleText uses the PlainTalk speech synthesizer to speak text; it can record audio as well.

**Voice Recognition**

PlainTalk's voice recognition requires the new generation of Apple microphones that ship with some Macs. These high-quality omnidirectional jobs are meant to sit on top of your monitor. They draw their power from the audio input port—normal microphones cannot be substituted for them if you have one of the older models. The AudioVision 14 monitor builds-in this special microphone.

The Speech Setup control panel turns speech recognition on/off and sets recognition parameters. (NOTE: Nasty commands like Erase Disk cannot be issued through PlainTalk, so your Mac is safe from audio input errors.) The sound input parameters must also be set with the Speech Setup control panel for speech recognition to work correctly, such as a digital sampling rate of 24 kHz.

When it's working, PlainTalk displays a text window that floats above the other desktop windows. This text window shows the text of the previous command and the current command. If PlainTalk can't figure out what you have said (which happens quite often) PlainTalk types "Pardon me?" in the window.

**The Usability of Speech Recognition**

Two problems plague System 7.5.5's PlainTalk speech recognition. The first problem is that the PlainTalk on the CD is intended only as an upgrade to earlier versions (since not all Macs can use it). As such, it lacks any documentation on the disc or in the manual; there is a Speech Guide Addition to the Macintosh Guide, however. So, if you haven't used PlainTalk before, don't expect any help from the written materials in the System 7.5.5 distribution. You'll need to refer to the manual that came with your AV or Power Mac to study the details of PlainTalk (or use the Speech Guide Addition).
I've used PlainTalk since version 0.9 came out last year. I don't use it any longer because it's slow (even on an 8100/80AV)—much slower than executing commands with a mouse—and it makes lots of mistakes when it is in a room with even only moderate background noise. In addition, it misinterprets enough commands so that you can't really trust its responses; you always have to double-check what it is doing.

I'd wait for version 2.0 before I dipped into the PlainTalk waters.

PlainTalk for Developers

Macintosh developers can use the System 7.5.5's Speech Recognition Toolbox to recognize speech. The toolbox lets you create and modify "language models" (so-called LMs), which are sets of words or phrases for which the application wants to listen, create and start a "recognizer" that uses one of the LMs, and receive "recognition result" notifications when your target software users say something in the active LM.

There are also many goodies in the toolbox that make it easy for applications to do some more sophisticated things with voice processing, including receiving notifications each time a user begins to speak, or automatically parsing results.

The Speech Recognition Toolbox only recognizes speaker independent, continuous speech. There are no provisions to train the recognizer to a particular speaker.

Currently, PlainTalk is designed for North American adult English speakers. It is not localized yet, and, in general, it will not yet work as well for children. Apple expects to broaden that audience over the coming months.

PlainTalk on the CD

The following software is included with PlainTalk on the System 7.5.5 CD-ROM:

- AppleScript "Check For Speech Mgr"—which does what its name suggests
• AppleScript "Open Speech Macro Editor"—ditto
• AppleScript "Open Speech Setup"—likewise
• AppleScript "Speech"—script that sets up PlainTalk on your Mac
• Speech Guide Additions to Apple Guide
• Speech Manager extension
• Speech Preferences file
• Speech Recognition extension
• AppleScript "Speech Scripting"—allows you to setup spoken phrases to control specific AppleScripts
• Speech Setup control panel
• System Speech Rules document
• SR Monitor extension—controls speech recognition
Appendix C

Glossary

As with most computer stuff, there is a lot of jargon floating around when you use a Mac. So, here's a list of some of the terms you are likely to run into and a brief definition of each.

-a-

accelerator card  An expansion card that contains another processor. This processor shares the work normally performed only by the computer's main microprocessor. An accelerator card shortens processing time.

access privileges  The privileges to open and make changes to folders and their contents; they are given to, or withheld from, users. By setting access privileges, you can control access to confidential information stored in folders on a server.

active window  The frontmost window on the desktop; the window where the next action will take place. An active window's title bar is highlighted.

administrator  The person who sets up a file server, registers users and their passwords, creates AppleShare groups, and maintains the server.

Adobe Type Manager (ATM)  A font technology that enables Adobe PostScript language outline fonts to be used for both onscreen display and printing on non-PostScript printers.

alert  A warning or report of an error in the form of an alert box, a sound from the computer's speaker, or both.

alias  A "pointer" to a real file (the file may be an application, document, folder, or any other type of file). Aliases can be used to help you organize your Mac while also making it easier to use.

allocate  To reserve an area of memory for use.

AppleScript  Apple's system software-level scripting system; it provides for the automation of routine or complex tasks and the customization of the user's computing environment.
Apple Desktop Bus (ADB) A low-speed, input-only serial bus with connectors on the back panel of the computer that you use to attach the keyboard, mouse, and other Apple Desktop Bus devices, such as graphics tablets, hand controls, and specialized keyboards.

Apple Events The messaging language of System 7.5.5's interapplication communications technology (IAC), used by applications for sophisticated communication with other applications; it will enable programs to share not only data, but also commands. Apple Events can be used by AppleScript to control the Scriptable Finder and scriptable applications.

Apple Guide An electronic assistant that is built into System 7.5.5 that guides you through specific tasks one step at a time. With 7.5.5, Apple provides the Macintosh Guide and PowerTalk Guide as solid examples of this technology.

Apple HD SC Setup A utility program that you use to initialize, update, and test SCSI hard disks.

Apple menu The menu farthest to the left in the menu bar, indicated by an Apple symbol. This menu allows you to access stuff quickly and easily.

Apple Menu Options The control panel that lets you see "nested" menus under the Apple menu; these make it easier and faster to access items that are several layers below the top menu.

application A program that performs a specific task, such as word processing, database management, or graphics.

archive A collection of files saved simultaneously for backup purposes, usually intended for longer storage than are daily backups.

ASCII Acronym for American Standard Code for Information Interchange (pronounced "ASK-ee"). A standard that assigns a unique binary number to each text character and control character. ASCII code is used for representing text inside a computer, and for transmitting text between computers or between a computer and a peripheral device.

ATM GX A version of Adobe Type Manager designed to specifically support QuickDraw GX.

background processing In multitasking environments, the operating system's ability to process lower-priority tasks while you perform other work on the computer.

backup A copy of a disk or of a file on a disk. It's a good idea to make backups of all your important files, keeping the backups in a safe place.

bit A contraction of binary digit. The smallest unit of information that a computer can hold. The value of a bit (1 or 0) represents a simple two-way choice, such as yes or no, on or off, positive or negative, something or nothing.

bitmapped character A character that exists in a computer file or in memory as a bitmap, is drawn as a pixel pattern on the graphics screen, and is sent to the printer as graphics data.

bitmapped display A display whose image is a representation of bits in an area of RAM called the screen buffer. With such a display, each dot, or pixel, on the screen corresponds, or is "mapped," to a bit in the screen buffer.

bitmapped font A font made up of bitmapped characters. Fonts stored in a Macintosh system file are bitmapped fonts, for example.
The Glossary page contains definitions of various computer-related terms. Here are some key definitions:

- **boot**: Another way to say start up. A computer boots by loading a program into memory from an external storage medium such as a disk. Starting up is often accomplished by first loading a small program, which then reads a larger program into memory. The program is said to "pull itself up by its own bootstraps"—hence the term bootstrapping or booting.

- **byte**: A unit of information consisting of a fixed number of bits. One byte consists of a series of eight bits.

- **Caddy**: The plastic case that contains a CD-ROM disc with some types of CD-ROM drives. When you insert the caddy into the drive, the metal shutter on the caddy slides away to give the laser access to the disc surface.

- **Calculator**: A desk accessory that works like a four-function pocket calculator. Calculation results can be cut and pasted into your documents using the Edit menu.

- **CD-ROM**: Acronym for compact disc read-only memory; a compact disc that is 120 mm (4.72 inches) in diameter and can store 600 MB of information. The information is designated as read-only memory because a CD drive can read the information but cannot record new information.

- **Central processing unit (CPU)**: The "brain" of the computer; the microprocessor that performs the actual computations in machine language.

- **Character**: Any symbol that has a widely understood meaning and thus can convey information.

- **Checkbox**: A small box associated with an option in a dialog box. When you click the checkbox, you change the option or affect related options.

- **Choose**: To pick a command by selecting it from a menu. You often choose a command after you've selected something for the program to act upon, for example, selecting a disk and choosing the Open command from the File menu.

- **Chooser**: An application that lets you configure your computer system to print on any printer for which there's a printing resource (on the current startup disk). If you're part of an AppleTalk network, you also use the Chooser to connect and disconnect from the network and choose among devices connected to the network.

- **Client**: A computer that has access to services on a network. The computers that provide services are called servers. A user at a client may request file access, remote log-on, file transfer, print, or complete other available services from servers.

- **Clipboard**: The holding place for what you last cut or copied; a buffer area in memory. Information on the Clipboard can be inserted (pasted) into documents.

- **Clipping file**: A file holding a selection dragged from a drag-and-drop capable application. Can be dropped into another drag-and-drop capable application file.

- **Coachmarks**: Part of Apple Guide, coachmarks provide onscreen visual clues, such as circles, that give the user information to help him perform a specific task.

- **ColorSync**: A color-matching technology that ensures color consistency between screen representation and color output.

- **Color wheel (color picker)**: The dialog box that lets you adjust hue, saturation, and brightness of colors displayed on your monitor.
composite video  A video signal that includes both display information and the synchronization (and other) signals needed to display it.

concurrent application  An application that runs on a file server at the same time as the AppleShare software.

concurrent processing  The ability of an operating system to execute multiple programs simultaneously.

configuration  A general-purpose computer term that can refer to the way you have your computer set up. It describes the total combination of hardware components—central processing unit, video display device, keyboard, and peripheral devices—that make up a computer system. It also refers to the software settings that allow various hardware components of a computer system to communicate with one another.

context sensitive  The ability to perceive the situation in which an event occurs. For example, an application program might present help information specific to the particular task you’re performing, rather than a general list of commands; such help would be context sensitive.

Control Panel  Controllable system extensions with dialog boxes to set their controls.

convergence  The correctness of aim of the red, green, and blue beams of an RGB color monitor. When the beams converge properly, the monitor gives the best quality color. You can test your monitor’s convergence and adjust it by using the Monitors control panel.

coprocessor  An auxiliary processor that is designed to relieve the demand on the main processor by performing a few specific tasks. Coprocessors may favor a certain set of operations, like floating-point calculations for graphics instruction looping, and therefore they can optimize the speed at which such operations are processed. Generally, coprocessors handle tasks that could be performed by the main processor running appropriate software, but would be performed much more slowly that way.

crash  To cease to operate unexpectedly, possibly destroying information in the process. Compare hang. See also Microsoft Windows95.

current startup disk  The disk that contains the system files which the computer is currently using. The startup disk icon always appears in the upper-right corner of the screen.

Cut  To remove something by selecting it and choosing Cut from the Edit menu. What you cut is placed on the Clipboard.

cut and paste  To move something from one place in a document to another in the same document or in a different one. It’s the computer equivalent of using scissors to clip something and using glue to paste the clipping somewhere else.

daisy chain  A colloquial term for a group of devices connected to a host device, where the first device in the “chain” is connected to the host, the second device is connected to the first, the third device is connected to the second, and so on.

debug  A colloquial term that means to locate and correct an error or the cause of a problem in a computer program. Often synonymous with troubleshoot. A term not often used in Redmond, WA.

default  A value, action, or setting that a computer system assumes, unless the user gives an explicit instruction to the contrary. Default values prevent a program from stalling or crashing if no value is supplied by the user.
Desk Accessory  A "mini-application" that is typically available from the Apple menu, regardless of which application you're using. For example, the Calculator, Note Pad, Alarm Clock, Puzzle, Scrapbook, Key Caps, and Chooser.

desktop  Your working environment on the computer. At the Finder level, the desktop displays the Trash and the icons (and windows) of disks that have been accessed.

desktop publishing  A system providing you with the ability to produce publication-quality documents.

destination  Describes the disk or folder that receives a copied or translated file, as in destination disk.

dialog box  A box that contains a message requesting more information from you. Sometimes the message warns you that you're asking your computer to do something it can't do, or that you're about to destroy some of your information. In these cases, the message is often accompanied by a beep.

disabled  Describes a menu item or feature that cannot be chosen; the disabled item appears dimmed. A disabled item has no effect when chosen.

disk capacity  The maximum amount of data a disk can hold, usually measured in kilobytes (K) or megabytes (MB). For instance, Apple 3.5-inch floppy disks typically have a disk capacity of either 800K or 1,440K.

dithering  A technique for alternating the values of adjacent dots or pixels to create the effect of intermediate values. In printing color or displaying color on a computer screen, the technique of making adjacent dots or pixels different colors to give the illusion of a third color. For example, a printed field of alternating cyan and yellow dots appears to be green. Dithering can give the effect of shades of gray on a black-and-white display, or more colors on a color display.

document  What you create with an application program—information you enter, modify, view, or save.

DOS  A disk operating system from Microsoft of little real value.

dot pitch  A measure of the distance between dots on the screen. The closer the dots, the sharper and clearer the image.

double click  Two clicks in quick succession, interpreted as a single command. The action of a double click is different from that of a single click. For example, clicking an icon selects the icon; double-clicking an icon opens it.

download  To transfer files or information from one computer to another, or from a computer to a peripheral device such as a printer. A printer will download fonts if a user prints a document containing fonts that are stored on a Macintosh, but not stored in the printer's memory.

drag  To position the pointer on something, press and hold the mouse button, move the mouse, and release the mouse button. When you release the mouse button, you either confirm a selection or move an object to a new location.

Drag and Drop  System 7.5.5 technology that lets you select something (text and graphics) from a document and drop the selection into another, without using cut and paste. The 7.5.5 Finder is drag-and-drop compliant, too, as are SimpleText and the Scrapbook. An application must support Drag and Drop to use it. Also, the Macintosh Drag and Drop extension must be installed and active.

driver  A program, usually in a System folder, that lets a peripheral device and a computer send and receive information. Printer drivers control printers; a hard disk driver controls exchanges between a hard disk and a computer.
-e-

**Easy Access**  A feature of system software that assists people who have difficulty typing on the keyboard or manipulating the mouse.

**Edit menu**  A menu in most mouse-based programs that lists editing commands.

**emulate**  To operate (through software) in a way identical to a different system. For example, Power Macs emulate the older 68K CPU's in order to run non-native PowerPC software.

**error message**  A message displayed or printed to tell you of an error or problem in the execution of a program or in your communication with the system. An error message is often accompanied by a beep, followed by a short, meaningful message, such as "An error of type 132.566 has occurred."

**Ethernet**  A high-speed local area network that consists of cable connections and a series of communication protocols. The Ethernet specification was developed by Digital Equipment Corporation, Intel Corporation, and Xerox Corporation.

**EtherTalk**  A high-speed AppleTalk network system that uses the cables of an Ethernet network. Ethernet is a widely used communications network.

-f-

**fatal error**  An error serious enough that the computer must halt execution. The act of buying any computer with Windows on it.

**fax modem**  A modem that supports fax sending and receiving via special software.

**file**  Any named, ordered collection of information stored on a disk. Application programs and operating systems on disks are examples of files. You make a file when you create text or graphics, give the material a name, and save it to disk. A Macintosh file consists of a data fork and a resource fork. You have to buy your own salad fork.

**File menu**  A menu in mouse-based applications that lists commands that affect whole documents—commands like Save, Print, and Quit.

**file name**  The name that identifies a file. The maximum character length of a file name and the rules for naming a file vary under different operating systems.

**file server**  A combination of controller software and a mass-storage device that allows computer users to share common files and applications through a network. AppleShare software, Macintosh computers, and one or more hard disks make up a file server on an AppleTalk network system.

**file synchronization**  The capability to synchronize files on two different systems so that they are the same, enabling users to work on two systems without worrying about whether they have the most current file. Apple includes File Assistant as part of System 7.5.5. File Assistant automatically synchronizes files and folders between your PowerBook and your desktop Macintosh. Files also can be synchronized with a server or between two Macintosh systems.

**file type**  A four-character sequence in single quotation marks, specified when a file is created, that identifies the type of file. Examples of file types are 'TEXT', 'APPL', and 'MPST'.
Finder  The application that maintains the Macintosh desktop and starts up other programs at the request of the user. You use the Finder to manage documents and applications, and to get information to and from disks. You see the desktop upon starting up your computer, unless you have specified a different startup application.

firmware  Programs stored permanently in read-only memory (ROM). Such programs (for example, the AppleSoft Interpreter and the Monitor program) are built into the computer at the factory.

floating-point coprocessor  A coprocessor that provides high-speed support for extended-precision arithmetic.

floating-point unit (FPU)  See floating-point coprocessor.

folder  A holder of documents, applications, and even other folders on the desktop. Folders act as subdirectories, allowing you to organize information in any way you wish.

font  A complete set of characters in one design, size, and style. In traditional typography usage, font may be restricted to a particular size and style or may comprise multiple sizes, or multiple sizes and styles of a typeface design.

font name  The name, such as Geneva or Times, given to a font family to distinguish it from other font families.

font size  The size of a font of characters in points; equivalent to the distance between the ascent line and the descent line of one line of text.

font style  A set of stylistic variations other than size, such as italic, bold, and underline.

fork  One of the two parts of a Macintosh file. The data fork contains data accessed via the Macintosh File Manager, and the resource fork contains data used by the application, such as menus, fonts, and icons.

format  (n.) (1) The form in which information is organized or presented. (2) The general shape and appearance of a printer's output, including page size, character width and spacing, line spacing, and so on. (v.) To divide a disk into tracks and sectors where information can be stored. Blank disks must be formatted before you can save information on them for the first time; synonymous with initialize.

gigabyte (GB)  A unit of measurement equal to 1,024 megabytes.

global backup  The process of backing up all the files on a hard disk.

gray scale  Shades of gray on the screen that are created by varying the intensity of the screen's pixels, rather than by using a combination of black and white pixels to produce shading.

guest  A user who is logged on to a server without a registered user name and password. A guest cannot own a private folder.

hang  To cease operation because either an expected condition is not satisfied or an infinite loop is occurring. A computer that's hanging is called a bung system.
hardware  Those parts of the computer that you can see and touch. The computer and the machines that attach to it the disk drive, printer, and other peripheral devices.

hierarchical file system (HFS)  A feature of system software that lets you use folders to organize documents, applications, and other folders on a disk. Folders can be nested in other folders to create as many levels as you need. In a hierarchical file system, a file is specified by its path name rather than by a single file name.

hierarchical menu  A menu in which one or more individual menu items can contain a submenu.

High Sierra format  The standard proposed by a number of computer and CD-ROM companies to specify a way of organizing information on a CD-ROM. The information is laid out in files located in a series of volumes, directories, and files. The High Sierra standard makes it possible to use the same CD-ROM with different kinds of computers. Only the retrieval software needs to be geared to the computer and its operating system.

icon  An image that graphically represents an object, a concept, or a message.

incremental backup  The process of backing up all files on a hard disk that have been created or modified since the last global backup.

initialize  To prepare a disk to receive information by organizing its surface into tracks and sectors; same as format.

input device  A device that sends information to the microprocessor. The mouse and keyboard are the Macintosh's primary input devices.

insertion point  The place in a document where something will be added, represented by a blinking vertical bar. You select the insertion point by clicking where you want to make the change in the document.

interface  The point at which independent systems or diverse groups interact (such as you and your Mac). Also, the devices, rules, or conventions by which one component of a system communicates with another.

Kerning  Spacing between particular combinations of letters in a word. An automatic function with QuickDraw GX and the new, "intelligent" QuickDraw GX fonts.

keyboard shortcut  A keystroke that you can use instead of a mouse action to perform a task. For example, pressing the 2X and the X keys at the same time is the same as choosing the Cut command from the Edit menu.

Key Caps  A desk accessory that shows you the optional character set available for a given font family.

kilobyte (K)  A unit of measurement consisting of 1,024 bytes. Thus, 64K memory equals 65,536 bytes.
laser printer  A printer that uses laser light to transfer a page image (sent by a computer) onto an electrostatically charged, light-sensitive drum. A black powder called toner adheres to the areas of the drum where the laser has drawn the image. Paper then passes over the drum, picking up the toner, and the toner is heat-fused to the paper as it rolls out of the printer. The Apple LaserWriter and LaserWriter Plus are examples of laser printers.

leading  Pronounced "LED-ing;" the amount of blank vertical space between the bottom of one line of text and the top of the next line of text. In early typesetting, strips of lead were placed between lines of type for spacing, hence the term.

ligature  A character that combines two letters. For example, the letters f and l are sometimes combined into a ligature.

load  To transfer information from a peripheral storage medium (such as a disk) into main memory for use; for example, to transfer a program into memory for execution.

local area network (LAN)  A group of computers connected for the purpose of sharing resources. The computers on a local area network are typically joined by a single transmission cable and are located within a small area such as a single building or section of a building.

lock  To prevent documents, files, or entire disks from being altered. Files can be locked with software commands; for example, to lock a document select it and choose Get Info from the File menu, then click the Locked checkbox in the lower-left corner of the Info window.

MacBinary  A file transfer type.

Macintosh Easy Open  A system software extension that automatically translates data and opens documents in supported applications, even if the application that created them is not available.

Macintosh Operating System (Mac OS)  The combination of ROM-based and disk-based routines that together perform basic tasks such as starting the computer, moving data to and from disks and peripheral devices, and managing memory space in RAM.

Macintosh PC Exchange  A utility that enables MS-DOS, Windows, and OS/2 disks to be mounted and opened on the desktop, along with their data files using compatible Macintosh applications.

MacTCP  Apple's standard software implementation of TCP/IP, which enables Macintosh users to access information on Cray supercomputers, UNIX and Sun workstations, VAX systems, and a variety of other hosts.

macro  A user-defined command that tells an application to carry out a series of commands when the macro is activated. These commands may be recorded sequences of characters and commands, identified by a name and possibly triggered by a keystroke.

main memory  The part of a computer's memory whose contents are directly accessible to the microprocessor; usually synonymous with random-access memory (RAM). Programs are loaded into main memory, where the computer keeps information while you're working.

megabyte (MB)  A unit of measurement equal to 1,024 kilobytes, or 1,048,576 bytes.
memory A hardware component of a computer system that can store information for later retrieval.

memory expansion card A circuit board that adds extra random-access memory (RAM) to your computer, typically a SIMM (Single Inline Memory Module).

menu A list of choices presented by a program, from which you can select a command.

menu bar The horizontal strip at the top of the screen that contains menu commands.

microprocessor An integrated circuit on the computer's main circuit board. The microprocessor carries out software instructions by directing the flow of electrical impulses through the computer. The microprocessor is the central processing unit (CPU) of the microcomputer. Examples are the Motorola 68040 and PowerPC.

MIDI Acronym for Musical Instrument Data Interface; a standard interface for electronically created music.

modem Short for modulator/demodulator; a peripheral device that links your computer to other computers and information services using telephone lines.

multitasking A process that allows a computer to perform two or more tasks simultaneously; it is accomplished by alternating the actions of the computer between tasks. True multitasking, also called preemption or preemptive multitasking, won't be available on the Mac until at least System 8.0.

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native mode Software that has been rewritten to work directly with the PowerPC CPUs of Power Macs, rather than running in the 68K emulator.

network A collection of interconnected, individually controlled computers, together with the hardware and software used to connect them. A network allows users to share data and peripheral devices such as printers and storage media, to exchange electronic mail, and so on.

Note Pad An application that allows you to enter and edit small amounts of text while working on another document.

NTSC Abbreviation for National Television Standards Committee, which defined the standard format used for transmitting broadcast video signals in the United States. Also, the standard video format defined by the NTSC, also called composite because it combines all the video information, including color, into a single signal.

NuBus An address bus and data bus incorporated into the system architecture, first implemented on the Macintosh II. The NuBus architecture lets you add a variety of components to the system, by means of expansion cards installed in NuBus expansion slots inside the Macintosh.

---O---

open To make available. You open files, folders, or documents in order to work with them.

open architecture A computer system's ability to use a variety of optional components designed to meet specialized needs, such as video, coprocessing, networking, and so on. An "open" system is one to which a user with no technical background can easily add devices and expansion cards to customize the system.
operating system  A program that organizes the actions of the parts of the computer and its peripheral devices. Also, low-level software that controls a computer by performing such basic tasks such as input/output, memory management, and interrupt handling. The operating system also determines the user interface. The major personal computer operating systems are DOS (forget it), Windows (just like the Mac, NOT!), Macintosh (the best), and O/S2.

Option key  A modifier key that gives a different meaning or action to another key you press or to mouse actions you perform. For example, you can use it to type foreign characters or special symbols contained in the optional character set.

output device  A device that receives information from the microprocessor. The monitor is the Macintosh computer's primary output device.

Owner  The AppleShare user category that the owners of folders or volumes use to assign access privileges to themselves.

paging  A method by which some operating systems store processes that are too large to be held in main memory. When a process is executing, a portion of its code and data resides in main memory. Other portions, divided into pages, are automatically read in from disk storage as needed. When the system runs low on free main memory, the kernel makes more available by writing unneeded pages back out to disk. The kernel shuffles pages in and out of main memory and disk storage like this until the process has executed. Also called page swapping.

parallel communication  A form of data communication in which the eight bits in each byte of data move along eight separate parallel lines inside a single cable.

parameter RAM  Battery-powered RAM contained in the clock chip that stores System preferences (such as time and date).

partition  A portion of a memory device—such as a hard disk or tape—that is treated like a device itself. For example, if you select the 50 percent Macintosh partition scheme provided by Apple HD SC Setup, your Macintosh volume, shown as a hard disk in the Finder, will take up about half your hard disk.

password  A series of keystrokes that gives you, but no one else, access to your files, messages sent to you through an information service, or a network.

paste  To place the contents of the Clipboard—whatever was last cut or copied—at the insertion point.

peripheral device  A piece of hardware—such as a video monitor, disk drive, printer, or modem—used in conjunction with a computer and under the computer's control. Peripheral devices are often (but not necessarily) physically separate from the computer and connected to the computer by wires, cables, or some other form of interface. Such devices often require peripheral cards.

pixel  Short for picture element; the smallest dot you can draw on the screen. Also a location in video memory that corresponds to a point on the graphics screen when the viewing window includes that location.

PlainTalk  Speech recognition and synthesis software extensions for System 7.5.5 that work with AV and Power Macs.
PMMU  The Motorola 68851 Paged Memory Management Unit, which allows an operating system to quickly reconfigure the arrangement of memory without physically moving data, so that different tasks can be “swapped” within the same space. The PMMU chip is needed with virtual memory.

Portable Digital Documents (PDDs)  Using the “print and view” technology in QuickDraw GX, you can create portable documents that can be viewed and printed by other users, even if they don’t have the application or fonts used to create the document.

Power Macintosh  Apple’s new line of Macintosh systems, based on PowerPC technology.

PowerPC  A CPU based on RISC technology, developed jointly by Apple, IBM, and Motorola.

PowerTalk  A set of collaborative services that enables users to send electronic mail, share files, and “sign” and forward documents from within an application.

PostScript Type 1  Adobe Systems’ outline font format. Type 1 fonts are based on the PostScript page-description language.

PrintMonitor  An application that monitors background printing and provides options intended to give you additional control over what happens to documents you are printing. PrintMonitor is not needed when you use QuickDraw GX.

print server  A combination of software and hardware that stores documents sent to it over the AppleTalk network and manages the printing of those documents.

print spooler  A utility that writes a representation of a document’s printed image to disk or to memory, schedules it to print in a queue of other jobs, and then prints it.

processor  The hardware component of a computer that performs the actual computation by directly executing instructions represented in machine language and stored in main memory.

proportional font  Any font in which different characters have different widths; thus, the space taken up by words having the same number of letters may vary. For example, in the typeface used here the letter M is wider than the letter I, so that MMMM produces a wider string than IIII.

protocol  Short for communications protocol; a formal set of rules for sending and receiving data on a communication line. For example, binary synchronous communications (BSC) is a protocol.

public-domain software  Software that is free for the taking. You can get it at user group meetings or through computer bulletin boards.

pull-down menu  A menu that is hidden until you move the pointer to its title and press the mouse button.

QuickDraw GX  A sophisticated graphics and printing architecture that represents a major advance in ease-of-use for everyday printing as well as high-end graphics manipulation.

RAM cache  Random-access memory that you can designate to store certain information an application uses repeatedly. Using the RAM cache can greatly speed up your work, but it may need to be used sparingly or not at all with applications that require large amounts of memory. You set the RAM cache in the Memory control panel.
RAM disk  A portion of RAM that appears to the operating system to be a disk volume or hard disk. Files in a RAM disk can be accessed much faster than the same files on a real hard disk.

random-access memory (RAM)  The part of the computer's memory that stores information temporarily while you're working on it. A computer with 4096K of RAM has 4,096 kilobytes of memory available to the user. Information in RAM can be referred to in an arbitrary or random order, hence the term random-access. (As an analogy, a book is a random-access storage device in that it can be opened and read at any point.) RAM can contain both application programs and your own information. Information in RAM is temporary, gone forever if you switch the power off without saving it on a disk or other storage medium. An exception is the battery RAM, which stores settings such as the time and which is powered by a battery.

read  To transfer information into the computer's memory from a source outside the computer (such as a disk drive or modem) or into the computer's processor from a source external to the processor (such as the keyboard or main memory).

read-only memory (ROM)  Memory whose contents can be read but not changed; used for storing firmware. Information is placed into read-only memory once, during manufacture. It remains there permanently, even when the computer's power is turned off.

registered user  A user who has been given a user name and password by the AppleShare administrator.

resource fork  The part of a file that contains data used by an application, such as menus, fonts, and icons. An executable file's code is also stored in the resource fork. Sometimes called a resource file.

restart  To cause the Mac to shut down and then turn itself on again. You have to do this when you are installing certain kinds of software (such as control panels). It can also help clear some types of errors.

RISC  Reduced Instruction Set Computing; an advanced processor architecture that provides greatly increased performance, and is implemented with the PowerPC chip in Power Macintosh computers.

RGB  Abbreviation for red-green-blue; a method of displaying color video by transmitting the three primary colors as three separate signals.

RGB monitor  A type of color monitor that receives separate signals for each color (red, green, and blue).

-s-

sans serif  Without serifs; serifs are fine lines that finish off the main strokes of a letter—like the little "feet" on the bottom of the vertical strokes in the letter M.

save  To store information by transferring it from main memory to a disk. Work not saved disappears when you switch off the computer or when the power is interrupted.

scanner  Any graphic input device that converts printed matter into digital data.

Scrapbook  A small application in which you can save frequently used pictures or text.

screen font  A bitmapped font intended for use on the computer screen.

screen shot  A document that is like a snapshot of your Macintosh screen. You make a screen shot by holding down the 3 and Shift keys and then pressing 3.
script  A series of commands written in HyperTalk, AppleScript, and other scripting languages that you can use to automate your computer.

Scriptable Finder  A version of the Macintosh Finder included with System 7.5.5 that can be scripted with AppleScript, enabling you to automate system-level tasks.

SCSI  An acronym for Small Computer System Interface (pronounced "SKUH-zee"). An industry standard interface that provides high-speed access to peripheral devices.

select  To designate where the next action will take place. To select (using a mouse) you click an icon or drag across information. In some applications, you can select items in menus by typing a letter or number at a prompt, by using a combination of keys, or by using arrow keys.

serial interface  An interface in which information is transmitted sequentially, one bit at a time, over a single wire or channel.

server  A computer that provides a particular service across a network. The service may be file access, log-in access, file transfer, printing, and so on.

shareware  Software you can try before sending payment to the author.

Shift-click  A technique that allows you to extend or shorten a selection by positioning the pointer at the end of what you want to select and holding down the Shift key while clicking the mouse button.

Shift-drag  A technique that allows you to select multiple objects by holding down the Shift key while you drag diagonally to enclose the objects in a rectangle.

68000  The microprocessor used in the Macintosh, Macintosh Plus, and Macintosh SE, among others. The 68000 has 32-bit data and address registers.

68020  The microprocessor in the Macintosh II. The Motorola 68020 can also be added to the Macintosh SE by means of an accelerator card installed in the SE Bus expansion connector.

68030  The microprocessors of the Mac Ile, Ile, and other Macs.

68040  The microprocessors of the Quadra line and related Macs.

68851  An optional coprocessor available for the Macintosh II that allows paged memory management, a technique that lets the microprocessor access a much larger body of data than can fit in RAM at one time. Sometimes referred to as the Paged Memory Management Unit, or PMMU.

68881  A coprocessor that provides high-speed support for processing scientific computations. Sometimes referred to as the floating-point unit, or FPU.

software  A collective term for programs, the instructions that tell the computer what to do. Software is usually stored on disks of one kind or another.

software pirate  A person who copies applications without the permission of the author. To copy software without permission is illegal.

SoftWindows  An application from Insignia Solutions, Inc., optimized for the PowerPC processor, which emulates an Intel x86 processor and enables Power Macintosh computers to run MS-DOS and Microsoft Windows applications on top of System 7.5.5. For most users, SoftWindows is too slow. You are better off using a System 7.5.5 Macintosh to read and use Windows disks, and leave direct Windows applications to a real PC.

spool printing  Writing a representation of a document's printed image to disk or to memory, and then printing it (as opposed to immediate printing).

spreadsheet program  A type of application program that simplifies financial planning, cost estimating, and other number-crunching tasks. In a spreadsheet, information is laid out in columns and rows. Also called an electronic worksheet.
start up  To get the system running. Starting up is the process of first reading an operating-system program from the disk and then running an application program. Synonymous with boot.

startup disk  A disk with all the necessary program files—such as the Finder and System files contained in the System Folder for the Macintosh—to set the computer into operation. Sometimes called a boot disk.

system  A coordinated collection of interrelated and interacting parts organized to perform some function or achieve some purpose—for example, a computer system comprising a processor, keyboard, monitor, and disk drive.

system file  Any file the computer uses to start itself up or to provide system-wide information. Although system files are represented by icons just as documents and applications are, they can't be opened in the usual way. You can, however, alter the contents of system files.


tear-off menu  Any menu that you can detach from the menu bar by pressing the menu title and dragging beyond the menu's edge. The torn-off menu appears in a window.

telecommunication  Transmitting information across varying distances, such as over telephone lines.

Telephony  The integration of personal computer and telephone functions.

text file  A file that contains information stored in the form of readable characters encoded using the ASCII format. On the Macintosh, they are known as Text Only documents.

title bar  The horizontal bar at the top of a window that shows the name of the window's contents. You can move a window by dragging its title bar.

troubleshoot  To locate and correct an error or the cause of a problem or malfunction in hardware or software. When referring to software, synonymous with debug.

TrueType  Apple's outline font technology that was introduced in 1990, a year before System 7 debuted. TrueType provides system-level support for the display and printing of scalable fonts. TrueType fonts are supported by QuickDraw GX.

unlock  To remove the restriction on the use of a disk or a file so that it can once again be changed, deleted, or renamed.

user group  A computer club in which computer users exchange tips and information, usually about a particular brand of computer.

user interface  The rules and conventions by which a computer system communicates with the person operating it.
version  A number indicating the release edition of a particular piece of software.

video monitor  A display device that can receive video signals by direct connection only and cannot receive broadcast signals such as commercial television; it can be connected directly to the computer.

virtual memory  Memory space that is separate from the main memory (physical RAM) and is instead located in auxiliary memory media (usually a hard disk). The ability of a system to address virtual memory space is important for multitasking operating systems and applications too large to be handled in RAM alone.

volume  A general term referring to a storage device or to part of a storage medium formatted to contain files; a source of or a destination for information. A volume can be an entire disk or only part of a disk. A volume has a name and a volume directory with the same name. Its information is organized into files.

wide area network  A system of interconnected local area networks that spans a wide geographical area.

word processor  A type of application program designed to make writing and editing easier and faster.

zone  One or more networks, collectively identified by a zone name, that are part of a larger, interconnected network. Users in a zone can easily share network services such as printers or servers.
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